

Knowledge, attitudes and practices of patients with chronic illnesses during the COVID-19 pandemic: A cross-sectional survey from Pakistan

Chronic Illness

2022, Vol. 18(3) 608–619

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/17423953211023961

journals.sagepub.com/home/chi

Muhammad Muzaffar Mahmood¹ ,
Junaid Rehman², Bushra Arif³,
Zahra Rehman⁴, Muhammad Aasim⁵ and
Muhammad Tahir Saeed⁶

Abstract

Objectives: We studied the impact of the Covid-19 pandemic on the physical and mental health of patients with chronic illnesses and their behavioural responses.

Methods: We conducted a cross-sectional knowledge, attitudes and practices (KAP) survey among outpatients with chronic illnesses in Lahore, Pakistan.

Results: Four hundred and one participants were surveyed (84% above 50 years of age). One or two chronic illnesses were present in 130 (32%), three or four in 211 (53%) and more than four in 60 (15%). The majority correctly identified the sources of Covid-19 infection and higher risk patients. Of the respondents, 127 (32%) described feeling more vulnerable. Respondents reported a lack of trust in the community response (199; 49.6%) and hospital measures (167; 41.6%) to slow the spread of Covid-19 and 369 (92%) practiced some degree of social distancing. Respondents described negative impacts of lockdown measures on their physical and mental health (235; 58.6% and 262; 65.3%, respectively). Many reported difficulty in getting medical help during the pandemic (302; 75.2%). Half of the respondents (200; 49.8%) felt that delays in

¹Department of Cardiology, Ittefaq Hospital Lahore & Sharif Medical and Dental College, Lahore, Pakistan

²Department of Cardiology, Ittefaq Hospital, Lahore, Pakistan

³Department of Cardiology, Punjab Institute of Cardiology, Lahore, Pakistan

⁴Department of Microbiology, Punjab University, Lahore, Pakistan

⁵Department of Statistics, NHRC, PHRC Research Centre, Shaikh Zayed Hospital, Lahore, Pakistan

⁶Department of Pathology, Sharif Medical and Dental College, Lahore, Pakistan

Corresponding author:

Muhammad Muzaffar Mahmood, Department of Cardiology, Ittefaq Hospital Lahore & Sharif Medical and Dental College, Lahore, Pakistan.

Email: muzafar.mahmood@gmail.com

receiving care had adversely affected their health.

Conclusions: Respondents with chronic illnesses frequently reported negative behavioural and health impacts during the Covid-19 pandemic.

Keywords

Chronic illness, mental health, health knowledge, attitudes, practices, health behavior, Covid-19

Received 23 August 2020; accepted 2 March 2021

Introduction

In March 2020 the World Health Organization (WHO) declared Coronavirus Disease-19 (Covid-19) a global pandemic.¹ Early in the outbreak, reports highlighted disproportionately negative impacts of the virus on the health of the elderly and those with chronic illnesses such as diabetes mellitus (DM) and cardiovascular (CV) diseases.^{2–5} Many countries advised, “shielding” vulnerable, at-risk groups^{6–8} and adopting measures to enforce social distancing, including community movement control orders to slow the spread of the virus.

Patients with chronic illnesses suffer increased mental health problems, in particular generalized anxiety disorders and depression.⁹ They also display frequent ongoing health needs and constitute the majority of routine hospital admissions.¹⁰ During the Covid-19 pandemic, international reports highlighted reduced hospital admissions for non-Covid cases.^{11–14} A WHO survey recently highlighted a reduction in services for non-communicable diseases (NCDs) as a result of diversion of resources towards dealing with Covid-19.¹⁵ Therefore, the real impact of the Covid-19 pandemic may extend beyond those directly infected with the Covid-19 virus.¹⁶

Low- and middle-income countries (LMICs), with already stretched health

resources, may be even more affected by the pandemic. In Pakistan, an LMIC, patients often rely on private providers to meet their healthcare requirements.¹⁷ In the absence of the availability of standardised healthcare, patients often resort to self-treatment, traditional/alternative medicine, spiritual healing, and advice from family members or even quacks. Complimentary use of traditional and alternative medicines, often provided by unregulated practitioners, is frequent, even in the urban south Asian population.¹⁸ Lack of access to accredited healthcare facilities during the pandemic, in particular during the lockdown phase, may encourage patients' dependence on unregulated healthcare providers. Larger households and social networks, and financial constraints, may make social distancing less feasible in LMICs.

