

Understanding Resource Accessibility, Learning outcomes and Subjective Well-being among Undergraduate Students during the COVID-19 Pandemic: A Mixed Method Approach

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Abstract: *The advent of the COVID-19 pandemic has led to fundamental changes for the world at large, with the impact here to stay for a long time. Like all other sectors, the educational community had to respond with swift adaptation, to make education accessible to all from their homes' comfort and safety. The purpose of the current study is to explore resource accessibility, learning outcomes & subjective well-being among undergraduate students. Convenience sampling was used to select a sample of 507 students, in the age group 17 to 21 years, attending University of Delhi. A survey for learning outcomes and subjective well being was carried out in the form of a questionnaire formulated for this purpose; it consisted of 20 questions. Further, focus group discussion was carried out with 100 participants (10 participants per group). Descriptive statistics for the data were computed. A mixed method analysis approach (Correlation coefficient & thematic analysis) was used to analyse the data. The variables learning outcomes and subjective well-being were found to be positively correlated to each other via quantitative analysis and a qualitative analysis led to the emergence of 4 themes, 11 sub-themes and 35 codes. The major inferences derived from the same were: 1) Online modality has been associated with an overall decline in the reported subjective well-being of the students. 2) Accessibility to tangible resources like a stable internet connection is a major hindrance to online learning. 3) Intangible resources like emotional support from peer groups and a supportive family environment act as buffers against the stressors and challenges posed by the online modality of learning. 4) Inconsistent interaction with teachers and peers can lead to lack of motivation and decreased attention span during classes. The results concluded that resource accessibility, peer and family support significantly correlate to an overall healthy subjective well-being and learning outcomes.*

Keywords: subjective well-being, resource accessibility, learning outcomes, COVID-19 pandemic, mixed-method approach

1. Introduction

With the world quarantining itself and social distancing norms becoming paramount, students anticipating holidays quickly realized that the year had ended up becoming a gargantuan number of overwhelming emotions caused by various negative psychological conditions such as anxiety and fear (Ozer, 2020), supplemented by the uncharted territory of virtual education. This virtual education was facilitated using various video call applications and it became a necessity to have devices and an internet connection good enough to use these applications. This resource necessity has ended up incapacitating students from continuing learning in universities. Governments worldwide have emphasized the increasing need for easy access to online education and distance learning. Various studies show the association between positive outcomes in terms of emotional well-being and being outdoors (Bowler et al. 2010; Collado et al. 2017; Frumkin et al. 2017; Hartig et al. 2014; Kondo et al. 2018; Bosch and Bird 2018), and quarantining is having an effect to the contrary. The feeling of loneliness is another consideration that impacts the emotional well-being of a person in these conditions of social distancing (Banerjee and Rai 2020; Tull et al. 2020). Students in particular, seem to have been impacted more by these physical and social distancing norms. This statement is supported by evidence from the United States and Spain,

which indicated that younger respondents seemed to have reported greater loneliness compared to adults (Losada-Baltar et al. 2020; Luchetti et al. 2020). However, some studies show that students tend to believe that even the online modality has been gainful in terms of learning and engagement and furthermore it has also heralded the technological age in education (Agarwal & Dewan, 2020).

The purpose of this research is to investigate the relationship between learning outcomes and subjective well-being in the context of access to tangible and intangible resources

In the setting of the research study a resource is a tangible or intangible thing that is of some utility and aids one in reaching their full potential. Unavailability of resources can hinder the process of reaching one's maximum potential. Here, subjective health is the self-reported evaluation of one's overall health status. The idea of subjective well-being combines physical, emotional and mental well-being of a person.

2. Method

Participants

The participants of the study were 507 college-going students (222 males and 285 females) pursuing their graduate studies at University of Delhi. The age range of the

participants was 17-21 years. In addition, 100 participants were chosen at random from the above data to participate in Focus Group Discussions.

