

## Are we really all in the same boat? Emotional epidemiology of COVID-19 and psychological and social variables affecting well-being

Jagruti Wandrekar<sup>1\*</sup>, Advaita Nigudkar<sup>2</sup>, Eashwarya Natekar<sup>3</sup>

### ABSTRACT

**Background:** The study examines whether demographics, minority status, impact from COVID-19, and psychological and personality variables affect subjective well-being and perceived isolation, and explores emotional and cognitive reactions to the pandemic to understand emotional epidemiology. **Method:** An online survey was used, with questions eliciting demographics, variables suggesting impact, reactions (emotions, coping strategies, construal, learnings and the first thing they would do once the pandemic ended), perceived threat, controllability and isolation, and standardized measures were used to assess subjective well-being, general self-efficacy and intolerance of uncertainty. **Results:** 364 respondents from 25 countries responded to the survey. Women and gender minorities, the 13 to 34 age-group, individuals with double minority status, those facing higher direct impact, and those previously diagnosed with mental health conditions, showed the lowest subjective well-being. Women and gender minorities and young individuals reported high isolation. Perceived threat, perceived controllability, perceived isolation, general self-efficacy and intolerance of uncertainty were found to predict subjective well-being. Results are explained using the protection motivation theory, social stress theory, and other constructs. Reactions to the pandemic were found to be varied. **Conclusion:** Individual characteristics as well as social group membership affect mental health response to COVID-19. Intervention and prevention programs for mental health and public campaigns need to be mindful of diversity, rather than promoting the idea that ‘we are all in the same boat.’

**Keywords:** Emotional epidemiology, COVID-19, Pandemic

The COVID-19 pandemic, and measures taken to safeguard public health such as lockdowns and social distancing, are likely to have short-term and long-term mental health outcomes, and these mental health outcomes are likely to affect a larger population than that actually contracting COVID-19 (egs Chatterjee & Chauhan, 2020,

<sup>1</sup>Consultant Psychologist, Medico Surgical Clinic and Hospital, Lb CHS, LBS Road, Doshi Wadi, Ghatkopar west, Mumbai, India

<sup>2</sup>Consultant Psychologist, Medico Surgical Clinic and Hospital, India

<sup>3</sup>Consultant Psychologist, Medico Surgical Clinic and Hospital, India

\*Responding Author

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Kumar & Nayyar, 2020, Liu et al, 2020, Duan, Linder & Huremonic, 2019, Taylor, 2020). Ofri (2009) coined the term ‘emotional epidemiology,’ and understanding the emotional epidemiology of this pandemic crucial (Orru, Cacchini, Gemignani & Conversano, 2020, Park & Park, 2020). We need robust research on mental health outcomes; this will help us to design interventions for the present and generate an evidence base for possible future phases of this infection or future such pandemics (egs Gordon & Borja, 2020, Holmes et al, 2020).

A global pandemic of such a scale and proportion may be novel for many individuals affected by it today. We wished to understand how people make sense of this. We explored individuals’ emotional reactions, self-reported coping styles, construals, and whether the experience had brought about a change in their perspectives in any way.

Many public campaigns during the pandemic express the sentiment- ‘we are all in the same boat.’ We were interested in understanding this in the context of subjective well-being and perceived isolation. Our quest was to answer the questions-. Are different groups of individuals impacted differently by the pandemic? Are individuals with different personality traits and perspectives impacted differently?

### **METHODOLOGY**

An internet survey form was the most accessible way of data collection given social distancing protocol. We took informed consent from the participants, in which we included declarations of confidentiality and the risk of finding some of the questions emotionally triggering. The survey was completely anonymous. It was distributed via social media channels such as WhatsApp, Facebook, Instagram and email to an initial pool of known participants, who were encouraged to distribute it to others on their lists of acquaintances, and so on. The form was circulated in April 2020. Data was entered, coded and analyzed. Online tools (Wessa, 2020, Lowry, 2020) were used for quantitative analyses and themes in the open-ended questions were codified and categorized based on sub-themes.

