

Evaluation of the Psychological Impact of COVID-19 Pandemic on Chinese Patients with Common Mental Disorders in Primary Care: A Cross-Sectional Study

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How to cite this paper: Fung, H.T., Lai, K.P.L., Luk, M.H.M. and Chan, P.F. (2022) Evaluation of the Psychological Impact of COVID-19 Pandemic on Chinese Patients with Common Mental Disorders in Primary Care: A Cross-Sectional Study. *Open Journal of Psychiatry*, 12, 157-173.

<https://doi.org/10.4236/ojpsych.2022.122013>

Received: January 25, 2022

Accepted: April 10, 2022

Published: April 13, 2022

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Abstract

Purpose: Our study aimed to evaluate the psychological impact of COVID-19 pandemic on Chinese patients with common mental disorders in primary care in Hong Kong. **Method:** A cross-sectional study was conducted on 102 Chinese patients with common mental disorders and being followed up in two public integrated mental health clinics in Hong Kong from 1st November 2020 to 31st January 2021. Patients would be evaluated about the impact of COVID-19 pandemic on their mood and daily life by using a questionnaire which assessed social distancing effects, financial impact, relationship with family, anxiety and depressive symptoms. The Patient Health Questionnaire-9 (PHQ-9) and General Anxiety Disorder-7 Questionnaire (GAD-7) would also be used to assess patients' mood symptoms. Factors which were related to COVID-19 pandemic and associated with anxiety or depressive symptoms would be analysed. **Results:** The mean age of the subjects was 58.0 years and more patients were female (77.5%). There were 84.3% and 72.5% of patients reported their anxiety and depressive symptoms being affected by COVID-19 pandemic respectively. It was found that 17.6% of patients had their income decreased or were unemployed. About one-third (30.4%) of patients indicated that their relationship with their family was worsened while 8.8% was improved. Social distancing was significantly associated with anxiety ($p = 0.006$) and depressive symptoms ($p < 0.001$) in patients with common mental disorders. **Conclusion:** There was considerably more psychological impact including an increase in anxiety and depressive symptoms due to COVID-19 pandemic in Chinese patients with existing common mental disorders in primary care. Primary care physicians should raise their awareness of the

psychological impact of COVID-19 pandemic on their patients. Our findings shed light on mental health care planning and preventive measures during the COVID-19 pandemic and potential subsequent pandemics.

Keywords

Psychological, COVID-19, Common Mental Disorders, Primary Care

1. Introduction

Since the first outbreak reported in mainland China in December 2019, the novel coronavirus disease (COVID-19) had rapidly spread into a global pandemic. To date (1 September 2020), over 25,000,000 confirmed cases and 800,000 deaths attributable to this disease had been reported [1]. In Hong Kong, COVID-19 had also been rapidly transmitted since late January 2020 with 4823 confirmed cases as of 1 September 2020 [2].

Reports already indicated that the COVID-19 pandemic would not only affect physical health, but also mental health [3]. The pandemic and the related containment measures *i.e.* lockdown curfew, quarantine, social distancing and self-isolation could have a detrimental impact on mental health [4] [5]. In particular, the increased loneliness and reduced social interactions, were the main risk-factor for depression and anxiety [6]. Fear of unknown was found to raise anxiety levels in both healthy individuals as well as those with pre-existing mental health conditions [7] [8]. This emotional response might evolve into distress reactions (insomnia, anger, extreme fear of illness even in those not exposed), health risk behaviours (increased use of alcohol and tobacco, social isolation), mental disorders, lowered perceived health and suicidal ideation [9] [10].

The rapid transmission of the disease would increase the likelihood of mental distress and psychiatric morbidities in different sub-populations, not simply attributed to persistent quarantine and massive negative news portrayal, but also influenced by the growing number of confirmed and suspected cases [11]. Symptoms of anxiety and depression and self-reported stress were found to be common psychological reactions to the COVID-19 pandemic [12]. Moreover, downturn in the economy caused by COVID-19 would lead to unemployment, financial insecurity and poverty; and could thus induce mental health problems in previously healthy people and negative effects on those with pre-existing mental disorders [13]. Youngster, women and those living with children, especially pre-school age children were particularly vulnerable [14] [15]. And people with mental health conditions could be more substantially influenced by the emotional responses brought on by the COVID-19 pandemic, resulting in relapses or worsening of an already existing mental health condition [16] [17].

