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Research article

Financial hardship and mental health conditions in people with underlying health conditions during the COVID-19 pandemic in Bangladesh

Md.Safaet Hossain Sujan [a,b,*], Rafia Tasnim [a,b,**], Md. Saiful Islam [a,b,***], Most.Zannatul Ferdous [a], Atefehsadat Haghighathoseini [c], Kamrun Nahar Koly [d], Shahina Pardhan [e]

[a] Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh
[b] Centre for Advanced Research Excellence in Public Health, Savar, Dhaka-1342, Bangladesh
[c] Department of Health Administration and Policy, George Mason University, USA
[d] Health System and Population Studies Division, icddr,b, Mohakhali, Dhaka-1212, Bangladesh
[e] Vision and Eye Research Institute, School of Medicine, Anglia Ruskin University, Young Street, Cambridge UK

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ABSTRACT

Background: Financial hardship is a major concern for patients who are suffering from long-term underlying health conditions. It is likely that emergencies such as the COVID-19 pandemic would impose increased financial distress and lead to the development or exacerbation of mental health conditions.

Objective: The present study aimed to explore the relationship between financial hardship and mental health conditions (loneliness, anxiety, and depression) among patients with underlying health conditions in Bangladesh.

Methods: An e-survey based cross-sectional study was conducted among purposively selected 971 patients (50.1% male; mean age = 42.29 [SD = 15.86]) with underlying health conditions between November 2020 and January 2021. Depression, anxiety, and loneliness were measured using the Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder (GAD-7), and UCLA loneliness scale, respectively. Multiple logistic regression analyses were performed to determine any associations between financial hardship and mental health conditions (loneliness, anxiety, and depression).

Results: 46.2% of participants reported experiencing financial difficulties, and a number of respondents (12.3%) had lost their jobs during the COVID-19 pandemic. The prevalence of anxiety, depression and loneliness were 35.2%, 38.9%, and 47.68%, respectively. In the multiple logistic regression analysis, age, gender, occupation, marital status, monthly income, self-reported health status and financial hardship were significantly associated with mental health conditions.

Conclusions: Mental health problems were prevalent among people with underlying health conditions and were also associated with financial difficulties. The findings suggest that care facilities should be strengthened by including psychosocial support components delivered with lower costs, particularly for patients with underlying health conditions.

1. Introduction

The world has undergone a critical public health emergency caused by coronavirus disease-2019 (COVID-19) declared as a pandemic in March 2020 by the World Health Organization (WHO) [1, 2]. Bangladesh, a South Asian developing country, has been significantly affected with 1,953,049 confirmed cases and 29,127 deaths as of 18th May 2022 [3].

The COVID-19 pandemic led to economic uncertainty and financial difficulties globally. Research findings, including those from Bangladesh and Pakistan, have reported fear of infection with COVID-19, social stigma, isolation, anxiety, depression, emotional disharmony, economic

* Corresponding author.
** Corresponding author.
*** Corresponding author.
E-mail addresses: sujanmahmuddphi@gmail.com (Md.SafaetH. Sujan), tasnimrifa97@gmail.com (R. Tasnim), islam.msaiful@outlook.com (Md.S. Islam).

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shutdown, financial and future insecurities and increased mortality rates [4, 5, 6]. It has been postulated that the United States might undergo a major economic recession resulting in an increased number of people in unemployment, which might have more far-reaching effects than COVID-19 infection alone [7, 8, 9]. The extensive effects of COVID-19 are negatively affecting people's mental health and warrant further research, especially in relation to the contributions economic and psychosocial consequences of the pandemic [10, 11]. The situation is already difficult for the general population, therefore, it is likely that people with underlying health conditions would experience increased complications as they have to maintain their health which can be costly [12].

Worldwide, approximately 150 million people face extreme financial hardship and 100 million are below the poverty line each year because of the rising costs of health care [13, 14]. The total health expenditure per capita in Bangladesh in 2012 was US$27, with households contributing almost 63% of their income towards health care expenditure [15, 16, 17]. Research suggests that co-morbidities can have adverse, even catastrophic, social and economic effects on individuals and their households [18].

A comprehensive survey of mental health outcomes found that depression, anxiety disorders, mood disorders, post-traumatic stress symptoms, sleep disorders, and low self-esteem are highly prevalent among individuals during periods of quarantine or isolation [19]. Since the start of the pandemic, Bangladesh has followed physical isolation measures to prevent transmission of the coronavirus, which might have psychological consequences. Previous studies have demonstrated a significant association between mental health conditions and chronic diseases including but not limited to diabetes mellitus, cardiovascular diseases and pneumonia [20, 21]. Mental health and chronic illness would most likely worsen because of the fear of infection, disruption of daily life and uncertainty caused by the ongoing pandemic in Bangladesh. Deterioration of the mental health of individuals with underlying health conditions is compounded by factors such as quarantines, restrictions to outdoor areas, scarcity of necessary products and increased cost of health care [22, 23]. Furthermore, patients with co-morbidities have been shown to considerably have a higher rate of COVID-19-related mortality, increasing the financial burden on family members [24]. These factors suggest the need for a comprehensive health care support package, which should include physical and mental health care, for individuals with chronic diseases [25].

To date, there is no previous study conducted in Bangladesh investigating the financial hardship and mental health burdens of people with underlying health conditions during the pandemic. We hypothesize that those suffering from underlying health conditions may have more financial hardship and mental health problems, which this study aims to investigate.

2. Methods

2.1. Study design, participants, and procedure

A cross-sectional e-survey was conducted from November 2020 to January 2021. A total of 971 respondents with underlying health conditions were enrolled in this study. The study was carried out during the first wave of COVID-19 in 2020 as a baseline assessment to understand the financial hardship that an individual with underlying health conditions faces in a low-middle income country such as Bangladesh. The target population of the present study was the Bangladeshi (not restricted to any division or district or geographical area) who can speak and understand Bangla and suffering from at least one of the following chronic diseases: diabetes, heart diseases, high blood pressure [hypertension], psychiatric disorders, HIV, cancer, and asthma; diagnosed by a medical doctor at least six months before the start of the survey.

A self-reported, semi-structured questionnaire was generated and distributed online by generating an online survey link (Google docs) and shared on various media networks (Facebook, WhatsApp, online blogs, email, etc.) via research assistants (training was provided prior to the survey). A pilot test was performed to assess the questionnaire in terms of acceptability and transparency, with 50 people from the same population (target group) whose data were excluded from the next phase. After the pilot testing, minor modifications were made to the questionnaire. The responses from the pilot test were not included in the final analysis.

Initially, there were 1300 responses and 971 responses were included in the final analysis after removing incomplete responses. On the first page of the questionnaire, an informed consent sheet explaining the purpose and procedure, and the right to withdraw their involvement in the study, was attached. Individuals first provided written informed consent, and then the following question was asked: *"Are you willing to participate in this study freely and voluntarily?"* A blank survey form was automatically submitted if the person replied 'no'. If the person replied 'yes', they were allowed access to the full form of the survey. In the study, the exclusion criteria were: individuals below 18 years old; those with no underlying health conditions; and pre-existing and severe psychological problems.

2.2. Measures

2.2.1. Socio-demographic measures

During the survey, socio-demographic data were gathered through both open-ended and closed-ended questions, including gender, age, occupation, marital status (unmarried, married, divorced/widow), residence area (rural, semi-rural, urban), monthly family income (categorized into <15, 000 Bangladeshi Taka [BDT], 15,000–30,000 BDT, >30, 000 BDT) [26]. In addition, to confirm about participants' underlying health conditions, they were asked the following question, *"Have you been suffering from any of the following diseases for a long time?"* (Hypertension, diabetes, heart diseases, kidney disease, cancer, HIV, etc.).