#### *Survey*

##### **Section 1**

We asked for demographic details such as age, gender (open-ended to allow for all possible gender identities), education, occupation, country and city of residence. We asked questions to elicit how much they had been impacted by the pandemic- whether they had personally tested positive for the corona virus, whether they had been quarantined in a hospital, whether their family members had tested positive, whether they believed they were immunocompromised, whether they were frontline workers, whether their immediate family member was a frontline worker, whether their country was in a lockdown, whether they felt they had been able to access adequate essential supplies, whether they had shelter, whether they were stranded away from their place of residence, whether they were facing a loss of income, wages or jobs, whether they were away from their immediate family, whether their household conditions were such that social distancing was difficult, and whether they were living in toxic/ abusive/ violent households. Most questions had ‘yes’ or ‘no’ response formats except for some for which we added a ‘maybe’ response option to allow for more flexibility. We asked participants to select any and all of the minority groups that they belonged to in their country- LGBTQIA+, religious minorities, ethnic or racial minorities, scheduled castes, tribal communities, persons with disability, lower economic strata or none.

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### **Section 2**

To elicit reactions to the pandemic, we asked open-ended questions- What are the emotions that you have experienced most frequently and intensely ever since you heard about the pandemic? What are some coping strategies that you have been using during this period? What is the first thing you are planning to do once the pandemic is under control? Has this experience changed you or your perspective in any way? If so, how?

To elicit commonly held potentially ‘positive’ or ‘negative’ construals, we listed 12 of each and asked participants to select the three in each section that they most strongly believed in. Positive construal statements were designed to elicit acceptance (There is no point fighting the situation and it is best to accept it), universality (I take comfort in knowing that we are all in this together), downward comparisons (I think about how much worse things could have been), reframing and seeing the positive aspects (I see this situation as an opportunity to take pause and learn something new), gratitude (I am thankful that I and my loved ones are safe), altruism (I keep trying to think of ways that I can help those in more difficult situations), impermanence (I keep reminding myself that this is temporary), perceived growth (I believe that the lessons I learn from this situation will help me emerge from it much stronger), faith (My belief in God will help me get through this), hope (I hold onto hope that this too shall pass), perceived responsibility for others (Knowing that I have to stay strong for my loved ones keeps me going), and pragmatism (I take life as it comes and this is just one of those things that happens).

Negative construal statements were designed to elicit uncertainty (The uncertainty related to the situation is what scares me), worry about personal harm (I am constantly worried about the possibility of I and my family members contracting the virus), compassionate grief (I am troubled by the loss of life), unpredictability (This incident is a stark reminder of how unpredictable life is), vulnerability (This has made me feel unsafe and vulnerable), grief for loss of previous life (I grieve for the loss of life as it was), being out of control (This has made me feel truly out of control), unfairness (The unfairness of it is what bothers me), denial (I still cannot believe this could happen), questioning faith (This incidence has shaken my faith), lack of preparedness (I feel very unprepared by this), and wishful thinking (I keep thinking if only this wouldn’t have happened).

### **Section 3**

To assess perceptions of threat, we asked two questions assessing perceived severity of the pandemic and two questions assessing perceived personal vulnerability or likelihood of contracting the virus. To assess perceptions of controllability, we asked 2 questions assessing perception of the extent to which they believed they could protect themselves from the virus, and two questions assessing the extent to which they believed the government and health care sector would manage to control the pandemic. Responses to all four questions were on a 5-point Likert scale with strongly agree, agree, neutral, disagree and strongly disagree as points on the scale, and we varied the direction of the questions to avoid responses based on set. We asked participants to rate how isolated they feel due to social distancing on a continuous scale from 0 suggesting ‘not at all’ to 10 suggesting ‘extremely isolated to the point that I can’t bear it.’

We asked participants if they had previously been diagnosed with any mental health conditions (yes/no), what their diagnosis was (open-ended), to what extent there had been a change in their mental health due to the pandemic (Likert-scale- improved a lot, improved a

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little, no change, worsened a little, worsened a lot, or not applicable to me), and the challenges they faced accessing mental health care, if any (open-ended).

### Section 4

We assessed subjective well-being using the General Well-Being Schedule by Dupuy (1977). Self-efficacy was assessed using the General Self-Efficacy Scale by Schwarzer and Jerusalem (1995). Intolerance of uncertainty was assessed using the Intolerance of Uncertainty Scale - Short Form by Carleton, Norton and Asmundson (2007). These are self-report measures which require responses on a Likert-scale.

## RESULTS

364 respondents completed the survey. There was no data loss.

### Demographic details

25 countries were represented in the data. Participants hailed from 43 different cities in India and 57 around the rest of the world. Ages ranged from 13 to 75. Country-wise distribution, age ranges, education and occupation categories, are described in Table 1.