Most of these psychosocial and mental health consequences of the pandemic would have to be addressed by psychiatrists or family physicians. This study

aimed to evaluate the psychological impact of COVID-19 pandemic in Chinese patients with existing common mental disorders in primary care in Hong Kong. We hoped to raise the awareness among primary care physicians on the psychosocial impact of COVID-19 pandemic on their patients. Our study results would also be useful for mental health care planning and preventive measures during the COVID-19 pandemic and potential subsequent pandemics [5] [18].

2. Materials and Method

2.1. Study Design

This was a cross-sectional study carried out in two public primary care integrated mental health clinics located in two districts in Hong Kong. The clinics were commenced since 2010 with an aim to early identify and provide intervention to patients with common mental disorders (CMDs) in community setting. Patients attending the clinics during 1st Nov 2020 to 31st Jan 2021 would be recruited. The inclusion and exclusion criteria were summarized as below:

Inclusion criteria:

All Chinese patients with diagnosis of CMDs which referred to two main diagnostic categories, depressive disorders and anxiety disorders, and had follow-up in the integrated mental health primary care clinics during the period from 1st Nov 2019 to 31st Jan 2020 (pre-COVID-19 pandemic).

Exclusion criteria:

- 1) Non-Chinese patients;
- 2) Patients with age below 18;
- 3) Patients who had non CMD diagnoses;
- 4) Patients with conditions affecting their mental capacity to give consent;
- 5) Patients who were new to the clinic.

2.2. Procedure

Collected variables including age, gender and diagnoses, were retrieved from computerized records. The impact of COVID-19 pandemic on patients' daily life and mood was evaluated by using a questionnaire (**Appendix I**) which assessed social distancing effects, financial impact, relationship with family, anxiety and depressive symptoms. The Patient Health Questionnaire-9 (PHQ-9) (**Appendix II**) and General Anxiety Disorder-7 questionnaire (GAD-7) (**Appendix III**) were used to assess patients' mood. PHQ-9 and GAD-7 are two validated questionnaires for identification and assessment of severity of depression and anxiety respectively [19] [20] [21]. The PHQ-9 consisted of 9 items whereas GAD-7 consisted of 7 items, both indicated on a 4-point Likert scale where "0" as not at all, "1" as several days, "2" as more than half the days and "3" as nearly every day. PHQ-9 total score for the 9 items ranges from 0 to 27. Scores of 5, 10, 15, and 20 represent cut-points for mild, moderate, moderately severe and severe depression, respectively. For GAD-7, total score for the 7 items ranges from 0 to 21. Scores of 5, 10, and 15 represent cut-points for mild, moderate, and severe an-

xiety, respectively.

Patients were interviewed by a nurse or an occupational therapist of the mental health clinics to complete the 3 questionnaires before they were seen by the attending family physicians.

Subsequently, the PHQ-9 score and GAD-7 score of pre- and peri-COVID-19 pandemic were compared between patients who perceived their anxiety symptoms were not worsened by COVID-19 pandemic and patients who perceived their anxiety symptoms were worsened by COVID-19 pandemic. The PHQ-9 score and GAD-7 score of pre- and peri-COVID-19 pandemic were also compared between patients who perceived their depressive symptoms were not worsened by COVID-19 pandemic and patients who perceived their depressive symptoms were worsened by COVID-19 pandemic.

2.3. Outcome

The main outcome was to evaluate the psychological impact including increase in anxiety or depressive symptoms due to COVID-19 pandemic in Chinese patients with common mental disorders in primary care in Hong Kong.

