Mental well-being of professionals during Covid-19 lockdown: A study through the introduction of JUMA framework and JMI

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ABSTRACT

Covid-19 pandemic and related global lockdown brought the world to a standstill. Apart from the infections and deaths, the lockdown was also impacting the mental well-being of professionals. This could be because of extended lockdowns, work from home (or lack of it), economic uncertainty or other factors. There was a need to understand and measure the impact due to Covid-19 lockdown on professionals. To address this need, a study was conducted amidst the lockdown. The study was based on three themes, viz. Simplicity, Quantifiability, and Generation of Non-obvious insights. Under the theme of Simplicity, a new JUMA framework was designed and a survey (titled 'Lockdown & me') was launched for the carefully chosen samples. The framework was scientific, yet easy to use for a lay person. The survey was well received and responded, and the data was objectively aggregated using the new JMI (mental well-being Index) in line with the theme of Quantifiability. Finally, the data was studied for patterns and analysed using statistical techniques like ANOVA. This led to some critical Non-obvious insights - like 'professionals of 32-41-year age group are most stressed' or 'women are more stressed than men'.

Keywords— COVID-19, Lockdown, JUMA framework, JMI, Mental well-being, Stress

1. INTRODUCTION

Global pandemic of coronavirus brought the world to a stand-still and the Covid-19 lockdown brought about sudden changes to the lifestyle which were unexpected earlier. Everyone was concerned about the spread of coronavirus infection and the death toll, however, there was a subtle aspect of mental health that was getting missed out. The global pandemic, lockdown, uncertainties and lifestyle changes had started to play on the minds of people. The relationship between lockdown and increase in mental distress has already been confirmed (Sibley, et al., 2020). Disease outbreaks and their relationship with increased anxiety has also been mentioned (Rubin & Wessely, 2020). There was a certain impact on the mental well-being that was being felt. This was possibly due to:

  (a) Not able to go out, go to office
  (b) Not being able to work in some cases
  (c) Economic uncertainty
  (d) Too much of use of devices

There was a need to study the impact of the new-found lifestyle and situation and its impact on the mental health of people. To understand the demographics and mental well-being a survey was conducted by reaching out to professionals. The anonymous survey was designed to capture the demographics, and well-being-related challenges faced by the professionals (purposive sampling), who were undergoing government-mandated lockdown owing to Covid-19. Further, the participants were requested to forward the survey forms to other professionals (snowball sampling) as well. The questions were divided into two main sections: Demographics, and mental well-being. The questions in the mental well-being section were specifically designed to cover the areas of anxiety, depression and stress.

The survey was conducted using google forms, over the internet using WhatsApp, LinkedIn and Facebook. The survey window was open for five days and the survey was well received. Since it was one of the very few surveys on mental well-being during Covid-19 lockdown, it received good number of responses. Data was analysed using box plots, ANOVA method and various data slicing techniques, the intent being to understand the relationships and significance between various variables.

Some non-obvious Insights were drawn from the data analysis and statistical significance.

2. MATERIAL AND METHODS

Since the Covid-19 lockdown continued over a month (in several countries it continued over two months), the mental health had started to get impacted and it was important for the study to be conducted in a timely manner in spite of lockdown. This prompted the use of internet-based outreach to the participants to assess their mental health in real time.

The study was conducted through following steps:

2.1. Setting up of Goal
Goal: To understand the impact of Covid-19 lockdown on mental well-being of people

2.2. Target population/Participants
Professionals who were following the 'stay-at-home' mandate from the government, were the targeted segment. Choosing this narrow scope helped in identifying common factors that might have an impact on most of them. It was restricted to people working in the technology sector, services, manufacturing and education industry; and performing Individual contributor, managerial or trainer roles.

2.3. The mental well-being assessment framework (JUMA Framework) and JMI
The specific need to assess mental well-being during a pandemic related lockdown prompted the authors to develop a tailor-made framework for such situations.

There were various open frameworks available to measure mental wellness and several of them were studied to understand its utility for the Covid-19 lockdown situation. Most of them were highly clinical in nature and were not relevant for lay-person's survey. Hence, there was a need to define a new framework for studying impacts of pandemic-related lockdowns that were enforced by the governments on the mental well-being of people. After much deliberations and research, a new JUMA framework and JM Index was designed to conduct the study.

This framework, called *JUi-Mugdha mental well-being Assessment framework (JUMA framework)*, which was developed by the authors, was specifically tuned for measuring the impact to mental well-beings of working professionals due to pandemic-related lockdowns. To make it measurable, **JMI (Jui-Mugdha Index)**, an aggregated index to assess mental well-being levels during such lockdowns, was introduced.

2.3.1. Sampling technique: As depicted in figure 1, a combination of purposive sampling and snowball sampling was employed. Professionals were deliberately targeted as participants to have a focused study; hence the age groups of participants were over 21 years. Further, the participants were encouraged to get other professionals to participate in the study. This was specifically done to get more of targeted participants in a shorter span of time.
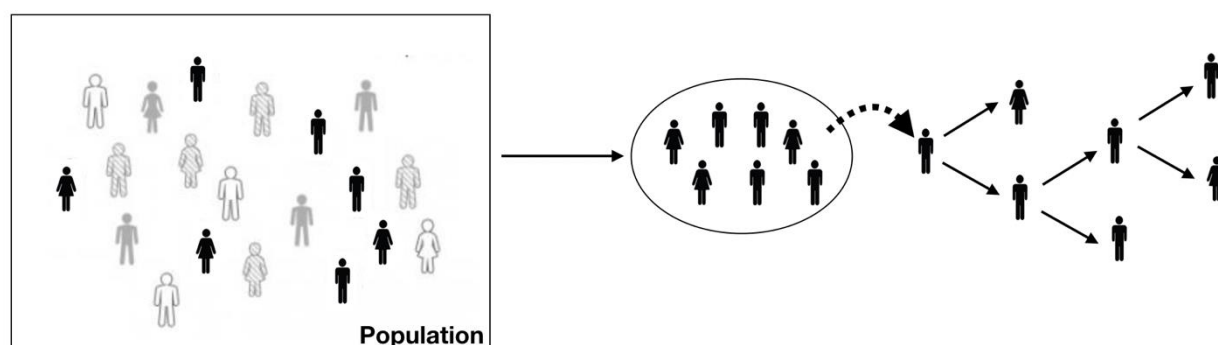

Fig. 1: Combination Sampling was used in the study (Purposive Sampling), (Exponential Snowball Sampling)

2.3.2. Demography-related categories:
2.3.2.1. Category-Gender: Male, Female, prefer not to say. Gender-wise classification was essential since it was obvious that gender could play an important role in a person's ability to manage the impact due to mental stress. This assumption was based on hunch but proved to be true!