**Table 1: Demographic details- Countries of residence, age, education and occupation**

Genders	N (%)	Occupation	N (%)	Other countries	N (%)
Women	216 (59.34)	Students	81 (22.25)	USA	13 (3.57)
Men	142 (39.01)	Academia	38 (10.44)	Australia	12 (3.30)
Non-binary	2 (0.55%)	Humanities	8 (2.20)	Canada	7 (1.92)
Transwomen	2 (0.55%)	Business and consultancy	23 (6.32)	Austria	7 (1.92)
Questioning	2 (0.55%)	Service	123 (33.79)	Germany	7 (1.92)
<b>Age ranges</b>	<b>N (%)</b>	Health workers	31 (8.52)	UK	6 (1.65)
19 or lower	24 (6.59)	Homemakers	11 (3.02)	France	5 (1.37)
20-29	129 (35.44)	Art and entertainment	16 (4.4)	Sweden	4 (1.10)
31-40	132 (36.26)	Public and civil affairs	2 (0.55)	New Zealand	3 (0.82)
41-50	34 (9.34)	Retired	11 (3.02)	Singapore	3 (0.82)
51-60	24 (6.59)	Seeking employment	10 (2.75)	Jordan	2 (0.55)
61 and above	21 (5.77)	Others	10 (2.75)	Vietnam	2 (0.55)
<b>Education</b>	<b>N (%)</b>	<b>India</b>	<b>281 (77.2)</b>	Italy	1 (0.27)
High school	26 (7.14)			Portugal	1 (0.27)
Undergraduate	28 (7.69)			Pakistan	1 (0.27)
Graduation	90 (24.73)			Kenya	1 (0.27)
Post-graduation	142 (39)			Kosovo	1 (0.27)
Professional degrees	57 (15.65)			Saudi Arabia	1 (0.27)
MPhil/ PhD/ Post doc	15 (4.12)			Sri Lanka	1 (0.27)
Diplomas	6 (1.65)			UAE	1 (0.27)
				Russia	1 (0.27)
				Switzerland	1 (0.27)
				Ireland	1 (0.27)
				Korea	1 (0.27)

Table 2 describes the kind of impact experienced and minority group membership. Those who reported up to two ways in which they had been negatively impacted formed the low impact group, while those showing more than two ways formed the high impact group.

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**Table 2- Impact due to COVID-19, minority group membership, pre-existing mental health conditions.**

Impact due to COVID-19	Yes- N (%)	No- N (%)	Maybe- N (%)	Minority groups	N (%)
Tested positive for Covid	1 (0.27)	363 (99.73)	NA	Religious minority	71 (19.51)
Family tested positive	1 (0.27)	363 (99.73)	NA	Ethnic/ racial minority	30 (8.24)
Quarantined in hospital	0 (0)	364 (100)	NA	LGBTQIA+/ sexual or gender minority	54 (14.84)
Immunocompromised	25 (6.86)	292 (80.22)	47 (12.91)	Scheduled caste	5 (1.37)
Country in lockdown	336 (92.31)	21 (5.77)	7 (1.92)	Scheduled tribe/ indigenous group	1 (0.27)
Stranded away from home	28 (7.69)	336 (92.31)	NA	Person with disability	2 (0.55)
Frontline worker- self	14 (3.85)	350 (96.15)	NA	Lower economic strata/ class	4 (1.10)
Frontline worker- family	52 (14.29)	312 (85.71)	NA	None of the above/ not a minority	232 (63.74)
Inadequate essential supplies	15 (4.2)	307 (84.34)	42 (11.54)	One minority group	100 (27.47%)
Income loss	29 (7.97)	313 (85.99)	22 (6.04)	2 or 3 minority groups	32 (8.79%)
Away from family	95 (26.10)	269 (73.90)	NA		
Without shelter	6 (1.65)	358 (98.35)	NA		
Household conditions making social distancing difficult	34 (9.34)	305 (83.79)	25 (6.87)		
Abusive/ toxic households	13 (3.57)	335 (92.03)	16 (4.40)		

**Preexisting mental health conditions**

Two independent t-tests were conducted to compare individuals with and without prior diagnoses on subjective well-being and perceived isolation. T-test values, number of individuals with and without diagnoses, and their belief in how their mental health status had changed due to the pandemic, are described in Table 3.