2.4. Statistical Analysis

SPSS version 21 was used for statistical analysis. For descriptive statistics, continuous variables with symmetrical distribution were presented as means and standard deviations (SD). Skewed continuous variables were presented as median and 1st/3rd quartiles. Normality of continuous variables were determined by Kolmogorov-Smirnov test, Shapiro-Wilk test, pattern of histogram, normal Q-Q plot and detrended normal Q-Q plot. Categorical variables of descriptive statistics were presented as percentages. For comparing patients with anxiety or depressive symptoms affected by COVID-19 pandemic to those who were not, the continuous variables were analyzed by an independent sample t-test. Categorical variables of two levels between these two groups of patients were analyzed statistically by Chi-square test with Yates continuity correction or Fisher's Exact Test where appropriate. Ordinal categorical variables with more than two levels were analyzed by Chi square test for trend or Exact test for trend. Multivariate analysis was performed by logistic regression model. Final model of logistic regression was obtained by backward elimination according to likelihood ratio.

3. Results

Study Population

There were 129 patients fulfilled inclusion criteria during the study period with 102 patients participated in the study. There were 11 (8.5%) patients refused to participate and 16 (12.4%) patients defaulted follow-up. The mean age of the subjects was 58.0 years and more patients were female (77.5%). Mixed anxiety and depressive disorder was the most prevalent (25.5%) common mental disorder diagnosed among the study subjects, followed by generalised anxiety dis-

order (20.6%). There were 92.2% of patients perceived that social distancing was affecting their daily life. The financial status was affected in 17.6% of patients with their income decreased or they were unemployed. There was 30.4% of patients indicated that their relationship with their family was worsen. The proportion of patients rated their anxiety and depressive symptoms were affected by COVID-19 pandemic was 84.3% and 72.5% respectively. Other clinical characteristics of the subjects and results of the questionnaire were summarized in **Table 1** and **Table 2** respectively.

Univariate analysis results for the impact of COVID-19 pandemic on patients' anxiety symptoms were summarized in **Table 3**. The mean GAD-7 score (peri-COVID-19 pandemic) in patients who perceived their anxiety symptoms worsened by COVID-19 pandemic was statistical significantly higher than those who perceived their anxiety symptoms not affected by COVID-19 pandemic (4.85 vs 3.13, $P = 0.037$). Similar results were shown for the impact of COVID-19 pandemic on patients' depressive symptoms and were summarized in **Table 4**. The mean GAD-7 score (peri-COVID-19 pandemic) in patients who perceived their depressive symptoms worsened by COVID-19 pandemic was statistical

Table 1. Demographic data and clinical characteristics of patients with CMD (N = 102).

Clinical Characteristics	Number (%)	Mean (SD)
Age (years)		58.0 (11.4)
<40	4 (4.9%)	
40 - 49	12 (11.8%)	
50 - 59	39 (38.2%)	
60 - 69	31 (29.4%)	
>70	16 (15.7%)	
Sex		
Male	23 (22.5%)	
Female	79 (77.5%)	
Diagnoses		
Mixed anxiety and depressive disorder	26 (25.5%)	
General anxiety disorder	21 (20.6%)	
Adjustment disorder	16 (15.7%)	
Dysthymia	12 (11.8%)	
Depressive episode	10 (9.8%)	
Panic disorder	9 (8.8%)	
Abnormal grief	3 (2.9%)	
Social anxiety disorder	2 (2.0%)	
Anxiety disorder not specified	2 (2.0%)	
Obsessive compulsive disorder	1 (1.0%)	

Table 2. Results of the questionnaire of patients with CMD (N = 102).

