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Corresponding author:
Sarita Robinson;
Email: SJRobinson1@uclan.ac.uk

Perceived Preparedness and Mental Health in Response to the COVID-19 Pandemic in the UK Population

Sarita Jane Robinson PhD[1], Matthew Brooks PhD[2], Naomi Fallon MSc[3], Carolina Campodonico PhD[1] and Champika Liyanage PhD[1]

[1]University of Central Lancashire, Preston, Lancashire, PR1 2HE, UK; [2]Manchester Metropolitan University, Manchester, Greater Manchester, M15 6GX, UK and [3]City University of London, London, EC1V 0HB, UK

Abstract

Objective: Preparedness levels have been shown to improve the outcomes for people who find themselves in an emergency. However, uptake of preparedness behaviors by the public prior to a major disaster is limited. This 2-part study examined perceived preparedness in the UK during the first months of the COVID-19 pandemic (Study 1), and 2 years later (Study 2).

Methods: Both studies investigated the effect of individual demographics (gender, age, perceived socioeconomic and health status) on perceived preparedness. Next, the studies examined the extent to which perceived preparedness was associated with mental health outcomes (anxiety, depression, and stress symptoms). Participants (Study 1, $N = 409$) completed an online survey in May to June 2020 during a national lockdown, with another sample (Study 2, $N = 87$) completing the same survey from March to July 2022.

Results: Across both studies, participants completed 2 to 3 different preparedness activities. Greater subjective perceptions of socioeconomic status were associated with perceived preparedness. Preparedness levels were related with better mental health, and unrelated to age and gender.

Conclusions: Encouraging the public to engage with preparedness behaviors may not only have practical benefits but also help to protect mental well-being during a disaster.

On March 11, 2020, the COVID-19 pandemic was officially declared by the World Health Organization (WHO). Although the pandemic has had an unprecedented impact on our everyday lives, it is difficult to say that it was unexpected. Virologists and public health bodies have frequently warned of the global threat that pandemics pose,[1–3] and there have been serious warnings regarding the potential for a pandemic including the SARS (2003), MERS (2012), and the West African Ebola (2013-2016) virus outbreaks.[4] The COVID-19 pandemic has highlighted a need for governments to prepare for future pandemics at a population level.[5] However, preparedness behaviors, defined as steps undertaken by individuals to develop appropriate responses to disaster events, can also increase survival[3,6] and reduce the mental health impact of disasters.[7] The COVID-19 pandemic provides an opportunity for researchers to examine factors which influence perceived preparedness during distinct phases of the pandemic. Therefore, the current multi-study paper investigated how individual differences (gender, age, perceived socioeconomic and health status) impact self-reported levels of preparedness and mental health outcomes (anxiety, depression, stress symptoms) during the first period of lockdown in the UK, and again 2 years later.

Emergency preparation and positive responses to disaster warnings are frequently linked to better outcomes.[8,9] Heeding evacuation warnings, stockpiling essential supplies, and undertaking appropriate training can enhance survival.[10,11] However, a high percentage of people do not take emergency warnings seriously and fail to prepare.[11,12] Others may on take warnings but are prevented from doing so due to financial constraints that act as a barrier to individuals from engaging in preparedness behaviors.[13] Further, individuals are less likely to engage in preparedness behaviors if they are unable to comprehend the scope of the potential disaster,[14] lack sufficient time prepare,[13] or are unsure about how to prepare.[15] The UK's geographical location may mean that the public are less able to understand the threat posed by COVID-19 as the populace has been exposed to fewer natural disasters than other world regions.[16] Recent pandemics, such as the H1N1 influenza virus in 2009-2010, have not caused great disruption, and the last major pandemic in the UK (Spanish flu, 1918-1919) is not in living memory. Therefore, the current study examined perceived preparedness seen in the UK population in response to the COVID-19 pandemic.

Demographics and Preparedness

Within the disaster research literature, there are calls to incorporate gender analysis to ensure that appropriate action can be undertaken to promote gender and health equality effectively.[17] Previous research has indicated that women are more likely to be engaged in preparedness[18] and follow evacuation advice[19] compared to men. However, social norms relating to gender identity could be important. In Serbia, men reported greater confidence in their preparedness, but interviewers found women demonstrated higher levels of caring, both in their own household and to flood victims.[20] It has been suggested that hegemonic masculinity can be a barrier to males undertaking preparedness behaviors with negative traits,[21] such as risk-taking associated with masculinity, putting mental and physical health at risk. Given the changing gender roles within the UK population,[22] the current study examined the influence of gender on perceived preparedness.

Alongside gender, age has demonstrated mixed relationships with preparedness. Some studies find that preparedness increases with age,[23] which may be partly due to some younger people (aged 14 to 17 years) perceiving a sense of invincibility, and increased engagement in risky behaviors.[24] However, other research finds that older people (aged 65 years and over) are less likely to engage in preparedness behaviors,[25] which may be due to an optimistic bias, whereby older people who have survived previous disasters are less likely to prepare. Conversely, some disaster research finds that age is unrelated to preparedness.[26,27] These mixed findings require further investigation as to whether age is a determinant of preparedness.