2.3.2.2. Category - Age: Participants were divided into following four age groups:
- 22-31 year: This age group was at the beginning of the career (yet to establish themselves) and some of them may have familial responsibilities. Their responses were expected to be different than the seniors, and it again was proved to be true.
- 31-41 year: This age group was fairly established and matured and were expected to respond differently to the mental stress situations
- 41-51 year: A very matured, seasoned and established sub-group
- 51+ year: Veterans, who were expected to have the least impact due to mental stress situations as they were expected to have enough financial stability and mental maturity to handle the lockdown situation.

2.3.3. Design of questionnaire: The questions were designed to capture the following information about the participants:
- Demographic information
- Work related information
- Information about mental well-being (anxiety – depression – stress type)

While doing the survey, anonymity of participants was maintained all the time. No question in the survey referred to any information which was personally identifiable (Name, Phone number, address, email address was not captured at all). Also, no personal information about participants was captured while conducting the survey.

2.3.4. Capturing the responses: In the questionnaire (please check Appendix A), there is a dedicated section for mental well-being related questions. There are 13 questions in this section. Responses to these are in the following range:

Zero   (0) : This signifies that all is well and there is no impact due to mental stress
One   (1) : Sometimes there is an impact due to mental stress
Two   (2) : Several times there is an impact due to mental stress
Four   (3) : Big problem! There is an impact due to mental stress all the time.

2.3.5. JMI, the index: JMI makes it easy to objectively measure and compare the stress-levels of various subgroups. Following are the details about the JMI scale:

Range of scale	: 1.25 to 5	: Any real number between 1.25 to 5 including the limits
Lowest value	: 1.25	: It implies absence of any stress
Threshold value	: 3	: JMI over 3 means higher level of mental well-being challenges.
Highest value	: 5	: It means a highest level of mental stress

The rating scale for capturing responses starts with zero, instead of one. This is to highlight to the participant that zero means absence of any impact. This is to make it easy for participant to understand the scale without any confusion. The responses are aggregated and transformed into a 1.25 – to – 5 scale to generate JMI.

For every question Q_i, a response R_i is recorded. All these questions are tagged as mandatory; hence no question can be skipped.

$$0 <= R_i <= 3$$

$$\text{JMI (Jui} - \text{Mugdha Index)} = \frac{(\sum_1^{13}[R_i + 1])}{13 * 4} * 5$$

2.3.6. Launch of survey: Since it was a global lockdown, the survey was launched through online platforms, viz. WhatsApp, Facebook and LinkedIn (this being a survey for professionals, LinkedIn was included). Survey was launched in English language and was well received and over 560 responses were received in a span of 5 days. Please check Appendix B and C for details about the actual communication to participants as well as the actual survey form. Data from the survey was received in the google sheets. It was analysed for patterns as well as significance of relationships between the variables.

3. RESULTS
3.1. Population Distribution
Total number of respondents: 560
There were three usual dimensions, namely gender, location and age. There also were a few novel dimensions that gave some good insights about the population distributions.

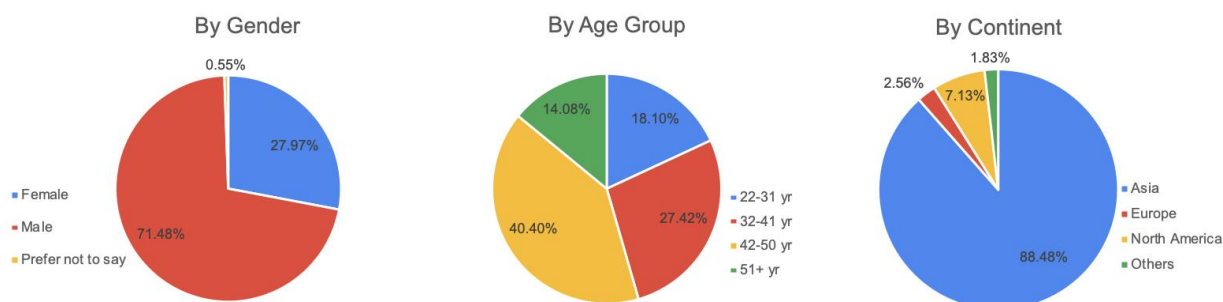### 3.1.1. Usual Dimensions:

Fig. 2: Population Distribution by usual dimensions (gender, age and location)

The distribution of population as per the usual dimensions of gender, Age and location are depicted in Fig. 2.

3.1.1.1. Gender-wise: 71% men participated in the survey as against 28% women. It was always expected that there would be less women participating in the survey. The respondents gender ratio was almost in line with the gender ratio usually seen in the industry. Thus, it was representative of the reality. About 1% didn't specify gender.

3.1.1.2. Location-wise: 88% respondents were from Asia, 7% from North America, 2.5% from Europe and 2.5% from other continents (Australia, Africa). The survey was launched from India, and it was always expected to have more participants from India (Asia). It was a pleasant surprise to receive several responses from US and Europe!

3.1.1.3. Age-wise: 40% respondents were between 40-to-50-year-old. 27.5% were between 32-to-41 year, 18.1% were between 22-to-31-year-old and 14% were more than 51-year-old. Since the targeted participants had to be working professionals, age below 22 years was not allowed. Also, the classification in age brackets grouped similar individuals together there by simplifying the survey form.