	Number (%)
Social distancing	
Absent	8 (7.8%)
Mild	23 (22.5%)
Moderate	42 (41.2%)
Severe	29 (28.4%)
Financial impact	
Decreased income or unemployed	18 (17.6%)
Not affected	84 (82.4%)
Increased	0 (0%)
Family relationship	
Worsen	31 (30.4%)
Not affected	62 (60.8%)
Improved	9 (8.8%)
Patients perceived increased anxiety symptoms	
Absent	16 (15.7%)
Mild	34 (33.3%)
Moderate	39 (38.2%)
Severe	13 (12.7%)
Patients perceived increased depressive symptoms	
Absent	28 (27.5%)
Mild	33 (32.4%)
Moderate	31 (30.4%)
Severe	10 (9.8%)

significantly higher than those who perceived their depressive symptoms not affected by COVID-19 pandemic (5.22 vs 2.89, $P < 0.001$). The mean PHQ-9 score (peri-COVID-19 pandemic) was also statistical significantly higher in patients who perceived their depressive symptoms worsened by COVID-19 pandemic than those who perceived their depressive symptoms not affected by COVID-19 pandemic (3.77 vs 2.46, $P = 0.014$). Social distancing was a statistically significant associated factor in both patients who perceived their anxiety and depressive symptoms were worsened by COVID-19 pandemic with P value 0.006 and <0.001 respectively.

Independent variables including sex, age, social distancing, financial impact, family relationship, PHQ-9 score and GAD-7 score were included for further analysis by multivariate logistic regression model (the final logistic regression

Table 3. Univariate analysis (anxiety symptoms not worsened by COVID-19 pandemic vs anxiety symptoms worsened by COVID-19 pandemic).

	Anxiety symptoms not worsened by COVID-19 pandemic (n = 16)	Anxiety symptoms worsened by COVID-19 pandemic (n = 86)	P value
Male	4 (25.0%)	19 (21.1%)	0.754
Female	12 (75.0%)	67 (77.9%)	
Compared with Pre-COVID-19			
GAD-7 same or decrease	11 (68.8%)	49 (57%)	0.547
GAD-7 increase	5 (31.3%)	37 (43%)	
PHQ-9 same or decrease	12 (75.0%)	49 (57%)	0.283
PHQ-9 increase	4 (25.0%)	37 (43%)	
Medications			0.757
Same dosage	13 (81.3%)	65 (75.6%)	
Step up or add new medications	3 (18.8%)	21 (24.4%)	
Social distancing			0.006
Absent	3 (18.8%)	5 (5.8%)	
Mild	7 (43.8%)	16 (18.6%)	
Moderate	4 (25.0%)	38 (44.2%)	
Severe	2 (12.5%)	27 (31.4%)	
Financial impact			
Decreased income/unemployed	2 (12.5%)	16 (18.6%)	0.731
Not affected	14 (87.5%)	70 (81.4%)	
Family relationship			0.913
Worsen	4 (25.0%)	27 (31.4%)	
Not affected	11 (68.8%)	51 (59.3%)	
Improved	1 (3.0%)	8 (9.3%)	
	Mean (SD)	Mean (SD)	
GAD-7 (Pre-COVID-19)	4.5 (3.97)	4.92 (2.92)	0.692
PHQ-9 (Pre-COVID-19)	4 (3.54)	3.45 (2.42)	0.560
GAD-7 (Peri-COVID-19)	3.13 (2.71)	4.85 (3.04)	0.037
PHQ-9 (Peri-COVID-19)	2.81 (2.79)	3.52 (2.35)	0.283
Anxiety worsen by COVID-19	Mean GAD-7 (Pre-COVID-19) 4.92	Mean GAD-7 (Pre-COVID-19) 4.85	0.801
	Mean PHQ-9 (Pre-COVID-19) 3.45	Mean PHQ-9 (Pre-COVID-19) 3.52	0.796

Table 4. Univariate analysis (depressive symptoms not worsened by COVID-19 pandemic vs depressive symptoms worsened by COVID-19 pandemic).