2.2.2. Financial hardship related questions

Measures related to financial hardship were obtained by asking questions as follows: *"Did you lose your job during the COVID-19 pandemic?"* (yes/no), *"Are you currently facing any financial difficulties?"* (yes/no), *"Are you currently in debt to cover your medical expenses?"* (yes/no), *"Did you save/ensure money to cover your medical expenses?"* (yes/no), *"Do you currently have to borrow money from family, friends or relatives to cover your medical expenses?"* (yes/no), *"Do you currently have to sell your home or any other property to cover your medical expenses?"* (yes/no), *"Have you had to spend money from your savings for your treatment?"* (yes/no), *"At present situation can you afford to see a doctor if you feel the need?"* (yes/no), *"Can you buy all the medicines you need now?"* (yes/no), *"Can you now do all the tests given by the doctor on time?"* (yes/no), *"Are you currently receiving help from any social organizations?"* (yes/no), *"Do you have the necessary medical equipment?"* (yes/no), and *"Do you think there will be a financial crisis in your family to cover the cost of your treatment?"* (yes/no) [10, 17, 18, 27, 28, 29, 30].

2.2.3. Psychometric measurement

2.2.3.1. Patient Health Questionnaire (PHQ-9). The nine-item Bangla version of the PHQ-9 scale, which corresponds to the DSM-IV Diagnostic Criteria for Symptoms of Major Depressive Disorder, was used to evaluate the level of depressive symptoms of the respondents [31, 32]. The PHQ-9 is a promising scale for diagnosing major depression, with a high sensitivity (89.5%) and specificity (94%) [32]. Respondents answered on a 4-point Likert scale ranging from "0 = not at all" to "3 = almost every day". Each item refers to concerns such as sleep deprivation, hunger fluctuations, concentration difficulties, and suicidal thoughts in the last two weeks. The cutoff score of ≥10 was regarded as the for moderate to extremely severe depression [32]. A Cronbach alpha score of the PHQ-9 of 0.91 was obtained in the present study.

2.2.3.2. Generalized Anxiety Disorder (GAD-7). The Bangla Generalized Anxiety Disorder (GAD-7), a seven-item scale, was used in this study to assess the participants' anxiety. This has been reported to have good sensitivity (89%) and specificity (82%) for assessing the intensity of anxiety in both the clinical and general population [33, 34]. This scale is made up of seven items questions with a four-point Likert scale ranging from 0 ("Not at all") to 3 ("Nearly every day"). The cutoff score of ≥10 was regarded as screening for moderate to extremely severe anxiety, which was used to identify whether or not anxiety existed among the respondents [33, 35]. The Cronbach alpha of the GAD-7 was 0.91 in the present study.

2.2.3.3. UCLA loneliness scale. The UCLA Loneliness Scale, developed by Russell et al. (1978), is a widely used measure for adolescents and adults [36]. The present study used a revised version of the loneliness scale which is a three-item scale including three points Likert scale as follows: 1 ("hardly ever"), 2 ("some of the time") and 3 ("often") [37]. The sum of the total score ranged from 3–9, with higher scores indicating higher levels of loneliness. In the present study, a score of ≥6 indicated loneliness, as in previous research [38, 39]. The Cronbach alpha of the UCLA Loneliness Scale was 0.84 in the present study.

2.3. Statistical analysis

Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated in this study. The data were normally distributed as suggested by the Skewness and Kurtosis of all outcome variables (i.e., PHQ-9, GAD-7, and UCLA Loneliness Scale) that ranged from ±2.0. Binary logistic regression analysis was performed to determine the candidate variables of multiple regression analysis. Mental health burdens (i.e. depression, anxiety, and loneliness) were dependent variables, and demographic and financial hardship measures were independent variables. Variables that were significant in the binary logistic regression analysis were included in the multiple logistic regression analysis separately for three dependent variables: depression, anxiety, and loneliness. All analyses were executed using Statistical Package for the Social Sciences (SPSS) version 25.0, considering a p-value of <0.05.

2.4. Ethics

The study was carried out according to the Institutional Research Ethics and human involvement guidelines (Helsinki Declaration). The Ethical Review Committee of Uttara Adhunik Medical College, Uttara, Dhaka-1260, Bangladesh, approved this study [Ref: UAMC/ERC/27/2020]. The purpose of this study was documented in the first phase of the questionnaire along with, i) the procedures and objectives of the current study, ii) data confidentiality and anonymity, and iii) freedom to withdraw response from the study at any time, and all participants gave written informed consent.

3. Results

3.1. General profile of participants

A total of 971 participants were included in the final analysis with a mean age of 42.29 (±15.86) years. 50.1% were males 65.3% were married, with 29% reported to be employed. Almost half (46.1%) of the participants reported their monthly family income as > 30,000 BDT ($346 US), and 62.7% resided in urban areas. Over half of participants rated their health as poor (55.9%).

3.2. Financial hardship during the COVID-19 pandemic

During the COVID-19 pandemic, 12.36% of respondents reported to have lost their jobs, and almost half (46.24%) indicated that they were currently experiencing financial difficulties. 25.95% were currently in debt to cover their medical expenses, and 78.6% had no savings to cover their medical expenses. More than a quarter (28.225) currently had to borrow money from family members, friends, or relatives to cover their medical cost, and 9.47% had to sell their home or any other properties to cover their medical expenses. A sizeable number of participants reported they had to spend money from their savings for their treatment (43.98%), couldn't consult with doctors they needed (32.34%), couldn't purchase all of their necessary medicines (27.91%), and couldn't afford all diagnostic tests suggested by doctors (38.41%). Over half (51.39%) reported to been able to acquire the essential medical equipment (e.g., insulin, insulin syringes, blood sugar meters, diabetic test strips, etc.) (51.39%). Only 10.92% of participants indicated that they were currently receiving financial support from social organizations. Finally, nearly half (47.79%) predicted a possible financial crisis in their family in order to be able to cover the cost of their current treatment (47.79%).

3.3. Association of all variables with loneliness

UCLA cutoff of ≥6 suggested the prevalence estimate of loneliness was 47.68%. In the multiple logistic regression analysis, females were 1.86 times more likely to report loneliness compared to males (AOR: 1.86; 95% CI: 1.30–2.66, $p = 0.001$) [Table 1]. Participants who reported their occupation as housewife, employee, and retired were respectively, 0.19, 0.36, and 0.35 times less likely to experience loneliness compared students ($AOR_{Housewife}$: 0.19; 95% CI: 0.09–0.41, $p < 0.001$; $AOR_{Employee}$: 0.36; 95% CI: 0.18–0.7; $p = 0.003$; and $AOR_{Retired}$: 0.35; 95% CI: 0.15–0.83, $p = 0.017$). Never been married and married participants were respectively 0.42 and 0.46 times less likely to experience loneliness compared to widowed participants ($AOR_{Unmarried}$: 0.42; 95% CI: 0.18–0.97, $p = 0.043$; $AOR_{Married}$: 0.46; 95% CI: 0.26–0.82, $p = 0.008$). Participants with underlying health conditions health status were nearly 3 times more likely to experience loneliness than those with good health (AOR: 2.95; 95% CI: 2.18–4.1, $p < 0.001$). Those who had to spend their savings for treatment were 1.49 times more likely to experience loneliness than those who hadn't (AOR: 1.49; 95% CI: 1.05–2.13, $p = 0.026$). Moreover, those who reported the possibility of financial crisis in the future to cover their costs of treatment were 1.57 times more likely to experience loneliness than those who didn't (AOR: 1.57; 95% CI: 1.08–2.28, $p = 0.018$).