There are limited reports regarding the behavioural reactions of patients with chronic illnesses to the Covid-19 pandemic. Similarly, it is not currently known what impact the pandemic may have had on patients with chronic illnesses regarding the routine management of their chronic diseases, access to alternative means of healthcare, and the overall impact on their mental and physical health. We set out to study the impact of the Covid-19 pandemic on the mental and physical health of patients with underlying chronic illnesses

by studying their knowledge of the pandemic and their attitudes and practices during the outbreak.

Methods

We conducted a cross-sectional knowledge, attitudes and practices (KAP) survey in patients with chronic illnesses from the 11th to 20th July 2020. The study was conducted in Lahore, the second largest city in Pakistan, an economically LMIC located in Southeast Asia, and a primarily urban area. While we work in a private healthcare facility, the usual healthcare facilities of the participants included both public and private providers. The Ittefaq Hospital (Trust) institutional research ethics committee approved this study (IHT/IRB/20/71).

The study questionnaire was initially circulated to senior clinicians and statistician for their feedback on the relevance and simplicity of the questions included. To further confirm the reliability a pilot study (N = 42) was performed. The Cronbach alpha for the pilot study was 0.76 suggesting adequate reliability. The data from the pilot study were not part of the main study analysis.

Participants, outpatients suffering from chronic illnesses were contacted using convenience sampling through WhatsApp messaging groups, including an on-line link in the message. An opening statement provided information on the scope of the survey, including consent information, and those who agreed were then asked to complete an English language 24-question survey using Google forms. The initial part of the questionnaire collected information on the sociodemographic characteristics and the chronic illnesses suffered by each respondent. The knowledge section comprised four multiple-choice questions regarding the sources of a participant's knowledge about the pandemic, the possible modes of transmission, the measures to avoid spread, and the criteria used to

identify patients at higher risk of complications arising from Covid-19. The attitudes section comprised nine questions assessing a participant's perception of their own vulnerability, their current major health concerns, their perception of the effectiveness of current community and hospital measures to stop the spread of the pandemic, their degree of concern in visiting a health facility for fear of acquiring the infection, and their changes in lifestyle and the impact on their physical and mental health during the lockdown phase of the pandemic. The practices section comprised 11 questions regarding the extent to which participants had practiced social distancing, the degree of difficulty experienced in seeking medical help during the pandemic and the controlled movement phase, any alternative means explored to seek medical help, and the impact on their condition of any delay in receiving help, including for their chronic disease.

SPSS version 20.0 was used for the analysis. The sample size of 385 was calculated by using 95% confidence interval (CI) and 5% margin of error with a statistically conservative response distribution assumed at 50%. Data were reported as frequencies and percentages. Responses were compared between categories based on the number of chronic illnesses suffered by respondents. A likelihood ratio test was used where the number of cells contained smaller frequencies and the Pearson chi-square test where the minimum frequency requirements were met. Cronbach's alpha test was used to assess the reliability of Likert scale items. P-values were reported accurate to three decimal places and $\leq 0.05\%$ was considered significant.

Results

A total of 401 participants completed the survey: 84% were over 50 years of age and 224 (55.9%) were male. Among the

respondents, 160 (40%) had no or only high school education while the rest had college or university education. Obesity, a sedentary lifestyle, and a history of smoking were present in 240 (60%), 238 (59%) and 211 (52%) respondents respectively. Respondents reported the presence of one or two chronic illnesses in 130 (32%), three or four chronic illnesses in 211 (53%), and more than four chronic illnesses in 60 (15%) cases. Respondents reported diabetes mellitus (DM) (223; 55.6%), hypertension (HTN) (236; 58.9%) and heart disease (244; 60.8%) in almost equal numbers. Lung disease, kidney disease, cancer (or its treatment), and liver disease were reported by 180 (44.9%), 164 (40.9%), 120 (29.7%) and 90 (22.4%) respondents respectively (Table 1). Cronbach's alpha value was 0.781 for the 11 Likert scale items in the questionnaire.

