Research Paper

Can Flow States Impact Covid Distress: A Comparison Among Four Groups in India

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ABSTRACT

The present study aimed to assess the effects of flow states upon psychological distress experienced due to COVID-19 in a sample of 4 groups namely - healthcare workers (HCWs), undergraduate students, teachers and working professionals in organizations. Further, between group differences were studied to understand how these groups differed from each other along these two variables. The overall sample consisted of 204 participants, residing in Delhi NCR who were sampled via convenient and purposive sampling. Covid-19 Psychological Destruction scale (Akan, 2020) and Flow short scale (Rheinberg, Vollmeyer & Engeser, 2003) were administered following which the data was analyzed using Linear regression analysis, ANOVA and Tukey's Post Hoc test. The results revealed that Flow predicted 18.6% of variance in COVID distress for the overall sample ($p<0.01$). However, individual analysis showed that this relationship was not significant for teachers particularly ($p>0.05$). Further, the ANOVA results revealed that the four groups significantly differed in their experience of both Flow and COVID distress. Reasons for these findings, limitations and future directions have been discussed.

***Keywords:** Flow, COVID-19 distress, Healthcare workers, Online education, Remote work*

Towards the beginning of 2020, the entire world was hit by a major health crisis that presented itself in the form of the COVID-19 virus. On March 11th, 2020 the World Health Organization (WHO) declared the novel coronavirus as a global pandemic (WHO, 2020) and the worldwide measures suggested to limit its spread included social distancing and national level lockdowns, that as a result strictly prevented all public movements and dramatically limited all educational, work and recreational activities. Alternatives were reached in the form of online teaching-learning and work from home, a way of life presented as the 'New Normal'. Plethora of research since then has explored the implications that living in this pandemic has on mental health of the general population. Serafini et al., (2020) for instance in their review reported that pervasive anxiety, boredom, frustration, and loneliness were the most common psychological reactions emerging directly as a result of social isolation and lockdowns, both of which are inherent to limit the spread

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of the virus. Similarly, a survey conducted by Grover et al., (2020) on a large sample of Indian respondents highlighted that 40.5% of the population reported having symptoms of either anxiety or depression and about one-third of the participants reported an increase of experiencing negative emotions such as sadness, fear, irritability and frustration thus, reporting poor psychological well-being.

Though the pandemic presented as a novel and exigent situation for all, certain groups of people can be assumed to be more vulnerable and exposed to psychological distress due to COVID relative to others. One of the most widely researched samples within this domain are the Healthcare workers (HCW). Research indicates that due to their increased demand and heightened psychological pressure, most HCWs are likely to report feeling a series of dysphoric emotional states such as despair, anxiety, physical and mental burnout, helplessness, loneliness and fear of spreading the virus (Ornell et.al., 2020; Cheng et.al., 2020). Sun et. al., (2020) in a meta-analysis of 44 studies reported that about 37% and 36% of HCWs experience symptoms of anxiety and depression respectively, hinting at their heightened level of COVID distress. Another sector that has been deeply impacted by the covid outbreak, but remains relatively under researched is the education sector. Students and teachers globally were expected to adapt to the new modes of online education while utilizing novel technologies regardless of their digital literacy levels (Akbana et.al., 2021) or socio-economic status. Daniel, (2020) has described COVID-19 as the "greatest challenge that education systems (across the world) have ever faced". Within this context research shows that since the outbreak of the pandemic due to relentless workload and exhaustion, teachers report feeling symptoms of anxiety, depression, burnout, post-traumatic stress disorder and sleep disturbances (Beames, Christensen, & Werner-Seidler, 2021; Karakose et.al., 2022). Similarly, Batra et. al., (2021) in a meta-analysis studying the psychological impact of COVID-19 on college students reported that about 39.4% and 31.2% of students mention experiencing anxiety and depression respectively, while 29.8% report symptoms of post-traumatic stress disorder (PTSD). In addition to these aforementioned groups, professionals working in organizations (non-healthcare workers) as a direct result of lockdown were asked to shift to remote working from home which led to increase in feelings of job insecurity (Godinić, & Obrenovic, 2020). The virus outbreak further became a potential source of various stressors for this group in the form of work-life balance dissatisfaction and overlap of personal and professional boundaries (Parent-Lamarche & Boulet, 2021), all of which tend to negatively affect employee-wellbeing (Juchnowicz & Kinowska, 2021). Taken together, the existing literature shows that the COVID-19 pandemic has led to considerable distress and worsening of psychological wellbeing for each of these four populations namely – Healthcare workers, college students, teachers and working professionals in organizations. While symptoms of anxiety and depression are predominant in each of these groups, no existing research, to the best of our knowledge has compared the adverse psychological effects of the pandemic across groups. One of the aims of this research thus, is to try and delineate which group among these four has been the most susceptible to experiencing the greatest amount of covid distress.