**Table 3: Prior mental health conditions and change in mental health**

Change in mental health status due to pandemic	With previous diagnoses N (%)	Without previous diagnoses N(%)	Total sample N (%)
Improved a lot	4 (4.6%)	12 (4.33%)	16 (4.39%)
Improved a little	16 (18.4%)	38 (13.71%)	54 (14.84%)
No change	24 (27.50%)	91 (32.85%)	115 (31.59%)
Worsened a little	29 (33.33%)	54 (19.49%)	83 (22.8%)
Worsened a lot	11 (12.64%)	11 (3.97%)	22 (6.04%)
Not applicable	3 (3.45%)	71 (25.63%)	74 (20.33%)
<b>Total number</b>	87 (23.9%)	277 (76.1%)	
<b>Subjective well-being scores</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>t- value</b>
	26.839 (9.249)	36.296 (9.503)	t <sub>(362)</sub> =8.15, p=0.0001
<b>Perceived isolation scores</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>t- value</b>
	5.816 (2.48)	5.007 (2.55)	t <sub>(362)</sub> =2.6, p=0.009

Among those with previous mental health conditions, 80 (91.95%) had been diagnosed with anxiety disorders or depression or dysthymia, while 7 (8.05%) reported bipolar disorder,

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brief psychosis, and personality disorders. 28 (32%) participants having preexisting diagnoses reported challenges accessing mental health care during the pandemic. Not being able to access medications and not being able to meet their psychiatrist or therapist were the most common challenges. Other challenges included finding it a little difficult to adapt to online therapy, interruption in the process of weaning off medications, and inability to access adjunct services such as acupuncture.

***Minority groups and level of impact***

Four 2-way ANOVAs were conducted- studying effects of minority group membership (three groups-none, one minority identity and multiple minority status) and level of impact (two groups-low and high) on subjective well-being and on perceived isolation, and effects of age (three groups- teenagers and young adults-13 to 34, middle age-35-54, old age- above 55) and gender (two groups- men, and women with gender minorities) on subjective well-being and on perceived isolation. Results are in Table 4.

***Table 4: Results of 2-way ANOVAs for demographic and social variables impacting well-being and isolation***

<b>2-way ANOVA variables</b>	<b>F values and significance</b>
1. Age and gender on subjective well-being (means)	
Gender (men M=35.34, women and others M=33.26)	F <sub>(1, 359)</sub> = 4.25, p=0.04
Age (young M=31.58, middle M=38.89, old M=43.69)	F <sub>(2, 359)</sub> =33.11, p=0.0001
Age X Gender	F <sub>(2, 359)</sub> =1.5, n.s.
2. Age and gender on perceived isolation (means)	
Gender (men M=5.09, women and others M=5.25)	F <sub>(1, 359)</sub> = 0.31, n.s
Age (young M=5.54, middle M=5.63, old M=5.82)	F <sub>(2, 359)</sub> =12.82, p=0.0001
Age X Gender	F <sub>(2, 359)</sub> =0.8, n.s.
3. Minority group membership and impact by COVID-19 on subjective well-being (means)	
Minority group membership (none M=35.75, 1 m=32.15, multiple M=27.41)	F <sub>(1, 359)</sub> = 4.44, p=0.035
Impact (low M=34.74, high M=31.62)	F <sub>(2, 359)</sub> =9.4, p=0.0001
Minority X Impact	F <sub>(2, 359)</sub> =0.8, n.s.
4. Minority group membership and impact by COVID-19 on perceived isolation (means)	
Minority group membership (none M=4.98, 1 M=5.51, multiple M=5.84)	F <sub>(1, 359)</sub> = 2.58, n.s
Impact (low M=5.09, high M=5.59)	F <sub>(2, 359)</sub> =2.59, n.s
Minority X Impact	F <sub>(2, 359)</sub> =0.06, n.s.

***Psychological variables***

Table 5 shows results of multiple linear regression analysis conducted with perceived threat, perceived controllability, perceived isolation, intolerance of uncertainty and general self-efficacy, as predictor variables for changes in subjective well-being.