	Depressive symptoms not worsened by COVID-19 pandemic (n = 28)	Depressive symptoms worsened by COVID-19 pandemic (n = 74)	P value
Male	8 (28.6%)	15 (20.3%)	0.529
Female	20 (71.4%)	59 (79.7%)	
Compared with Pre-COVID-19			
GAD-7 same or decrease	18 (64.3%)	42 (56.8%)	0.643
GAD-7 increase	10 (35.7%)	32 (43.2%)	
PHQ-9 same or decrease	17 (60.7%)	44 (59.5%)	1.000
PHQ-9 increase	11 (39.3%)	30 (40.5%)	
Medications			0.963
Same dosage	22 (78.6%)	56 (75.7%)	
Step up or add new medications	6 (21.4%)	18 (24.3%)	
Social distancing			<0.001
Absent	6 (21.4%)	2 (2.7%)	
Mild	10 (35.7%)	13 (17.6%)	
Moderate	10 (35.7%)	32 (43.2%)	
Severe	2 (7.1%)	27 (36.5%)	
Financial impact			0.413
Decreased income/unemployed	2 (7.1%)	16 (21.6%)	
Not affected	26 (92.9%)	58 (78.4%)	
Family relationship			0.129
Worsen	4 (14.3%)	27 (36.5%)	
Not affected	22 (78.6%)	40 (54.1%)	
Improved	2 (7.1%)	7 (9.5%)	
	Mean (SD)	Mean (SD)	
GAD-7 (Pre-COVID-19)	3.93 (3.61)	5.2 (2.82)	0.100
PHQ-9 (Pre-COVID-19)	2.89 (3.12)	3.78 (2.38)	0.179
GAD-7 (Peri-COVID-19)	2.89 (2.56)	5.22 (2.99)	<0.001
PHQ-9 (Peri-COVID-19)	2.46 (2.22)	3.77 (2.41)	0.014
Depressive symptoms worsen by COVID-19	Mean GAD-7 (Pre-COVID-19) 5.20	Mean GAD-7 (Pre-COVID-19) 5.22	0.964
	Mean PHQ-9 (Pre-COVID-19) 3.78	Mean PHQ-9 (Pre-COVID-19) 3.77	0.962

Table 5. Multivariate analysis for anxiety symptoms worsened by COVID-19 pandemic.

Initial model	P Value	OR	95% CI lower	95% CI upper
Sex (Male)	0.623	0.64	0.10	3.90
Age	0.009	1.11	1.03	1.20
Social Distancing (Reference: absent)	0.056			
Mild	0.261	3.93	0.36	42.79
Moderate	0.016	19.20	1.75	210.65
Severe	0.044	22.12	1.09	449.84
Finance (reduced compared with not affected)	0.477	2.21	0.25	19.69
Family relationship (reference: improved)	0.817			
Worsen	0.531	0.37	0.02	8.55
Not affected	0.674	0.56	0.04	8.49
GAD-7 (Peri-COVID-19)	0.361	0.79	0.47	1.31
PHQ-9 (Peri-COVID-19)	0.022	1.74	1.08	2.79
GAD-7 (Pre-COVID-19)	0.033	0.62	0.40	0.96
PHQ-9 (Peri-COVID-19)	0.173	1.31	0.89	1.94
Final model				
Age	0.025	1.07	1.01	1.14
Social Distancing (Reference: absent)	0.025			
Mild	0.112	5.24	0.68	40.45
Moderate	0.007	17.81	2.18	145.44
Severe	0.012	20.85	1.95	222.91
GAD-7 (Peri-COVID-19)	0.006	1.61	1.15	2.27

was obtained by backward method according to the likelihood ratio until variables had p value < 0.1) as in **Table 5** and **Table 6** (all items in the questionnaires were included in the regression model, as well as demographic factors including age and sex, PHQ9 & GAD7 scores). Age, social distancing and GAD-7 score (peri-COVID-19 pandemic) were found to be significantly associated with patients who perceived their anxiety or depressive symptoms worsened by COVID-19 pandemic. For patients who perceived their anxiety symptoms worsened by COVID-19 pandemic, older age ($p = 0.025$, OR 1.07, 95% CI: 1.01 - 1.14), moderate ($p = 0.007$, OR 17.81, 95% CI: 2.18 - 145.44) to severe ($p = 0.012$, OR 20.85, 95% CI: 1.95 - 222.91) social distancing were found to be statistically significant associated factors. Findings were similar in patients who perceived their depressive symptoms affected by COVID-19 pandemic with older age ($p =$

Table 6. Multivariate analysis for depressive symptoms worsened by COVID-19 pandemic.