Assessment of respondents' knowledge

Respondents reported obtaining Covid-19 related information from multiple sources with social media (203; 50.6%), family and friends (220; 54.9%), and electronic media (201; 50.4%) frequently identified. Among all respondents, 301 (75.1%) identified multiple sources of infection (coughs/sneezes, touch, and secretions) but 100 (24.9%) respondents identified food as a major source of Coronavirus infection. Similarly, while the majority of respondents identified the elderly and patients with DM and chronic illnesses as more vulnerable to infection, 108 (26.9%) of them identified the younger part of the population, and 65 (16.2%) identified children, as more vulnerable to Covid-19. The majority of respondents (241; 60%) answered that hand-washing, wearing masks, social distancing, and increasing community immunity are the best ways of avoiding

contracting Covid-19, while the rest chose one of these options alone as being more important.

Assessment of respondents' attitudes

In the attitudes section, 127 (32%) respondents described feeling more anxious or vulnerable since the start of the pandemic compared with their younger friends or family members. Respondents with three or four (21.8%) and more than four comorbidities (15.3%) reported feeling more vulnerable less frequently than those with one or two (55.4%) chronic illnesses ($p < 0.001$). Covid-19 was identified as the current single most important health concern by 203 (51%) respondents. Those with fewer co-morbidities were more concerned about catching Covid-19 (70.1% for those with one or two chronic illnesses) while those with a higher number of comorbidities were more concerned about flare-up of their chronic illness or developing a heart attack (55.5% for three or four and 66.6% for more than four chronic illnesses) ($p < 0.001$). When asked about their greatest concern arising from acquiring Covid-19, 195 (49%) respondents identified the risk of developing complications of their chronic conditions. There were no significant differences in reporting their perceived degree of vulnerability, their main concern, or the likely impact of Covid-19, between the groups based on the different chronic illnesses suffered, or the presence or absence of a particular chronic illness. Respondents frequently reported a lack of trust in the effectiveness of community (199; 49.6%) and hospital based measures (167; 41.6%) to stop the spread of Covid-19. Considering the likelihood of acquiring a Covid-19 infection while visiting public places, 151 (37.6%) felt it was likely/very likely while visiting outpatient/emergency departments

Table 1. Demographic and baseline clinical information.

		No. of chronic illnesses						P-value
		1–2		3–4		>4		
		n	%	n	%	n	%	
Gender	Male	72	55.4	117	55.5	35	58.3	0.916
	Female	58	44.6	94	44.5	25	41.7	
Age groups	18–30	9	6.9	1	0.5	1	1.7	< 0.001
	31–40	12	9.2	2	0.9	0	0.0	
	41–50	23	17.7	16	7.6	1	1.7	
	51–65	52	40.0	144	68.2	37	61.7	
	>65	34	26.2	48	22.7	21	35.0	
Educational status	No formal education	35	27.1	32	15.2	4	6.7	<0.001
	Higher school or less	28	21.7	49	23.2	16	26.7	
	College education	36	27.9	102	48.3	27	45.0	
	University Education	30	23.3	28	13.3	13	21.7	
Social class	Low	40	30.8	60	28.4	27	45.0	0.185
	Middle	77	59.2	132	62.6	29	48.3	
	High	13	10.0	19	9.0	4	6.7	
Employment status	Employed	36	27.7	70	33.2	7	11.7	0.005
	Unemployed	94	72.3	141	66.8	53	88.3	
DM	Yes	43	33.1	127	60.2	53	88.3	<0.001
	No	87	66.9	84	39.8	7	11.7	
HTN	Yes	37	28.5	144	68.2	55	91.7	<0.001
	No	93	71.5	67	31.8	5	8.3	
Heart disease	Yes	43	33.1	145	68.7	56	93.3	<0.001
	No	87	66.9	66	31.3	4	6.7	
Lung disease	Yes	23	17.7	102	48.3	55	91.7	<0.001
	No	107	82.3	109	51.7	5	8.3	
Kidney disease	Yes	16	12.3	101	47.9	47	78.3	<0.001
	No	114	87.7	110	52.1	13	21.7	
Cancer or its treatment	Yes	14	10.8	66	31.3	39	65.0	<0.001
	No	116	89.2	145	68.7	21	35.0	
Liver disease	Yes	18	13.8	52	24.6	20	33.3	0.005
	No	112	86.2	159	75.4	40	66.7	