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**Table 5: Means, ranges, multiple linear regression- personality and cognitive variables and wellbeing**

Variables (predictors)	Parameter	SD	t value	P value	Means	Range
Perceived threat	-0.4608	0.14	-2.26780e+00	0.003	11.94	5-16
Perceived controllability	+0.7344	0.17	+5.1620e+00	2.027e-07	10.57	2-16
Perceived isolation	-1.179	0.16	-7.3610e+00	6.32e-13	5.21	1-10
General self-efficacy	+0.5988	0.08	+6.7830e+00	2.437e-11	19.82	0-30
Intolerance of uncertainty	-0.2964	0.04	+6.4790e+00	1.528e-10	27.23	2-48
<b>Subjective well-being (outcome variable)</b>					34.03	6-55
<b>Regression values</b>	<i>Multiple R= 0.6885</i>	<i>R<sup>2</sup>=0.474, Adjusted R<sup>2</sup>=0.4667</i>	<i>F (5, 358) = 64.52, p&lt;0.0001</i>	<i>Residual SD= 7.492</i>		

**Reactions to the pandemic**

Table 6 describes most commonly experienced emotions, most commonly used coping strategies reported by participants, and construals. The three most common positive construals were gratitude, reframing and impermanence, and the three least common positive construals were growth, faith and duty.

**Table 6: Emotions, coping strategies, and construals in reaction to the pandemic**

Emotions	N (%)	Coping strategies	N (%)	Construals	N (%)
Anxiety/panic/ stress/ worry/fear	284 (78)	Working and studying	78 (21.43)	Acceptance	82 (22.53)
Anger/ irritability	97 (26.65)	Household chores	30 (8.25)	Solidarity	89 (24.45)
Gratitude	64 (17.58)	Staying productive	56 (15.39)	Downward comparison	88 (24.18)
Frustration	63 (17.31)	Having a routine	18 (4.95)	Reframing	129 (35.44)
Boredom/ discomfort	99 (27.2)	Hobbies	214 (58.79)	Gratitude	186 (51.10)
Loneliness	36 (9.89)	Learning something new	38 (10.44)	Altruism	73 (20.05)
Sadness/sorrow	54 (14.84)	Strengthening bonds with people with you	79 (21.70)	Impermanence	109 (29.95)
Helplessness	71 (19.51)	Nurturing plants and pets	18 (4.95)	Growth	68 (18.68)
Hopelessness	24 (6.59)	Staying connected with people away	54 (14.84)	Faith	51 (14.01)
Satisfaction/	20 (5.49)	Physical health	96	Hope	85 (23.35)

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Emotions	N (%)	Coping strategies	N (%)	Construals	N (%)
happiness/peace/contentment		care	(26.37)		
Feeling trapped/ claustrophobic	40 (10.99)	Active mental health care	12 (3.3)	Responsibility to others	46 (12.64)
Curiosity/interest	37 (10.16)	Gathering information	30 (8.25)	Pragmatism	84 (23.08)
Grief/ bereavement	21 (5.71)	Disconnecting from news/ media	25 (6.87)	Uncertainty	206 (56.59)
Compassion/pity	31 (8.52)	Social media + sharing memes	34 (9.35)	Worry about personal harm	121 (33.24)
Guilt/shame	9 (2.47)	Sleeping	40 (10.99)	Compassionate grief	206 (56.59)
Indifference/ numbness	10 (2.75)	Religion	10 (2.75)	Unpredictability	209 (57.42)
Hope	10 (2.75)	Helping others	10 (2.75)	Grief for loss of previous life	116 (31.87)
Lethargy/ sleepiness	7 (1.92)	Mindset change/ reappraisal based	51 (14.01)	Unfairness	47 (12.91)
Faith	6 (1.65)	Following social distancing protocol	19 (5.22)	Lack of preparedness	33 (9.07)
Others	55 (15.11)	Others	18 (4.95)	Denial	46 (12.64)
				Wishful thinking	15 (4.12)
				Vulnerability	19 (5.22)
				Questioning faith	6 (1.65)
				Isolation	66 (18.13)

The three most common negative construals were unpredictability, uncertainty and grief for loss of previous life, while the three least common negative construals were vulnerability, wishful thinking and questioning faith. Table 7 described the themes elicited in the responses to the question- what is the first thing you will do when the pandemic is over, and what are your learnings in response to this situation.