3.1.2. Novel dimensions: Population distribution could also be observed by some novel dimensions like 'sole-bread-earner' status, 'no. of dependents' status, industry, role, ability to work from home and screen time (as depicted in Figure 3).
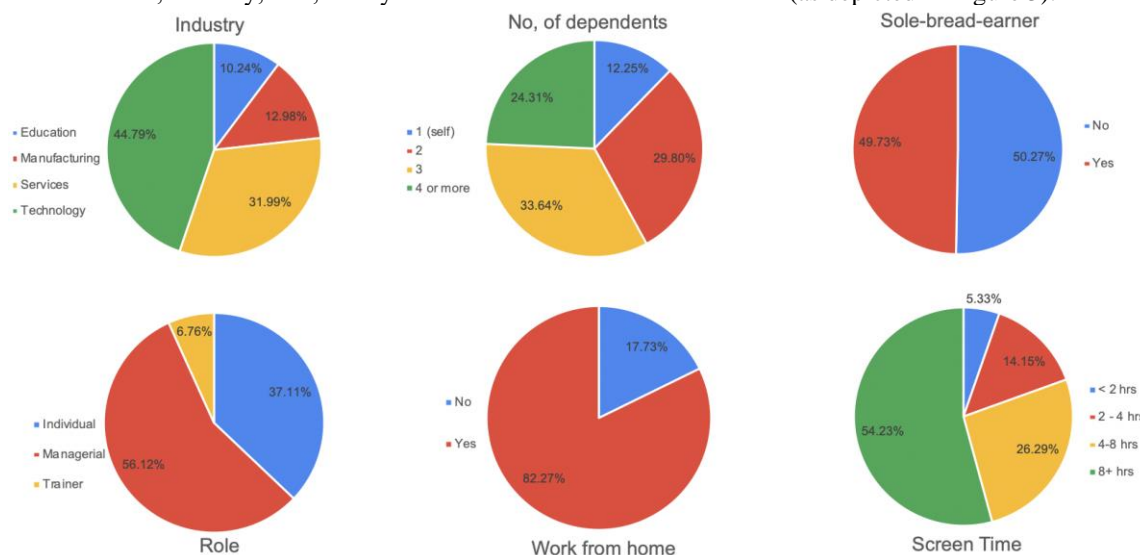

Fig. 3: Population Distribution by novel dimensions (Industry, role, no. of dependents, work from home, sole-bread-earner status and screen time)

3.1.2.1. Sole-bread-earner-wise: Half of the population were sole bread earner. This was exactly as per the expectations. However, the impact of 'sole-bread-earner' status on the mental stress turned out to insignificant. This was an important learning.

3.1.2.2. No. of dependents-wise: Only 12% respondents had no dependents other than themselves. Out of the 88% remaining respondents, about 60% of the respondents had 3 or more dependents. 30% of the respondents had 1 dependent apart from themselves. This also has to do with the age criteria of the survey.

3.1.2.3. Industry-wise: 45% of respondents belonged to technology industry. 32% belonged to services industry. 23% are from manufacturing or education sector.

3.1.2.4. Role-wise: 55% were performing a managerial role who have to deal with people every single day. 37% were individual contributors, who can work in silos and may not need to interact with other team members daily. 8% are trainers (who teach pupils).

3.1.2.5. Ability-to-work-from-home-wise: About 80% of participants had the permission as well as facility to work from home. Remaining participants were either not allowed to work from home or were not equipped to work from home. This could be people working in the manufacturing sector. This was on the expected lines.

3.1.2.6. Screen-time wise: Amount of time spent in using a computer (desktop / laptop), smart phones, tabs and even television was considered an important factor (independent variable) prior to the survey. It turned out that the factor is important, but its correlation to mental well-being is slightly different than anticipated. 55% people spend over 8 hours on screen time, which is very high!

3.2. Mental well-being related findings
3.2.1. Gender wise mental well-being: Overall, it was observed that women participants have higher population of respondents with JMI of 3 or more (measured as 35% percentage of the population within the gender-group). This was an important finding and definitely worth highlighting. This is clear from Figure 4. Men on the other hand had 28% of respondents within the gender group who had their JMI of 3 or more.
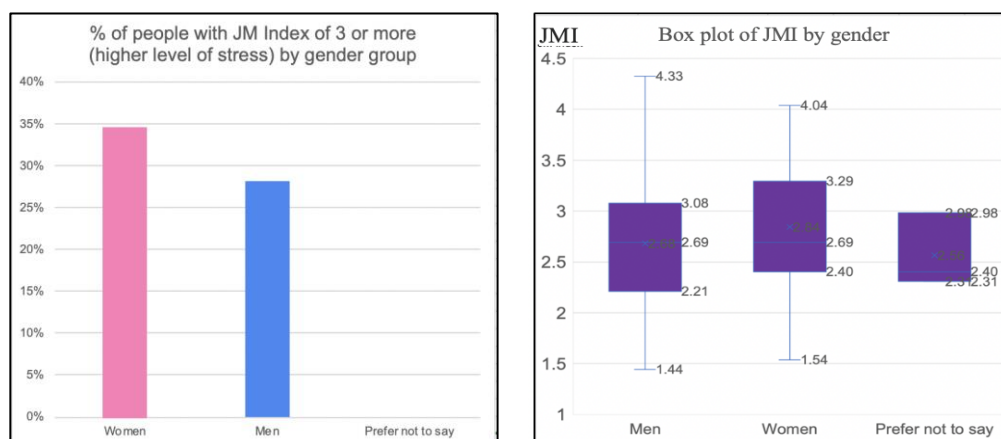

Fig. 4: Gender and percentage population with JMI > 3 and box plot of Gender and JMI distribution
Note: Percentages represent share within the gender group

This gender wise difference in responding to the anxious situations, has also been corroborated in the literature (Akiskal & Akiskal, 2005), (Wang, et al., 2007).

3.2.2. Age wise mental well-being: Overall, it was observed that participants in the 22-41-year age group had quite high JMI (representing higher level of impact due to stress) compared to their senior counterparts. 37% of 22-31-year age group had a JMI of more than 3 and 38% of 32-41-year-old had JMI more than 3. This is a significantly important finding and defies the usual assumption. This is clear from the Figure 5 and Table 1 and Table 2.
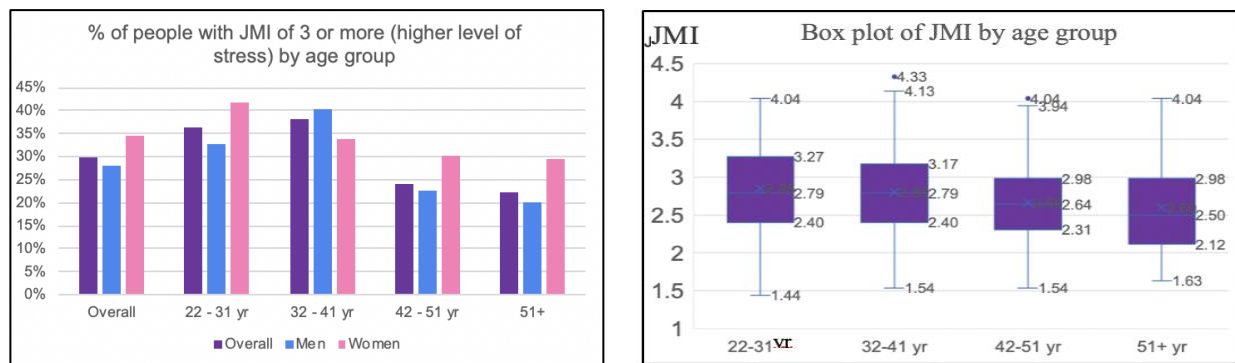
Fig. 5: Age group and percentage people with JMI > 3 and box plot of age group and JMI distribution
Note: Percentages represent share within the age group

Table 1: Descriptive statistics of JMI by age group:

22-31 year		32-42 year		43-51 year		51+ year	
Mean	2.850962	Mean	2.800481	Mean	2.662689	Mean	2.599852
Standard Error	0.060449	Standard Error	0.046625	Standard Error	0.037158	Standard Error	0.065897
Median	2.788462	Median	2.788462	Median	2.644231	Median	2.5
Mode	2.788462	Mode	2.403846	Mode	2.596154	Mode	2.115385
Standard Deviation	0.604491	Standard Deviation	0.57483	Standard Deviation	0.55613	Standard Deviation	0.581988
Sample Variance	0.36541	Sample Variance	0.330429	Sample Variance	0.30928	Sample Variance	0.33871
Kurtosis	-0.6249	Kurtosis	-0.22276	Kurtosis	-0.31965	Kurtosis	-0.61337
Skewness	-0.08945	Skewness	0.022017	Skewness	0.178277	Skewness	0.508623
Range	2.596154	Range	2.788462	Range	2.5	Range	2.403846
Minimum	1.442308	Minimum	1.538462	Minimum	1.538462	Minimum	1.634615
Maximum	4.038462	Maximum	4.326923	Maximum	4.038462	Maximum	4.038462
Sum	285.0962	Sum	425.6731	Sum	596.4423	Sum	202.7885
Count	100	Count	152	Count	224	Count	78

Table 2: ANOVA for JMI by age group:

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	4.543762	3	1.514587	4.59927279	**0.003439**	2.621108175
Within Groups	181.1206	550	0.32931			
Total	185.6644	553				

The P-value of 0.003439 is statistically significant (since it is less than 0.05) and provides a strong evidence against null hypothesis. This was consistent with the JMI patterns found in case of men, where over 40% of men in the 32 – 41 age group had JMI of more than 3! In case of women though, the pattern was a bit different. Here, the youngest professionals' women seem to have the highest percentage of JMI within the age group.

3.2.3. Ability to work from home: 43% of people who are not able to work from home for some reason (either they are not allowed or equipped) are having JMI of 3 or more (higher stress) as compared to the one who are able to work from home of which only 27% are having JMI of 3 or more (higher stress). This is an important finding and is a non-obvious one (Ref. Fig. 6, Table 3 & 4)
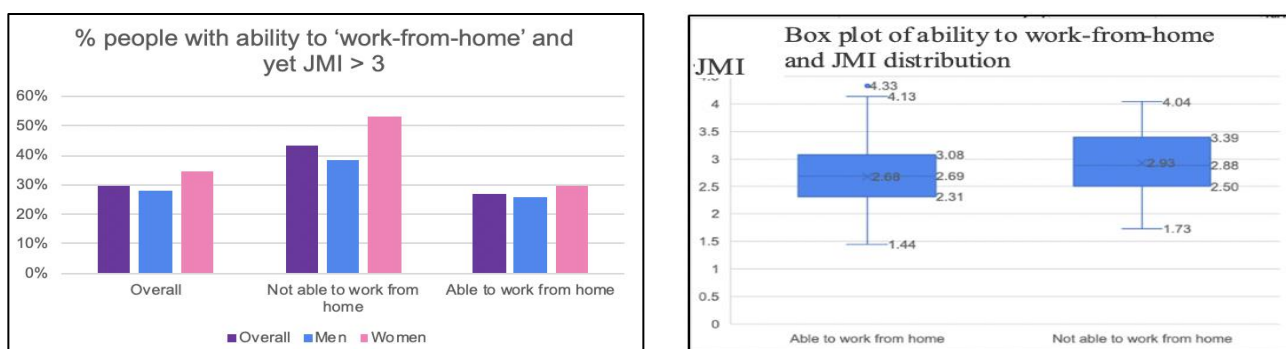

Fig. 6: Work-from-home and with JMI > 3 and a box plot of work-from-home and JMI distribution
Note: Percentages represent share within the 'work-from-home' and not-working-from-home' subgroups

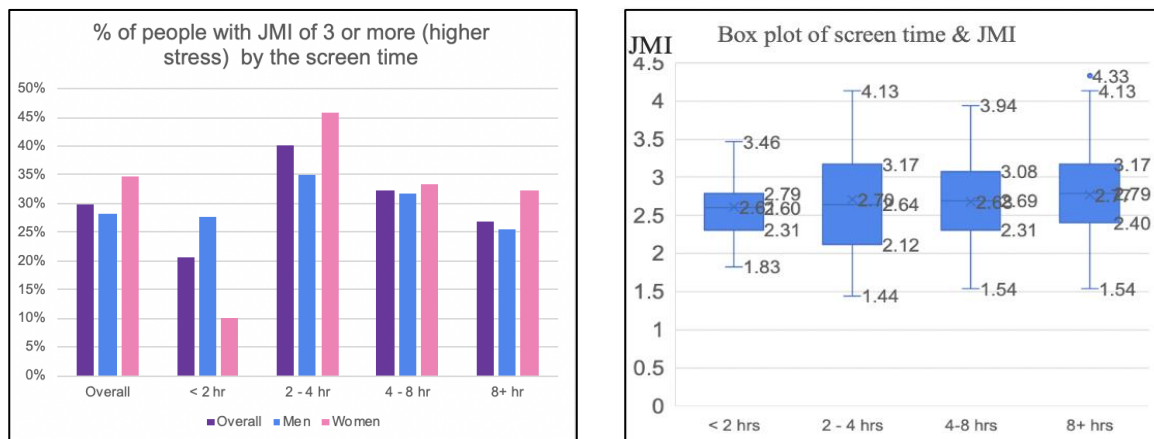**Table 3: Descriptive Statistics of JMI by 'ability to work-from-home'**