Initial model	P Value	OR	95% CI lower	95% CI upper
Sex (Male)	0.074	0.24	0.05	1.15
Age	0.018	1.07	1.01	1.14
Social Distancing (Reference: absent)	0.039			
Mild	0.067	0.66	0.86	108.85
Moderate	0.009	24.68	2.22	274.31
Severe	0.019	26.40	1.72	404.33
Finance (reduced compared with not affected)	0.033	9.69	1.20	78.22
Family relationship (reference: improved)	0.456			
Worsen	0.767	1.48	0.11	19.89
Not affected	0.511	0.50	0.07	3.89
GAD-7 (Peri-COVID-19)	0.529	0.87	0.57	1.33
PHQ-9 (Peri-COVID-19)	0.003	1.77	1.21	2.59
GAD-7 (Pre-COVID-19)	0.448	0.87	0.60	1.26
PHQ-9 (Peri-COVID-19)	0.743	1.06	0.76	1.46
Final model				
Age	0.038	1.05	1.00	1.11
Social Distancing (Reference: absent)	0.008			
Mild	0.039	9.14	1.11	74.99
Moderate	0.004	22.08	2.68	181.68
Severe	0.002	41.60	3.98	434.91
Finance	0.084	4.58	0.82	25.69
GAD-7 (Peri-COVID-19)	0.001	1.50	1.17	1.92

0.038, OR 1.50, 95% CI: 1.00 - 1.11), moderate ($p = 0.004$, OR 22.08, 95% CI: 2.68 - 181.68) to severe ($p = 0.002$, OR 41.60, 95% CI: 3.978 - 434.91) social distancing were found to be statistically significant associated factors.

4. Discussion

This was the first study on the psychological impact of the COVID-19 pandemic on Chinese patients with existing common mental disorders in primary care setting in Hong Kong.

Recent research or survey recognized the critical role played by the COVID-19 pandemic in mental health in general population. The proportion of people with anxiety symptoms increased by 39.8% and 25.4% of the general population reported their mental health deteriorated during the 1st wave of COVID-19 pan-

demic in Hong Kong [22] [23]. A large study from 194 cities in China during the COVID-19 pandemic indicated that 16.5% of people reported moderate to severe depressive symptoms and 28.8% of people reported moderate to severe anxiety symptoms. The prevalence of people with anxiety and depression was even up to 71.3% and 24.7% respectively in Portugal and Brazil in the initial stage of the pandemic [24].

In our study, the proportions of patients who rated their anxiety and depressive symptoms were affected by COVID-19 pandemic were 84.3% and 72.5% respectively which were much higher than those of the general population in Hong Kong [22]. This might be due to the reasons that our patients had underlying common mental disorders (CMD) and this study was conducted during the fourth wave of the pandemic with more local confirmed cases compared with the initial phase of the pandemic. Similarly, a large study in Dutch showed that the levels of depressive symptoms, anxiety, worry and loneliness increased modestly in people with less severe chronic mental health disorders compared with individuals without mental health disorders [16]. Our results provide further evidence that COVID-19 pandemic had significant psychological impact on patients who had CMD.

In addition, this study highlighted that social distancing contributed significantly to the worsen anxiety and depressive symptoms among patients with CMD.