Lower socioeconomic status (SES), often measured using household income, has been identified as a barrier to preparedness behaviors.[28,29] During the influenza A (H1N1) pandemic, higher household income and homeownership were positively associated with more knowledge about the H1N1 pandemic.[30] A further study revealed that lower SES is related to more difficultly accessing information about the H1N1 pandemic, due to factors such as reduced internet access.[31] However, other research suggests that subjective perceptions of SES are more closely aligned with well-being outcomes,[32] and engaging in pro-environmental behaviors[33] compared to objective indicators of SES alone. Therefore, the current study assessed the influence of subjective SES on people's perceived preparedness.

Another important factor in emergency preparedness is a person's perceived health status, with vulnerable populations requiring additional support.[34] Although it may be more prudent for people with a long-term health condition to undertake more preparedness behaviors, there is limited research into whether this influences their perceived preparedness. One American study reported that people with a disability were more likely to be prepared for emergencies.[35] A UK-based study found that people with disabilities made few attempts at emergency preparedness and tended to adopt a fatalistic approach.[36] More research is needed as to whether subjective health status is related to preparedness.

Preparedness and Mental Health

As well as enhancing survival, emergency preparedness before a disaster has been shown to have a positive benefit on mental health.[7,37,38] For example, having extra stockpiles of food and household supplies can reduce the anxiety and fear associated with an impending disaster.[39] One Chinese study revealed that participants with perceived greater knowledge about COVID-19 also reported higher well-being.[40] One suggestion is that more knowledge could help people feel more in control. Therefore, this paper examined whether perceived preparedness prior to the March 2020 lockdown would lead to better mental health during the lockdown period, and again 2 years later.

It is important to assess factors determining levels of preparedness and resulting mental health outcomes at various stages during the COVID-19 pandemic in the UK population to develop an understanding of people's responses to pandemic situations. The current 2-part study had 2 aims: (1) to examine the extent to which demographic variables (gender, age, subjective SES, subjective health status) predict levels of preparedness during the COVID-19 pandemic; and (2) to assess relationships between perceived preparedness and mental health outcomes (anxiety, depression, subjective distress). Study 1 investigated these aims during the first UK lockdown, and Study 2 2 years into the pandemic, to identify predictors of preparedness and relationships with common mental health outcomes. For both studies, it was expected that demographic variables would predict perceived preparedness, and higher levels of preparedness would be associated with better mental health outcomes.

Study 1

Methods

Participants

Five hundred and seventy people initially responded to an online survey (see Supplementary Information for questions) regarding psychological responses to COVID-19. Of these participants, 161 did not complete the survey or meet the inclusion criteria, leaving a final sample of 409 participants (71.9% completion rate). Key sample characteristics are presented in Table 1.

Materials

Demographics. Participants provided brief demographic information including their gender, age, relationship status, and country of residence. Participants also indicated whether they experienced symptoms of COVID-19 and/or had hospital treatment for symptoms since March 16, 2020.

COVID-19 preparedness. A single item asked participants to rate their level of COVID-19 preparedness on a 5-point scale from 0 (not at all prepared) to 4 (extremely prepared). Higher scores infer greater perceived preparedness prior to the COVID-19 outbreak in the UK. Participants also identified the number of preparedness activities undertaken from a selection of 6, such as "reviewed information about COVID-19 on websites" or had "bought equipment, such as hand wash or a face mask." Participants scored 1 for a yes response to each item with a maximum score of 6. A higher score indicated a higher level of prepping behaviors.

Subjective socioeconomic status. The MacArthur Scale of Subjective Socioeconomic Status[41] was used to measure participants' subjective SES. Participants rate on a scale of 0-100 where they would position themselves in UK society. A high score of 100 reflects people who are best off, with the highest amount of schooling and respected jobs, and 0 represents those who are the worst off, with no education or job, or jobs that no one wants or respects.

Subjective health status. A visual analogue scale, taken from the EuroQol 5D (EQ-5D[42]), measured participants' subjective perceptions of health. Participants indicated on a scale from 0 (worst) to 100 (best) how they considered their health to be, with higher scores reflecting greater perceived health status.

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Table 1. Sample characteristics of Study 1 and Study 2

	Study 1 (*N* = 409)		Study 2 (*N* = 87)	
	M	*SD*	*M*	*SD*
Age	41.76	14.40	47.40	15.07
	N	%	*N*	%
Female gender	314	76.8	66	75.9
Marital status				
Single	119	29.1	15	17.2
Cohabiting	79	19.3	22	25.3
Married	166	40.6	39	44.8
Separated	15	3.7	5	5.7
Widowed	12	2.9	4	4.6
Other	18	4.4	2	2.3
Level of preparedness				
Not prepared	77	18.8	35	40.2
Somewhat prepared	149	36.4	24	27.6
Prepared	96	23.5	15	17.2
Very prepared	69	16.9	9	10.3
Extremely prepared	18	4.4	4	4.6
Preparedness behaviors				
Reviewed information about COVID–19 on websites	305	74.6	75	86.2
Developed a household emergency plan	60	14.7	16	18.4
Undertook specialist training	17	4.2	8	9.2
Bought additional food and household supplies	237	57.9	63	72.4
Bought equipment such as handwash or face mask	177	43.3	80	92.0
Bought leisure equipment	132	32.3	48	55.2
COVID–19 symptoms since March 16, 2020	47	11.6	35	40.2
Hospital treatment for COVID–19 since March 16, 2020	3	0.7	2	2.3