A noticeable inference that can be made is that while there is ample literature that sheds light on the negative aspects brought upon due to COVID, there is very little that has been done to study how covid distress interacts with positive psychological states to mitigate its effects. Within this context the variable our study explores is Flow.

Since the broadening of focus upon positive psychology in recent times, Flow or 'optimal experience' as it was termed has been the focus of much research, garnering considerable

attention from researchers. Theoretically it was first introduced by Mihaly Cziksentmihaly in 1973, who defined flow as "the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it" (Csikszentmihalyi, 1990).

The experience of this 'optimal state' was believed to be a result of when an individual's skills and the challenges presented by the environment around them balance each other. Imbalance between these was theorized to cause either anxiety (when the challenge was perceived as too high) or boredom (when the skill was higher than the challenge). Thus, activities of perfect skill-challenge balance were believed to be conducive of inducing flow states. As a result, flow research was initially restricted to what can be termed as creative professions, i.e., most research would often only focus on musicians, dancers, athletes, artists and the like (Arora, 2021; Deuri, Sanjushree & Hebbani, 2021). However, with expansion in research methodologies and interest in the topic, it quickly became evident that flow can be inculcated not just in creative or artistic pursuits but in contexts of work, learning, play and web use as well; expanding its scope to all arenas of life (Engeser, 2012; Chen, et.al., 2000). For instance, Flow has been found to play an important role in educational settings. In the classroom, much research has noted that flow experiences are interdependent among students and teachers (Lloyd & Smith, 2006; Culbertson, 2015). In a similar vein, qualitative research on teachers' experiences with flow was carried out by Dalton et al., (2014) where they found that flow conditions flourished under 5 overarching environments: when both teachers and students were engaged, when learning tasks were authentic and meaningful, when the relationship between student and teacher was meaningful and the teacher could accurately understand the students' needs, and finally when teachers were flexible and were willing to take risks. For students, flow experiences lead to desirable outcomes such as academic achievement, persistence in learning as well as self-efficacy (Lee, 2011; Song, 2012) thus, enhancing overall wellbeing. How these environments lead to flow experiences during the pandemic with the onset of e-learning still remains to be studied. Along similar lines, flow might be especially relevant in the healthcare context. While there hasn't been much research looking into ways in which flow can be fostered within these settings it has been found to inversely affect job stress, burnout and improve overall psychological and physical health of the medical staff (Martínez-Zaragoza et al., 2017). With the onset of the pandemic, these variables of mental health are likely to have been compromised due to rising challenges and demands faced by the HCWs, thus drastically affecting their experiences of flow (Bartzik et.al., 2021). Flow within the workplace has also received considerable attention from researchers as it has been found to lead to multiple desired and positive outcomes such as increased job performance (Peifer & Zipp, 2019), work engagement (Plester & Hutchison, 2016), organizational commitment (Smith & colleagues, 2012) as well as higher job satisfaction (Maeran & Cangiano, 2013). Research exploring antecedents of organizational flow, have found that various factors affecting work motivation also tend to affect flow. For example, Maeran and Cangiano, (2013) in their study found that flow was particularly predicted by task significance and timely feedback. Studies have also found that a higher degree of autonomy in their workplace helps individuals feel a higher sense of control over the situation, thus leading to flow (Emanuel et al., 2016; Zito et al, 2016). Hence, flow experiences in organizations are contingent upon various job characteristics as well as environmental factors that in cohesion foster optimal conditions for it to flourish. Regardless, there has been very little research comparing levels of flow among different populations. The second aim of our study is thus to compare the difference in the level of flow experienced by students, teachers, HCWs and working professionals in organizations.