4.1. Social Distancing

This study was unique in showing that social distancing was associated with worsen anxiety and depressive symptoms in patients with CMD in both univariate and multivariate analysis. In Hong Kong, the government had implemented various social distancing measures including restrictions of group gatherings and facility closures. Social distancing measures were one of the public health measures adopted by most countries, which contributed to loss of daily routines, reduction of social and physical contact with others, disruption of social rhythm, reduction of the availability of family and social supports and were shown to cause boredom, frustration and loneliness [7]. Social distancing measures were essential for the protection of individuals and to reduce the risk of infection through close contact with people infected with COVID-19, but at the same time, individuals might experience a high burden of mental health conditions [6] and patients with pre-existing mental health disorders were particularly at risk [13]. Reviews reported a high burden of mental health conditions among individuals who experienced isolation or quarantine. Among specific mental health outcomes, all reviews reported a high prevalence of anxiety among study participants in the US [25]. A small-scale Chinese study also showed that more anxiety and depression were experienced in psychiatric patients with strict lockdown measures [26].

In a Spain study, more frequent leisure activities during confinement includ-

ing watching films, reading, talking to someone via phone or video calls, were associated with lower stress, anxiety and depression scores [15]. Therefore, maintaining social connections, reducing isolation by phone or video calls and maintaining physical activities could be promoted by general practitioners and mental health practitioners, and specific guidelines should be promulgated by policy makers for the public to follow so that they could take care of their mental health.

4.2. Financial Situation

The financial status of majority patients (82.4%) in our study was unaffected, 16.7% of patients had their income decreased and only 0.9% were unemployed. Our results showed that the association between financial status and both anxiety and depressive symptoms was statistically insignificant. Econometric analysis of the world's economic growth rate showed that the COVID-19 pandemic had led to widespread economic damage. The highest unemployment rates were in Asia, Europe, and America [27]. In Hong Kong, Gross Domestic Product (GDP) growth was 9% in the first half of 2020 but narrowed to 3.5% in second half of 2020 and the unemployment rate had risen to 6.4% in Oct 2020 due to COVID-19 pandemic [28]. Subsequent analyses indicated that economic hardships led to much higher prevalence of expressing adverse mental health, including feelings of depression and health anxiety [29]. Adults experiencing household job loss during the COVID-19 pandemic had consistently reported higher rates of symptoms of anxiety and/or depressive disorder compared to adults not experiencing household job loss (53% vs. 32%, respectively) [30]. Compared with local unemployment rate 6.4%, the unemployment rate was only 1% among our study participants, this might contribute to our findings. In rapidly changing COVID-19 pandemic situations, we suggested further studies to further evaluate how the financial situation would contribute to the psychological impact on patients with CMD.

4.3. Family Relationship

COVID-19 pandemic had severe impacts on interpersonal relationships and family systems. Pre-existing vulnerabilities including known depression and anxiety could also harm the stability of relationships. However, similar to the findings of financial situation, the association between family relationship and both anxiety and depressive symptoms was not significant. 60.8% of patients reported that their family relationship was not affected, 30.4% was worse and 8.8% was improved. This might be due to the interactions of multiple factors including social distancing, external stressors such as economic downtrend and unemployment, increased time for household members staying together at home due to government policy on closure of school, work from home, etc. Further studies to elucidate how family relationship interfere with anxiety and depressive symptoms on patients with CMD during COVID-19 pandemic was needed.

5. Limitations

This study was subjected to several limitations. Firstly, the cross-sectional design of our study limited the establishment of causal relationship between psychological impact and the independent variables. Future studies should examine how the changes in the independent variables could predict psychological impact of patients with common mental disorders using longitudinal study designs. Secondly, other potential confounding effects on the outcomes could not be excluded. These included deteriorating mental health due to the natural disease course, their own perpetuating factors, and other social factors not related to COVID-19 pandemic. Thirdly, the sampling method might not allow for generalization of the results since the study subjects were recruited from two public primary care clinics covering only 2 of the 18 districts in Hong Kong.

6. Conclusions

Our study showed that there was considerably more psychological impact including an increase in anxiety and depressive symptoms due to COVID-19 pandemic in Chinese patients with common mental disorders (CMD) in primary care in Hong Kong. It is important that primary care physicians must be aware of the psychological impact of COVID-19 pandemic on their patients with CMD and provide additional support to the patients.