Anxiety. The Generalized Anxiety Disorder-7 (GAD-7[43]) is a 7-item measure of anxiety symptoms. Participants rate, on a scale from 0 (not at all) to 3 (nearly every day), how bothered they have been by the items over the previous 2 weeks. Problems include "Feeling nervous, anxious or on edge." Higher scores are indicative of increased anxiety. The GAD-7 has demonstrated good psychometric properties,[43] which was reflected in this study (α = .94).

Depression. The Patient Health Questionnaire (PHQ-9[44]) is a 9-item measure of depressive symptoms rated on a scale from 0 (not at all) to 3 (nearly every day). Participants rate how bothered they have been by the problems described over the last 2 weeks. Items include "Little interest or pleasure in doing things." Higher scores are reflective of greater depressive symptoms. The PHQ-9 is a reliable and valid measure of depressive symptoms,[44] and was demonstrated in this study (α = .91).

Stress symptoms. The Impact of Events Scale-Revised (IES-R[45]) lists 22 difficulties people may experience after a stressful life event, on a scale of 0 (not at all) to 4 (extremely). The scale was adapted to focus on negative symptoms attributed to COVID-19 within the past 7 days. Example items include "I tried not to think about it." Higher scores indicate greater stress symptoms. The IES-R has sound psychometric properties, which was reflected in this study (α = .90).

Procedure

Data collection took place from May 5 to June 12, 2020, during the first UK national lockdown which started on March 23, 2020. During this lockdown period, education establishments, places of worship, and non-essential shops and businesses were closed. Strict social distancing restrictions were in place and legally enforced. To comply with social distancing requirements at the time, participants were recruited via snowball sampling, online social media posts, and paid Facebook advertisements targeted at UK users to reach a larger demographic. Participants were eligible for the study if they were over the age of 18, located in the UK, and fluent in English. Prior to starting the questionnaire, participants were given the opportunity to read information regarding the study aims and requirements. Participants were made aware of their rights to confidentiality and withdrawal, voluntary participation, and secure storage of data. After providing informed consent, participants completed the survey questionnaires and were presented with a debriefing sheet at the end of the questionnaire with details of support services. The study received institutional ethics approval from the Science Ethics Review Panel (SCIENCE 0015) and was conducted in accordance with the Declaration of Helsinki.

Data analysis

Statistical analyses were conducted using the IBM-Statistical Package for the Social Sciences (IBM-SPSS) Version 29. First, correlation analyses were performed to examine relationships between key demographic, preparedness, and mental health outcomes. Next, multiple regression was conducted to examine whether demographic variables predicted COVID-19 level of preparedness.

Results

Preparedness activities

Participant preparedness data is summarized in Table 1. On average, participants undertook 2 different preparedness activities (M = 2.27, SD = 1.36; range 1-6) prior to the UK lockdown. The most preferable preparedness activities were reviewing information about COVID-19 on websites (74.6%) and buying additional food and household supplies (57.9%). Over a third of participants (36.4%) felt they were "somewhat prepared" for the pandemic. Self-reported levels of preparedness prior to the pandemic were significantly and positive correlated with the number of preparedness activities undertaken [$r(407) = .45$, $p < .001$].

Demographics, Preparedness, and Mental Health Outcomes

Correlation analysis was conducted to establish relationships between demographic, mental health, and self-reported COVID-19 preparedness variables (see Table 2). Higher levels of perceived preparedness were associated with lower levels of anxiety, depression, and stress symptoms. Subjective SES was the only demographic variable associated with perceived preparedness, demonstrating a weak positive relationship.

Multiple regression analysis was used to examine demographic predictors of COVID-19 preparedness levels. The overall regression

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Table 2. Descriptive and correlational data for key Study 1 variables

Variable	*M*	*SD*	Min.	Max.	1	2	3	4	5	6	7	8
1. Gender	–	–	–	–								
2. Age	41.76	14.40	18.00	81.00	−.04							
3. Subjective socioeconomic status	56.88	18.66	0.00	98.00	.01	.01						
4. Subjective health status	69.88	21.58	0.00	100.00	−.06	−.05	.28***					
5. Anxiety	14.45	6.28	1.00	28.00	−.07	−.29***	−.17***	−.27***				
6. Depression	17.50	6.85	7.00	36.00	−.04	−.27***	−.26***	−.37***	.79***			
7. Stress	21.78	13.50	0.00	72.00	−.10*	−.22***	−.18***	−.21***	.74***	.68***		
8. Preparedness level	2.52	1.11	1.00	5.00	.05	.09	.10*	.09	−.17***	−.20***	−.15**	

Notes. Min. = minimum value; Max. = maximum value. Gender was dichotomized with a higher value corresponding to "female." * $p < .05$, ** $p < .01$, *** $p < .001$.

model was not significant [F (4, 405) = 2.30, p = .074], and only accounted for 1% of the variance in preparedness (Adj. R^2 = .01). Gender (p = .427), age (p = .077), subjective SES (p = .168), and subjective health status (p = .171) were non-significant predictors of perceived preparedness.