From the literature presented above one can derive that all the four samples selected for this study have experienced extremes of psychological distress due to COVID and that their work contexts allow for flow experiences to flourish. Most research done on flow describes it as a positive experience that helps improve individual emotional-wellbeing especially during stressful and uncertain periods (Rankin et al., 2019). It has been well established that flow serves as a protective factor against symptoms of burnout, anxiety, and depression (Aust et.al., 2022; Mosing, Butkovic, & Ullen 2018; Mao et al., 2020) For instance, research done by Basyouni and Keshky, (2021) on professionals working in organizations during the COVID lockdown showed that work-related flow was negatively related to financial anxiety and job insecurity regardless of age, gender and sector of employment. In addition, another set of findings state that people who experienced higher levels of flow during quarantine, reported lesser loneliness, lesser depressive symptoms and overall greater positive emotions (Sweeny, et.al., 2020). Deriving from these findings it can be hypothesized that flow may have a significant impact in attenuating COVID distress.

Based on the above literature review it becomes evident that the four samples under study that are– students, teachers, healthcare workers and working professionals in organizations have been the most radically affected by the COVID pandemic, however which among these have been the most susceptible to covid distress to the best of our knowledge hasn't been studied yet. Similarly, due to the dramatic change in work environments for each of these groups since the outbreak of the pandemic, it becomes necessary to see if these groups vary in their level of flow experienced. In addition, studying an inverse relationship between flow and covid will further help us better understand the ways and the extent to which Flow states can help mitigate the adverse psychological effects brought upon due to COVID, paving way for effective future interventions enhancing individual and community coping capacities. Finally, no such comparative research exists within the Indian context.

Stemming from the gaps identified above the following hypotheses were formulated for this study–

- H1: There will be a significant inverse impact of flow experiences on the psychological distress due to COVID-19.
- H1a - There will be a significant inverse impact of flow experiences on the psychological distress due to COVID-19 in Undergraduate students.
- H1b - There will be a significant inverse impact of flow experiences on the psychological distress due to COVID-19 in Teachers.
- H1c - There will be a significant inverse impact of flow experiences on the psychological distress due to COVID-19 in Working professionals.
- H1d - There will be a significant inverse impact of flow experiences on the psychological distress due to COVID-19 in Healthcare workers.
- H2: There will be a significant difference in the psychological distress experienced due to COVID between the four groups.
- H3: There will be a significant difference in the experience of flow among the four groups.

METHODOLOGY

Participants

The overall sample of this study consisted of 204 participants (82 males and 122 females) subdivided into four groups namely Undergraduate students (51 participants), Teachers (50), Working professionals in organizations (55) and Healthcare workers (48). All participants were residing in Delhi NCR and had not tested positive for COVID-19 in at least a month

preceding data collection. The participants were selected through non-probability, convenient and purposive sampling.

Measures
- **Covid-19 Psychological Destruction Scale:** Developed by Akan, (2020), this scale contains 18 items measuring the experience of Covid-19 among individuals. The scale contains 2 dimensions: Fear, measured through items 1-4 and Collapse, measured through items 5 to 18, all rated on a 5-point Likert scale. Thus, the highest possible score is 90 and the lowest, 18. Higher scores on this scale indicate a higher level of psychological destruction/distress caused due to COVID-19. The scale is suitably reliable with a Cronbach's Alpha of 0.951 for the whole scale and 0.937 and 0.791 for the respective dimensions.
- **Flow Short Scale:** Developed by Rheinberg, Vollmeyer, and Engeser, (2003), this 13 item scale measures flow experiences in individuals. Out of these, the first 10 items measure components of the flow experience, with items 2, 4, 5, 7, 8, 9 measuring fluency of performance and items 1, 3, 6, 10 measuring absorption by the activity. The final 3 items measure the perceived importance of the task. All items are rated on a 7-point scale and participants may choose to rate items as not at all, partly, or very much according to their experience. Higher scores on the scale indicate a higher degree of flow. The scale has been suitably validated with a Cronbach Alpha of 0.90.