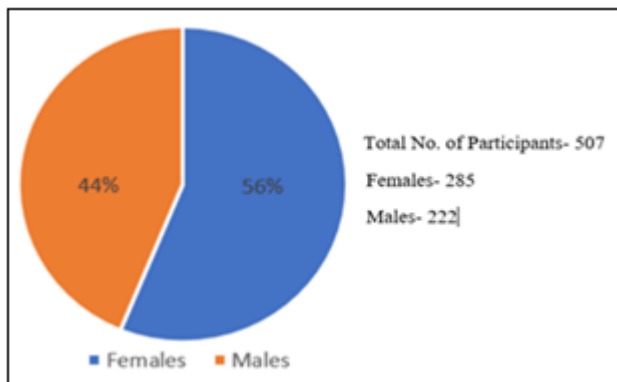
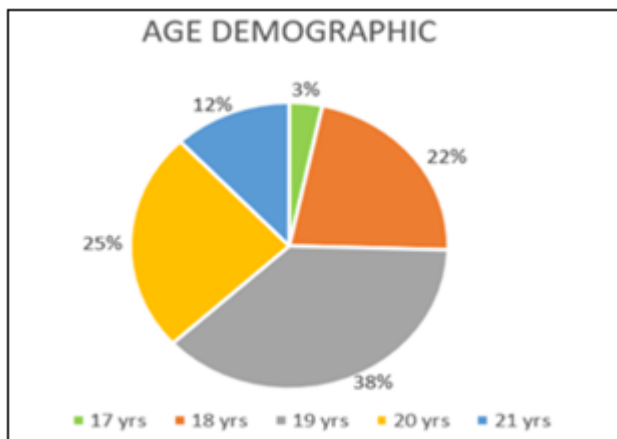


Figure 1: Percentages of Male and Female Participants



Total No. of Participants- 507	
Age	No. of Participants
17	17
18	112
19	191
20	126
21	61

Figure 2: Age Demographic of Participants

Sampling

The sampling used for study was convenience sampling, where representative data was drawn by selecting people based on the ease of their volunteering or their availability or easy access. This technique was chosen as participants were chosen on their time availability and based on ease of access (Etikan & Bala, 2017).

Research Design

In order to answer the research questions and hypothesis of this study, a mixed method approach (Tashakkori & Teddlie, 2003) was employed. It is a type of research design that uses elements from both quantitative and qualitative approach, i.e., using qualitative and quantitative method of tools and data collection, analysis and interpretation, for the presenting depth of understanding for the topic of interest (Johnson et al. 2007). Under mixed methods approach, this study utilized a ‘convergence model of triangulation’ (Creswell, Plano Clark, Gutmann, & Hanson, 2003; Herriott & Firestone, 1983).

Measures

Measures used for present study were a survey questionnaire containing 20 questions, SPSS Software, version 25 & Focus Group Discussions (FGDs).

The Survey Questionnaire (refer: Appendix A) containing 20 questions, was drafted by the researchers. It was created to measure two variables- learning outcomes, and subjective well-being. The variables' learning outcomes' and subjective well being were measured through 10 items on a five-point rating scale. After reading each item, participants indicate their response by selecting a number from 1 (strongly agree) to 5 (strongly disagree).

Focus group discussion is frequently used as a qualitative approach to gain an in-depth understanding of social issues. The method aims to obtain data from a purposely selected group of individuals. Focus group discussion consists of four major steps; these include (1) research design, (2) data collection, (3) analysis and (4) reporting of results (Morgan et al., 1998). For the current study, ten focus group discussions (FGDs) were held with 100 randomly selected undergraduate students at Delhi University from the sample, with each focus group including ten subjects. The researchers moderated the discussion, and the participants were asked questions to help drive the conversation forward. The discussion was taped and subsequently transcribed, and the data collected from it was analysed thematically.

Procedure

The research was divided into two parts: quantitative and qualitative. A survey questionnaire was used to acquire quantitative data. A total of 507 Delhi University students between the ages of 17 and 21 were chosen to participate in the study. Participants first completed the demographic form before moving on to the survey questionnaire. The data was subjected to descriptive statistical analysis, which included the calculation of Mean and Standard Deviation (SD). In addition, a correlational analysis was used to see if there was a link between two variables: learning outcomes and subjective well-being.

For the FGDs, 100 people were chosen at random from the pool of 507 people that were given the survey questionnaire and divided into ten groups. These were held in a virtual setting with a moderator and a facilitator. Following data collection, these participants were debriefed about the study's nature. The data that emerged was subjected to thematic analysis.

3. Result

Quantitative phase

For the quantitative part, the data was scored and then analysed statistically. A descriptive analysis for N=507 was done. Participants' ages ranged from 17 to 21 years (M=19.1736, SD=1.0007) with 58.4% identified as females and remaining 43% identified as males.