Numbers in bold indicate a significant difference in distribution.

in hospital, and 152 (37.9%) felt that it was likely/very likely while staying in hospital (Table 2).

Assessment of respondents’ Covid-19 avoidance practices

The majority of respondents practiced a degree of social distancing, with 146 (36.4%) respondents limiting contact to

close family members, and 171 (42.6%) to extended family members and work colleagues. There was no significant relationship between the burden of chronic illnesses and the degree of social distancing and isolation practiced. Overall, 184 (45.9%) respondents described a negative impact of lockdown on their general life-style, 235 (58.6%) on their physical health, and 262 (65.3%) on their mental

Table 2. Attitudes and Covid-19 avoidance practices according to the number of chronic illnesses.

		No. of chronic illnesses						P-value
		1-2		3-4		> 4		
		N	%	n	%	n	%	
Feeling more vulnerable compared to younger and/or healthier family members/ friends ()	Strongly agree	39	30.0	24	11.4	4	6.8	<0.001
	Agree	33	25.4	22	10.4	5	8.5	
	Neutral	29	22.3	19	9.0	3	5.1	
	Disagree	19	14.6	11	52.6	37	62.7	
	Strongly Disagree	10	7.7	35	16.6	10	16.9	
Current single most important health concern	Avoiding COVID 19	89	70.1	94	44.5	20	33.3	<0.001
	Avoiding flare-up of your chronic illness	23	18.1	54	25.6	20	33.3	
Trust in effectiveness of community measures to stop spread of Covid 19	Avoiding heart attack	15	11.8	63	29.9	20	33.3	<0.001
	Very effective	28	21.5	9	4.3	4	6.7	
	Effective	16	12.3	21	10.0	2	3.3	
	Somewhat effective	17	13.1	14	6.6	7	11.7	
	Not very effective	23	17.7	47	22.3	14	23.3	
Trust in effectiveness of hospital measures to stop spread of Covid 19	Not effective	27	20.8	88	41.7	21	35.0	<0.001
	Not effective at all	19	14.6	32	15.2	12	20.0	
	Very effective	21	16.2	5	2.4	2	3.3	
	Effective	22	16.9	28	13.3	4	6.7	
	Somewhat effective	29	22.3	20	9.5	5	8.3	
Overall impact of lock down on physical health	Not very effective	20	15.4	43	20.4	15	25.0	<0.001
	Not effective	20	15.4	55	26.1	15	25.0	
	Not effective at all	18	13.8	60	28.4	19	31.7	
	Strongly positive	12	9.2	3	1.4	1	1.7	
	Positive	31	23.8	8	3.8	4	6.7	
Overall impact of lock down on mental health	No effect	39	30.0	53	25.2	14	23.3	0.001
	Negative	35	26.9	98	46.7	29	48.3	
	Strongly negative	13	10.0	48	22.9	12	20.0	
	Strongly positive	16	12.3	5	2.4	2	3.3	
	Positive	12	9.2	11	5.2	3	5.0	
During the pandemic new symptoms of concern or need to contact the doctor for follow up/advice	No effect	35	26.9	39	18.6	15	25.0	0.001
	Negative	42	32.3	79	37.6	20	33.3	
	Strongly negative	25	19.2	76	36.2	20	33.3	
	No symptoms or need to contact the doctor	40	31.0	42	19.9	8	13.6	
	Yes symptoms of concern	36	27.9	45	21.3	9	15.3	0.001
	Yes need to contact the doctor for follow up advice	53	41.1	124	58.8	42	71.2	