Design & Procedure
The present research used an ex-post facto (i.e., after the fact investigation) survey design to assess the impact Flow states have on the psychological distress experienced due to COVID, in a non-clinical, working population. Data was collected from members of four different populations who as per previous literature were the most adversely affected by the COVID outbreak. A google form containing both the COVID psychological destruction as well as the Flow state scale was sent via email and WhatsApp to consenting participants. The obtained data was analyzed by computing scores of individual questionnaires as proposed in the guidelines provided by respective authors. Linear regression analysis, ANOVA and Tukey's post hoc tests were then conducted on this data using SPSS version 21.0.

RESULTS

Table 1 Descriptive Statistics

Working Category	n	Mean	SD	Minimum	Maximum
Psychological distress due to Covid-19					
Undergraduate Students	51	53. 24	15.13	18.00	80.00
Teachers	50	40.38	12.27	20.00	66.00
Working Professionals	55	42.16	12.59	18.00	76.00
Health Care Workers	48	37.71	13.18	18.00	73.00
Total	204	43.45	14.48	18.00	80.00
Flow Scores					
Undergraduate Students	51	38.55	9.55	16.00	58.00

Teachers	50	51.98	8.46	27.00	64.00
Working Professionals	55	50.36	10.09	27.00	70.00
Health Care Workers	48	52.29	8.49	19.00	69.00
Total	204	48.26	10.76	16.00	70.00

Table 1 shows the descriptive statistics of the sample studied (204 respondents). The mean score of the four categories studied for psychological impact of Covid-19 was 43.45 while that for Flow scores was 48.26. The highest mean for Psychological Impact of Covid-19 was in the case of UG students (53.24) who also showed the lowest mean for flow scores (38.55). At the same time, HCWs showed the lowest Psychological Impact of Covid-19 (48) and highest flow scores (52.29).

Table 2 Regression results for the four groups

Working Category	Beta Value (β)	R^2	Adjusted R^2	P-value
Undergraduate Students	-0.38	0.141	0.124	**0.007****
Teachers	-0.18	0.032	0.012	0.211
Working Professionals	-0.29	0.081	0.064	**0.035***
Healthcare Workers	-0.22	0.084	0.065	**0.045***
Overall impact of flow on COVID	-0.436	.190	.186	**0.000****

** significant at p <0.01 * significant at p <0.05

Table 2 shows the linear regression scores, that is, the impact of Flow on Psychological destruction due to Covid-19. In our sample of UG students, the results showed that flow predicted 12.4% of the variance in Covid experience. The correlation between flow and COVID experience was found to be -.38, suggesting a moderate-high inverse correlation between these two variables. For teachers, flow didn't seem to have a significant impact on COVID distress. For working professionals, flow predicted 6.4% of the variance in Covid experience and the correlation between flow and COVID experience was found to be -.29, suggesting a moderate inverse correlation. In our sample of healthcare workers, results showed that flow predicted 6.5% of the variance in Covid experience while the correlation between the two was -.291, suggesting a moderate inverse correlation as well. Finally, for the overall sample flow explains 18.6% of variance in COVID distress.

Table 3 ANOVA Of Psychological Impact Of COVID-19

	Sum of Squares	df	Mean Square	F	P-value
Between Groups	7028.01	3	2342.67	13.18	**0.000****
Within Groups	35558.40	200	177.79		
Total	42586.41	203			

**significant at p <0.001

Table 3 shows the ANOVA results of Psychological Impact of Covid-19, where it can be observed that there is a significant difference between the 4 groups studied in terms of the psychological impact of Covid-19 ($F_{(3, 200)} = 13.18$, $p < 0.001$).

Table 4 Post- Hoc Analysis for ANOVA Scores of Psychological Impact of Covid-19

(I)Group Code	(J) Group Code	Mean Difference (I-J)	Standard Error	P-value	95% Confidence Interval	
					Lower Bound	**Upper Bound**
Undergraduate Students	Working Professionals	11.07	2.59	**.000****	4.36	17.79
	Teachers	12.86	2.65	**.000****	5.98	19.73
	HealthCare Workers	15.53	2.68	**.000****	8.58	22.47
Working Professionals	Undergraduate Students	-11.07	2.59	**.000****	-17.79	-4.36
	Teachers	1.78	2.61	.903	-4.97	8.53
	HealthCare Workers	4.46	2.63	.754	-2.37	11.28
Teachers	Undergraduate Students	-12.86	2.65	**.000****	-19.73	-5.98
	Working Professionals	-1.78	2.61	.903	-8.53	4.97
	HealthCare Workers	2.67	2.69	.754	-4.31	9.65
HealthCare Workers	Undergraduate Students	-15.53	2.68	**.000****	-22.47	-8.58
	Working Professionals	-4.46	2.63	.331	-11.28	2.37
	Teachers	-2.67	2.69	.754	-9.65	4.31