Table 1: Tabular Representation of Descriptive Analysis of Data

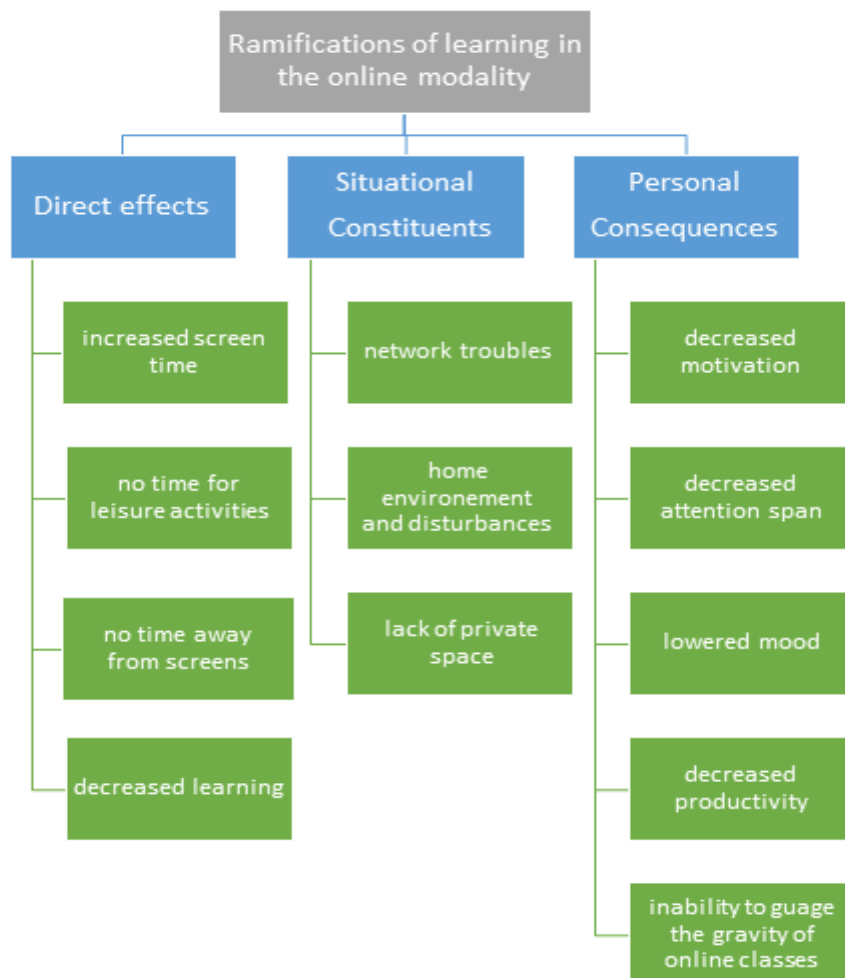
Descriptive analysis of the data (N=507)	
N	507
Males	43%
Females	58.4%
Age range	17-21
Mean (M)	19.1736
Standard deviation (SD)	2

The quantitative data, revealed a moderately positive correlation, ($r(505) = +0.54, p < .001$), between the subjective wellbeing and learning outcomes of the students, implying that students with better subjective wellbeing have better learning outcomes and vice versa.