3.4. Association of all variables with anxiety

According to the GAD-7 scale, 35.2% of participants were in danger of suffering from anxiety. In the multiple logistic regression analysis, females were 1.76 times more likely to have anxiety compared to males (AOR: 1.76; 95% CI: 1.20–2.57, $p = 0.004$) [Table 2]. Participants who reported their occupation as housewife and employee were respectively 0.40 and 0.42 times less likely to have anxiety compared to students ($AOR_{Housewife}$: 0.40; 95% CI: 0.19–0.87, $p = 0.021$), ($AOR_{Employee}$: 0.42; 95% CI: 0.21–0.84, $p = 0.014$). Participants who had poor health status were over 5.66 times more likely to have anxiety compared to those who had good health (AOR: 5.66; 95% CI: 4.01–7.99, $p < 0.001$). Participants who had to spend their savings were 1.81 times more likely to have anxiety compared to those who hadn't (AOR: 1.81; 95% CI: 1.25–2.62; $p = 0.002$).

3.5. Association of all variables with depression

As per the PHQ-9 scale, 38.9% of participants were likely to be suffering from depression. In multiple logistic regression analysis, younger adults were 0.60 times less likely to have depression compared to middle aged/older adults (AOR: 0.60; 95% CI: 0.38–0.94, $p = 0.025$) [Table 3]. Participants who reported their occupation as housewife, employee and businessman were respectively 0.21, 0.27, and 0.25 times less likely to have depression than students ($AOR_{Housewife}$: 0.21; 95% CI:

Table 1. Distribution and association of all variables with loneliness.

Variables	Overal $N = 971$	Loneliness		Bivariate regression analysis		Multiple logistic regression analysis	
		Negative	Positive				
	n (%)	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Gender							
Male	486 (50.05)	281 (57.82)	205 (42.18)	Ref.		Ref.	
Female	485 (49.95)	227 (46.8)	258 (53.2)	1.558 (1.209–2.007)	0.001	1.861 (1.301–2.662)	**0.001**
Age							
Younger adults	424 (43.67)	184 (43.4)	240 (56.6)	1.895 (1.466–2.45)	<0.001	1.212 (0.814–1.804)	0.344
Middle-aged/older adults	547 (56.33)	324 (59.23)	223 (40.77)	Ref.		Ref.	
Occupation							
Student	234 (24.1)	79 (33.76)	155 (66.24)	Ref.		Ref.	
Housewife	209 (21.52)	128 (61.24)	81 (38.76)	0.323 (0.219–0.476)	<0.001	0.191 (0.09–0.407)	**<0.001**
Employee	282 (29.04)	165 (58.51)	117 (41.49)	0.361 (0.252–0.518)	<0.001	0.359 (0.184–0.7)	**0.003**
Businessman	137 (14.11)	74 (54.01)	63 (45.99)	0.434 (0.282–0.668)	<0.001	0.531 (0.245–1.152)	0.109
Retired	84 (8.65)	50 (59.52)	34 (40.48)	0.347 (0.207–0.579)	<0.001	0.35 (0.148–0.828)	**0.017**
Unemployed	25 (2.57)	12 (48)	13 (52)	0.552 (0.241–1.266)	0.161	0.481 (0.167–1.385)	0.175
Marital status							
Unmarried	263 (27.09)	100 (38.02)	163 (61.98)	1.175 (0.695–1.986)	0.547	0.421 (0.182–0.971)	**0.043**
Married	634 (65.29)	377 (59.46)	257 (40.54)	0.491 (0.302–0.801)	0.004	0.462 (0.262–0.815)	**0.008**
Widowed	74 (7.62)	31 (41.89)	43 (58.11)	Ref.		Ref.	
Monthly family income							
<15,000 BDT	169 (17.4)	65 (38.46)	104 (61.54)	2.567 (1.785–3.694)	<0.001	0.957 (0.571–1.603)	0.867
15,000–30,000 BDT	354 (36.46)	167 (47.18)	187 (52.82)	1.797 (1.355–2.383)	<0.001	1.084 (0.759–1.549)	0.657
>30,000 BDT	448 (46.14)	276 (61.61)	172 (38.39)	Ref.		Ref.	
Residence							
Rural	235 (24.2)	123 (52.34)	112 (47.66)	Ref.			
Semi-urban	127 (13.08)	78 (61.42)	49 (38.58)	0.69 (0.445–1.071)	0.098	□	□
Urban	609 (62.72)	307 (50.41)	302 (49.59)	1.08 (0.799–1.46)	0.615	□	□
Self-reported health status							
Poor	543 (55.92)	210 (38.67)	333 (61.33)	3.635 (2.778–4.756)	<0.001	2.954 (2.184–3.995)	**<0.001**
Good	428 (44.08)	298 (69.63)	130 (30.37)	Ref.		Ref.	
Did you lose your job during the COVID-19 pandemic?							
No	852 (87.74)	463 (54.34)	389 (45.66)	Ref.		Ref.	
Yes	119 (12.26)	45 (37.82)	74 (62.18)	1.957 (1.32–2.903)	0.001	1.152 (0.699–1.898)	0.580
Are you currently facing any financial difficulties?							
No	522 (53.76)	339 (64.94)	183 (35.06)	Ref.		Ref.	
Yes	449 (46.24)	169 (37.64)	280 (62.36)	3.069 (2.361–3.989)	<0.001	1.47 (0.991–2.18)	0.055
Are you currently in debt to cover your medical expenses?							
No	719 (74.05)	424 (58.97)	295 (41.03)	Ref.		Ref.	
Yes	252 (25.95)	84 (33.33)	168 (66.67)	2.875 (2.127–3.885)	<0.001	1.203 (0.687–2.108)	0.517
Did you save/ensure money to cover your medical expenses?							
No	758 (78.06)	392 (51.72)	366 (48.28)	Ref.			
Yes	213 (21.94)	116 (54.46)	97 (45.54)	0.896 (0.66–1.215)	0.479	□	□
Do you currently have to borrow money from family, friends or relatives to cover your medical expenses?							
No	697 (71.78)	407 (58.39)	290 (41.61)	Ref.		Ref.	
Yes	274 (28.22)	101 (36.86)	173 (63.14)	2.404 (1.802–3.206)	<0.001	0.896 (0.53–1.516)	0.683
Do you currently have to sell your home or any other properties to cover your medical expenses?							
No	879 (90.53)	478 (54.38)	401 (45.62)	Ref.		Ref.	
Yes	92 (9.47)	30 (32.61)	62 (67.39)	2.464 (1.562–3.885)	<0.001	1.008 (0.568–1.787)	0.979
Have you had to spend money from your savings for your treatment?							
No	544 (56.02)	334 (61.4)	210 (38.6)	Ref.		Ref.	
Yes	427 (43.98)	174 (40.75)	253 (59.25)	2.313 (1.785–2.996)	<0.001	1.494 (1.049–2.128)	**0.026**
At present can you see a doctor if you feel the need?							
No	314 (32.34)	113 (35.99)	201 (64.01)	2.682 (2.03–3.543)	<0.001	1.181 (0.714–1.954)	0.516
Yes	657 (67.66)	395 (60.12)	262 (39.88)	Ref.		Ref.	
Can you buy all of your necessary medicines?							
No	271 (27.91)	91 (33.58)	180 (66.42)	2.915 (2.173–3.91)	<0.001	1.491 (0.872–2.551)	0.145
Yes	700 (72.09)	417 (59.57)	283 (40.43)	Ref.		Ref.	
Can you do all the tests given by the doctor on time?							