**- significant at p <0.001

Table 4 shows the post-hoc results for ANOVA scores of Psychological Impact of Covid-19. As can be seen, the psychological impact of UG students significantly differed from that of working professionals (SD= 2.59, p<0.001), Teachers (SD= 2.65. p<0.001) as well as HCWs (SD= 2.68, p<0.001). There was no significant difference between the other three groups.

Table 5 ANOVA Of Flow Scores

	Sum of Squares	df	Mean Square	F	P-value
Between Groups	6524.98	3	2174.99	25.65	**.000**
Within Groups	16960.25	200	84.80		
Total	23485.23	203			

**significant at p <0.001

Table 5 shows the ANOVA results of Flow scores. It can be seen that there is a significant difference between the 4 groups studied in terms of flow scores (F (3, 200) = 25.65, p<0.01).

Table 6 Post- Hoc Analysis for ANOVA Of Flow Scores

(I)Group Code	(J) Group Code	Mean Difference	Standard Error	P-value	95% Confidence Interval	
					Lower Bound	Upper Bound
Undergraduate Students	Working Professionals	-11.81	1.79	**.000**	-16.45	-7.18
	Teachers	-13.43	1.83	**.000**	-18.18	-8.68
	HealthCare Workers	-13.74	1.85	**.000**	-18.54	-8.94
Working Professionals	Undergraduate Students	11.81	1.79	**.000**	7.18	16.45
	Teachers	-1.62	1.80	.806	-6.28	3.05
	Health Care Workers	-1.93	1.82	.714	-6.64	2.78
Teachers	Undergraduate Students	13.43	1.83	**.000**	8.68	18.18
	Working Professionals	1.62	1.80	.806	-3.05	6.28
	Health Care Workers	-0.31	1.86	.998	-5.13	4.51
HealthCare Workers	Undergraduate Students	13.74	1.85	**.000**	8.94	18.54
	Working Professionals	1.93	1.82	.714	-2.78	6.64
	Teachers	0.31	1.86	.998	-4.51	5.13

**significant at p <0.001

Table 6 shows the results of post-hoc analysis for ANOVA of Flow scores. As can be seen, the flow scores of UG students significantly differed from working professionals (SD= 1.79, p<0.001), Teachers (SD= 1.83. p<0.001) and HCWs (SD= 1.85, p<0.001). There was no significant difference between the other three groups.

DISCUSSION

Our research aimed to study the impact flow states have on mitigating COVID psychological distress in a sample of four groups, and whether these groups significantly differ from each other in their flow and COVID distress experiences. In line with our first hypothesis, our results showed that there is a significant relationship between flow experiences faced by each of our groups and the level of COVID distress they underwent. The results of our linear regression highlighted that flow in our overall sample predicted 18.6% of the variance in Covid destruction. Flow experiences were found to be negatively impacting COVID distress, that is, the more flow an individual experienced, the lesser psychological distress by Covid would be faced. Further individual linear regressions for each of our groups showed that flow was found to be a significant predictor attenuating COVID distress for UG students (Adjusted R^2 = 0.124, F= 0.007, p<0.01), Working Professionals in organizations (Adjusted R^2 = 0.064, F= 0.035, p<0.05) and HCWs (Adjusted R^2 = 0.065, F= 0.045, p<0.05). The above results are in line with our sub-hypotheses H1a, H1c, and H1d as well as with previous literature in the field. Studies have been done to see the impact flow may have in mitigating various aspects of Covid destruction. Basyouni and El Keshky (2021) for instance, showed that work-related flow mediated the relationship between job insecurity and financial anxiety. Similarly, Bassi et al., (2022) showed that flow experiences were associated with higher emotional well-being in adolescents, both before and after the pandemic. Numerous papers have also looked at the role that flow experiences play in alleviating anxiety, depression, and loneliness, all of which have been prevalent since the outbreak of the pandemic (Mosing, Butkovic, & Ullen 2018; Sweeny et al., 2020; Chang, Dattilo, Hsieh & Huang, 2021). Our study also contributes to this literature and provides further evidence on how flow impacts COVID experience across different groups and varying contexts.