	No		Yes
		Yes	
Mean	2.929749	Mean	2.681765
Standard Error	0.056794	Standard Error	0.026892
Median	2.884615	Median	2.692308
Mode	2.596154	Mode	2.788462
Standard Deviation	0.562231	Standard Deviation	0.574249
Sample Variance	0.316104	Sample Variance	0.329762
Kurtosis	-0.77119	Kurtosis	-0.38639
Skewness	-0.06108	Skewness	0.18887
Range	2.307692	Range	2.884615
Minimum	1.730769	Minimum	1.442308
Maximum	4.038462	Maximum	4.326923
Sum	287.1154	Sum	1222.885
Count	98	Count	456

Table 4: ANOVA of JMI by 'ability to work-from-home'

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	4.960547	1	4.960547	15.15309	**0.000111**	3.85836
Within Groups	180.7038	552	0.327362			
Total	185.6644	553				

The P-value of 0.000111 is statistically significant (since it is less than 0.05) and provides a strong evidence against null hypothesis. Gender wise, women who are not able to work from home, have a slightly higher JMI (53% of the subgroup population) as compared to the men (48%).

3.2.4. Screen time wise: People who were spending less than 2 hours on screen (smart phone, laptops, TV, tabs) were having lower JMI (less stress) generally speaking. However, members spending 2-4 hours of time on screen were having JMI of 3 or more (higher stress) and the JMI decreased as the screen time is increased. Please refer figure 7, Table 5 and 6.

Fig. 7: Screen time and percentage people JMI > and box plot of Screen-time and JMI distribution
Note: Percentages represent share within the specific 'screen-time' subgroups

Table 5: Descriptive Statistics of JMI by screen time sub-groups

< 2 hrs		2-4hrs		4-8 hrs		8+ hrs	
Mean	2.653846	Mean	2.903107	Mean	2.728617536	Mean	2.686538
Standard Error	0.099157	Standard Error	0.063022	Standard Error	0.052811571	Standard Error	0.03209
Median	2.596154	Median	2.836538	Median	2.692307692	Median	2.692308
Mode	2.403846	Mode	2.788462	Mode	2.403846154	Mode	2.596154
Standard Deviation	0.543107	Standard Deviation	0.556597	Standard Deviation	0.631534533	Standard Deviation	0.55582
Sample Variance	0.294965	Sample Variance	0.3098	Sample Variance	0.398835866	Sample Variance	0.308935
Kurtosis	0.179055	Kurtosis	-0.69225	Kurtosis	-0.711343817	Kurtosis	-0.29034
Skewness	0.526949	Skewness	-0.05512	Skewness	0.194373319	Skewness	0.109686
Range	2.115385	Range	2.403846	Range	2.596153847	Range	2.884615
Minimum	1.730769	Minimum	1.634615	Minimum	1.538461538	Minimum	1.442308
Maximum	3.846154	Maximum	4.038462	Maximum	4.134615385	Maximum	4.326923
Sum	79.61538	Sum	226.4423	Sum	390.1923077	Sum	805.9615
Count	30	Count	78	Count	143	Count	300

Table 6: ANOVA of JMI by screen time sub-groups

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.07087	3	1.023623	3.086415664	**0.026866978**	2.621197354
Within Groups	181.415	547	0.331654			
Total	184.4858	550				

The P-value of 0.026866978 is statistically significant (since it is less than 0.05) and provides a strong evidence against null hypothesis. Gender wise, women who have a screen time of 2 -4 hr have a slightly higher JMI (45% of the subgroup population) as compared to the men (35%).

The relationship between depressive temperament and social contacts has also been highlighted in the literature (Walsh, Brown, Barrantes-Vidal, & Kwapil, 2012). The relationship between increased screen time and its impact on sleep and mood has already been confirmed (Cellini, Canale, Mioni, & Costa, 2020).

3.2.5. Industry-wise: The survey primarily targeted four industries – Technology, Services, Manufacturing and Education. While the participation of each industry varied quite a bit, the stress-level as well varied a lot across age groups and gender. Overall 22-41 years is the one with maximum population with JMI > 3 (stressed out). 51+ year population generally remained least stressed. Fig. 8 and Fig. 9 provides comparative details by industry and age group.
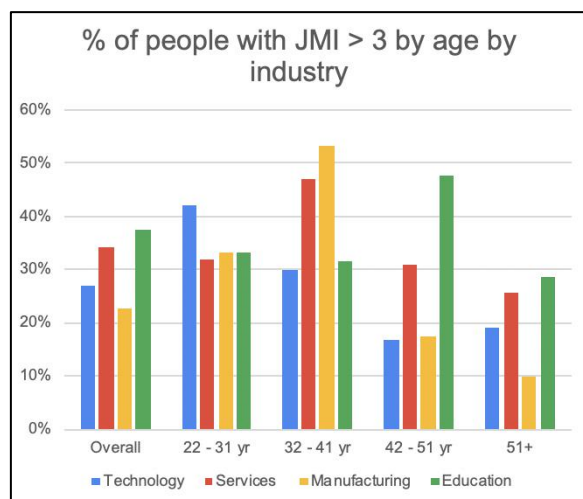
Fig. 8: Industry wise age groups with JMI > 3

3.2.5.1. Industry-wise: Technology Industry: Overall, in technology industry, the youngest age group (22-31 year) has the highest percentage (42%) of people with JMI of 3 or more. This is definitely a non-obvious insight. As the age group becomes senior, the percentage of such people reduce.

3.2.5.2. Industry-wise: Services Industry: Overall, in the services industry, the 32-41-year age group has the highest percentage of people (45%) with JMI of 3 or more. This is again a non-obvious insight. As the age group becomes senior, the percentage of such people reduce.
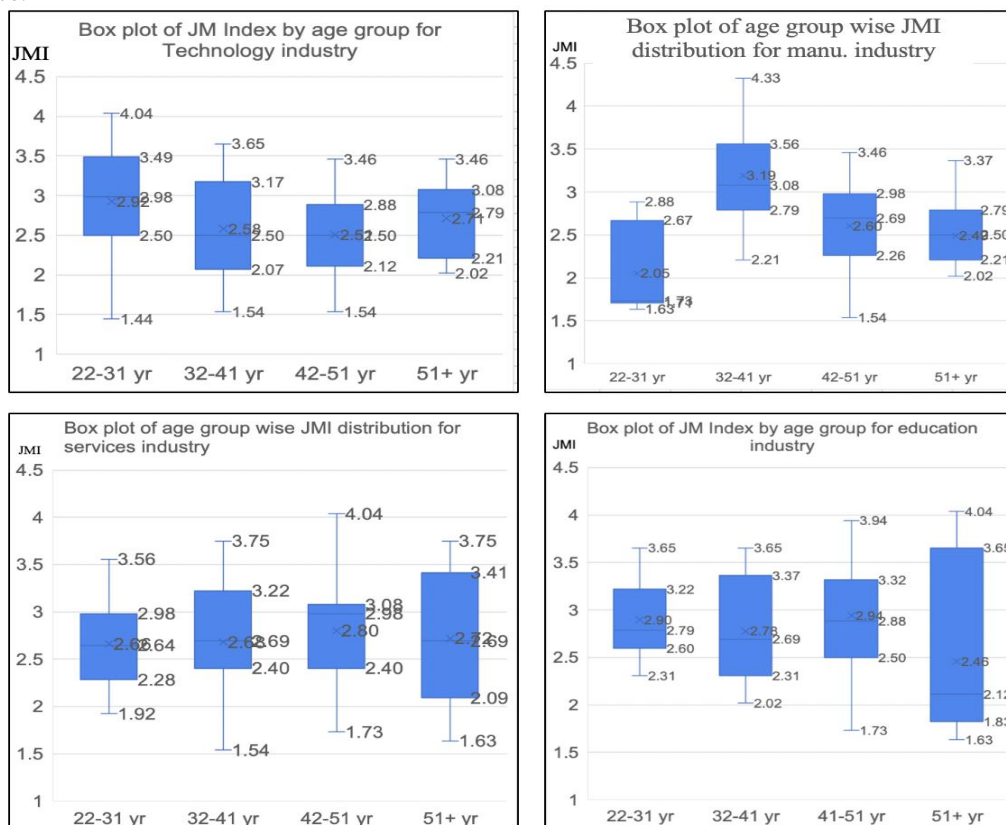
Fig. 9: Percentage people in Tech., Serv., Manu. and Edu. With JMI > 3 and JMI distribution
Note: Percentages represent share within the specific industry's age subgroups

3.2.5.3. Industry-wise: Manufacturing Industry: Overall, in the manufacturing industry, the 32-41-year age group has the highest percentage (52%) of people with JMI of 3 or more. This is again a non-obvious insight. As the age group becomes senior, the percentage of such people reduce.

3.2.5.4. Industry-wise: Education Industry: Overall, in the education industry, the 42-51-year age group has the highest percentage (47%) of people with JMI of 3 or more. This is again a non-obvious insight. Other age groups have relatively less such percentage. Box plot highlights the wide range of diverse responses from the senior most sub-group.

4. DISCUSSION
Developing the JUi-Mugdha mental well-being Assessment framework (JUMA framework), provided an objective way of assessing the status of mental well-being of professionals. It offered an easy to comprehend-and-respond approach to getting inputs from the respondents. While it provided for a scientific way of understanding the status of mental well-being (in the context of anxiety – depression – stress), it didn't include any complex-to-comprehend or uncomfortable questions. This made it easy for the respondent to understand and respond to the questionnaire in about 2-min, which was unique!

Further, devising the JMI (Jui-Mugdha Index), an aggregated index to assess stress levels during such lockdowns, made it easy to objectively measure and compare the stress-levels of various subgroups. Analysis of the respondent's data using the JMI and statistics provided some unique opportunity to understand mental state of the professionals during lockdown.

Key findings of the survey include:
- 22-41-year age group had very high percentage of population with JMI of over 3 (representing higher level of impact due to stress) compared to their senior counterparts. 37% of 22-31-year age group had a JMI of more than 3 and 38% of 32-41-year-old had JMI more than 3. This was confirmed further through the P-value of 0.003439.
- Among the population of professionals who are not able to work from home, 42% have JMI of over 3, which is concerning. This was confirmed further through the P-value of 0.000111.
- People with less than 2 hour of screen time have the least population who is stressed out (JMI $>= 3$). This was confirmed further through the P-value of 0.026866978.
- Women have a higher percentage of stressed out population (~35%) as compared to men (~27%)
- Among the young women population between 22 – 31 year of age, percentage of those with JMI of over 3 are 42% as compared to men who have 37% of population from 32-41 year of age most stressed.

5. CONCLUSION
Based on the JUMA framework, survey responses, quantification using JMI, analysis of data using ANOVA and other statistical techniques, following can be concluded:
- JUi-Mugdha mental well-being Assessment framework (JUMA framework) provides for an easy to understand, respond and analyse option for conducting survey and study the impact to professionals' mental well-being due to a pandemic-related lockdown. It is based on scientific concepts (anxiety, depression and stress) and yet easy to understand by any lay person. Simplicity is the hallmark of the JUMA framework. This study serves as the validation of the JUMA framework as it proves the hypothesis (e.g. age and gender wise impact of covid-19 lockdown) to be true.
- JMI (Jui-Mugdha Index) is an easy to calculate aggregation index for objectively quantifying the impact to mental well-being professionals due to pandemic-related lockdown.
- Mental well-being of professionals in the age group of 32-41 year is most impacted due to the Covid-19 lockdown.
- People who are not able to work from home are facing much bigger mental stress as compared to those who are able to work from home.
- Professionals with less than 2-hour of screen time are least stressed in spite of Covid-19 lockdown.
- All things being equal, women are mentally more stressed than men due to Covid-19 lockdown.

If the government or companies are looking to address the mental well-being related concerns, then the above analysis could be useful in targeting the right audience with the right measures.

6. AUTHOR CONTRIBUTIONS
Mugdha Keskar: Conceptualization, methodology, JUMA framework (except JMI), draft preparation, application of ANOVA

Jui Keskar: JMI (including Index calculations), Designing of Survey messages (including logo), outreach, data analysis, charting, review and editing

All authors have read and agreed to the published version of the manuscript.

7. ACKNOWLEDGEMENT
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APPENDIX

APPENDIX A: JUi-Mugdha mental well-being Assessment framework (JUMA framework)

JUMA Framework is specifically designed for assessing the mental well-being of professionals during pandemic related lockdowns. The key highlights of this framework are its simplicity and quantifiability. The main components of the framework are:

- The combination of purposive sampling and exponential snowball sampling techniques
- Effective use of social media to reach out to the targeted population
- Easy to understand and yet scientific questionnaire to understand the mental well-being related challenges faced by the professionals undergoing pandemic related lockdown.
- A quantitative way of aggregating and comparing the stress levels using JMI (mental well-being index named after the authors)

Questionnaire

The questionnaire of JUMA Framework has three sections:

- Demographic Information: No personally identifiable information is sought here
- Work related information: No specific details about the workplace is sought here
- Well-being information: No specific details about actual health condition is sought here

Complete anonymity is ensured while capturing the data. Well-being Information section has 13 questions. Following is the significance of the responses to each of the question under this section:

Zero	(0)	: This signifies that all is well and there is no impact due to mental stress
One	(1)	: Sometimes there is an impact due to mental stress
Two	(2)	: Several times there is an impact due to mental stress
Four	(3)	: Big problem! There is an impact due to mental stress all the time.

Such survey can easily be launched completely online using the social media networks and responses can be acquired in real time. The elements of the survey questionnaire are given in Table 7.

Table 7: Survey Questionnaire
Demographic Information

1.a: Continent you live in:			
○ Asia	○ Europe	○ North America	○ Others
1.b: Age			
○ 22 - 31	○ 32 - 41	○ 42 - 51	○ 52 +

1.c: Gender		
○ Female	○ Male	○ Prefer not to say

1.d: Are you the sole bread earner of your family?	
○ Yes	○ No

1.e: Number of dependent family members			
○ 1 (self)	○ 2	○ 3	○ 4 or more

Work Information

2. a: Industry			
○ Manufacturing	○ Technology	○ Services	○ Education

2.b: Type of role		
○ Managerial	○ Individual	○ Trainer

2.c: Does the role primarily involve		
○ Individual	○ Mentorship	○ Teamwork

2.d: Are you allowed / able to work from home	
○ Yes	○ No

2.e: Daily screen time these days (computer and/or mobile)			
○ < 2 hr	○ 2 – 4 hr	○ 4 - 8 hr	○ 8 + hr

Well-being Information

3.a: Have you been able to concentrate on work like before?			
○ 0	○ 1	○ 2	○ 3

3.b: Have you been able to sleep well?			
○ 0	○ 1	○ 2	○ 3

3.c: Have you been able to make decisions like before?			
○ 0	○ 1	○ 2	○ 3

3.d: Have you been feeling stressed due to any reason?			
○ 0	○ 1	○ 2	○ 3

3.e: Have you been able to enjoy day to day activities?			
○ 0	○ 1	○ 2	○ 3

3.f: Do you sometimes feel unhappy or sad these days?			
○ 0	○ 1	○ 2	○ 3

3.g: Is there a feeling of loss of confidence these days?			
○ 0	○ 1	○ 2	○ 3

3.h: Have you been able to wind down / relax these days?			
○ 0	○ 1	○ 2	○ 3

3.i: Do you feel difficulty / less enthusiastic in taking initiatives on your own?			
○ 0	○ 1	○ 2	○ 3

3.j: Do you tend to over-react to situations these days?			
○ 0	○ 1	○ 2	○ 3

3.k: Do you feel worried about the situation?			
○ 0	○ 1	○ 2	○ 3

3.l: Do you feel that there is nothing to look forward to?			
○ 0	○ 1	○ 2	○ 3

3.m: Do you feel scared these days without any reason?			
○ 0	○ 1	○ 2	○ 3

JMI (Jui-Mugdha Index)

JMI is an easy to calculate aggregated index to assess stress levels during pandemic-related lockdowns. It is part of the JUMA framework and needs to be used along with the JUMA framework.

For every question Q_i, a response R_i is recorded. All these questions are tagged as mandatory; hence no question can be skipped.

$$0 <= R_i <= 3$$

$$\text{JMI (Jui} - \text{Mugdha Index)} = \frac{(\sum_1^{13}[R_i + 1])}{13 * 4} * 5$$

Following are the details about the JMI scale:
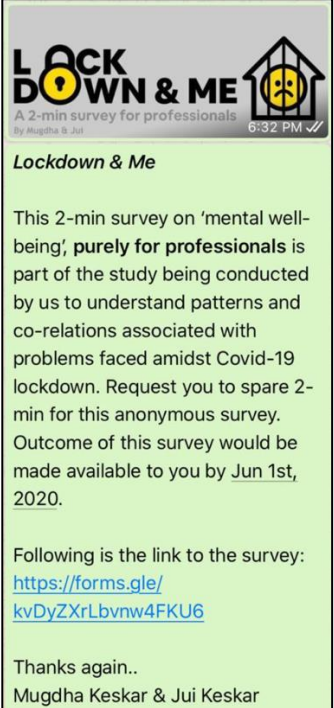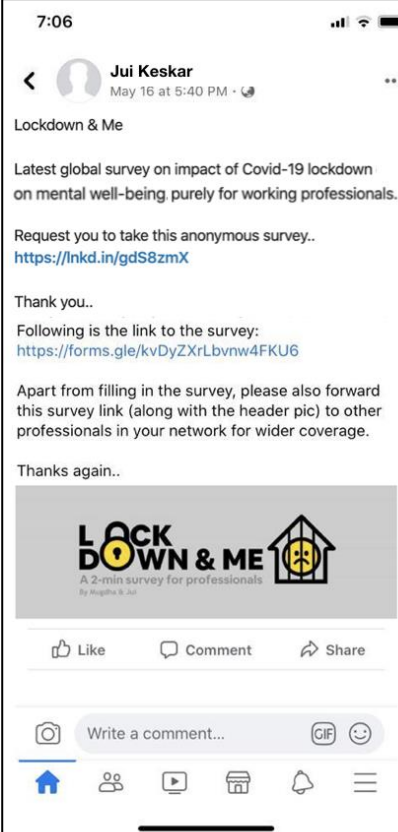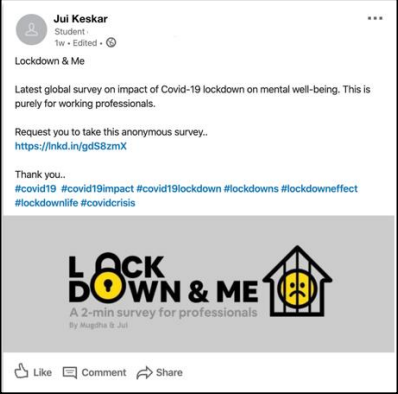
Range of scale	: 1.25 to 5	: Any real number between 1.25 to 5 including the limits
Lowest value	: 1.25	: It implies absence of any stress
Threshold value	: 3	: JMI over 3 means higher level of mental well-being challenges.
Highest value	: 5	: It means a highest level of mental stress

APPENDIX B: Survey outreach messages

Survey was launched purely using the social media (since lockdown made everyone immobile!), namely WhatsApp, LinkedIn and Facebook. Survey was launched on May 15th, 2020 and was on for a period of 5 days. It was sent to individual professionals and groups of professionals.

Table 8 provides sample of the outreach messages.
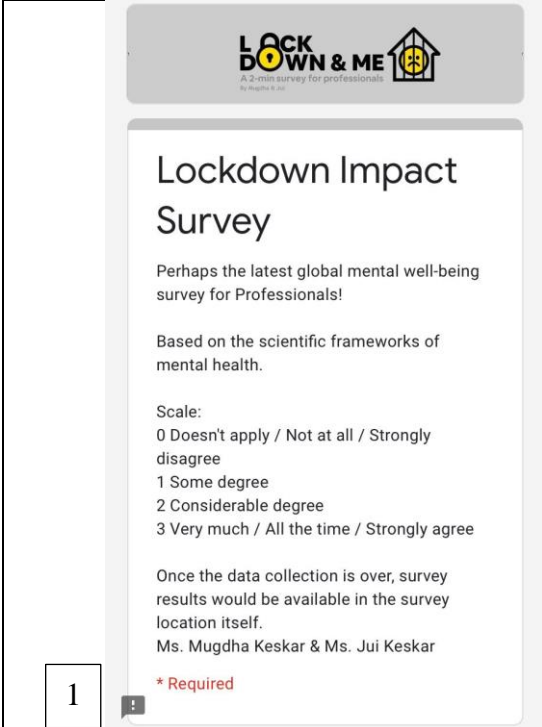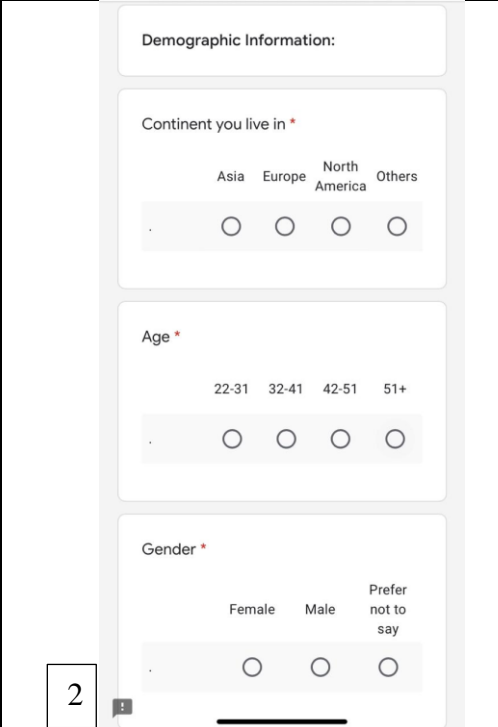
Table 8: Sample screenshots of the survey outreach messages to individual professional / groups of professionals

WhatsApp	Facebook	LinkedIn

APPENDIX C: Questionnaire (as seen by the participant)

Table 9 contains screenshots of the 'google-forms-based' survey as seen by the participants.

Table 9: Screen shots of the survey form as seen by the participant

3

Are you the sole bread earner of your family? *

	Yes	No
.	○	○

Number of dependent family members *

	1 (self)	2	3	4 or more
.	○	○	○	○

4

Work Information:

Industry *

○ Manufacturing
○ Technology
○ Services
○ Education

Type of role *

	Managerial	Individual	Trainer
.	○	○	○

5

Does the role primarily involve *

	Individual	Mentorship	Teamwork
.	○	○	○

Are you allowed / able to work from home *

	Yes	No
.	○	○

Daily screen time these days (computer and/or mobile)

	< 2 hrs	2 - 4 hrs	4-8 hrs	8+ hrs
.	○	○	○	○

6

Well-being Information:

Have you been able to concentrate on work like before? *

0 1 2 3
Not at all ○ ○ ○ ○ Very high!

Have you been able to sleep well? *

0 1 2 3
Not at all ○ ○ ○ ○ Nice sleep!

Have you been able to make decisions like before? *

0 1 2 3
Not at all ○ ○ ○ ○ Strongly yes

7

Have you been feeling stressed due to any reason? *

0 1 2 3
Strongly disagree ○○○○ Strongly agree

Have you been able to enjoy day to day activities? *

0 1 2 3
Not at all ○ ○ ○ ○ All the time

Do you sometimes feel unhappy or sad these days? *

0 1 2 3
Not at all ○ ○ ○ ○ All the time

8

Is there a feeling of loss of confidence these days? *

0 1 2 3
Not at all ○ ○ ○ ○ All the time

Have you been able to wind down / relax these days? *

0 1 2 3
Strongly disagree ○○○○ Strongly agree

Do you feel difficulty / less enthusiastic in taking initiatives on your own? *

0 1 2 3
Not at all ○ ○ ○ ○ All the time

Do you tend to over-react to situations these days? *

0 1 2 3

Not at all ○ ○ ○ ○ All the time

Do you feel worried about the situation? *

0 1 2 3

Not at all ○ ○ ○ ○ All the time

Do you feel that there is nothing to look forward to ? *

0 1 2 3

Not at all ○ ○ ○ ○ All the time

9

Do you feel scared these days without any reason? *

0 1 2 3

Not at all ○ ○ ○ ○ All the time

10 Submit