Discussion

Study 1 revealed that demographic factors were unrelated to levels of perceived preparedness prior to the COVID-19 outbreak. This suggests that other factors may better explain preparedness than demographic characteristics[26] in the context of COVID-19. However, in the bivariate analysis, higher levels of perceived preparedness were associated with lower levels of anxiety, depression, stress symptoms, and higher SES. These findings are consistent with the potentially ameliorative effects of preparedness on mental health outcomes,[7,37,38] and of higher SES related to greater preparedness.[30]

Study 2

Method

Participants

One-hundred and fourteen people responded to an online survey regarding psychological responses to COVID-19. Of these participants, 27 participants were excluded due to incomplete data or not meeting the inclusion criteria. Therefore, the survey completion rate was 76.3%, with the final sample consisting of 87 participants (see Table 1 for sample characteristics).

Materials

The same questionnaires described in Study 1 were administered in Study 2. The GAD-7 (α = .94), PHQ-9 (α = .89), and IES-R (α = .90) demonstrated similar internal reliability to Study 1. Furthermore, participants recorded whether their mental health had improved, deteriorated, or remained the same during the pandemic, and whether they experienced long-term illness due to contracting COVID-19. Participants self-reported their perceived preparedness before COVID-19, their current perceptions, and whether they felt more prepared to deal with future pandemics (see Supplementary Information for questions).

Procedure and Data Analysis

Data collection took place from March 7 to July 5, 2022, approximately 2 years from the initial lockdown. All procedures and data analysis were the same as described in Study 1.

Results

Preparedness activities

Preparedness data for participants is summarized in Table 1. On average, participants undertook 3 different preparedness activities (M = 3.33, SD = 1.30; range 1-6) 2 years after the UK lockdown. The most preferable preparedness activities were buying additional equipment such as handwash or face masks (92.0%), reviewing information about COVID-19 on websites (86.2%), and buying additional food and household supplies (72.4%). A fifth of participants (40.2%) felt they were "not prepared" for the pandemic. Significant positive correlations were observed between the number of preparedness activities undertaken and levels of preparedness prior to the pandemic [r(85) = .22, p = .037], current preparedness [r(85) = .33, p = .002], and future preparedness [r(85) = .34, p = .001].

Demographics, Preparedness, and Mental Health Outcomes

Table 3 presents descriptive statistics and correlations between key study variables. Higher levels of perceived preparedness prior to COVID-19, and current preparedness levels, were all associated with lower levels of anxiety, depression, and stress symptoms. Depressive symptoms were negatively and weakly associated with future preparedness. Subjective SES was the only demographic variable associated with all 3 perceived preparedness variables, demonstrating positive relationships with preparedness. Subjective health status was positively associated with current and future perceived preparedness levels. All preparedness levels were strongly and positively associated with one another.

Three multiple regression analyses were conducted to examine demographic predictors of (1) perceived preparedness levels before the pandemic, (2) current preparedness, and (3) future preparedness. Findings (shown in Table 4) indicated that the regression model with current preparedness as the criterion explained the most variance (13%) of all 3 models. SES was a robust positive predictor of preparedness levels in all three models.

Discussion

Study 2 indicated that subjective SES was a robust predictor of perceived preparedness both before, during, and subsequent pandemics. This finding extends previous literature[30] which has not always considered temporal aspects of preparedness in relation to SES. Study 2 also extended the findings of Study 1 by determining that prior and current preparedness are related to better mental health.

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Table 3. Descriptive and correlational data for key Study 2 variables

Variable	*M*	*SD*	Min.	Max.	1	2	3	4	5	6	7	8	9	10
1. Gender	–	–	–	–										
2. Age	47.40	15.07	21.00	84.00	.02									
3. Subjective socioeconomic status	56.21	21.92	1.00	100.00	.09	.27								
4. Subjective health status	62.62	21.40	10.00	100.00	.17	−.08	.45***							
5. Anxiety	13.86	5.83	7.00	28.00	−.16	−.23*	−.52***	−.23*						
6. Depression	16.63	6.36	8.00	34.00	−.22*	−.18	−.53***	−.34**	.83***					
7. Stress	16.00	12.21	0.00	67.00	−.12	−.15	−.30**	−.14*	.69***	.68***				
8. Preparedness before COVID–19	2.11	1.19	1.00	5.00	.17	.05	.33**	.20	−.33**	−.30**	−.22*			
9. Current preparedness	3.01	1.14	1.00	5.00	.12	−.05	.38***	.27**	−.28**	−.33**	−.25*	.56***		
10. Future pandemic preparedness	2.98	1.03	1.00	5.00	.13	−.10	.30**	.21*	−.20	−.23*	−.14	.56***	.80***	

Notes. Min. = minimum value; Max. = maximum value. Gender was dichotomized with a higher value corresponding to "female." * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. Study 2 demographic predictors of perceived preparedness before COVID-19, current preparedness, and future preparedness