(*continued on next page*)

Table 1 (*continued*)

Variables	Overal $N = 971$	Loneliness		Bivariate regression analysis		Multiple logistic regression analysis	
		Negative	Positive				
	n (%)	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
No	373 (38.41)	144 (38.61)	229 (61.39)	2.474 (1.897–3.226)	<0.001	0.875 (0.54–1.419)	0.589
Yes	598 (61.59)	364 (60.87)	234 (39.13)	Ref.		Ref.	
Are you currently receiving help from a social organization?							
No	865 (89.08)	457 (52.83)	408 (47.17)	0.828 (0.553–1.24)	0.359	☐	☐
Yes	106 (10.92)	51 (48.11)	55 (51.89)	Ref.			
Do you have the necessary medical equipment?							
No	499 (51.39)	242 (48.5)	257 (51.5)	Ref.		Ref.	
Yes	472 (48.61)	266 (56.36)	206 (43.64)	1.371 (1.065–1.766)	0.014	0.864 (0.627–1.19)	0.372
Do you think there will be a financial crisis in your family to cover the cost of your treatment?							
No	507 (52.21)	327 (64.5)	180 (35.5)	Ref.		Ref.	
Yes	464 (47.79)	181 (39.01)	283 (60.99)	2.84 (2.189–3.686)	<0.001	1.568 (1.079–2.279)	**0.018**

Note: COR = Crude Odds Ratio; CI = Confidence Interval; AOR = Adjusted Odds Ratio; BDT = Bangladeshi Taka.

Table 2. Distribution and association of all variables with anxiety.

Variables	Anxiety		Bivariate regression analysis		Multiple logistic regression analysis	
	Negative	Positive				
	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Gender						
Male	341 (70.16)	145 (29.84)	Ref.		Ref.	
Female	288 (59.38)	197 (40.62)	1.609 (1.233–2.098)	<0.001	1.758 (1.201–2.573)	**0.004**
Age						
Younger adults	276 (65.09)	148 (34.91)	0.976 (0.748–1.273)	0.856	☐	☐
Middle-aged/older adults	353 (64.53)	194 (35.47)	Ref.			
Occupation						
Student	123 (52.56)	111 (47.44)	Ref.		Ref.	
Housewife	137 (65.55)	72 (34.45)	0.582 (0.397–0.855)	0.006	0.403 (0.187–0.87)	**0.021**
Employee	212 (75.18)	70 (24.82)	0.366 (0.252–0.531)	<0.001	0.421 (0.211–0.837)	**0.014**
Businessman	90 (65.69)	47 (34.31)	0.579 (0.374–0.895)	0.014	0.788 (0.356–1.747)	0.558
Retired	49 (58.33)	35 (41.67)	0.792 (0.478–1.31)	0.363	0.922 (0.386–2.204)	0.856
Unemployed	18 (72)	7 (28)	0.431 (0.173–1.071)	0.070	0.364 (0.115–1.157)	0.087
Marital status						
Unmarried	146 (55.51)	117 (44.49)	0.996 (0.593–1.673)	0.987	0.793 (0.339–1.856)	0.593
Married	442 (69.72)	192 (30.28)	0.54 (0.331–0.88)	0.013	0.713 (0.399–1.275)	0.255
Widowed	41 (55.41)	33 (44.59)	Ref.		Ref.	
Monthly family income						
<15,000 BDT	80 (47.34)	89 (52.66)	2.907 (2.016–4.192)	<0.001	1.222 (0.725–2.061)	0.451
15,000–30,000 BDT	225 (63.56)	129 (36.44)	1.498 (1.11–2.021)	0.008	0.87 (0.593–1.275)	0.475
>30,000 BDT	324 (72.32)	124 (27.68)	Ref.		Ref.	
Residence						
Rural	142 (60.43)	93 (39.57)	Ref.			
Semi-urban	86 (67.72)	41 (32.28)	0.728 (0.462–1.147)	0.171	☐	☐
Urban	401 (65.85)	208 (34.15)	0.792 (0.581–1.08)	0.141	☐	☐
Self-reported health status						
Poor	260 (47.88)	283 (52.12)	6.807 (4.932–9.396)	<0.001	5.661 (4.009–7.993)	**<0.001**
Good	369 (86.21)	59 (13.79)	Ref.		Ref.	
Did you lose your job during the COVID-19 pandemic?						
No	553 (64.91)	299 (35.09)	Ref.			
Yes	76 (63.87)	43 (36.13)	1.046 (0.702–1.56)	0.824	☐	☐
Are you currently facing any financial difficulties?						
No	388 (74.33)	134 (25.67)	Ref.		Ref.	
Yes	241 (53.67)	208 (46.33)	2.499 (1.907–3.274)	<0.001	1.243 (0.822–1.88)	0.303
Are you currently in debt to cover your medical expenses?						
No	503 (69.96)	216 (30.04)	Ref.		Ref.	
Yes	126 [50]	126 [50]	2.329 (1.736–3.124)	<0.001	0.98 (0.55–1.747)	0.945

(*continued on next page*)

Table 2 (*continued*)

Variables	Anxiety		Bivariate regression analysis		Multiple logistic regression analysis	
	Negative	Positive				
	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Did you save/ensure money to cover your medical expenses?						
No	483 (63.72)	275 (36.28)	Ref.			
Yes	146 (68.54)	67 (31.46)	1.241 (0.897–1.717)	0.193	□	□
Do you currently have to borrow money from family, friends or relatives to cover your medical expenses?						
No	485 (69.58)	212 (30.42)	Ref.		Ref.	
Yes	144 (52.55)	130 (47.45)	2.065 (1.55–2.751)	<0.001	0.771 (0.444–1.336)	0.354
Do you currently have to sell your home or any other properties to cover your medical expenses?						
No	591 (67.24)	288 (32.76)	Ref.		Ref.	
Yes	38 (41.3)	54 (58.7)	2.916 (1.881–4.52)	<0.001	1.612 (0.91–2.854)	0.101
Have you had to spend money from your savings for your treatment?						
No	403 (74.08)	141 (25.92)	Ref.		Ref.	
Yes	226 (52.93)	201 (47.07)	2.542 (1.941–3.33)	<0.001	1.807 (1.249–2.616)	**0.002**
At present can you see a doctor if you feel the need?						
No	156 (49.68)	158 (50.32)	2.604 (1.969–3.442)	<0.001	1.166 (0.692–1.965)	0.564
Yes	473 (71.99)	184 (28.01)	Ref.		Ref.	
Can you buy all of your necessary medicines?						
No	130 (47.97)	141 (52.03)	2.693 (2.017–3.595)	<0.001	1.456 (0.84–2.523)	0.181
Yes	499 (71.29)	201 (28.71)	Ref.		Ref.	
Can you do all the tests given by the doctor on time?						
No	195 (52.28)	178 (47.72)	2.416 (1.842–3.168)	<0.001	1.085 (0.652–1.805)	0.753
Yes	434 (72.58)	164 (27.42)	Ref.		Ref.	
Are you currently receiving help from a social organization?						
No	556 (64.28)	309 (35.72)	1.229 (0.797–1.898)	0.351	□	□
Yes	73 (68.87)	33 (31.13)	Ref.			
Do you have the necessary medical equipment?						
No	299 (59.92)	200 (40.08)	1.554 (1.191–2.028)	0.001	1.154 (0.823–1.617)	0.407
Yes	330 (69.92)	142 (30.08)	Ref.		Ref.	
Do you think there will be a financial crisis in your family to cover the cost of your treatment?						
No	368 (72.58)	139 (27.42)	Ref.		Ref.	
Yes	261 (56.25)	203 (43.75)	2.059 (1.575–2.691)	<0.001	0.971 (0.648–1.455)	0.887

Note: COR = Crude Odds Ratio; CI = Confidence Interval; AOR = Adjusted Odds Ratio; BDT = Bangladeshi Taka.

Table 3. Distribution and association of all variables with depression.