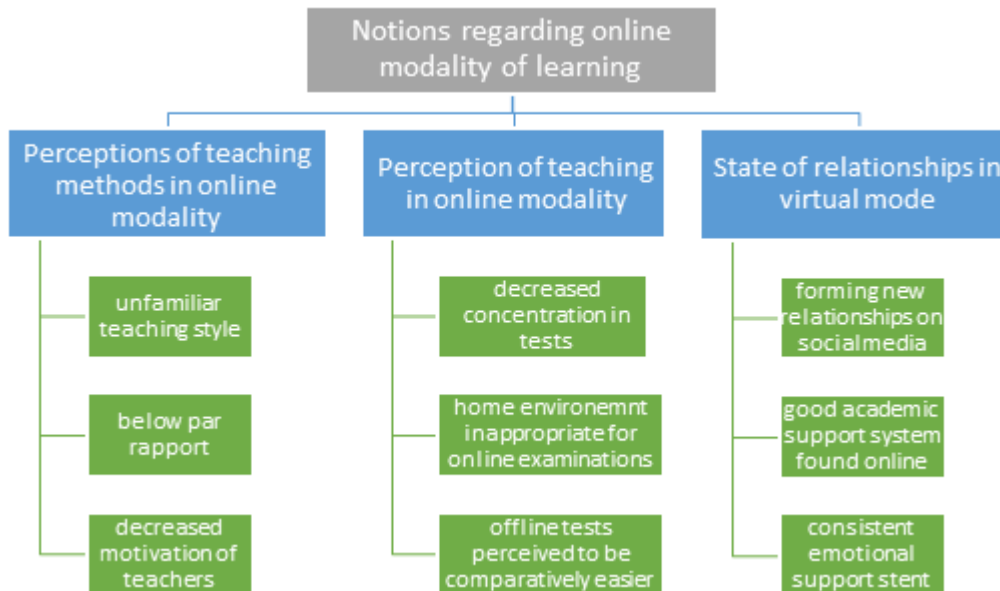
Qualitative phase

The data collected through focus group discussions with 100 randomly selected participants was transcribed and subjected to thematic analysis. Thematic analysis can be understood as an independent qualitative descriptive approach that is essentially described as “a method for identifying, analysing and reporting patterns (themes) within data” (Braun & Clarke, 2006: 79). As a method, it entails the search for and identification of common threads, which usually extend across an entire interview or set of interviews (DeSantis & Noel Ugarriza, 2000). Our study has employed the use of Inductive thematic analysis as the coded categories are derived directly from the text data.

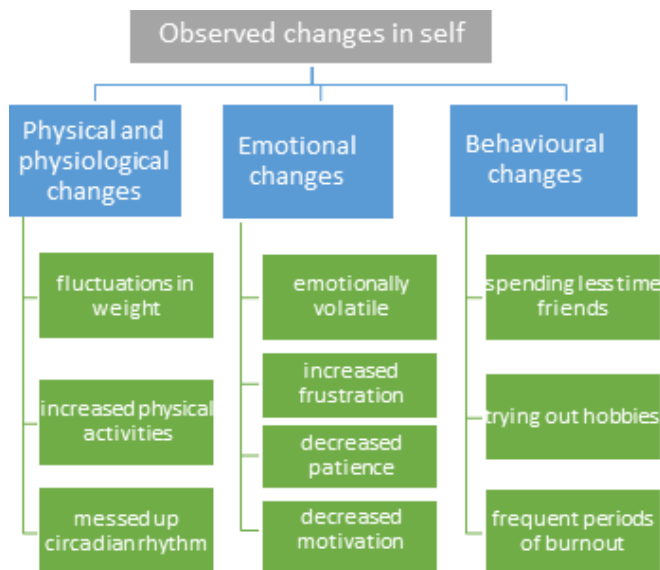
The analysis led to the emergence of 4 themes, 11 sub-themes and 35 codes as presented below.



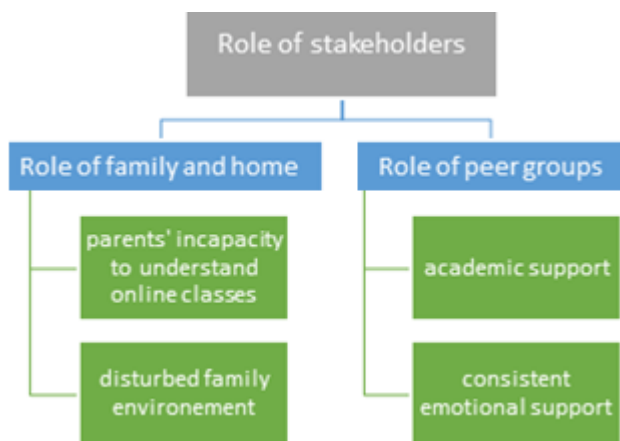
Theme 1- "Ramifications of learning in the online modality."



Theme 2- "Notions regarding online modality of learning"



Theme 3- "Observed changes in self"



Theme 4- "Role of stakeholders"

4. Discussion

The COVID-19 pandemic changed the landscape of education at large. With the changes, there came scores of

effects on the well-being of the student community. The present study aimed at understanding the relationship between the learning outcomes and subjective well-being of the students and the probable contributing factors that assure a good online learning experience. (Need to have a better objective). For the same, a mixed-method approach was followed wherein a survey questionnaire with 20 items was designed to explore the relationship between the variables "learning outcomes" and "subjective well-being." The survey was administered to 507 undergraduate students from Delhi University. For further exploration of the subject matter, the qualitative methods of data collection and analysis were employed, wherein focus group discussions were conducted with 100 students in groups of 10.