	Perceptions of preparedness prior to COVID-19			Perceptions of current preparedness			Perceptions of future preparedness		
	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β
Predictors									
Gender	.20	.26	.08	.12	.22	.05	.20	.25	.08
Age	.00	.01	−.02	−.01	.01	−.14	−.01	.01	−.18
Subjective socioeconomic status	.02	.01	.29*	.02	.01	.36**	.02	.01	.32*
Subjective health status	.00	.01	.05	.01	.01	.10	.00	.01	.04
Model summary									
R^2		.11			.17			.13	
Adjusted R^2		.07			.13			.08	
F statistic		2.42			4.05**			2.85*	

Notes. B = unstandardized beta coefficient; *SE* (*B*) = standard error of unstandardized beta coefficient; β = standardized beta coefficient. Gender was dichotomized with a higher value corresponding to "female." * $p < .05$, ** $p < .01$, *** $p < .001$.

General Discussion

The current study examined perceived preparedness in a sample of the UK public in response to the COVID-19 pandemic during the first national lockdown (Study 1) and 2 years afterwards (Study 2). Across both studies, participants engaged in at least 1 preparedness activity in the lead up to the lockdown period, with 2 to 3 activities on average being undertaken. The COVID-19 pandemic posed a challenge to the UK public. As a nation who rarely face disasters, emergency preparedness is not central to public daily life compared to more disaster-prone countries.[16] Considering the major impact that COVID-19 had on the lives of people living in the UK, it is surprising that, on average, most people only undertook 2 to 3 emergency preparedness activities. Lack of preparedness experience for an emergency has been shown to negatively influence the number of preparedness behaviors undertaken,[14] and the novelty of the pandemic may have meant people simply did not know how to prepare.[15] However, it is useful to note that all participants in the sample did undertake at least 2 preparedness activity prior to the March 2020 lockdown and appeared to engage in similar behaviors 2 years into the pandemic.

Demographics and Preparedness

The results of the current study found no gender differences in perceived preparedness. Previous research had suggested that established gender norms can influence engagement with preparedness with hegemonic masculinity reduce preparedness in males[21] and the burden of emergency preparations falling more heavily on women.[18–20] However, the absence of gender differences in perceived COVID-19 preparedness suggested that preparing for the pandemic in the UK was equally shared between males and females. Greater gender equality with women having better social and economic freedom, and males taking on more household responsibility, could explain the lack of gender difference in perceived preparedness during various stages of the pandemic in the UK.

The current findings also imply that age was not a significant determinant of preparedness. This contrasts with results that

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demonstrate older people are more[23] or less likely[25] to prepare due to their previous experiences of disasters. However, the results observed are like other research that has assessed preparedness in countries like the UK which experience few natural hazards.[26,27] The results may therefore be explained by the low prevalence of natural disasters in the UK, and the relative unpreparedness of the population compared to countries more accustomed to national emergencies.[16] Further, older individuals in the study are unlikely to have faced a major pandemic of the same magnitude as the COVID-19 pandemic, and so previous experiences may have had a limited influence on their preparedness levels. Finally, it could be argued that due to the increased mortality in older people who become ill with COVID-19, preparedness behaviors should have been higher in this group.[46] Moving forward, it would be interesting to examine whether the optimism bias[25] or a more fatalist approach[36] are related to more preparedness behaviors in older people.

The current study also explored the influence of subjective SES on preparedness. The results revealed that those with lower perceived SES also had low perceived preparedness. One explanation is that those with higher SES have the time and money to engage in preparedness behaviors. Further, it is suggested that higher SES may mean that people have access to more information about potential disasters and emergency preparedness.[30,31]

Therefore, those with lower SES may need additional support when preparing for additional waves of the COVID-19 pandemic or during future public health emergencies. Future research should explore whether enhancing access to additional information and resources to low SES households can increase emergency preparedness.

The results of the current study suggest that those with perceived better health are more likely to engage in preparedness behaviors. This finding appears to be counterintuitive, as vulnerable populations require additional support during emergencies[34] and so are likely to require additional preparations prior to lockdown. One explanation is that poor physical health could lead to reduced access to activities such as undertaking additional shopping trips for stockpiling. Although previous research has sometimes found that those with a disability are more likely to be prepared for emergencies,[35] other studies have found that people with disabilities can take a more fatalistic approach and so make few attempts to prepare for an emergency.[36] The current study did not explore the practical and psychological barriers that may have stopped people from undertaking emergency preparedness behaviors, which could be addressed in future research.

Mental Health and Preparedness

The present study examined relationships between COVID-19 preparedness and mental health status at distinct stages of the pandemic. Some consistent findings emerged in that perceived preparedness was largely associated with lower anxiety, depression, and stress symptoms, revealing a potentially beneficial impact on mental health during a major public health emergency. Emergency preparedness has been linked to better mental health[7,39] and the results of the current study support these prior findings, as participants with greater perceived preparedness had lower anxiety and depression during lockdown. Research has indicated that people who are well-informed about COVID-19 report greater well-being as it may help people feel more in control.[40] These results mirror findings that suggest that developing an emergency preparedness plan can help reduce the risk of adverse psychological outcomes.[37,38] Therefore, the results of current study indicate clear mental health advantages of engaging in preparedness behaviors prior to emergency situations occurring. Given the better mental health outcomes associated with preparedness, individuals should be encouraged to proactively prepare for emergencies.