Numbers in bold indicate a significant difference in distribution.

health. Respondents with more co-morbidities were more likely to report a less healthy lifestyle ($p < 0.001$) and a negative impact on physical ($p < 0.001$)

and mental ($p > 0.001$) health during the lockdown. Significantly more respondents from the middle socioeconomic class reported a negative impact of the

Table 3. Attitudes and Covid-19 avoidance practices according to the number of chronic illnesses.

		No. of chronic illnesses						P-value
		1-2		3-4		> 4		
		n	%	n	%	n	%	
Did you seek medical help	No response	1	0.8	0	0.0	0	0.0	<0.001
	Did not contact anyone	36	27.7	16	7.6	4	6.7	
	Discussed only with family members etc.	13	10.0	33	15.6	14	23.3	
	Visited hospital	23	17.7	40	19.0	8	13.3	
	Visited local physician	18	13.8	51	24.2	10	16.7	
	Visited a specialist in a clinic	18	13.8	44	20.9	19	31.7	
	Contact by phone/ Telemedicine etc.	21	16.2	27	12.8	5	8.3	
Degree of social distancing practiced	No social distancing	18	13.8	12	5.7	2	3.3	<0.001
	Within extended family members and work	34	26.2	103	48.8	34	56.7	
	Within close family members	59	45.4	74	35.1	13	21.7	
If it were not the pandemic how would you have approached?	Isolation	19	14.6	22	10.4	11	18.3	0.027
	No response	2	1.5	1	0.5	0	0.0	
	Discussed only with family members etc.	7	5.4	35	16.6	10	16.7	
	Visited hospital	41	31.5	47	22.3	15	25.0	
	Visited local physician	25	19.2	41	19.4	12	20.0	
	Visited a specialist in a clinic	32	24.6	49	23.2	12	20.0	
	Would not contact anyone	16	12.3	14	6.6	3	5.0	
How reluctant have you been to visit hospital because of concern for catching Covid-19	Contact by phone/ Telemedicine etc.	7	5.4	24	11.4	8	13.3	<0.001
	Very reluctant	48	36.9	30	14.3	6	10.0	
	Reluctant	27	20.8	24	11.4	4	6.7	
	Normal	24	18.5	27	12.9	5	8.3	
	Relaxed	15	11.5	84	40.0	33	55.0	
Adverse effect on health because of delay or difficulty in receiving care	Very relaxed	16	12.3	45	21.4	12	20.0	0.007
	No	53	41.4	112	53.3	33	55.0	
	Maybe	46	35.9	77	36.7	23	38.3	
	Yes	29	22.7	21	10.0	4	6.7	

Numbers in bold indicate a significant difference in distribution.

lockdown on their physical health (52.0% versus 63.9% versus 41.2% for low, middle and high socioeconomic classes respectively, $p=0.031$). There were no significant differences in reports of the

impact on mental health between the various social classes.

Most respondents (309; 77%) reported the need to seek medical help since the start of the pandemic. Eighty percent of

