The impact of mentoring intervention during COVID-19 in mental health of vulnerable students: Results from International Hellenic University

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Abstract

The spread of COVID-19 has resulted in increased levels of fear, stress, and depression, affecting multiple groups, including university students, who have to also address the fear of not completing their studies due to the various lockdown measures. Mentoring has been identified as an effective solution addressing academic requirements. This work aims to study the extent of the effect of COVID-19 on vulnerable university students and how a mentoring plan may mitigate the situation, while covering the literature gap on the studied subject in Greece. The study protocol incorporates a section dedicated to reviewing the anxiety/repression levels of students after the pandemic, using the Duke Anxiety-Depression scale. The results suggested that female participants expressed higher levels of fear and depression than male participants, as a result of the pandemic. The noted depression levels might be directly attributed to being afraid and stressed due to COVID-19, and indirectly to increased anxiety. This work accentuates the impact of the intricate connections between factors such as anxiety and stress on the appearance of depression and how they can affect strategies intending to address this disorder. These findings underline the importance of a mentor in defining the research route of their mentee and the general significance of mentoring.

Keywords: Completion, COVID-19, Mental health, University students, Mentoring intervention

Introduction

The recent pandemic has been an unanticipated phenomenon, that has affected the lives of multiple people (Ochnik et al., 2021). COVID-19 can be defined as a contagious disease caused by an intense respiratory syndrome virus, also known as SARS-CoV-2 (Sarkar et al., 2021). The pandemic, which has been described as a "black swan" event and "catastrophic calamity", and even juxtaposed to the World War II in regard to financial and societal ramifications, has elicited a historic disruption of education (Radu et al., 2020). COVID-19 has generated a worldwide health emergency, which poses a threat to both the actual lives of people, but also endangers their mental health (Zhong et al., 2021). The physical repercussions of COVID-19 have been widely researched (Shaukat et al., 2020), however, new research work suggests a significant psychological effect on multiple groups, prompting for further study on the subject (Holmes et al., 2020). Lockdown measures worldwide resulted in social isolation at a new level, which can be linked to symptoms of psychological distress, increased anxiety, and intense stress (Rajkumar, 2020; Troyer et al., 2020; X. Wang et al., 2020).

Through this point of view, the strict government measures and the repercussions of the pandemic greatly affected operations in all educational institutions globally (Śliwa et al., 2021). Education in Greece has naturally also been impacted by the pandemic, since the Greek government imposed the closure of all academic institutes country-wide, effective since March 10, 2020 (Parlapani et al., 2020)

Web-based meeting platforms have been utilized to assist with academic activities (Raaper & Brown, 2020; Rizun & Strzelecki, 2020), thus weighing down the students who without warning were expected to possess or acquire a new set of skills, abilities, and resources (Iivari et al., 2020).These demands have negatively influenced the mental state of many social groups (People with limited resources to get protected against the disease (Tan et al., 2020) and people with either physical or mental deficiencies are the most exposed (Hao et al., 2020)), including university students who were impacted by lockdown (Marques et al., 2021).

University students are deeply affected by the pandemic (Aristovnik et al., 2020), encountering a multitude of mental health challenges, very little social support in the process of adjusting to online courses, and inequality in educational opportunities, which has put an additional strain on their transition to higher education (Pownall et al., 2021). Cao et al and Wang et al explored the impact of these challenges on the psychology of undergraduate

students (Cao et al., 2020; C. Wang et al., 2020). These issues appear to be further magnified if the student already belongs to a marginalized group, such as racial, ethnic, sexual or gender minorities (Ruprecht et al., 2021). Students may be additionally stressed over the possibility of bad performance and potential delays In finishing their studies (Malik & Javed, 2021).

Academic institutions have attempted to alleviate some of these difficulties by offering increased access to mental health services (Nash, 2021) [24].] C. Berinsterova suggested most institutions provide some sort of mentoring (Berinšterová, 2021), which is a means of intervention that has proven to be beneficial when addressing crises like this (Kaufman et al., 2021).