**Table 7: Themes- First thing to do when the pandemic is over, and change in perspective**

First thing to do	N (%)	Change in perspective	N (%)
Meeting people	120 (32.97)	Learnt that life is unpredictable	43 (11.81)
Going out in nature	38 (10.44)	Learnt importance of accepting and/or planning for uncertainty	14 (3.85)
Eating good food	40 (10.99)	Life is uncertain, hence important to make most of time and opportunities	18 (4.95)
Express gratitude/ pray	37 (10.17)	Increased gratitude and appreciation of life, learnt not to take things for granted	74 (20.33)
Resume work/ studies	42 (11.54)	Learnt what is actually important/ learnt to simplify life	18 (4.95)
Complete interrupted goals	9 (2.48)	Understood the power of God/ nature	17 (4.67)
Get back to routine	18 (4.95)	Valuing time for self-care/ introspection/ building self-reliance	23 (6.32)
Getting back to regular habits that involve going out	24 (6.6)	Realized specific things about themselves/ clarified own goals	30 (8.24)



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<b>First thing to do</b>	<b>N (%)</b>	<b>Change in perspective</b>	<b>N (%)</b>
Continue to take precautions	13 (3.57)	Learnt the importance of health and mental health	8 (2.2)
Make changes in life	28 (7.7)	Came to realizations about the way the world works	9 (2.48)
Travel	16 (4.4)	Understood own privilege	11 (3.02)
Helping others	9 (2.48)	Developed new values	10 (2.75)
Others	10 (2.75)	Yes- perspective changed, but unspecified	10 (2.75)
Haven't thought about it	16 (4.4)	No perspective change	88 (24.18)

## **DISCUSSION**

We studied the role of various demographic and social variables on subjective well-being and perceived isolation. We also examined whether psychological variables and personality variables can predict subjective well-being. In addition, we explored the kinds of responses that individuals had towards this novel situation in their lives.

### ***Age and gender***

Both age and (self-identified) gender were found to significantly affect subjective well-being, but no interaction effects were found. The youngest individuals showed the poorest well-being and the oldest showed the best well-being scores. Men showed better well-being compared to women and gender minorities. While gender did not have a significant effect on perceived isolation and there were no interaction effects, younger individuals reported more isolation compared to older ones.

Some of the potential reasons for the below age 34 demographic to show poorer well-being and higher isolation could be that the pandemic is likely to have affected their developmental goals of completing education, or establishing financial and career stability, or finding and building social networks. They may be more concerned about the long-term impact of this on their future. Future research can explore whether differences in perspectives towards life, perhaps stemming from a different set of previous life experiences about illnesses and other traumas, may be protective factors for the elderly by preparing them better for this pandemic (even though their risk for mortality is higher).

The poorer well-being of women and gender minorities may be explained using theories of gender and patriarchal impact. Women may have to shoulder more domestic responsibilities in the wake of this situation, and women and gender minorities as a disadvantaged group may also be at higher risk for domestic abuse.

Combining data for adolescents and young adults and for women, transgender and gender non-conforming individuals because of low sample sizes may be a limitation, as their experiences are likely to be distinct.

### ***Minority group membership and impact of COVID-19***

Neither minority group membership nor impact affected perceived isolation. We found that both these variables had significant main effects on subjective well-being, but no interaction effects. Individuals who belonged to multiple minority groups showed the poorest well-being, followed by those belonging to one minority group, while those who were not minorities showed the best scores. Those facing high impact from COVID-19 showed poorer well-being than those with a lower impact.

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The poorer well-being for those showing more impact is understandable given the cumulative impact of all these factors adding to their levels of distress. A limitation here is that all kinds of impact may not be comparable, and hence number of impact factors may not be an appropriate measure of impact; further studies can explore these differentials.

The finding with respect to minorities could be explained by Social Stress Theory (Meyer, Schwartz & Frost, 2008). Individuals belonging to minority groups are more socially disadvantaged and deal with stigma and discrimination on an everyday basis, and that contributes to poorer mental health outcomes. We examined intersectionality here at a basic level, by comparing those belonging to one minority group to those belonging to multiple. Multiple minorities are likely to face a double burden of marginalization and consequently, this may contribute to poorer well-being outcomes, and this is independent of whether they were exposed to low or high actual impact due to COVID-19.

### ***Preexisting mental health conditions***

Subjective well-being scores were significantly lower, and perceived isolation scores were significantly higher, for individuals with pre-existing mental health conditions, than for those without prior diagnoses. We also asked individuals to assess whether they believed there was a change in their mental health status due to COVID-19. Many more participants (45.97%) with prior diagnoses believed that their mental health had worsened (compared to 23.46% of those with no diagnoses). Those with prior mental health conditions may be a vulnerable population; however, we did not control for various other factors such as treatment and their mental health status just before the pandemic; also, not having a prior diagnosis does not imply the lack of a preexisting mental health condition as individuals may not have sought treatment.

### ***Personality and psychological variables***

We were interested in five variables- three cognitive/ appraisal related variables specific to COVID-19- perceived threat, perceived controllability, perceived isolation, and two personality traits- general self-efficacy and intolerance of uncertainty. Our regression model was highly significant and accounted for 46% of the variance in subjective well-being scores, and each individual variable was found to significantly predict subjective well-being. The importance of perceived threat, perceived controllability and self-efficacy can be explained by the protection motivation theory (DeZwart et al, 2009, Floyd, Prentice & Rogers, 2000). Individuals' health behaviours and level of distress in the face of a health crisis may be affected by how severe they believe the crisis is and how likely it is to affect them personally, as well as their belief in whether it can be controlled and belief in their own ability to cope with it.

Pandemics such as the COVID-19 are accompanied by a lot of uncertainty about varied factors, such as their own risk, when the pandemic will end, what the potential short and long term consequences of it could be, when lockdowns and social distancing measures will end and 'normality' will resume, etc. Individuals with a high intolerance of uncertainty are likely to find it difficult to cope with so many unpredictable factors (eg Taylor 2009) and consequently may have poorer well-being.

### ***Reactions to COVID-19***

While 22.64% of the sample reported that their mental health had worsened due to the situation, 31.59% reported that their mental health hadn't been affected and 19.23% of the

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sample reported an improvement in their mental health status. While fear and anxiety (the most commonly felt emotions), and anger, frustration and sadness, are to be expected at such times, individuals also reported experiencing a range of pleasant emotions such as gratitude, curiosity and interest, satisfaction, happiness and hope. Finding ways to use time, be it through work, household chores, studying, hobbies, and learning something new, or strengthening connections with loved ones with them (or drawing boundaries if these relations were toxic) and loved ones they couldn't meet, seemed to be the most commonly using coping strategies. Most participants reported having thought about what they would do once the pandemic ended, and their choices reflected the things that they seemed to miss the most due to the lockdown and social distancing such as companionship, the freedom to go out and eat out, or a desire to resume their usual day to day life. While most participants reported that the uncertainty, unpredictability of the situation bothered them and they grieved for the loss of life as they knew it, positive construals such as gratitude, reframing the situation and reminding self of the impermanence of the situation may have been amongst the construals that helped to cope. Many participants reported that the pandemic had changed their perspective about themselves and about life, and many felt a greater gratitude, and an appreciation for life and things they usually took for granted.

All of the above reflect that individuals show a multiplicity of different responses to a pandemic, and a one-size-fits-all explanation may not be adequate. Not only do individuals react emotionally and find their own ways to cope, but they also actively try and make sense of what is happening and find some meaning in their experiences. It is necessary to explore this sense and meaning making process to better understand why some individuals show long term mental health concerns while others demonstrate resilience.

### ***Implications for intervention and prevention***

Assessing mental health status of individuals during pandemics is important. Individuals with pre-existing mental health conditions, those belonging to minority groups, individuals who have multiple impact factors, women, gender minorities and younger individuals, may be most at risk, and as such, targeted intervention programs can be geared towards these groups. Making psychiatric and therapeutic services and medication more accessible is necessary. We need to address the spectrum of health, distress and disorder, rather than only developing interventions for those showing illness. A community prevention program can focus on building self-efficacy beliefs and tolerance of uncertainty, developing realistic threat and controllability appraisals, learning a wide range of coping strategies, and collectively exploring sense and meaning making mechanisms. Prevention programs should be intersectional in their approach, rather than remaining blind to the impact of marginalization and other social mechanisms.

### ***Limitations***

Results may not be entirely representative of the population at large given the use of convenience sampling. Individuals diagnosed with COVID-19 and in quarantine were largely absent. Use of the internet for data collection may exclude individuals without internet access, low income groups, elderly individuals, uneducated individuals, etc. Despite having global participation, we haven't explored cultural factors in this paper.

## **CONCLUSION**

While the pandemic is a global phenomenon, age, gender identity and the social groups that we belong to, and the impact we directly face due to it, affect our well-being. In addition,

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our well-being is likely to depend on who we are as individuals, with the unique personality traits, cognitions and perceptions, that we have. The phrase that “we are all in the same boat” doesn’t reflect the diversity of impact by the pandemic, and it would be more useful to develop intervention and prevention programs and give out public service messages that are attuned to this diversity.

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***Conflict of Interest***

The author declared no conflict of interest.

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