Variables	Depression		Bivariate regression analysis		Multiple logistic regression analysis	
	Negative	Positive				
	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Gender						
Male	321 (66.05)	165 (33.95)	Ref.		Ref.	
Female	272 (56.08)	213 (43.92)	1.523 (1.175–1.975)	0.001	1.453 (0.986–2.141)	0.059
Age						
Younger adults	237 (55.9)	187 (44.1)	1.471 (1.134–1.908)	0.004	0.595 (0.378–0.938)	**0.025**
Middle-aged/older adults	356 (65.08)	191 (34.92)	Ref.		Ref.	
Occupation						
Student	93 (39.74)	141 (60.26)	Ref.		Ref.	
Housewife	141 (67.46)	68 (32.54)	0.318 (0.215–0.47)	<0.001	0.207 (0.093–0.461)	**<0.001**
Employee	202 (71.63)	80 (28.37)	0.261 (0.181–0.378)	<0.001	0.269 (0.134–0.542)	**<0.001**
Businessman	97 (70.8)	40 (29.2)	0.272 (0.173–0.427)	<0.001	0.248 (0.107–0.572)	**0.001**
Retired	45 (53.57)	39 (46.43)	0.572 (0.346–0.945)	0.029	0.588 (0.237–1.458)	0.252
Unemployed	15 (60)	10 (40)	0.44 (0.189–1.02)	0.056	0.366 (0.119–1.128)	0.080
Marital status						
Unmarried	114 (43.35)	149 (56.65)	1.538 (0.916–2.582)	0.104	1.27 (0.53–3.045)	0.592
Married	439 (69.24)	195 (30.76)	0.523 (0.321–0.851)	0.009	0.687 (0.38–1.242)	0.214
Widowed	40 (54.05)	34 (45.95)	Ref.		Ref.	

(*continued on next page*)

Table 3 (*continued*)

Variables	Depression		Bivariate regression analysis		Multiple logistic regression analysis	
	Negative	Positive				
	n (%)	n (%)	COR (95% CI)	*p*-value	AOR (95% CI)	*p*-value
Monthly family income						
<15,000 BDT	77 (45.56)	92 (54.44)	2.548 (1.774–3.66)	<0.001	0.603 (0.345–1.053)	0.076
15,000–30,000 BDT	211 (59.6)	143 (40.4)	1.445 (1.081–1.933)	0.013	0.666 (0.446–0.995)	**0.047**
>30,000 BDT	305 (68.08)	143 (31.92)	Ref.		Ref.	
Residence						
Rural	132 (56.17)	103 (43.83)	Ref.		Ref.	
Semi-urban	86 (67.72)	41 (32.28)	0.611 (0.389–0.961)	0.033	0.732 (0.417–1.286)	0.278
Urban	375 (61.58)	234 (38.42)	0.8 (0.589–1.085)	0.151	0.852 (0.574–1.265)	0.428
Self-reported health status						
Poor	239 (44.01)	304 (55.99)	6.085 (4.497–8.234)	<0.001	5.613 (3.969–7.938)	**<0.001**
Good	354 (82.71)	74 (17.29)	Ref.		Ref.	
Did you lose your job during the COVID-19 pandemic?						
No	528 (61.97)	324 (38.03)	Ref.		Ref.	
Yes	65 (54.62)	54 (45.38)	1.354 (0.92–1.993)	0.124	□	□
Are you currently facing any financial difficulties?						
No	379 (72.61)	143 (27.39)	Ref.		Ref.	
Yes	214 (47.66)	235 (52.34)	2.91 (2.228–3.801)	<0.001	1.357 (0.885–2.079)	0.161
Are you currently in debt to cover your medical expenses?						
No	484 (67.32)	235 (32.68)	Ref.		Ref.	
Yes	109 (43.25)	143 (56.75)	2.702 (2.014–3.625)	<0.001	1.176 (0.644–2.148)	0.597
Did you save/ensure money to cover your medical expenses?						
No	450 (59.37)	308 (40.63)	1.398 (1.015–1.927)	0.040	1.493 (1.015–2.195)	**0.042**
Yes	143 (67.14)	70 (32.86)	Ref.		Ref.	
Do you currently have to borrow money from family, friends or relatives to cover your medical expenses?						
No	465 (66.71)	232 (33.29)	Ref.		Ref.	
Yes	128 (46.72)	146 (53.28)	2.286 (1.719–3.04)	<0.001	0.731 (0.412–1.297)	0.284
Do you currently have to sell your home or any other properties to cover your medical expenses?						
No	556 (63.25)	323 (36.75)	Ref.		Ref.	
Yes	37 (40.22)	55 (59.78)	2.559 (1.65–3.968)	<0.001	1.216 (0.667–2.218)	0.522
Have you had to spend money from your savings for your treatment?						
No	379 (69.67)	165 (30.33)	Ref.		Ref.	
Yes	214 (50.12)	213 (49.88)	2.286 (1.757–2.975)	<0.001	1.452 (0.982–2.147)	0.062
At present can you see a doctor if you feel the need?						
No	133 (42.36)	181 (57.64)	Ref.		Ref.	
Yes	460 (70.02)	197 (29.98)	3.178 (2.404–4.201)	<0.001	0.957 (0.563–1.626)	0.872
Can you buy all of your necessary medicines?						
No	106 (39.11)	165 (60.89)	3.559 (2.657–4.767)	<0.001	2.047 (1.165–3.596)	**0.013**
Yes	487 (69.57)	213 (30.43)	Ref.		Ref.	
Can you do all the tests given by the doctor on time?						
No	165 (44.24)	208 (55.76)	3.174 (2.421–4.161)	<0.001	1.514 (0.904–2.535)	0.115
Yes	428 (71.57)	170 (28.43)	Ref.		Ref.	
Are you currently receiving help from a social organization?						
No	530 (61.27)	335 (38.73)	0.926 (0.614–1.397)	0.714	□	□
Yes	63 (59.43)	43 (40.57)	Ref.			
Do you have the necessary medical equipment?						
No	282 (56.51)	217 (43.49)	1.486 (1.146–1.928)	0.003	0.957 (0.671–1.367)	0.810
Yes	311 (65.89)	161 (34.11)	Ref.		Ref.	
Do you think there will be a financial crisis in your family to cover the cost of your treatment?						
No	366 (72.19)	141 (27.81)	Ref.		Ref.	
Yes	227 (48.92)	237 (51.08)	2.71 (2.077–3.537)	<0.001	1.587 (1.052–2.393)	**0.028**

Note: COR = Crude Odds Ratio; CI = Confidence Interval; AOR = Adjusted Odds Ratio; BDT = Bangladeshi Taka.

0.09–0.46, $p < 0.001$; $AOR_{Employee}$: 0.27; 95% CI: 0.13–0.54, $p < 0.001$; $AOR_{Buisenessman}$: 0.25; 95% CI; 0.11–0.57, $p = 0.001$). Participants who reported a monthly family income of 15,000–30,000 BDT were 0.67 times less likely to have depression compared to those who with a monthly income >30,000 BDT (AOR: 0.67; 95% CI: 0.45–1.00; $p = 0.047$). Participants who reported poor health status were 5.61 times more likely to have depression compared to those who reported good health (AOR: 5.61; 95% CI: 3.97–7.94; $p < 0.001$). Participants who hadn't saved money to cover medical expenses were more likely to have depression compared to those who saved money (AOR: 1.49; 95% CI: 1.02–2.2; $p = 0.042$). Those who reported that they couldn't buy all of their necessary medical equipment were 2.05 times more likely to have

depression than those who could (AOR: 2.05; 95% CI: 1.17–3.60; $p = 0.013$). Participants who reported there would be a financial crisis to cover the cost of their medical treatment were more likely to have depression compared to those who didn't (AOR: 1.59; 95% CI; 1.05–2.39, $p = 0.028$).

4. Discussion

The effects and economic consequences of the pandemic have been widespread, but they are most prominent among individuals with underlying health conditions [40]. Financial challenges are rarely investigated, quantified, or compared with clinical care parameters, particularly in patients with underlying conditions who are likely to be burdened and distressed by diagnosis and ongoing treatment-related expenditures. Financial difficulties can have a wide-ranging impact on many aspects of life, including a patient's economic well-being and overall quality of life [30]. We hypothesized that those suffering from underlying conditions will have more financial hardship and mental health problems during the COVID-19 pandemic in Bangladesh.