For the quantitative phase of the study, the survey responses were subjected to Pearson correlation to discover the relationships between the variables- learning outcomes and subjective well-being. Pearson correlation analysis revealed a moderately positive correlation, $(r(505) = +0.54, p < .001)$, between the subjective well-being and learning outcomes of the students, implying that students with better subjective wellbeing have better learning outcomes and vice versa. During the pandemic, inadequate attempts to diagnose and address mental health concerns among college students could have long-term health and educational effects. (Browning et al, 2021). Some students may be particularly vulnerable to academic stress and emotional distress as a result of the pandemic. (Clabaugh, Duque & Fields, 2021). (Villani, 2021) reported that an increase in anxiety occurrences is found among female students, for students who aren't able to attend in-person college, unable to meet peers etc. The online modality of learning can be particularly stressful for students. While a good relationship with college peers can act as a buffer against academic stress, the lack of physical interaction with them can have serious negative effects on a student's learning outcomes and well-being. Hence, it becomes imperative for the educators to not only focus on the scholastic aspects of college but also promote peer interactions during and after classes in the online

modality of learning for an overall well-being of the students.

For the qualitative part of the study, focus group discussions were conducted to explore the variables comprehensively and also provide plausible solutions for an effective learning experience. The data thus acquired was subjected to Thematic analysis, which led to the emergence of 4 major themes. The first theme that emerged from the analysis- ‘ramifications of learning in online modality’ aims to explain the direct effects faced by students due to a sudden change in the way they attained their education. Our findings reveal that, situational constituents such as lack of internet access and personal space to study combined with increased screen time, lack of time to indulge in leisure activities, trigger feelings of frustration and anger in the students, which leads to a lower subjective well-being. Tangible Resources like a stable internet connection and space to study affect the learning outcomes of the students. A participant said- *“during my classes I hesitated to switch on the mic because of background disturbance, which resulted in me keeping my doubts and questions to myself”*

Students (64.2% of the sample) reported technical issues like poor connectivity, power cuts, broadband issues, poor audio and video quality as the main problems with online learning. Technical issues, lack of structure, disturbance in the flow of classes, problems in clarifying doubts, lack of interest and motivations to attend the classes were some prominent factors reducing the effectiveness of online classes (Nambiar, 2020). Online modality of learning was also seen to have negative consequences in one’s self such as decreased motivation, attention span and frequent changes in one’s mood. The students also reported limited attention span and the resource-intensive nature of online learning as a limitation (Mukhtar, Javed, Arooj& Sethi, 2020).

The second theme that emerged was “Notions regarding online modality of learning.” student’s experiences with their peers and teachers play a major role in their interest and motivation to join online classes. Students’ relationships with their peers have been reported as consistent. The sense of camaraderie with peers helped the students to deal with academic challenges effectively. However, an Inconsistent relationship with teachers and their inaccessibility has negatively affected students’ desire to learn and has consequently been detrimental to their learning outcomes. Student evaluations show that transitioning to online modality was detrimental to the overall quality of the course. Courses became less enjoyable, less interesting, decreased in learning value, facilitated less attention and effort. (Garris & Fleck, 2020)

The theme- “Observed changes in self” elucidates the physical/physiological, emotional and behavioural changes observed by the students in themselves. The findings reveal that due to lack of physical activities during online classes, students experienced fluctuations in weight and the circadian rhythm. Students described a ‘volatile’ emotional state and reported decreased patience, motivation, and increased frustration. While physical changes were experienced by a few, most participants reported a lower subjective well-

being, attributing it to the emotional changes experienced during the online classes.

These findings are supported by many researches, which suggest that online learning leads to higher levels of anxiety, anger and boredom to students than traditional classroom classes. (Stephan, Markus &Gläser-Zikuda, 2019). Furthermore, findings of a study done by Balta-Salvador et. al. (2021) showed that students were not satisfied with the quality of education during the lockdown enforced during the COVID-19 pandemic and reported feeling discouragement, boredom, confusion and worry to a greater extent and calm and trust to a lesser extent. Hence, it can be inferred that the online modality and the stressors produced by it negatively affect the students’ overall subjective well-being.