Limitations

While these studies provided some insight into preparedness behaviors and outcomes, it is not without limitation. Participants were based in the UK, and so the results may not be generalizable to people in other geographic locations. No data were collected as to whether participants were based in rural or urban areas. Rural and urban communities face different disaster risks, present with divergent attitudes towards preparedness, and varying access to preparedness equipment.[47] The research was cross-sectional, and so it was not possible to determine causality between variables. Due to possible fatigue engaging with COVID-19 research,[48] the sample size for Study 2 was not comparable with that of Study 1. Considering the non-responses rates for both studies, it is possible that those who were more psychologically impacted by COVID-19 were not represented in the research.[49] However, other research finds no relationship between response rate and response bias. Additionally, the lack of repeated measures data means it was not possible to fully assess the extent to which individuals' perceptions of preparedness and mental health in Study 1 had changed 2 years post-lockdown. Although common mental health outcomes were assessed, research also suggests that emergency situations can induce substance-related misuse.[50] During the COVID-19 lockdowns in the UK, more than 1 in 6 adults increased their alcohol consumption, which has been associated with worse mental health.[51] Future research into the impact of emergency situations on mental health should also consider if there have been increases in substance-related misuse.

Conclusion

The current study suggests that encouraging preparedness behaviors can have a positive impact on mental health during subsequent emergencies. Therefore, encouraging the public to engage with preparedness behaviors may not only have practical benefits but also help to protect mental well-being during a disaster. Demographic factors such as age and gender were not associated with the level of preparedness. As preparing for emergencies appears to have a beneficial effect on mental health during an emergency, more research is needed to examine how preparedness behaviors can be promoted.

Data availability statement. Data for the study are available upon request from the first author.

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Author contribution. SJR: Conceptualization, methodology, data collection, writing—original draft. MB: Methodology, formal analysis, writing—original draft; writing—review and editing. NF: Data collection. CC: Methodology. CL: Conceptualization, data collection, writing—review and editing.

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Competing interests. The authors declare none.

Ethical standard. Ethical approval for this study was granted by the Science Ethics Review Panel (SCIENCE 0015) at the University of Central Lancashire.