Our study shows that people reported financial difficulties, which were significantly associated with anxiety, depression, and loneliness, and those with underlying health conditions reported financial difficulties with higher prevalence of mental health conditions.

Being female was found to be significantly associated with loneliness and anxiety, agreeing with a previous study which found a significant association between anxiety and female [41], although other studies did not show this gender difference with loneliness [42, 43]. Gender differences have been shown for depression with females being nearly twice as likely as males to be diagnosed with depression and have more depressive symptoms [44], with a higher burden of psychological issues than males [45, 46, 47]. It has been suggested that stress hormones may contribute [48] but this requires further investigation. Younger participants with underlying health problems demonstrated fewer mental health issues such as depression than other age groups in this study, agreeing with a previous study [49].

Multiple logistic regression analysis suggests that students were more likely to suffer from loneliness, anxiety, and depression compared to housewives, employees, and businessmen, agreeing with previous studies [50, 51, 52, 53, 54]. A systemic review reported that students have been suffering from mental health disorders including loneliness, anxiety, stress and depression following the pandemic [55].

Participants who reported being married as well as never been married were less likely to experience loneliness compared to those who were widowed or divorced. A previous similar study demonstrated that those who were divorced and widowed showed increased loneliness [56], and that unmarried women with poor health status were lonelier than others [57]. On the other hand a, previous study reports that marital status has no effect on death anxiety [58].

Family income of 15,000–30,000 BDT was found to be significantly associated with higher depression in this study, agreeing with a previous study [59] which showed a significant association between income and depression but not with loneliness or anxiety. A previous study of older adults in Europe indicated that poor participants were the ones most vulnerable to loneliness [60].

Self-reported poor health status was found to be significantly associated with anxiety, depression, and loneliness. A multi-center study in the Nordic countries demonstrated that COPD patients suffered more from psychological issues, particularly anxiety, depression, or both [61]. Anxiety could arise due to a health issue or exacerbate an existing health problem [62].

Our study shows a significant percentage (62.36%) of patients with underlying health problems faced various financial difficulties, and that loneliness was found to be significantly associated with financial difficulties. The association of low financial status with feelings of isolation and loneliness among older adults has been shown [63, 64]. Debts or inability to cover medical expenses during the pandemic may multiple financial difficulties, with participants who were unable to pay their medical bills reported being depressed.

A significant proportion of respondents reported to now spending money from their savings for treatments, with associated loneliness and anxiety. Depression was significantly associated with not been able to obtain all necessary medications. A significant number of respondents suffering from anxiety and loneliness also reported that they were expecting their families to face financial hardship as a result of their treatment costs during the pandemic.

The association of financial difficulties with various mental health problems (loneliness, anxiety, and depression) agree with previous studies conducted in different countries, for example among British students which found that financial troubles were associated with a higher risk of depression [65], and insufficiency of cash-flow was associated with a higher incidence of mental health problems [66].

A recent study conducted among co-morbid patients in African Americans [67] found an association between several diseases (heart disease, diabetes, and cancer) and financial challenges, as did a qualitative study in Australia [18]. Chronic conditions such as heart disease and cancer have linked to lower-income due to long-time treatment costs [68, 69]. A systematic review investigating financial hardship among cancer patients and their families found that treatment termination and poverty were the most important consequences of financial burden [70], and younger cancer survivors in the United States are vulnerable to material, psychological, and behavioral medical financial difficulty [71]. A study among Hispanic women with thyroid cancer revealed that low-acculturated women of all ages are exposed to financial hardship [72]. To the best of the authors' knowledge, there is little evidence from developing countries that examines any association between financial hardship and mental health conditions among people with underlying chronic conditions during the COVID-19 pandemic.

A recent study in Bangladesh showed a prevalence of depression and anxiety at 55.9% and 58.6% respectively among respondents facing financial hardship [10]. A study among older adults revealed that participants who had trouble paying their expenses were more likely to suffer from depression and anxiety [73], while a preliminary study has shown a link between subjective financial burden and general loneliness among the older population [63]. Further research has examined the relationship between social and emotional aspects and chronic patients' perceptions of pain severity, and has discovered a link between financial troubles and loneliness [74].

The consequences of the disruption in treatment for chronic illness due to financial barriers may have a significant and long-term effect on health. Marshall and Tucker-Seeley discovered that skipping medication due to general financial stress is a robust predictor of poor self-reported health [75]. It is possible that cutting medical care and treatment due to financial hardship could aggravate current physical and mental health concerns that require frequent or long-term management. It might lead to new health problems by delaying necessary action when an ailment first occurs. If this is the case, policies and programs aimed at alleviating debt loads and healthcare cost burdens for individuals in debt or with financial vulnerabilities may be especially crucial for preventing this form of care avoidance.

4.1. Limitations

There are various limitations to this study that should be considered. Since participants in this study had access to a smartphone or computer, respondents who were not -digitally literate could not be included. We chose an online convenience sampling technique because of the COVID-19 lockdown. As it is a cross-sectional study, causal inferences cannot be made. This study relied on self-reported responses during home isolation, which may or may not correspond to clinical diagnoses made by health professionals.

5. Conclusions

The present study reported a high level of financial difficulties prevalent among people with underlying health conditions. Many people had lost their job due to the COVID-19 pandemic, and a significant proportion reported to be in debt to cover medical expenses. These financial difficulties were highly associated with depression, loneliness and anxiety, showing that patients with underlying health problems need appropriate psychosocial support. In addition, state or institutional financial assistance can help individuals to address their ongoing challenges during an unprecedented crisis.

Declarations

Author contribution statement

Md. Safaet Hossain Sujan: Conceived and design the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper. Rafia Tasnim: Performed the experiments; Wrote the paper. Md. Saiful Islam: Performed the experiments; Analyzed and interpreted the data; Contributed reagents; materials, analysis tools or data; Wrote the paper. Most. Zannatul Ferdous: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper. Atefehsadat Haghighathoseini: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper. Kamrun Nahar Koly; Shahina Pardhan: Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Declaration of interest's statement

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Additional information

No additional information is available for this paper.