This study also looked at the impact of flow on covid experiences in a sub-sample of 50 teachers. The results of the linear regression showed that flow did not significantly predict variance in COVID experience for this sample thus, disproving sub-hypothesis H1b. The correlation between flow and covid experience was found to be -.180, suggesting a low, inverse relation. We posit several factors for why the flow-covid relation did not turn out to be significant in this sample. One of them relates to a study conducted by Llorens, Salanova, and Rodríguez (2012) where the authors proposed that since the nature of work of a teacher is multifaceted and involves a variety of skills, it may contain more flow-producing resources relative to other occupations, however, if we look at a teacher's role in the context of the pandemic, it is likely that such an environment was not made possible. Teaching remotely in the pandemic led to a great deal of technostress, especially due to the almost instant shift to online education as well as a great deal of loneliness, which may have further increased teachers COVID distress and reduced the likelihood of flow experiences (Donham et al., 2022). Another factor inherent in remote learning was the lack of student-teacher interaction which may have also led to a reduction of flow in teachers while contributing to greater distress. As per Dalton et al, (2014), one of the conditions that leads to flow experiences for teachers is student participation, and thus feedback. However, in an online learning context, most of this interaction was missing (Almahasees, Mohsen & Amin, 2021; Almpanis & Joseph-Richard, 2022). Another important factor for consideration is the very

nature of teacher's flow and the nature of their work. Prior research done on this topic in educational settings has pointed out how for both teachers and students flow is contagious and can spread from teacher to student or student to student in a classroom (Culbertson, Fullagar, Simmons, & Zhu, 2015). This makes a teacher's flow dependent to some degree, on their students. If there is lack of engagement, lack of participation and a lack of feedback from the students, possibilities of flow experiences for teachers are also greatly reduced. Finally, our results indicate that it's likely that variables other than flow predict mitigation of COVID psychological distress in teachers, and future research on this is of necessity to explore what these variables may be or how they might emerge.

To test the second and third hypothesis of this study, ANOVA tests were run and as hypothesized a significant difference (P < 0.001) was observed between the four groups for both the variables of COVID psychological distress and Flow experience. Further, Tukey's Post Hoc analysis was conducted for pairwise comparison, facilitating better insight into the findings. The results obtained revealed that while there was no significant difference between the COVID distress experienced by teachers, working professionals, and healthcare workers (HCWs), the variance observed in the results was due to the significantly higher amount of COVID psychological distress experienced by undergraduate students. Research conducted on college students during the pandemic helps elucidate various reasons as to why this might be the case. University educational experiences are usually seen as being foundational in influencing future vocational choices. With the inevitability of online learning due to the pandemic, a challenge that was unique to college students was the loss of opportunities due to lesser exposure to internships, laboratories, academic resources such as libraries and so on, translating into increased uncertainty and anxiety about the future (Lee et.al., 2020). Within India, most universities postponed lectures as well as examinations/assessments as newer modes of delivery and evaluation needed to be devised for online teaching, compromising the quality of university education, pushing the students into a state of helplessness and precariousness about the future course of action (Ravi, 2020). Another significantly distressful aspect of online education is its unequal accessibility leading to discriminated learning opportunities for socio-economically better-off students (Jæger & Blaabæk, 2020, Aucejo et.al., 2020). This aspect becomes even more highlighted for a developing country like India where about 25% of its population lives in poverty (Hindustan times, 2021). Thus, reasons such as lack of technological devices, technological illiteracy and excessive internet costs could have served as a major barrier in accessing online university education for a vast majority of Indian students adding to their distress (Wong et.al., 2015; Hasan & Bao, 2020).