References

1. **Cox NJ**, **Tamblyn SE**, **Tam T.** Influenza pandemic planning. *Vaccine.* 2003; **21**(16):1801–1803. doi:10.1016/S0264-410X(03)00076-8
2. **Oppenheim B**, **Gallivan M**, **Madhav NK**, et al. Assessing global preparedness for the next pandemic: development and application of an Epidemic Preparedness Index. *BMJ Glob Health.* 2019;**4**(1):e001157. doi:10.1136/bmjgh-2018-001157
3. **World Health Organization**. *Essential Steps for Developing or Updating a National Pandemic Influenza Preparedness Plan.* World Health Organization; 2018. Accessed February 2, 2024. https://www.who.int/publications/i/item/WHO-WHE-IHM-GIP-2018.1
4. **Naguib MM**, **Ellström P**, **Järhult JD**, et al. Towards pandemic preparedness beyond COVID-19. *Lancet Microbe.* 2020;**1**(5):e185–e186. doi:10.1016/S2666-5247(20)30088-4
5. **Chaudhry R**, **Dranitsaris G**, **Mubashir T**, et al. A country level analysis measuring the impact of government actions, country preparedness and socioeconomic factors on COVID-19 mortality and related health outcomes. *EClinicalMedicine.* 2020;**25**:100464. doi:10.1016/j.eclinm.2020.100464
6. **Braunack-Mayer AJ**, **Street JM**, **Rogers WA**, et al. Including the public in pandemic planning: a deliberative approach. *BMC Public Health.* 2010; **10**(1):1–9. doi:10.1186/1471-2458-10-501
7. **Clay LA**, **Goetschius JB**, **Papas MA**, et al. Influence of mental health on disaster preparedness: findings from the behavioral risk factor surveillance system, 2007–2009. *J Homel Secur Emerg Manag.* 2014;**11**(3):375–392. doi:10.1515/jhsem-2014-0013
8. **Das R.** Disaster preparedness for better response: logistics perspectives. *Int J Disaster Risk Reduct.* 2018;**31**:153–159. doi:10.1016/j.ijdrr.2018.05.005
9. **Ronan KR**, **Alisic E**, **Towers B**, et al. Disaster preparedness for children and families: a critical review. *Curr Psychiatry Rep.* 2015;**17**(7):1–9. doi:10.1007/s11920-015-0589-6
10. **Egbelakin T**, **Poshdar M**, **Walsh KQ**, et al. Preparation of small to medium-sized enterprises to earthquake disaster: Napier and Dunedin case studies. *Bull N Z Soc Earthq Eng.* 2018;**51**(4):171–182. doi:10.5459/bnzsee.51.4.171-182
11. **Feinberg M**, **Willer R.** Apocalypse soon? Dire messages reduce belief in global warming by contradicting just-world beliefs. *Psychol Sci.* 2011;**22**(1): 34–38. doi:10.1177/0956797610391911
12. **Codreanu TA**, **Celenza A**, **Jacobs I.** Does disaster education of teenagers translate into better survival knowledge, knowledge of skills, and adaptive behavioral change? A systematic literature review. *Prehospital Disaster Med.* 2014;**29**(6):629–642. doi:10.1017/S1049023X14001083
13. **Leach J.** *Survival Psychology*. Springer; 1994.
14. **Greene M**, **Perry R**, **Lindell M.** The March 1980 eruptions of Mt. St. Helens: citizen perceptions of volcano threat. *Disasters.* 1981;**5**(1):49–66. doi:10.1111/j.1467-7717.1981.tb01129.x
15. **Kruger J**, **Chen B**, **Heifeld S**, et al. Attitudes, motivators, and barriers to emergency preparedness using the 2016 Styles Survey. *Health Promot Pract.* 2020;**21**(3):448–456. doi:10.1177/1524839918794940
16. **Ritchie H**, **Rosado P**, **Roser M**. Natural disasters. Our World in Data. 2024. Accessed February 2, 2024. https://ourworldindata.org/natural-disasters
17. **Wenham C**, **Smith J**, **Morgan R.** COVID-19: the gendered impacts of the outbreak. *The Lancet.* 2020;**395**(10227):846–848. doi:10.1016/S0140-6736(20)30526-2
18. **Mulilis JP**. Gender and earthquake preparedness: a research study of gender issues in disaster management: differences in earthquake preparedness due to traditional stereotyping or cognitive appraisal of threat? *Aust J Emerg Manag.* 1999;**14**(1):41–49. doi:10.3316/informit.395651918909784
19. **Thompson RR**, **Garfin DR**, **Holman EA**, et al. Distress, worry, and functioning following a global health crisis: a national study of Americans' responses to Ebola. *Clin Psychol Sci.* 2017;**5**(3):513–521. doi:10.1177/2167702617692030
20. **Cvetković VM**, **Roder G**, **Öcal A**, et al. The role of gender in preparedness and response behaviors towards flood risk in Serbia. *Int J Environ Res Public Health.* 2018;**15**(12):2761. doi:10.3390/ijerph15122761
21. **Zara C**, **Parkinson D**, **Duncan A**, et al. Men and disaster: men's experiences of the Black Saturday bushfires and the aftermath. *Aust J Emerg Manag.* 2016;**31**(3):40–48.
22. **Kan MY**, **Laurie H.** *Gender, Ethnicity and Household Labour in Married and Cohabiting Couples in the UK.* Institute for Social and Economic Research; 2016. Accessed February 2, 2024. https://www.iser.essex.ac.uk/research/publications/working-papers/iser/2016-01
23. **Mishra S**, **Suar D.** Dependence proneness influencing disaster preparedness behaviour. *Psychol Stud.* 2005;**50**(2 and 3):250–254.
24. **Wickman ME**, **Anderson NLR**, **Smith Greenberg C.** The adolescent perception of invincibility and its influence on teen acceptance of health promotion strategies. *J Pediatr Nurs.* 2008;**23**(6):460–468. doi:10.1016/j.pedn.2008.02.003
25. **Chan EY**, **Yue J**, **Lee P**, et al. Socio-demographic predictors for urban community disaster health risk perception and household based preparedness in a Chinese urban city. *PLOS Curr.* 2016;8. doi:10.1371/currents.dis.287fb7fee6f9f4521af441a236c2d519
26. **Najafi M**, **Ardalan A**, **Akbarisari A**, et al. Demographic determinants of disaster preparedness behaviors amongst Tehran inhabitants, Iran. *PLOS Curr Disasters*. 2015;**7**. doi:10.1371/currents.dis.976b0ab9c9d9941cbbae3775a6c5fbe6
27. **Appleby-Arnold S**, **Brockdorff N**, **Jakovljev I**, et al. Applying cultural values to encourage disaster preparedness: lessons from a low-hazard country. *Int J Disaster Risk Reduct.* 2018;**31**:37–44. doi:10.1016/j.ijdrr.2018.04.015
28. **Eisenman DP**, **Glik D**, **Maranon R**, et al. Developing a disaster preparedness campaign targeting low-income Latino immigrants: focus group results for project PREP. *J Health Care Poor Underserved.* 2009;**20**(2): 330–345. doi:10.1353/hpu.0.0129
29. **Kohn S**, **Eaton JL**, **Feroz S**, et al. Personal disaster preparedness: an integrative review of the literature. *Disaster Med Public Health Prep.* 2012;**6**(3):217–231. doi:10.1001/dmp.2012.47
30. **Lin L**, **Savoia E**, **Agboola F**, et al. What have we learned about communication inequalities during the H1N1 pandemic: a systematic review of the literature. *BMC Public Health.* 2014;**14**(1):1–13. doi:10.1186/1471-2458-14-484
31. **Lin L**, **Jung M**, **McCloud RF**, et al. Media use and communication inequalities in a public health emergency: a case study of 2009–2010 pandemic influenza A virus subtype H1N1. *Public Health Rep.* 2014;**129**(4):49–60. doi:10.1177/00333549141296S408
32. **Zhao M**, **Huang CC**, **Mendoza M**, et al. Subjective socioeconomic status: an alternative to objective socioeconomic status. *BMC Med Res Methodol.* 2023;**23**(1):73. doi:10.1186/s12874-023-01890-z
33. **Zhong B**, **Niu N**, **Li J**, et al. How subjective socioeconomic status influences pro-environmental behavior: the mediating role of sense of control and life history strategy. *Behav Sci.* 2024;**14**(7):591. doi:10.3390/bs14070591
34. **Nick GA**, **Savoia E**, **Elqura L**, et al. On linkages: integrating community-based organizations into preparedness planning for people with special health care needs. *Public Health Rep.* 2009;**124**(2):338–343. doi:10.1177/003335490912400225
35. **Eisenman DP**, **Wold C**, **Fielding J**, et al. Differences in individual-level terrorism preparedness in Los Angeles County. *Am J Prev Med.* 2006;**30**(1): 1–6. doi:10.1016/j.amepre.2005.09.001
36. **Finkelstein A**, **Finkelstein I.** Emergency preparedness – The perceptions and experiences of people with disabilities. *Disabil Rehabil.* 2020;**42**(14): 2056–2066. doi:10.1080/09638288.2018.1550686
37. **Sherman MF**, **Gershon RR**, **Riley HEM**, et al. Emergency preparedness safety climate and other factors associated with mental health outcomes among World Trade Center disaster evacuees. *Disaster Med Public Health Prep.* 2017;**11**(3):326–336. doi:10.1017/dmp.2016.136
38. **Welton-Mitchell C**, **James LE**, **Khanal SN**, et al. An integrated approach to mental health and disaster preparedness: a cluster comparison with earthquake affected communities in Nepal. *BMC Psychiatry.* 2018;**18**(1):1–14. doi:10.1186/s12888-018-1863-z
39. **Columbus C**, **Brust KB**, **Arroliga AC.** 2019 novel coronavirus: an emerging global threat. *Bayl Univ Med Cent Proc.* 2020;**33**(2):209–212. doi:10.1080/08998280.2020.1731272

40. **Yang H**, **Ma J.** How an epidemic outbreak impacts happiness: factors that worsen (vs. protect) emotional well-being during the coronavirus pandemic. *Psychiatry Res.* 2020;**289**:113045. doi:10.1016/j.psychres.2020.113045
41. **Adler N**, **Stewart J.** MacArthur Scale of Subjective Social Status. MacArthur Research Network on SES & Health. 2007. Accessed February 2, 2024. https://sparqtools.org/mobility-measure/macarthur-scale-of-subjective-social-status-adult-version/
42. **Rabin R**, **Charro F de**. EQ-SD: a measure of health status from the EuroQol Group. *Ann Med.* 2001;**33**(5):337–343. doi:10.3109/07853890109002087
43. **Spitzer RL**, **Kroenke K**, **Williams JB**, et al. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med.* 2006;**166**(10):1092–1097. doi:10.1001/archinte.166.10.1092
44. **Kroenke K**, **Spitzer RL**, **Williams JB**. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med.* 2001;**16**(9):606–613. doi:10.1046/j.1525-1497.2001.016009606.x
45. **Weiss DS**. The Impact of Event Scale: Revised. In: Wilson JP, Tang CS, eds. *Cross-Cultural Assessment of Psychological Trauma and PTSD*. International and Cultural Psychology Series. Springer US; 2007:219–238. doi:10.1007/978-0-387-70990-1_10
46. **Mahase E.** Covid-19: death rate is 0.66% and increases with age, study estimates. *Br Med J.* 2020;369. doi:10.1136/bmj.m1327
47. **Chai L**, **Han Y**, **Han Z**, et al. Differences in disaster preparedness between urban and rural communities in China. *Int J Disaster Risk Reduct.* 2021;**53**:102020. doi:10.1016/j.ijdrr.2020.102020
48. **Patel SS**, **Webster RK**, **Greenberg N**, et al. Research fatigue in COVID-19 pandemic and post-disaster research: causes, consequences and recommendations. *Disaster Prev Manag Int J.* 2020;**29**(4):445–455. doi:10.1108/DPM-05-2020-0164
49. **Hendra R**, **Hill A.** Rethinking response rates: new evidence of little relationship between survey response rates and nonresponse bias. *Eval Rev.* 2019;**43**(5):307–330. doi:10.1177/0193841X18807719
50. **Alexander AC**, **Ward KD**. Understanding postdisaster substance use and psychological distress using concepts from the self-medication hypothesis and social cognitive theory. *J Psychoactive Drugs.* 2018;**50**(2):177–186. doi:10.1080/02791072.2017.1397304
51. **Jacob L**, **Smith L**, **Armstrong NC**, et al. Alcohol use and mental health during COVID-19 lockdown: A cross-sectional study in a sample of UK adults. *Drug Alcohol Depend.* 2021;**219**:108488. doi:10.1016/j.drugalcdep.2020.108488

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