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References

[1] E. Mahase, China coronavirus: WHO declares international emergency as death toll exceeds 200, BMJ Br. Med. J. (Clin. Res. Ed.) (2020) 368.
[2] R. Tasnim, M.S.H. Sujan, M.S. Islam, A.H. Ritu, M.A. Siddique, T.Y. Toma, et al., Prevalence and correlates of anxiety and depression in frontline healthcare workers treating people with COVID-19 in Bangladesh, BMC Psychiatr. 21 (1) (2021) 1–14.
[3] Worldometer. Bangladesh [Internet]. https://www.worldometers.info/coronavirus/country/bangladesh/, 2022.
[4] A.K.M.I. Bhuiyan, N. Sakib, A.H. Pakpour, M.D. Griffiths, M.A. Mamun, COVID-19-Related suicides in Bangladesh due to lockdown and economic factors: case study evidence from media reports, Int. J. Ment. Health Addiction (2020).
[5] M.A. Mamun, I. Ullah, COVID-19 suicides in Pakistan, dying off not COVID-19 fear but poverty?–The forthcoming economic challenges for a developing country, Brain Behav. Immun. (2020).
[6] V. Thakur, A. Jain, COVID 2019-suicides: a global psychological pandemic, Brain Behav. Immun. (2020).
[7] S. Roy, Economic Impact of COVID-19 Pandemic, 2020.
[8] E. Keshky, M. El Sayed, S.S. Basyouni, A.M. Al Sabban, Getting through covid-19: the pandemic's impact on the psychology of sustainability, quality of life, and the global economy–a systematic review, Front. Psychol. 11 (2020) 3188.
[9] M.A. Reger, I.H. Stanley, T.E. Joiner, Suicide mortality and coronavirus disease 2019—a perfect storm? JAMA Psychiatr. (2020).
[10] M.S. Sultana, A.H. Khan, S. Hossain, T. Islam, M.T. Hasan, H.U. Ahmed, et al., The Association between Financial Hardship and Mental Health Difficulties Among Adult Wage Earners during the COVID-19 Pandemic in Bangladesh: Findings from a Cross-Sectional Analysis, 2020.
[11] M. Gjaka, K. Feka, A. Bianco, F. Tishukaj, V. Giustino, A.M. Parroco, et al., The effect of covid-19 lockdown measures on physical activity levels and sedentary behaviour in a relatively young population living in kosovo, J. Clin. Med. 10 (4) (2021) 1–15.
[12] O.S. Kotsiou, S. Zouridis, M. Kosmopoulos, K.I. Gourgoulianis, Impact of the financial crisis on COPD burden: Greece as a case study, Eur. Respir. Rev. 27 (147) (2018).
[13] K. Xu, D.B. Evans, G. Carrin, A.M. Aguilar-Rivera, P. Musgrove, T. Evans, Protecting households from catastrophic health spending, Health Aff 26 (4) (2007) 972–983.
[14] WHO. World Bank and WHO, Half the World Lacks Access to Essential Health Services, 100 Million Still Pushed into Extreme Poverty Because of Health Expenses [Internet] [cited 2021 Oct 10]. Available from: https://www.who.int/news/item/13-12-2017-world-bank-and-who-half-the-world-lacks-access-to-essential-health-services-100-million-still-pushed-into-extreme-poverty-because-of-health-expenses, 2017.
[15] MoHFW, Bangladesh National Health Accounts 1997 - 2012, February 2, 2011). Available from: http://www.who.int/nha/country/bgd/en/, 2015.
[16] WHO, Bangladesh National Health Accounts, an Overview on the Public and Private Expenditures in Health Sector [Internet] [cited 2021 Jan 4]. Available from: https://www.who.int/bangladesh/news/detail/05-10-2017-bangladesh-national-health-accounts-an-overview-on-the-public-and-private-expenditures-in-health-sector, 2017.
[17] T. Tahsina, N.B. Ali, M.A.B. Siddique, S. Ahmed, M. Rahman, S. Islam, et al., Determinants of hardship financing in coping with out of pocket payment for care seeking of under five children in selected rural areas of Bangladesh, PLoS One 13 (5) (2018), e0196237.
[18] Y.-H. Jeon, B. Essue, S. Jan, R. Wells, J.A. Whitworth, Economic hardship associated with managing chronic illness: a qualitative inquiry, BMC Health Serv. Res. 9 (1) (2009) 182.
[19] M.M. Hossain, A. Sultana, N. Purohit, Mental health outcomes of quarantine and isolation for infection prevention: a systematic umbrella review of the global evidence, 2020. Available SSRN 3561265.
[20] M. Mukeshimana, G. Chironda, Depression and associated factors among the patients with type 2 diabetes in Rwanda, Ethiop. J. Health Sci 29 (6) (2019).
[21] S.S. Rozario, S.W. Masho, The associations between mental health status, hypertension, and hospital inpatient visits in women in the United States, Am. J. Hypertens. 31 (7) (2018) 804–810.
[22] L.E. Egede, D. Zheng, K. Simpson, Comorbid depression is associated with increased health care use and expenditures in individuals with diabetes, Diabetes Care 25 (3) (2002) 464–470.
[23] N. Sartorious, Comorbidity of mental and physical diseases: a main challenge for medicine of the 21st century, Shanghai Arch. Psych 25 (2) (2013) 68.
[24] A. Osibogun, M. Balogun, A. Abayomi, J. Idris, Y. Kuyinu, O. Odukoya, et al., Outcomes of COVID-19 patients with comorbidities in southwest Nigeria, PLoS One 16 (3) (2021), e0248281.
[25] A. Sayeed, S. Kundu, M.H. Al Banna, E. Christopher, M.T. Hasan, M.R. Begum, et al., Mental Health Outcomes of Adults with Comorbidity and Chronic Diseases during the COVID-19 Pandemic: a Matched Case-Control Study, 2020.
[26] M.S. Islam, M.S.H. Sujan, R. Tasnim, M.Z. Ferdous, J.H.B. Masud, S. Kundu, et al., Problematic internet use among young and adult population in Bangladesh: correlates with lifestyle and online activities during the COVID-19 pandemic, Addict. Behav. Reports (2020) 12.
[27] A. Sanyaolu, C. Okorie, A. Marinkovic, R. Patidar, K. Younis, P. Desai, et al., Comorbidity and its impact on patients with COVID-19, SN Compr. Clin. Med (2020) 1–8.
[28] A. Murphy, C. McGowan, M. McKee, M. Suhrcke, K. Hanson, Coping with healthcare costs for chronic illness in low-income and middle-income countries: a systematic literature review, BMJ Glob. Heal 4 (4) (2019) 1–8.