During COVID-19 pandemic, social distancing measures were necessary for preventing disease transmission, but it was often associated with negative psychological impact, especially on patients with existing CMD. Extra awareness and psychological support would therefore be needed for patients with CMD when social distancing measures were implemented during an infectious disease pandemic.

Acknowledgements

We would like to thank Dr. TK Wong, Dr. LC Too, Dr. SN Wong, Dr. PY Siu, Dr. NP Chan, Dr. ML Tsang, Dr SW Yeung, Ms. HP Law and Ms. Y Wong for participating in the collection of the data.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix I

Project title: Evaluation of the psychological impact of COVID-19 pandemic on Chinese patients with common mental disorders in primary care

Please use Block Letter/Gum label

Name

GOPC No

Sex/Age

Questionnaire

Q1. 自從新冠肺炎大流行以來，你的日常生活是否會受到社交距離的影響（即減少社交聚會、休閒活動）？

沒有 / 輕度 / 中度 / 嚴重

Q1. Since the COVID-19 pandemic, would your daily life being affected by social distancing (i.e. reduction of social gatherings, leisure activities)?

absent / mild / moderate / severe

Q2. 自從新冠肺炎大流行以來，你的工作是否受到影響？

失業 / 收入減少 / 收入增加 / 不受影響

Q2. Since the COVID-19 pandemic, would your work life being affected?

unemployed / income reduced / income increased / not affected

Q3. 自從新冠肺炎大流行以來，您與家人的關係是否受到影響（即與家人有更多衝突）？

惡化 / 不受影響 / 改善

Q3. Since the COVID-19 pandemic, would your relationship with family being affected (i.e. increased conflicts with family members)?

worsen / not affected / improve

Q4. 自從新冠肺炎大流行以來，你是否比平時更加焦慮？

沒有 / 輕度 / 中度 / 嚴重

Q4. Since the COVID-19 pandemic, would you have been increased anxiety more than usual?

Absent / mild / moderate / severe

Q5. 自從新冠肺炎大流行以來，你是否比平時更加抑鬱？

沒有 / 輕度 / 中度 / 嚴重

Q5. Since the COVID-19 pandemic, would you have been increased depression more than usual?

absent/ mild / moderate/ severe

Appendix II: Traditional Chinese Version of PHQ-9

在過去兩個星期，你有多經常受以下問題困擾？ (請用「✓」勾選你的答案)	完全不會	幾天	一半以上的天數	近乎每天
1) 做任何事都覺得沉悶或者根本不想做任何事	0	1	2	3
2) 情緒低落、抑鬱或絕望	0	1	2	3
3) 難於入睡；半夜會醒或相反地睡覺時間過多	0	1	2	3
4) 覺得疲倦或活力不足	0	1	2	3
5) 胃口極差或進食過量	0	1	2	3
6) 不喜歡自己——覺得自己做得不好、對自己失望或有負家人期望	0	1	2	3
7) 難於集中精神做事，例如看報紙或看電視	0	1	2	3
8) 其他人反映你行動或說話遲緩；或者相反地，你比平常活動更多——坐立不安、停不下來	0	1	2	3
9) 想到自己最好去死或者自殘	0	1	2	3

PHQ-9(1-9 題)總分:

如果你發現自己有上述所提的任何問題，這些問題對你的工作、照顧家庭事務或與他人相處時造成了多大的困難？

毫無困難	有點困難	非常困難	極度困難
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Appendix III: Traditional Chinese Version of GAD-7

在過去兩個星期，你有多經常受以下問題困擾？ (請用「✓」勾選你的答案)	完全不會	幾天	一半以上的天數	近乎每天
1) 感到緊張、不安或煩躁	0	1	2	3
2) 無法停止或控制憂慮	0	1	2	3
3) 過份憂慮不同的事情	0	1	2	3
4) 難以放鬆	0	1	2	3
5) 心緒不寧以至坐立不安	0	1	2	3
6) 容易心煩或易怒	0	1	2	3
7) 感到害怕，就像要發生可怕的事情	0	1	2	3

GAD-7(1-7 題)總分: