Depression, Anxiety, Stress and intolerance of uncertainty during the COVID-19 pandemic by considering the impact of pre-existing mental health issues

Purpose: This research was conducted during the COVID-19 pandemic, to investigate self-reported mental health issues in a public sample, including depression, anxiety and intolerance of uncertainty about the future.

Approach: A public sample (N = 313) was obtained through social media, and collected using an online survey. Participants completed a series of demographic questions including disclosure about previous mental health issues, the Depression Anxiety Stress Scale (DASS), and the Intolerance Uncertainty Scale (IUS).

Findings: There was a strong positive relationship between elements of the DASS and IUS. Having previous mental health issues were strongly associated with higher scores across all measures.

Originality: Evidence is provided to support the notion that additional stress, anxiety and fear is experienced by people with pre-existing mental health issues during unprecedented times. This research offers a unique insight into the mental health of the general public during a global pandemic.

Keywords: Depression, anxiety, stress, public, mental health

Article type: Research Paper

Introduction

The spectrum of mental illness encompasses a wide range of conditions and impairments including common conditions (e.g., depression, anxiety), personality disorders, eating disorders, and psychotic disorders (American Psychiatric Association (APA), 2013). Previous surveys estimated that 1 in 4 people will face mental ill health in their lifetime (Mental Health Taskforce, 2016), however, recent estimates put this is closer to 1 in 2 (McGrath *et al.,* 2023). Previous research from the World Health Organisation (2008) found that mental ill health represents up to 23% of total burden of disease in the UK, making it the largest single cause of disability. Results from a review that compared statistics from 2005 to 2011 and revealed that approximately 38.2% of the European population experience at least one mental disorder annually. The findings also indicated that around 164.8 million people in Europe were impacted by mental illness in 2011 (an increase of 27.4% from 2005).

More recent research investigated if prevalence rates for mental illness in adults had increased over a 37-year period. A meta-analytic study included research conducted in the UK between 1978 and 2015 (Richter *et al.,*

2019). Cross-sectional population studies were included that reported the prevalence rates of mental illness in adults, based on the ICD or DSM diagnoses, symptom or distress scales that used the same methodological approach at least twice in the same geographical region. A total of 44 samples (42 publications) were included in the analysis across the time-period. Overall, there was a small increase for prevalence of mental illness in the included samples over the 37-year period.

In relation to gender differences, research indicates that those who identify as women, are significantly more likely to be diagnosed with mental illness in their lifetime compared to men (Kessler, 2003; Kuehner, 2017; McGrady *et al.,* 2010). More specifically, studies have found that women have higher prevalence rates for anxiety disorders and report an increased severity of the impact of symptoms on their lives, compared to men (McLean *et al.,* 2011; Van Oort *et al.,* 2009). Furthermore, research has found gender differences in attitudes towards and engagement with help seeking behaviour in relation to mental health support (Mackenzie *et al.,* 2006). Women viewed accessing psychological interventions more positively than men, and were more likely to talk about their experiences of mental health services. It is therefore important to acknowledge the impact that barrier to diagnosis, support and restricted access to service may have on different genders.

Mental health is becoming an increasingly discussed topic, with media campaigns and increased help and support available for the public to access. This may have, in part, contributed to the rise in self-disclosed mental health issues and increasing clinical diagnosis of common mental illnesses (e.g. anxiety and depression) (De Choudhury and De, 2014; Gonsalves *et al.,* 2023). Over recent years, there has been a shift in language and the attitudes towards the use of traditional diagnostic labelling of mental health issues. As an alternative to the clinical diagnostic model, the *Power Threat Meaning Framework* has been proposed (Johnson and Boyle, 2018). This framework takes a more positive and broader approach, by seeing the seemingly dysfunctional behaviour (in the clinical model) as a response to trauma, rather than focusing on pathology, prioritising biology, and placing labels on people or groups. This shift could support the idea of self-diagnosis of mental health issues and encouraging individuals to take a more pro-active role in reporting experiences of mental distress.

Self-diagnosis of mental illness is becoming increasingly popular, in part due to the rise of social media, online forums and discussion of symptomology in public chats (Giles and Newbold, 2011). However, there is relatively limited research available on the validity of self-diagnosed mental illness, compared to clinically diagnosed mental illness. It is important for researchers to identify the experience of mental illness and the accuracy of which someone can self-diagnose, as this may help to inform practitioners experience and support of service users with reported mental health issues. Research has found that self-reported anxiety and depression

were statistically agreeable when compared to clinician's diagnosis (McGrady *et al.,* 2010). However, there were issues with the coherence of such diagnosis, but the benefits of self-reported symptoms helped clinicians to better understand the experience of the individual's mental health issues. Groot (2010) found that when the public were given access to tools to complete a self-assessment of ongoing mental health symptoms, they felt empowered and more aware of their changing mood, without the need for a diagnostic label. In addition, Rutter *et al.* (2023) found that there was a high level of accuracy when self and formal diagnosis were compared for a range of mental illnesses, most notably depression and generalised anxiety disorder. Researchers should put more faith in individuals' ability to recognise symptoms and self-report their experiences. There are clear drawbacks and benefits to self-diagnosis of mental health issues, the current research aims to understand if people with a clinical diagnosis compared to a self-reported mental health condition, were significantly impacted during the COVID-19 pandemic.

Major world events and unprecedented times can understandably cause additional stress and fear amongst the general population, this can be observed most notably in the impact of the COVID-19 pandemic (Ghebreyesus, 2020). The COVID-19 pandemic led to worldwide restrictions in the way people lived their lives in order to curtail the spread of the virus. Many countries imposed lockdowns, to varying degrees, where members of the public were restricted to how often, how long and for what reasons they left their place of residence (Kent, 2020). These shifts in lifestyle and freedom, with the added worry of catching the virus, caused mass uncertainty likely impacting on people's mental health and wellbeing. There is strong research evidence to suggest the pandemic had a negative influence on the public's mental health and wellbeing (Sampogna *et al*., 2022), due to several factors but mainly the restrictions and lockdowns, fear about the virus and vaccine anxiety (Abbott, 2021; Bridgland *et al.,* 2021; De Hert *et al.,* 2021).

A recent briefing published by the World Health Organisation (WHO) (2022) states that there was a 25% increase in global prevalence for anxiety and depression during the first year of the COVID-19 pandemic. The report also stated that in regards to mental health issues, those who identified as female seemed to be more impacted by the pandemic than those who identified as male. As a result of the growing concerns regarding the increase in mental health issues, 90% of countries involved in the survey have included mental health and psychosocial support in their COVID-19 response plans. The unprecedented stress caused by the social isolation as a result of the pandemic was given as one explanation as to the growing number of people reporting mental health issues, loneliness and concerns about the future. However, the data gathered in the report did not consider the further impact, ability to cope and increased mental health issues, for those already known to have mental

health issues prior to the pandemic (WHO, 2022). It is difficult to estimate whether there was an increase in prevalence for mental illness following the pandemic, due to the lack of a baseline measurement. However, one study analysed available data in a public sample pre-pandemic (n = 3,306) and during pandemic (n = 3,021), for levels of reported common mental illness (Winkler *et al.,* 2020). The findings revealed that prevalence of depression almost tripled, while anxiety doubled. Levels of symptomology of common mental illness were found to be associated with participants worries about health and/or economic concepts as a result of the pandemic.

It is likely that the uncertainty of the pandemic was particularly triggering for individuals who are intolerant to uncertainty. Intolerance to uncertainty (IU) refers to negative thoughts, emotions and behaviours (related to coping) that occur when faced with uncertainty (perceived or actual) (Birrell *et al.,* 2011). There are two elements to IU: prospective IU and inhibitory IU. The former refers to a person's desire for certainty and the latter refers to experiencing paralysis in the face of uncertainty (Birrell *et al.,* 2011; Carleton *et al.,* 2012). Therefore, IU is an individual difference that leads an individual to initially perceive uncertain situations as aversive, leading them to engage in behaviours to reduce uncertainty and then moderates their perceptions of uncertainty and threat (Taha *et al*., 2014). IU has been found to be a concept involved in many emotional disorders (Carleton *et al.,* 2012; 2014), with individuals with mental health diagnoses (vs. no diagnoses) reporting higher IU and reductions in IU have been seen for individuals who received treatment for mental health diagnoses (Boswell *et al.,* 2013). High levels of IU have been found to contribute to the development of depression over time (Huang *et al*., 2019), as well as be a key maintaining factor on anxiety disorders and depression (McEvoy and Mahoney, 2012; Rosser, 2019). It is likely that the cycles of negative thoughts, emotions and behaviours that occur for individuals with high levels of IU are linked to and potentially maintain those thoughts, emotions and behaviours related to mental health disorders (Rosser, 2019). A person's ability to tolerate uncertainty is likely to influence the way they respond and cope with situations (Einstein, 2014; Fergus and Bardeen, 2013; Huang *et al.,* 2019) and so individuals with mental health difficulties (and those with high IU) might struggle to positively cope with uncertainty and are likely to become distressed when experiencing uncertainty.

In the context of COVID-19, individuals who had a previous or current diagnosis of mental health issues may have found this time particularly distressing due to their IU. This could also be the case for individuals who have self-diagnosed their mental health issues. IU has been explored in relation to experiences of distress during the COVID-19 pandemic. For example, Rettie and Daniels (2020) sought to investigate whether mental health difficulties during the COVID-19 pandemic could be predicted by IU. Individuals who were classified as 'vulnerable' (according to UK Government COVID-19 guidance) reported experiencing more IU than those who

were not classified as 'vulnerable' and were also more likely to reach the threshold for health anxiety or generalised anxiety than those who were not classified as 'vulnerable'. Research conducted during the 2009 swine flu (H1N1) pandemic found that individuals with high IU (versus low IU) were more likely to perceive the pandemic as threatening and reported elevated levels of anxiety (Taha *et al.,* 2014). However, there is limited research that has investigated IU and the impact of COVID-19 on mental health specifically for individuals who have previous diagnoses or self-diagnoses of mental health issues. Therefore, the current research aimed to explore the relationship between IU and distress experienced during the COVID-19 pandemic for individuals with self, formal or no mental health diagnoses.

Project aims

The current research was conducted to investigate the impact of pre-existing mental health issues, on reported levels of depression, anxiety, stress, and IU, during the COVID-19 pandemic. More specifically, to identify if participants who disclosed previous formally or self-diagnosed mental health issues report more distress as a result of the COVID-19 pandemic. Considering the existing literature exploring the links between these elements, the following research predictions were made.

Research predictions

1. Participants who identify as female will score higher than males on measures associated with anxiety, depression, and IU during the pandemic.
2. There will be a positive relationship between reported levels of depression, anxiety, stress and IU during the COVID-19 pandemic.
3. Participants who self-report previous mental health issues or a current mental health diagnosis will score higher on measures associated with depression, anxiety and stress, and IU during the COVID-19 pandemic, than those without previous mental health issues.

Methods

Compliance with Ethical Standards

Institutional ethical approval was granted from The University of Huddersfield School of Social and Health Sciences ethics board (May 2020) before commencing data collection. Human participants were used in the research, they were fully briefed and written informed consent was gained before participation began. Regarding ethical guidelines and considering the sensitive nature of mental health, participants were made fully aware of the aims and purpose of the study and their right to withdraw. There are no conflicts of interest for the authors to declare.

Participants

The study received 313 total respondents via opportunity sampling, one participant withdrew from the study and 17 respondents had only completed the demographic information, but not engaged with the research content. As such, 61 participants were removed from the study ($N = 252$). The age range of the included sample was 18-63 years ($M = 29.34$, $S.D = 9.45$), with the majority of participants identifying as female ($n = 211$, 83.70%) and the remaining participants identifying as male ($n = 41$, 16.3%). The ethnic background of participants was mostly white ($n = 223$, 88.50%) and country of residence during the pandemic was predominantly the United Kingdom ($n = 204$, 81.00%). Participants were asked about their history of any diagnosed mental health issues, the majority reported they had been diagnosed in the past or were currently diagnosed with a mental illness ($n = 120$, 47.60%), 68 (27.00%) participants declared a self-diagnosed or suspected mental health issue and 64 (25.40%) said they never felt they experienced a mental health issue to the point of diagnosis. The most prevalent reported mental health issues were anxiety (Formally diagnosed, 40.40%; suspected or self-diagnosed, 26.20%) and depression (Formally diagnosed, 40.10%; suspected or self-diagnosed, 21.80%).

Materials

As per ethical guidelines, a standardised briefing, consent form and debriefing materials were used, explaining the aims of the research, participants requirements and the right to withdraw. A demographics questionnaire was used, to gather information about the participants, including current gender identity and age. Participants were also asked a series of questions about their previous experience and diagnosis of mental health related issues.

The Depression Anxiety Stress Scale (DASS) (Lovibond and Lovibond, 1995), short version consisting of 21 items was used. Responses are measured on a likert scale rating from 1- Did not apply to me at all, to 4- Applied to me very much/most of the time. Participants were asked to select the options that reflected how they

had been feeling during the COVID-19 pandemic. Totals for the subscales of depression, anxiety and stress can be generated, as well as an overall score. All the items are positively scored meaning a low score would indicate low agreement with the overall construct and a high score would indicate high agreement.

The second measure used was the Intolerance of Uncertainty scale (IUS) (Freeston *et al.,* 1994), consisting of 27 items. The scale assesses emotional, cognitive and behavioural reactions to equivocal situations, implications of which are uncertain. Responses are indicated on a 5-point likert scale ranging from 1-Not at all characteristic of me, to 5-Entirely characteristic of me. Participants were asked to select the option that was most fitting to them. Total scores on the IUS range from 27 to 135. Two subscales can also be analysed; Prospective anxiety (items 7, 8, 10, 11, 18, 19, 21) and Inhibitory anxiety (items 9, 12, 15, 20, 25) (Carleton *et al.,* 2007). A low score indicated low agreement with the items and a high score, strong agreement with the items.

Procedure

Participants were recruited via social media, and an anonymous survey link was distributed via email to the researchers' associates. As the link was anonymous and shared widely on multiple social media, the overall response rate could not be determined. Before taking part in the research, the participants were fully briefed and gave informed consent. Participants then completed the demographics questionnaire and questions regarding their history of mental health issues, then completed the DASS and IUS scales. Before submitting, participants were informed that they would no longer be able to withdraw once they had exited the final page, due to there being no identifiable data collected. After submitting their responses, the debriefing sheet was presented to participants. The data was collected during the COVID-19 pandemic, from 25th June 2020 to 7th May 2021.

Results

Data cleaning and screening processes were conducted prior to analysis, and guidance in regards to coding and totalling the measures was followed. New variables were created for DASS total, Depression subscale, Anxiety subscale, Stress subscale, IUS total, IUS short version (12-item), Prospective Anxiety (7-item) and Inhibitory Anxiety (5-item), to indicate total scores.

Reliability Analysis

Cronbach's (1951), reliability test was used, the guide for reliability states that .7 is acceptable, .8 is good and .9 is excellent (Nunnaly & Bernstein, 1978). Cronbach's alpha revealed excellent reliability of the DASS total scale ($\alpha = .948$), and the subscales depression ($\alpha = .911$) anxiety ($\alpha = .870$) and stress ($\alpha = .920$). The overall IUS measure also indicated excellent reliability ($\alpha = .961$) and the short version IUS-S ($\alpha = .915$), Prospective anxiety ($\alpha = .848$) and Inhibitory anxiety ($\alpha = .881$).

Gender Differences

To test for gender differences within the sample, a series of independent samples t-tests were conducted. All the tests were statistically significant for gender differences between males and females, as reported below. Homogeneity of variance tests using Levenes were conducted, and assumptions were met for all but one test (Anxiety subscale $p = .037$), so the values were adjusted accordingly.

Across all the scales, those who identified as female scored significantly higher than males, which indicated greater endorsement of that element. For overall scores on the DASS, $t\ (250) = 3.46$, $p < .001$ (Female $M = 44.52$, $S.D = 13.56$; Male $M = 35.61$, $S.D = 12.56$). The subscale analysis was also significant, Depression $t\ (250) = 2.89$, $p = .002$ (Female $M = 15.57$, $S.D = 5.25$; Male $M = 12.98$, $S.D = 5.33$), Anxiety $t\ (62.35) = 3.73$, $p < .001$ (Female $M = 12.34$, $S.D = 4.53$; Male $M = 9.80$, $S.D = 3.87$), and Stress $t\ (250) = 2.95$, $p = .002$ (Female $M = 16.60$, $S.D = 5.52$; Male $M = 13.83$, $S.D = 5.40$).

Gender differences remained apparent for the analysis of the IUS, IUS total $t\ (248) = 4.24$, $p < .001$ (Female $M = 82.05$, $S.D = 23.14$; Male $M = 65.00$, $S.D = 24.04$), IUS short version $t\ (250) = 3.52$, $p < .001$ (Female $M = 37.15$, $S.D = 10.20$; Male $M = 30.95$, $S.D = 10.89$), IUS prospective anxiety $t\ (250) = 3.12$, $p = .001$ (Female $M = 23.12$, $S.D = 5.74$; Male $M = 19.98$, $S.D = 6.67$), and IUS Inhibitory anxiety $t\ (250) = 3.49$, $p < .001$ (Female $M = 14.03$, $S.D = 5.16$; $M = 10.98$, $S.D = 5.01$). Females scored higher on all concepts of the scales used, meaning they reported higher levels of depression, anxiety, stress and IU compared to males.

Association between depression, anxiety, stress, and uncertainty about the future

To investigate the relationships between the constructs of the DASS and IUS, a Pearson's correlation was conducted. Relationships and significance can be observed in Table I.

TABLE I HERE

Overall there were significant positive relationships, demonstrating that higher levels of depression, anxiety and stress were associated with each other in terms of increased endorsement of each element. Both prospective anxiety and inhibitory anxiety were significantly correlated with all elements of the DASS, indicating that an association exists between reported symptoms of poor mental health and respondents IU. Positive correlations indicate that as endorsement with one element increased, it also increased on the other element.

Mental health diagnosis and DASS

As previously discussed, participants were asked to indicate if they had ever been diagnosed with a mental health condition, which was measured on 3 levels (1- Formally diagnosed with any condition by a qualified medical professional, 2- Suspected or self-diagnosed, 3- Never suspected or diagnosed with a condition), this was used as the grouping variable (IV) and their scores on the DASS and subscales was used as the dependent.

The assumptions of homogeneity of variance were violated for the Analysis of Variance (ANOVA), therefore Browns-Forsythe test was conducted. There were significant differences revealed across participants previous mental health diagnosis (3 levels) and their responses to the overall DASS (F (2, 213.69) = 32.34, p < .001), Depression subscale (F (2, 219.50) = 20.41, p < .001), Anxiety subscale (F (2, 192.47) = 26.70, p < .001), and Stress subscale (F (2, 207.39) = 27.48, p < .001). Post-hoc testing using Games-Howell revealed that there were significant differences for the overall DASS, between participants who had formal diagnosis (p < .001) or suspected/self-diagnosed (p < .001) and those who had no known diagnosis or reported mental health issues. There were no significant differences between participants who identified as having a previous formal MH diagnosis and those with suspected or self-diagnosis, and their scores on the DASS (p = .119) and subscales, except for anxiety (p < .023). For anxiety, participants who had a previous formal MH diagnosis scored higher (M = 13.54, $S.D$ = 4.74) than those with suspected or self-diagnosed MH issues (M = 11.68, $S.D$ = 4.53).

Across the remaining categories there were significant differences between participants with no formal diagnosis and the other two conditions, with no declared diagnosis having the lowest scores across all areas of the DASS than suspected, self- and formally diagnosed. This indicated that individuals with no previous history of a mental health diagnosis reported lower DASS experienced during the COVID-19 pandemic than individuals with a diagnosis whether self-diagnosed or formally diagnosed. Moreover, this indicates that regardless of whether the diagnosis was formal or suspected/self-diagnosed, those with previous mental health issues reported higher scores overall on the DASS and for each of the subscales.

Mental health diagnosis and IUS

Particpants' mental health diagnosis, measured on 3 levels remained as the grouping variable (IV) and their scores on the IUS and subscales were the dependent variable. An ANOVA was conducted and the assumptions were met. There were significant differences revealed across participants previous mental health diagnosis (3 levels) and their responses to the overall IUS (F (2, 249) = 21.07, p < .001), IUS short version (F (2, 251) = 23.22, p < .001), Prospective Anxiety subscale (F (2, 251) = 22.23, p < .001), and Inhibitory Anxiety subscale (F (2, 251) = 17.62, p < .001). Post-hoc testing using Bonferroni revealed that there were significant differences for the overall IUS, between participants who had formal (p < .001) or suspected/self-diagnosed (p <

.001) and those who had no known diagnosis or reported mental health issues. Participants who had a previous formal mental health diagnosis, scored highest on the overall IUS (M = 85.87, $S.D$ = 23.34) and participants who reported no history of mental health issues scored the lowest (M = 63.73, $S.D$ = 23.16). This result was consistent when subscale analysis was conducted, with formal diagnosis being associated with higher scores on elements of the IUS and no mental health issues having lower scores on elements associated with fear of uncertainty.

Discussion

The aim of the current research was to investigate the impact of pre-existing mental health conditions, on reported levels of depression, anxiety, stress, and IU, during the COVID-19 pandemic. More specifically, consider gender differences, previous mental health diagnosis and associations between common mental health issues and fear of the unknown during the pandemic. The results of the current research will now be disseminated and discussed in relation to previous research, future directions, and the limitations of the research acknowledged.

The findings of the current research revealed strong support for the first research prediction which stated that participants who identified as female would score higher than males on measures associated with anxiety, depression, and uncertainty about the future during the pandemic. This offers some support for research conducted during the pandemic, that found females reported significantly higher stress than males, but no difference in depression and anxiety levels (Stanton *et al.,* 2020). Previous research had indicated that women were significantly more likely to be diagnosed with mental illness in their lifetime compared to men (Griffiths *et al.,* 2008; Kessler, 2003; Kuehner, 2017; McGrady *et al.,* 2010), and women have higher prevalence rates for anxiety disorders and an increased severity of the impact of symptoms (McLean *et al.,* 2011; Van Oort *et al.,* 2009). However, research found gender differences in attitudes towards and engagement with help seeking behaviour in relation to mental health support (Mackenzie *et al*., 2006). Therefore, one must be mindful when disseminating data about gender differences, that males may not feel as comfortable declaring mental health issues as females and therefore this might possibly explain some gender differences.

When discussing the results of gender differences, it is important to be aware of the different risk factors that can contribute to the development of mental illness. Biological differences between the genders could be one explanation for differences and an increase in mental health issues for those identifying as female (e.g. sex hormones, pregnancy, oral contraceptives) (Kessler, 2003). Whilst psychosocial risk factors including an increased prevalence of gender-based violence towards women, could be a contributing element to the development of mental health issues (Riecher-Rössler, 2017). Whilst gender identity and biological sex are not the same, most research considers the binary genders and as such, there are limited comments that can be made at

this time about the experience of people who fall outside of these gender norms. Future research should endeavour to explore the experiences of people outside of the binary genders, for example transgender, gender non-conforming and non-binary individuals.

The findings of the current research offered support for the second research prediction, as positive relationships between reported levels of depression, stress, anxiety, and IU during the COVID-19 pandemic were found. These findings indicate that during the COVID-19 lockdown in the UK individuals experiencing high levels of anxiety, depression and stress were also experiencing high levels of IU. This relationship provides more support for the relationship between IU and symptoms of anxiety, depression and stress, how IU may be a factor involved in common mental illness (Carleton *et al.,* 2012; 2014) and further highlights IU as a potential avenue for managegement of mental health difficulties (Boswell *et al*., 2013). As IU impacts a person's ability to cope with uncertain situations (Einstein, 2014; Fergus and Bardeen, 2013; Huang *et al.,* 2019) those with high levels of IU may have been particularly impacted by the COVID-19 pandemic. The COVID-19 pandemic produced drastic changes and uncertainty in people's lives and so individuals' with higher levels of IU were also experiencing higher levels of anxiety, depression and stress during the pandemic. However, as this is cross-sectional and correlational causal links cannot be ascertained. Future research should use longitudinal approaches to follow IU and symptoms of depression and anxiety to establish the direction of causation. It is also unknown from this data whether IU had increased as a result of COVID-19 or if IU remained stable. Greater insight into this would provide an important understanding of whether intervention is needed, due to the relationship found within this study and previous studies between IU and mental health.

Findings also support the final prediction of individuals with previous- or current- and self-diagnosis of mental illness reporting higher depression, stress and IU than individuals with no previous mental illness. Individuals with formal and self diagnoses of mental illness reported higher levels of anxiety, depression, stress and IU than those without previous or current mental health diagnoses. This indicates that COVID-19 impacted individuals with existing mental illness more negatively than individuals with no mental health diagnoses, supporting previous findings of the negative impact of COVID-19 (e.g. Ghebreyesus, 2020; Sampogna *et al*., 2022; Rettie and Daniels, 2020). The current findings also add to previous research by indicating that COVID-19 has had a detrimental impact on those with pre-existing mental illnesses, whether formally- or self-diagnosed, compared to those with no history of mental illness. No differences in reported levels depression, stress or IU during COVID-19 were found between individuals with formally diagnosed mental illness or self-diagnosed mental illness. This supports previous literature that suggests agreement between self-reports of symptoms of

mental illness and clinicians' decisions and diagnoses (McGrady *et al.,* 2010; Rutter *et al.,* 2023). It provides further support that individuals are able to recognise their symptoms of mental illness and indicates that more faith can be put into self-reported measures. However, differences were found in reported levels of anxiety between individuals with formally- and self-diagnosed mental illness, with those with a formal diagnosis reporting higher levels of anxiety than those who self-diagnosed their mental illness. It is possible that those with formal diagnoses were or had been receiving support for their mental health and disruptions caused by the COVID-19 pandemic (e.g., disruptions to mental health care provision; NHS, 2020; WHO, 2020) may have led to symptoms of anxiety due to the uncertainty of accessing support. It is also possible that other factors, not accounted for in this study, were impacting levels of anxiety or individuals with formal diagnoses compared to self-diagnoses (e.g., 'vulnerability' status; Rettie and Daniels, 2020). Despite this differing finding, the findings suggest that individuals without formal mental health diagnoses (i.e., self-diagnosed) were experiencing high levels of depression, anxiety and stress during the COVID-19 pandemic. These individuals are likely not known by their health care provider due to being undiagnosed and so it is important that these individuals have access to support for their mental health to reduce and manage symptoms of mental illness. Addressing IU and helping individuals to develop positive ways of coping with uncertain situations would be beneficial to prevent deterioration in mental health in future uncertainty.

Limitations

The researchers acknowledge several limitations of the current study. Firstly, it relies on self-report methods, it is unavoidable that some participants may give dishonest answers. Using a quantitative method, the nature of which can sometimes make the findings difficult to understand in the context of a phenomenon, meaning the data may not be detailed enough to explain complex issues. So whilst a quantitative approach is limited due to a lack of richness in the data and limited explanations as to 'why' participants gave certain responses, it does allow for the application of the data to similar populations, increased generalisability, and comparison of results of previous research using this method. It can be used to inform possible avenues for future research using alternative methodologies.

The survey was only available online, which excludes those who do not have the ability or access to the internet (Andrade, 2020). Using an opportunity sample may also attract participants who are willing to help and want to take part in the research out of interest. This may result in some socially desirable responses and possibly display demand characteristics (Gnambs and Kaspar, 2017). In addition to this, for some characteristics there were

not enough participants in each condition to compare differences (e.g., non-cisgender participants, non-white ethnic backgrounds).

When participants were asked to report their previous mental health issues, this may have been open to some subjectivity. What one participant sees as a symptom or experience of mental health, may only be seen as mild by another individual. Therefore there could have been some disparity with the reporting of participants experience of mental health issues.

Conclusion

To summarise, the current study was conducted during the COVID-19 pandemic, to investigate self-reported mental health issues, including depression, anxiety and IU. Evidence was provided for gender differences of experience of mental health issues relating to the pandemic. There was a strong positive relationship between elements of the DASS and IUS. Participants who had reported a previous history of mental health issues reported greater levels of mental health related issues and stress during the pandemic. The results of this study provide novel evidence to support the notion that additional stress, anxiety and fear is experienced by people with pre-existing mental health issues (regardless of formal diagnosis or self-diagnosis) during unprecedented times. This research offered a unique insight into the mental health of the general public during a global pandemic.

On behalf of all authors, the corresponding author states that there are no conflicts of interest.

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