respondents with three or four chronic illnesses and 86% of those with more than four chronic illnesses reported the need to seek medical help and/or advice ($p < 0.001$). Among those seeking medical help, 90 (22.4%) respondents reported new symptoms of concern as the reason to seek medical help while 219 (54.6%) felt a need to contact the doctor for a follow-up consultation regarding their chronic condition. Most respondents (302; 75.3%) reported difficulties in contacting and/or a delay in receiving care during the pandemic with 155 (38.6%) respondents reporting that their usual health professional was not available for advice in a timely manner. Also, 139 (34.6%) respondents reported that they have been reluctant/very reluctant to visit hospitals because of concern regarding Covid-19 infection. During the pandemic, 71 (17.7%) respondents visited the hospital, 79 (19.7%) visited their local physicians, 81 (20.2%) visited a specialist in a clinic (outside the hospital), and 53 (13.2%) contacted a medical professional by phone, WhatsApp or a telemedicine service. Among respondents with one or two chronic illnesses, 37.7% reported either not discussing their medical concerns with anyone, or only with non-medical persons. Respondents' approach towards seeking medical help did not differ significantly according to sociodemographic class. Half of the respondents (200; 49.8%) felt that the delay in receiving care had had a definite or potentially adverse impact on their health. Respondents with fewer co-morbidities were more likely to report a definite or potentially adverse impact of the delay in receiving care on their health (58.6% for one or two, 46.7% for three or four, and 45% for more than four chronic illnesses, $p 0.007$) (Table 3). Reports of an adverse impact on health did not vary according to the presence or absence of a particular illness, or the social class of the respondents (55.1% versus 46.6% versus 55.6% for low,

middle and high socioeconomic classes respectively, $p 0.241$).

Discussion

Our study found that among respondents with chronic illnesses: 1) one third of respondents reported experiencing increased anxiety and feelings of vulnerability during the Covid-19 pandemic compared with their younger and healthier acquaintances; 2) respondents commonly lacked trust in the effectiveness of community and hospital efforts to contain the virus and that they practiced social distancing to varying degrees; 3) respondents avoided hospital contact or had difficulty in accessing healthcare, often seeking alternative means of health advice and support; and 4) that half of the respondents felt that delays in receiving care had a potential or definite negative impact on their health.

Previous epidemics, including SARS,¹⁹ swine flu²⁰ and Ebola,²¹ highlighted the adverse impact of rapidly-spreading diseases on the psychological well-being of the population. Survivors and close contacts of Ebola virus victims were found to have high levels of anxiety and depression and were frequently diagnosed with post-traumatic stress disorder.^{21,22} During the Covid-19 pandemic, the general public experienced increased anxiety and stress²³⁻²⁵ and concern was expressed regarding the likely deterioration of mental health in particular groups such as healthcare professionals,²⁶ refugees,²⁷ and patients with existing mental health disorders.²⁸ Mental health disorders, in particular depression and/or anxiety, are frequently associated with chronic physical diseases. A meta-analysis reported a high prevalence of depression and depression/anxiety in patients with chronic physical disorders (36.6% overall).⁹ Our study indicates that patients with chronic illnesses

were susceptible to mental stress during the Covid-19 pandemic.

The fear of contracting Ebola virus made patients avoid hospitals or leave care centres despite being ill, and led carers to resort to secret burials.^{21,22} Our study similarly reports that respondents lacked trust in the effectiveness of community and hospital measures against Covid-19 and frequently avoided hospitals during the pandemic. Patients' reluctance to seek non-Covid related medical help can compound the adverse effects of reduced availability of health resources for non-Covid illnesses during a pandemic. This may also partly explain the reduced admissions for non-Covid reasons during the pandemic.

A WHO assessment of service delivery for NCDs during the Covid-19 pandemic showed that one in three countries surveyed suffered disruption to services for CV emergencies and almost half of them had fewer resources for the treatment of hypertension, and diabetes and related complications. The majority of the countries surveyed had diverted healthcare resources previously earmarked for NCDs towards management of Covid-19.¹⁵ Lower and middle-income countries face a dual challenge regarding infectious diseases and NCDs, with the focus on acute infections often occurring at the expense of caring for NCD patients.²⁹ There is significant inequality in access to healthcare resources in such settings. Healthcare in Pakistan is provided by public and, more often, by private healthcare providers.¹⁷ Our study highlights the fact that patients resort to alternative sources of advice in the absence of access to accredited facilities. It is concerning that respondents often reported non-availability of their usual physicians and that one quarter of them did not seek medical advice from health professionals, did not seek medical help at all, resorted to advice from family members or traditional

medicine practitioners, or contacted physicians by phone or telemedicine services. There were no significant differences in attitudes or Covid-19 avoidance practices based on the presence or absence of a particular disease, or according to various sociodemographic characteristics. Instead the responses varied according to the number of chronic illnesses suffered.