Along similar lines, Post Hoc results for differences in Flow experiences showed that the observed variance was due to the significantly lower amount of Flow experienced by Undergraduate students, while no significant differences were observed in the other three groups. While literature studying the presence of flow within e-learning context during the pandemic is scarce, certain reasons as to why college students experienced low flow can be deduced by taking into account the nature of online learning. Due to the sudden and abrupt shift of education online, there was hardly any time for universities to curate a systematic structure of teaching that would facilitate and be suited for online learning, thus unavoidably many of the practices of offline pedagogy were utilized in the online context. Research however, highlights that this "one size fits all approach" is rarely suitable in e-learning contexts as it comes with its own barriers which aren't apparent in offline classroom settings (Gillett-Swan, 2017). Some such barriers identified by existing literature include difficulty in collaborative learning tasks like group work and presentations (which form an essential

component of evaluation), lack of assessment options that might not be conducive to the learning styles of various students and feelings of withdrawal, dissociation and exclusion from engaging with coursework in some students due to a sense of alienation (Gillett-Swan, 2017; Reese, 2014). All these challenges specific to this group are naturally likely to hinder their experience of flow states. Further, Csikszentmihalyi, (2015) mentions that *immediate feedback on tasks* and one's *feeling of control* over their work are seen as conditions essential for flow to flourish. However, with everyone adjusting to virtual education and without any organized teaching pedagogy in place, it was long before mechanisms of adequate feedback were instilled, let alone them being immediate or individualized. Similarly, due to excessive uncertainty with respect to new modes of conducting examinations, complete change in assessment techniques and more recently decisions of hybrid education as taken by some Indian universities (Times of India, 2022) without adequate and timely dissemination of information is likely to have altered their sense of control, thus restricting flow. All these factors coupled with their novelty can be predictive of a heightened perceived sense of challenge over skill among the sample of college students, resulting in increased anxiety and reduced flow.

Our results revealed that teachers, working professionals and HCWs didn't differ in their experience of flow (which they all experienced towards the higher end on the Flow scale) and COVID distress (where all were within the moderate range on the COVID destruction scale). Two of the following reasons are likely to have contributed to these findings – first is the duration of this study. Our study was conducted about one and a half years into the pandemic, which means that the complete novelty and urgency of the situation had faded and the sample from these groups are likely to have become desensitized to the anxieties of the virus, having adapted to their new work contexts (Stevens, Oh & Taylor, 2021). Secondly, each of these three groups had well established professional careers with a habitual sense of perceived competence, an aspect missing from the college students' sample. Thus, while the lockdowns led to dramatic changes in their ways of working, they could have still fostered a sense of control over their lives helping them experience flow and relatively reduced distress due to COVID.

Limitations & Future Directions
While this study meaningfully contributes to literature in the field of flow research and positive psychology, it's not without its limitations. Firstly, the number of years of experience and the sample's position within their respective organizations weren't controlled for. These factors are likely to affect one's sense of competence and hence, could have led to differing flow and COVID distress experiences. Secondly, our study used a one-shot survey design, thus, the data obtained was limited and quantified in nature. For a subjective experience such as flow, studying it over a span of time by employing different methodologies such as interviews and experience sampling method (ESM) can result in more rich and in-depth data. Finally, convenience sampling was used which limits the generalizability of the findings and may not be truly representative of the population diversity.

The limitations and findings of this study paves way for future research that can explore the individual experiences of people in similar groups through qualitative methods as well as look into the phenomenological experiences of COVID distress within the Indian context. As the results of our study have shown an overall attenuating impact of flow states on the psychological distress of COVID, interventions to inculcate flow in relevant organizational settings, such as hospitals, multinationals, as well as educational settings may be devised

and tested on relevant populations. Thirdly, as mentioned above alternative variables that impact COVID distress in teachers can be studied in depth, via quantitative, qualitative and mixed methods. Lastly, our regression analysis revealed that only 18.6 % of variance in attenuating COVID psychological distress is explained by flow. Further research can look into these other protective factors that will be helpful in both prevention and recovery from traumatic events such as the COVID-19 pandemic.

CONCLUSION

This study aimed to explore the potential impact of flow states in reducing COVID-19 distress among four groups namely – healthcare workers, teachers, undergraduate students and working professionals in organizations. Linear regression, ANOVA and Tukey's post hoc were conducted for data analysis. Our results supported our hypotheses and showed an overall significant impact of flow in attenuating COVID distress. However individual analyses of the groups showed that this relationship was not significant for our sub-sample of teachers. Relevant reasons for the same are discussed. Our study contributes to literature aimed at mitigating the effects of crises such as COVID by emphasizing the importance of studying positive psychological variables. It further, paves way for future research to explore and devise interventions targeted at fostering flow states within the work contexts of these groups.

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