The final theme- “Role of stakeholders” focuses on the role of various people that surround the students in ensuring an unobstructed experience with the online modality of learning. results reveal that a disturbing family environment can negatively affect the students’ learning outcomes. Whereas a supportive family environment seemed to encourage learning. students reported that having a lack of a supportive home environment and family issues makes it harder for them to fully involve themselves during online classes (Nambiar, 2020). Peer groups also play a significant role in ensuring a smooth experience with online classes by providing tangible and intangible support such as help with assignments; class notes and also emotional support in the pandemic. However, Lack of social interaction is one of the barriers to effective online learning and hence, instructors should make sure they have an interactive environment in the classroom as it makes online learning effective and also helps in releasing the anxiety of social isolation during the lockdown. (Baber, 2021).

5. Limitations

- 1) Convenience sampling was used for the questionnaire.
- 2) The sampling frame was limited to students of the University of Delhi.

6. Future Directions

- 1) Random sampling can be used across various higher educational institutions to make the results more generalisable.
- 2) Scales and measures can be developed to quantify the extent of the effect of resource accessibility, peer and family support on the subjective well-being and learning outcomes of students.

7. Conclusion

This research study was conducted to examine the relationship between learning outcomes and subjective well-being in the online modality of learning during the COVID-19 pandemic.

Findings from the quantitative phase of the study reveal that there is a moderate positive correlation between learning

outcomes and subjective well-being ($r(505) = +0.54, p < .001$).

The qualitative phase explored this relationship comprehensively. The thematic analysis led to the emergence of 4 themes, 11 sub-themes and 35 codes. The major inferences derived from the same were: 1) Online modality has been associated with an overall decline in the reported subjective well-being of the students. 2) Accessibility to tangible resources like a stable internet connection is a major hindrance to online learning. 3) Intangible resources like emotional support from peer group and a supportive family environment act as buffers against the stressors and challenges posed by the online modality of learning. 4) Inconsistent interaction with teachers and peers can lead to lack of motivation and decreased attention span during classes.

This study reveals that the moderate positive correlation between the variables is affected by components such as resource accessibility and emotional support from peers and family and interaction with educators and peers.

Hence, from our study it can be concluded that Resource accessibility, peer and family support significantly leads to an overall healthy subjective well-being and learning outcomes.

References

- [1] Adedoyin OB, Soykan E. COVID-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*; 1–13.
- [2] Agarwal S, Dewan J. Psychological resilience and coping strategies during COVID-19 pandemic lockdown. *JOURNAL OF XI'AN UNIVERSITY OF ARCHITECTURE & TECHNOLOGY* 2020; XII. Epub ahead of print 2020. DOI: 10.37896/jxat12.04/1028.
- [3] Banerjee D, Rai M. Social isolation in COVID-19: The impact of loneliness. *International Journal of Social Psychiatry*; 66: 525–527.
- [4] Bosch MVden. *The oxford textbook of nature and public health: The role of nature in improving the health of a population*. New York, New York: Oxford University Press, 2018.
- [5] Bowler DE, Buyung-Ali LM, Knight TM, et al. A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health* 2010; 10. Epub ahead of print 2010. DOI: 10.1186/1471-2458-10-456.
- [6] Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*; 3: 77–101.
- [7] Collado S, Staats H, Corraliza JA, et al. Restorative environments and health. *Handbook of Environmental Psychology and Quality of Life Research*; 127–148.
- [8] Coomey M, Stephenson J. Online learning: It is all about dialogue, involvement, support and control — according to the research. *Teaching & Learning Online*; 37–52.
- [9] DeSantis L, Ugarriza DN. The concept of theme as used in Qualitative Nursing research. *Western Journal of Nursing Research*; 22: 351–372.
- [10] Etikan I. Sampling and sampling methods. *Biometrics & Biostatistics International Journal* 2017; 5. Epub ahead of print 2017. DOI: 10.15406/bbij.2017.05.00149.
- [11] Frenkel-Yosef M, Maytles R, Shrira A. Loneliness and its concomitants among older adults during the COVID-19 pandemic. *International Psychogeriatrics*; 32: 1257–1259.
- [12] Frumkin H, Bratman GN, Breslow SJ, et al. Nature contact and human Health: A research agenda. *Environmental Health Perspectives*; 125: 075001.
- [13] Hartig T, Mitchell R, de Vries S, et al. Nature and health. *Annual Review of Public Health*; 35: 207–228.
- [14] HERRIOTT ROBERTE, FIRESTONE WILLIAM A. Multisite qualitative policy research: Optimizing description and generalizability. *Educational Researcher*; 12: 14–19.
- [15] Johnson RB, Onwuegbuzie AJ, Turner LA. Toward a definition of mixed methods research. *Journal of Mixed Methods Research*; 1: 112–133.
- [16] Kondo MC, Jacoby SF, South EC. Does spending time outdoors reduce stress? A review of real-time stress response to outdoor environments. *Health & Place*; 51: 136–150.
- [17] Kruger RA. *Focus groups: A practical guide for applied research (2d edition)*, by Richard a. KRUEGER. Thousand OAKS, CA; SAGE Publications. *Journal of Product Innovation Management*; 13: 273–274.
- [18] Losada-Baltar A, Martínez-Huertas JÁ, Jiménez-Gonzalo L, et al. Longitudinal correlates of loneliness and psychological distress during the Lockdown situation due to COVID-19. effects of age and self-perceptions of aging. *The Journals of Gerontology: Series B* 2021. Epub ahead of print 2021. DOI: 10.1093/geronb/gbab012.
- [19] Luchetti M, Lee JH, Aschwanden D, et al. The trajectory of loneliness in response to COVID-19. *American Psychologist*; 75: 897–908.
- [20] MORSE JANICEM. Approaches to qualitative-quantitative methodological triangulation. *Nursing Research* 1991; 40. Epub ahead of print 1991. DOI: 10.1097/00006199-199103000-00014.
- [21] Odriozola-González P, Planchuelo-Gómez Á, Iruetia MJ, et al. Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a Spanish university. *Psychiatry Research*; 290: 113108.
- [22] Okruszek Ł, Aniszewska-Stańczuk A, Piejka A, et al. Safe but Lonely? LONELINESS, anxiety, and depression symptoms and COVID-19. *Frontiers in Psychology* 2020; 11. Epub ahead of print 2020. DOI: 10.3389/fpsyg.2020.579181.
- [23] Palgi Y, Shrira A, Ring L, et al. The loneliness Pandemic: Loneliness and other concomitants of depression, anxiety and their COMORBIDITY during the COVID-19 outbreak. *Journal of Affective Disorders*; 275: 109–111.

- [24] Rossman GB, Wilson BL. Numbers and words revisited: Being? shamelessly eclectic? Quality & Quantity; 28: 315–327.
- [25] Russell D, Cutrona CE, Rose J, et al. Social and EMOTIONAL loneliness: An examination of weiss's typology of loneliness. Journal of Personality and Social Psychology; 46: 1313–1321.
- [26] Schnettler B, Denegri M, Miranda H, et al. Family support and subjective well-being: An exploratory study of university students in southern chile. Social Indicators Research; 122: 833–864.
- [27] Stephan M, Markus S, Gläser-Zikuda M. Students' achievement emotions and online learning in teacher education. Frontiers in Education 2019; 4. Epub ahead of print 2019. DOI: 10.3389/feduc.2019.00109.
- [28] Stickley A, Koyanagi A. Loneliness, common mental disorders and suicidal behavior: Findings from a general population survey. Journal of Affective Disorders; 197: 81–87.
- [29] Stieger S, Lewetz D, Swami V. Emotional well-being under conditions OF Lockdown: An experience SAMPLING study in Austria during the COVID-19 pandemic. Journal of Happiness Studies; 22: 2703–2720.
- [30] Tashakkori A, Creswell JW, Plano Clark VL, et al. Advanced mixed methods research designs . In: Sage handbook of mixed methods in social & behavioral research. Sage, Los Angeles, CA: SAGE Publications, 2010, pp. 209–240.
- [31] Tashakkori A, Teddlie C. Issues and dilemmas in teaching research methods courses in social and behavioural sciences: US perspective. International Journal of Social Research Methodology; 6: 61–77.
- [32] Tull MT, Edmonds KA, Scamaldo KM, et al. Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. Psychiatry Research; 289: 113098.
- [33] Weinstein SM, Mermelstein RJ, Hedeker D, et al. The time-varying influences of peer and family support on Adolescent Daily positive and negative affect. Journal of Clinical Child & Adolescent Psychology; 35: 420–430.
- [34] Yin RK. Case study research: Design and methods. 4th ed. Thousand Oaks, London : Sage, 2009.