Only a small minority (52, 12.9%) of the respondents practiced social isolation at any point during the pandemic, while 146 (36.4%) remained in social contact with their immediate family members. Most respondents remained in social contact with extended family members and work colleagues (171, 42.6%), or did not practice social distancing at all (32, 7.9%). The majority of our respondents belong to the low- to middle-income groups. Larger households, larger social and cultural networks, and significant financial constraints are more frequent in LMICs and may explain why most of the respondents in our study were less strict regarding social distancing.

The negative impact of delays in receiving care during the Covid-19 pandemic on individual patients' health has been previously reported.³⁰ Half of the respondents in our study felt that delays in receiving care had a potential or definite negative impact on their health. The resultant impact of Covid-19, therefore, may well be greatest for patients who could not access healthcare facilities for non-Covid reasons.^{16,31} This has important implications for LMICs as these factors could exacerbate healthcare inequality among populations with already scarce healthcare resources, making them more vulnerable to unqualified medical advice.

Further research into the impact of reduced access to healthcare services during a pandemic for patients with chronic diseases is urgently required. Our study provides evidence that the reluctance of

patients with chronic diseases to admit to hospital exacerbates the health crisis at a time of already reduced resources.

Limitations

Our study was based on an on-line, English language survey with a higher proportion of educated and middle socioeconomic class participants than in the general population, and may not be representative of the wider population. Potential sample clustering and recall bias, inherent to any online survey, may also limit the general application of our study results.

Conclusions

Patients with chronic illnesses frequently reported increased anxiety and lack of trust in the effectiveness of measures to slow the spread of the Covid-19 virus. They also frequently reported difficulty in accessing healthcare and the fear that hospital visits would have an adverse impact on their health during the Covid-19 pandemic.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical approval

The study was approved by the research ethics committee, Ittefaq Hospital, Lahore, Pakistan. Approval number IRB/2020/07/041.

Informed consent

Participants were presented with an on-line consent statement to explain the survey, voluntary participation and once agreed were directed to the on-line questionnaire.

Guarantor

Muhammad Muzaffar Mahmood (1st and corresponding author).

Contributorship

MMM and JR researched the literature, conceived and designed the study, JR, BA and ZR were involved in patient recruitment and collection of data, MMM, MTS and MA analysed and interpreted the data, MMM wrote the initial draft, all authors reviewed and edited the manuscript and approved the final version of the manuscript.

Acknowledgements

None.

ORCID iD

Muhammad Muzaffar Mahmood  <https://orcid.org/0000-0002-5162-5276>

References

1. WHO updates, www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen (accessed 26 May 2021).
2. CDC advice for higher risk, www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fgroups-at-higher-risk.html (accessed 26 May 2021).
3. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020; 395: 1054–1062.
4. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; 395: 497–506.
5. Tian W, Jiang W, Yao J, et al. Predictors of mortality in hospitalized COVID-19 patient: a systematic review and meta-analysis. *J Med Virol* 2020; 92: 0–2.