[29] R.A. Mahumud, A.R. Sarker, M. Sultana, Z. Islam, J. Khan, A. Morton, Distribution and determinants of out-of-pocket healthcare expenditures in Bangladesh, J. Prev. Med. Public Heal 50 (2) (2017) 91–99.
[30] M. Delgado-Guay, J. Ferrer, A.G. Rieber, W. Rhondali, S. Tayjasanant, J. Ochoa, et al., Financial distress and its associations with physical and emotional symptoms and quality of life among advanced cancer patients, Oncol. 20 (9) (2015) 1092.
[31] A.N. Chowdhury, S. Ghosh, D. Sanyal, Bengali adaptation of brief patient health questionnaire for screening depression at primary care, J. Indian Med. Assoc. 102 (10) (2004) 544–547.
[32] K. Kroenke, R.L. Spitzer, J.B.W. Williams, B. Löwe, The patient health questionnaire somatic, anxiety, and depressive symptom scales: a systematic review, Gen. Hosp. Psychiatr. 32 (4) (2010) 345–359.
[33] R.L. Spitzer, K. Kroenke, J.B.W. Williams, B. Löwe, A brief measure for assessing generalized anxiety disorder: the GAD-7, Arch. Intern. Med. 166 (10) (2006) 1092–1097.
[34] S. Hossain, A. Anjum, M.E. Uddin, M.A. Rahman, M.F. Hossain, Impacts of socio-cultural environment and lifestyle factors on the psychological health of university students in Bangladesh: a longitudinal study, J. Affect. Disord. (2019).
[35] M.S. Islam, M.Z. Ferdous, M.N. Potenza, Panic and generalized anxiety during the COVID-19 pandemic among Bangladeshi people: an online pilot survey early in the outbreak, J. Affect. Disord. 276 (2020) 30–37.
[36] F.F. Reichmann, Loneliness, Psychiatry. 22 (1) (1959) 1–15.
[37] M.E. Hughes, L.J. Waite, L.C. Hawkley, J.T. Cacioppo, A short scale for measuring loneliness in large surveys: results from two population-based studies, Res. Aging 26 (6) (2004) 655–672.
[38] A. Steptoe, A. Shankar, P. Demakakos, J. Wardle, Social isolation, loneliness, and all-cause mortality in older men and women, Proc. Natl. Acad. Sci. U. S. A. 110 (15) (2013 Apr) 5797–5801.
[39] J.M. Groarke, E. Berry, L. Graham-wisener, -P.E. Mckenna, E. Mcglinchey, C. Armour, Loneliness in the UK during the COVID-19 pandemic : cross-sectional results from the COVID-19 psychological wellbeing study, PLoS One 15 (9) (2020), e0239698.
[40] M.J. Fastiggi, J. Sim, I.-C. Huang, Association of co-morbidities with financial hardship in survivors of adult cancer, Support. Care Cancer 1–10 (2021).
[41] T.A. Pigott, Gender differences in the epidemiology and treatment of anxiety disorders, J. Clin. Psychiatr. 60 (1999) 4–15.
[42] S. Borys, D. Perlman, Gender differences in loneliness, Pers. Soc. Psychol. Bull. 11 (1) (1985) 63–74.
[43] M. Barreto, C. Victor, C. Hammond, A. Eccles, M.T. Richins, P. Qualter, Loneliness around the world: age, gender, and cultural differences in loneliness, Pers. Indiv. Differ. 169 (2021), 110066.
[44] J.S. Girgus, K. Yang, Gender and depression, Curr. Opin. Psychol 4 (2015) 53–60.
[45] H. Salbach-Andrae, K. Lenz, N. Simmendinger, N. Klinkowski, U. Lehmkuhl, E. Pfeiffer, Psychiatric comorbidities among female adolescents with anorexia nervosa, Child Psychiatr. Hum. Dev. 39 (3) (2008) 261–272.
[46] M.I. Pumar, C.R. Gray, J.R. Walsh, I.A. Yang, T.A. Rolls, D.L. Ward, Anxiety and depression—important psychological comorbidities of COPD, J. Thorac. Dis. 6 (11) (2014) 1615.
[47] S.L. Mott, C.E. Schiller, J.G. Richards, M.W. O'Hara, S. Stuart, Depression and anxiety among postpartum and adoptive mothers, Arch Womens Ment. Health 14 (4) (2011) 335–343.
[48] X.-X. Ding, Y.-L. Wu, S.-J. Xu, R.-P. Zhu, X.-M. Jia, S.-F. Zhang, et al., Maternal anxiety during pregnancy and adverse birth outcomes: a systematic review and meta-analysis of prospective cohort studies, J. Affect. Disord. 159 (2014) 103–110.
[49] J. Mirowsky, C.E. Ross, Age and depression, J. Health Soc. Behav. (1992) 187–205.
[50] S. Sidana, J. Kishore, V. Ghosh, D. Gulati, R.C. Jiloha, T. Anand, Prevalence of depression in students of a medical college in New Delhi: a cross-sectional study, Australas. Med. J. 5 (5) (2012) 247.
[51] S. Hossain, A. Anjum, M.T. Hasan, M.E. Uddin, M.S. Hossain, M.T. Sikder, Self-perception of physical health conditions and its association with depression and anxiety among Bangladeshi university students, J. Affect. Disord. 263 (2020) 282–288.
[52] A.M. Werner, A.N. Tibubos, L.M. Mülder, J.L. Reichel, M. Schäfer, S. Heller, et al., The impact of lockdown stress and loneliness during the COVID-19 pandemic on mental health among university students in Germany, Sci. Rep. 11 (1) (2021) 1–11.
[53] M.S. Islam, M.S.H. Sujan, R. Tasnim, M.T. Sikder, M.N. Potenza, J. Van Os, Psychological responses during the COVID-19 outbreak among university students in Bangladesh, PLoS One (2020).
[54] M.A. Islam, S.D. Barna, H. Raihan, M.N.A. Khan, M.T. Hossain, Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: a web-based cross-sectional survey, PLoS One 15 (8) (2020 Aug), e0238162.
[55] F. Al Mamun, I. Hosen, J.M. Misti, M.M. Kaggwa, M.A. Mamun, Mental disorders of bangladeshi students during the covid-19 pandemic: a systematic review, Psychol. Res. Behav. Manag. (2021) 645–654.
[56] M. Pinquart, Loneliness in married, widowed, divorced, and never-married older adults, J. Soc. Pers. Relat. 20 (1) (2003) 31–53.
[57] M.J. Essex, S. Nam, Marital status and loneliness among older women: the differential importance of close family and friends, J. Marriage Fam. (1987) 93–106.
[58] M.A. Cole, Sex and marital status differences in death anxiety, Omega J. Death Dying 9 (2) (1979) 139–147.
[59] F.J. Zimmerman, W. Katon, Socioeconomic status, depression disparities, and financial strain: what lies behind the income-depression relationship? Health Econ 14 (12) (2005) 1197–1215.
[60] C.L. Niedzwiedz, E.A. Richardson, H. Tunstall, N.K. Shortt, R.J. Mitchell, J.R. Pearce, The relationship between wealth and loneliness among older people across Europe: is social participation protective? Prev. Med. 91 (2016) 24–31.
[61] P.R. Muskin, Major depressive disorder and other medical illness: a two-way street, Ann. Clin. Psychiatry Off. J. Am. Acad. Clin. Psychiatr 22 (4 Suppl 3) (2010) S15–20.
[62] B.-J. Shen, Y.E. Avivi, J.F. Todaro, A. Spiro, J.-P. Laurenceau, K.D. Ward, et al., Anxiety characteristics independently and prospectively predict myocardial infarction in men: the unique contribution of anxiety among psychologic factors, J. Am. Coll. Cardiol. 51 (2) (2008) 113–119.
[63] M.A. Drost, Financial Stress and Loneliness in Older Adults, The Ohio State University, 2020.
[64] G. Cheung, V. Wright-St Clair, E. Chacko, Y. Barak, Financial difficulty and biopsychosocial predictors of loneliness: a cross-sectional study of community dwelling older adults, Arch. Gerontol. Geriatr. 85 (2019), 103935.
[65] T. Richardson, P. Elliott, R. Roberts, M. Jansen, A longitudinal study of financial difficulties and mental health in a national sample of British undergraduate students, Community Ment. Health J. 53 (3) (2017) 344–352.
[66] K.M. Kiely, L.S. Leach, S.C. Olesen, P. Butterworth, How financial hardship is associated with the onset of mental health problems over time, Soc. Psychiatr. Psychiatr. Epidemiol. 50 (6) (2015) 909–918.
[67] S.M.W. Jones, S. Chennupati, T. Nguyen, C. Fedorenko, S.D. Ramsey, Comorbidity is associated with higher risk of financial burden in Medicare beneficiaries with cancer but not heart disease or diabetes, Medicine (Baltim.) 98 (1) (2019).
[68] C. Hajat, E. Stein, The global burden of multiple chronic conditions: a narrative review, Prev. Med. Reports 12 (2018) 284–293.
[69] E.C. Dowling, N. Chawla, L.P. Forsythe, J. de Moor, T. McNeel, H.M. Rozjabek, et al., Lost productivity and burden of illness in cancer survivors with and without other chronic conditions, Cancer 119 (18) (2013) 3393–3401.
[70] M. Azzani, A.C. Roslani, T.T. Su, The perceived cancer-related financial hardship among patients and their families: a systematic review, Support. Care Cancer 23 (3) (2015) 889–898.
[71] Z. Zheng, A. Jemal, X. Han, G.P. Guy Jr., C. Li, A.J. Davidoff, et al., Medical financial hardship among cancer survivors in the United States, Cancer 125 (10) (2019) 1737–1747.
[72] D.W. Chen, D. Reyes-Gastelum, C.M. Veenstra, A.S. Hamilton, M. Banerjee, M.R. Haymart, Financial hardship among Hispanic women with thyroid cancer, Thyroid 31 (5) (2021) 752–759.
[73] G.L. Marshall, E. Kahana, W.T. Gallo, K.L. Stansbury, S. Thielke, The price of mental well-being in later life: the role of financial hardship and debt, Aging Ment. Health 25 (7) (2021) 1338–1344.
[74] J. Cohen-Mansfield, R. Eisner, The meanings of loneliness for older persons, Aging Ment. Health 24 (4) (2020) 564–574.
[75] G.L. Marshall, R. Tucker-Seeley, The association between hardship and self-rated health: does the choice of indicator matter? Ann. Epidemiol. 28 (7) (2018) 462–467.