6. <https://tribune.com.pk/story/2247401/1-dr-zafar-mirza-urges-citizens-take-special-care-elderly-pandemic> (accessed 26 May 2021).
7. World Health Organization. Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected. *WHO* 2020; 2019: 12. <https://www.who.int/publications/i/item/10665-332299>. (accessed 1 June 2021)
8. UK Advice on shielding and protecting the vulnerable, www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19#who-this-guidance-is-for (accessed 1 June 2021).
9. Daré LO, Bruand PE, Gérard D, et al. Comorbidities of mental disorders and chronic physical diseases in developing and emerging countries: a meta-analysis. *BMC Public Health* 2019; 19: 1–12.
10. Hernandez C, Jansa M, Vidal M, et al. The burden of chronic disorders on hospital admissions prompts the need for new modalities of care: a cross-sectional analysis in a tertiary hospital. *QJM* 2009; 102: 193–202.
11. Garcia S, Albaghdadi MS, Meraj PM, et al. Reduction in ST-segment elevation cardiac catheterization laboratory activations in the united states during COVID-19 pandemic. *J Am Coll Cardiol* 2020; 75: 2871–2872.
12. Bangalore S, Sharma A, Slotwiner A, et al. ST-segment elevation in patients with Covid-19 – a case series. *N Engl J Med* 2020; 2: 25–27.
13. De Filippo O, D’Ascenzo F, Angelini F et al. Reduced rate of hospital admissions for ACS during Covid-19 outbreak in Northern Italy. *N Engl J Med* 2020; 383: 88–89. DOI: 10.1056/NEJMc2009166
14. Solomon MD, McNulty EJ, Rana JS, et al. The Covid-19 pandemic and the incidence of acute myocardial infarction. *N Engl J Med*. Epub ahead of print May 2020. DOI: 10.1056/NEJMc2015630.
15. Rapid assessment of service delivery for NCDs during the COVID-19 pandemic. <https://www.who.int/publications/m/item/rapid-assessment-of-service-delivery-for-ncds-during-the-covid-19-pandemic> (accessed 1 June 2021)
16. Extance A. Covid-19 and long term conditions: what if you have cancer, diabetes, or chronic kidney disease? *Br Med J* 2020; 368: m1174.
17. Shaikh BT. Private sector in healthcare delivery: a reality and a challenge in Pakistan. *J Ayub Med Coll Abbottabad* 2015; 27: 496–498.
18. Amin F, Islam N and Gilani A. Traditional and complementary/alternative medicine use in a South-Asian population. *Asian Pacific J Heal Sci* 2015; 2: 36–42.
19. Wang K-Y. How change of public transportation usage reveals fear of the SARS virus in a city. *PLoS One* 2014; 9: e89405. DOI: 10.1371/journal.pone.0089405. PMC: 24647278
20. Rubin GJ, Amlot R, Page L, et al. Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey. *Br Med J* 2009; 339: b2651–b2651.
21. Shultz JM, Baingana F, Neria Y. The 2014 Ebola outbreak and mental health: current status and recommended response. *J Am Med Assoc* 2015; 313: 567–568.
22. Kamara S, Walder A, Duncan J, et al. Mental healthcare during the Ebola virus disease outbreak in Sierra Leone. *Bull World Health Organ* 2017; 95: 842–847.
23. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Heal*. Epub ahead of print 2020. DOI: 10.3390/ijerph17051729.
24. Cullen W, Gulati G and Kelly BD. Mental health in the COVID-19 pandemic. *QJM* 2020; 113: 311–312.
25. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020; 395: 912–920.
26. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among healthcare workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020; 3: e203976.

27. Júnior JG, de Sales JP, Moreira MM, et al. A crisis within the crisis: the mental health situation of refugees in the world during the 2019 coronavirus (2019-nCoV) outbreak. *Psychiatry Res* 2020; 288: 113000.
28. Liu S, Yang L, Zhang C, et al. Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry* 2020; 7: e17–e18.
29. Arokiasamy P, Uttamacharya, Kowal P, et al. Chronic noncommunicable diseases in 6 low- and middle-income countries: findings from wave 1 of the World Health Organization's Study on Global Ageing and Adult Health (SAGE). *Am J Epidemiol* 2017; 185: 414–428. doi:10.1093/aje/kww125
30. Kunkel KJAS. Papillary muscle rupture due to delayed STEMI presentation in a patient self-isolating for presumed COVID-19. *JACC Case Reports*. Epub ahead of print 2020. DOI: 10.1016/j.jaccas.2020.06.036.
31. Parpia AS, Ndeffo-Mbah ML, Wenzel NS, et al. Effects of response to 2014–2015 Ebola outbreak on deaths from malaria, HIV/AIDS, and tuberculosis, West Africa. *Emerg Infect Dis* 2016; 22: 433–441.