The following observations have been made throughout researching the current situation, as mentioned below:

- Only two studies were found in terms of studying the mental health of vulnerable Greek university students during this crisis (Kaparounaki et al., 2020), focusing on the ramifications of the lockdown measures and quarantine, coming to the conclusion that vulnerable groups require targeted interventions. (Sazakli et al., 2021) suggested that mental health should be monitored, and any measures should put emphasis on select personal, academic and social factors. (Parlapani et al., 2020) concluded that safety/checking behaviors and adherence to guidelines have heightened fear, possibly because of the contamination awareness. Women and older students have displayed increased anxiety related to COVID-19.
- Literature research highlighted the limited number of publications on the impact of COVID-19 related mentoring on the perception of stress and depression of vulnerable students in Greece.

This work attempts to address the above issues and contribute by:

- Performing a thorough study in the International Hellenic University to examine the effectiveness of mentoring in vulnerable groups.
- Describing the study conclusions and discussing the successful strategies, offering insight on the perspective of the study subjects.

This work's main objective is thus to explore the results of COVID-19-related monitoring on the levels of stress perception of Greek vulnerable university students, thereby closing the literature gap on the subject. The findings allow educators, administrators and policy makers to improve mentoring processes in a manner that protects the mental health of the students. Section 2, discusses the proposed methodology in greater detail, along with the data collection and processing methods. Section 3 describes the findings, while Section 4

discusses these results and examines limitations, and potential need for further studies. Lastly, Section 5 concludes the paper.

2. Materials and Methods

This study was conducted at a state public university; The International Hellenic University in Greece. In 2018, the "Support for social care interventions (SSCI) for students of the International Hellenic University (Kavala campus)" program was created, funded by the National Strategic Reference Frame (NSRF) and the European Union Social Fund as well as local resources (MIS 5048179). This descriptive study aims to provide additional insight, from the program participants' perspective, in terms of the challenges faced and the successful mentoring strategies. In short, the goal of the SCCI program is to increase the percentage of timely completion of studies and to encourage the participation of students belonging to vulnerable or financially-challenged groups in higher education, through the strengthening of relevant support structures. In particular, it includes the following indicative actions:

- Recording current needs,
- Psychological support for students with disabilities and vulnerable social groups
- Study counseling for students with disabilities and vulnerable social groups.

2.1. Participants

The participants selected were undergraduate IHU students, who study in the Kavala campus. Ph.D. and M.Sc. students were excluded, because in many universities some of them operate as paid employees, thus rendering them less easy to compare to the undergraduate students. A call for participation was sent out to all faculties of the Kavala Campus of the International Hellenic University, which is located in Kavala, Greece. Undergraduate students were sent a link with the invitation through the administration of the program and were asked to participate in the program Support for social care interventions for students of the International Hellenic University (Kavala campus) MIS 5048179. An online platform was established as the official connection between the university and the students.

The questionnaire included a note on the voluntary participation, an anonymity clause and a consent form, as well as instructions about answering the questions. Measures were taken to ensure the privacy and confidentiality of the participants' sensitive information, all of which were apprised about the study goals and the confidentiality of their information, only to be used in the context of this study, and that not participating would not impact their studies under any circumstances. All required actions were compliant with the national and

university standards and policies in terms of human experimentation and according to the 1975 Helsinki Declaration (and 2008 revision).

2.2. Variables

The variable identification and definition can assist in refining the research problem. A variable can be defined as a symbol, figure or character that might have various distinct values (Kumar, 2011). Variables are measurable, and can be controlled or influenced. They have different attributes and specific roles in the research, with varying measure types they can be subject to.

The variables used in this work have been distinguished into the following basic categories (Kumar, 2011): **Independent:** These are the variables or factors affecting the dependent variables, which means that an adjustment of the independent variable will cause a cascading update of the dependent variable. After an extensive literature review and a series of expert interviews, the research variables were determined. **Confounding:** Variables that weren't included in the calculations. They can imply a correlation when in actuality this is not the case, and they might even insinuate bias. **Dependent:** The value of a such variables are affected by or relies on some other variable/s. **Moderator:** A variable, which is considered to influence the extent of the effect of an independent variable on a dependent one. This could be a variable that might enhance, lessen, cancel, or otherwise affect the correlation between independent and dependent variables. **Control:** A variable that cannot be examined simultaneously, thus should be neutralized to make sure it does not have any effect. Such variables can be useful in controlling confounding variables.

Independent variables: a) Demographic and social characteristics (mainly gender and social status), b) academic status (the study program and area were incorporated as parameters relevant to the academic context of the students).
Dependent Variable: Mental health for the completion of the studies
Confounding variable: Entry level characteristics
Control variables: Academic performance
Moderator variable: Mentoring intervention

2.3. Sampling Method

Non-probability sampling is frequently linked with case study and qualitative research, where the case studies are mostly limited to small samples, with no intent to evaluate a phenomenon, or to produce statistical results about a wider population (Yin, 2009). A sample of people or cases are not required to be representative, or follow a certain pattern, but there should be a specified logic for the participation of certain individuals or for the selection of certain cases over others (Taherdoost, 2016).

Purposive or judgmental sampling is a method, in which particular circumstances, individuals or events are specifically chosen to extract significant information that cannot be otherwise obtained (Maxwell, 2013), i.e. when the researcher takes into account cases or people because they deem it appropriate to include them (Taherdoost, 2016).

2.4 Questionnaire design

A questionnaire with six categories was designed, including demographics, knowledge about COVID-19, approach and frequency of obtaining information, comprehension level, social behaviors and actions and personal-psychological aspects. The questionnaire was designed in Greek with an English translation.

The demographic information included gender, year of entry and department, as well as details on financial status, residence, vulnerable group status, and sociopsychological parameters. A list of emotional self-evaluation questions was included, following the Duke Anxiety-Depression scale, in order to calculate the corresponding score. The Duke scale includes 7 parameters that assess psychological symptoms (depression, anxiety), bodily symptoms (fatigue, sleep deprivation), self-esteem concerns (being comfortable around other people, quitting too easily) and cognitive factors (difficulty concentrating). A score that is higher than 5 is considered High, while below that threshold, it is considered Low (Parkerson & Broadhead, 1997). The score can be adjusted to a 0-100 scale by multiplying with 7.143. In addition, question about awareness were included, examining the level of knowledge before and after the emergency declaration of the pandemic. A 5-point Likert scale was used (1 being “strongly disagree” and 5 meaning “strongly agree”) according to several questionnaires for infectious diseases.

2.5 UMBRACO Database

The UMBRACO Database is the program's database that hosts the information regarding student demographics, and academic programs for all the semesters a student is registered. The Umbraco CMS platform has been selected based on its provided features and adjustability, that allow for easier development as opposed to other popular CMSs such as Joomla! and WordPress, according to careful deliberation and after practical use thereof. This system collects, stores, manages, and publishes vulnerability information. Each student is provided a unique identification number and username upon registration.

2.6 Data Collection

The information about the mental health of the students was gathered over the past two years, during which the sample of the 416 university students was available for most of the descriptive statistics. The data were collected through an online questionnaire, after obtaining participants' consent. A structured multipart questionnaire was designed, which was approved by the scientific coordinator of the program. The survey consisted of mostly closed questions; however, a few open-ended questions were also included.

2. 7 Data Analysis

The data was exported for further statistical analysis and to obtain a clearer graphical representation of them, which enabled their analysis and interpretation. The answers to the open-ended questions were grouped according to similarity.

3. Results

3.1. Characteristics of Participants

The basic information of the total sample (N = 416) is presented in Table 1. The full sample consists of 224 (53.8%) female and 192 (46.15%) male participants. The target group consisted of students from the following faculties: Sciences, Engineering and Economics and Business Administration. There were 130 students from the Faculty of Sciences, 106 from the Faculty of Engineering and 180 students from the Faculty of Economics and Business Administration that completed the questionnaire. About 40% of the participants stemmed from the Faculty of Economics and Business Administration, constituting the largest part of the sample.

Table 1. Students' demographic characteristics

SOCIODEMOGRAPHIC FACTORS			
VARIABLES	Participants		
Academic Status			
Undergraduate students **n (%)**	100% (n=416)		
Gender n (%)			
Female	**n**= 224 (53,8)		
Male	**n**= 192 (46,15)		
Faculty of Sciences n= 130 (31,25)			
Study field n (%)		F	M
Chemistry	**n** = 47 (11,2)	20	27
Physics	**n** =50 (12,01)	18	32
Computer Science	**n** = 33 (7,9)	8	25
Faculty of Engineering n=106 (25,48)			
Study field n (%)			
Petroleum and Mechanical Engineering Dpt.	**n** =42 (10,09)	16	26
Electrical Engineering Dept.	**n** =27 (6,4)	5	22
Computer Engineering Dept.	**n** = 37 (8,8)	13	24
Faculty of Economics and Business Administration n=180 (43,26)			
Study field n (%)			
Accounting and Finance	**n** =76 (18,2)	49	27
Management Science and Technology Dept.	**n** =104 (25)	67	**n**37

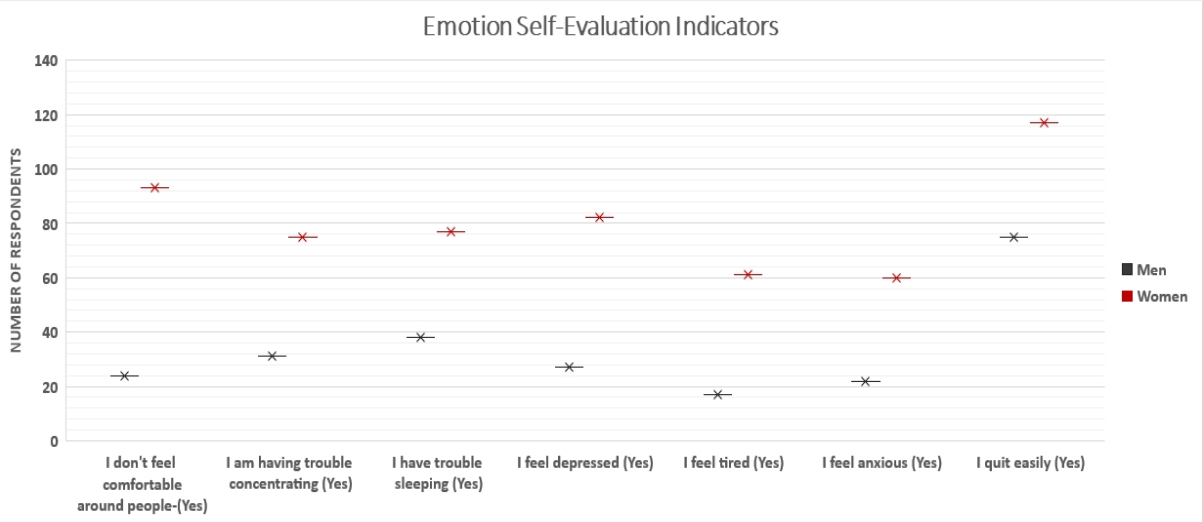

Figure. 1. Positive response frequencies to emotion self-evaluation indicators for men and women

The frequencies of participants reporting symptom positively, according to gender, is presented in Figure 1. The figure displays the percentage of men (blue) and women (red) who reported positively when asked if they expressed specific symptoms such as anxiety, stress and depression. It becomes apparent that women are more negatively affected, expressing they have experienced the above negative emotions at a consistently higher frequency than men. The pattern applies to all questions, showing a larger gap for the question about feeling comfortable around other people. It is further evident that both women and men appear to quit more easily, reaching almost 120 for the women, and slightly less than 80 responses from the men.

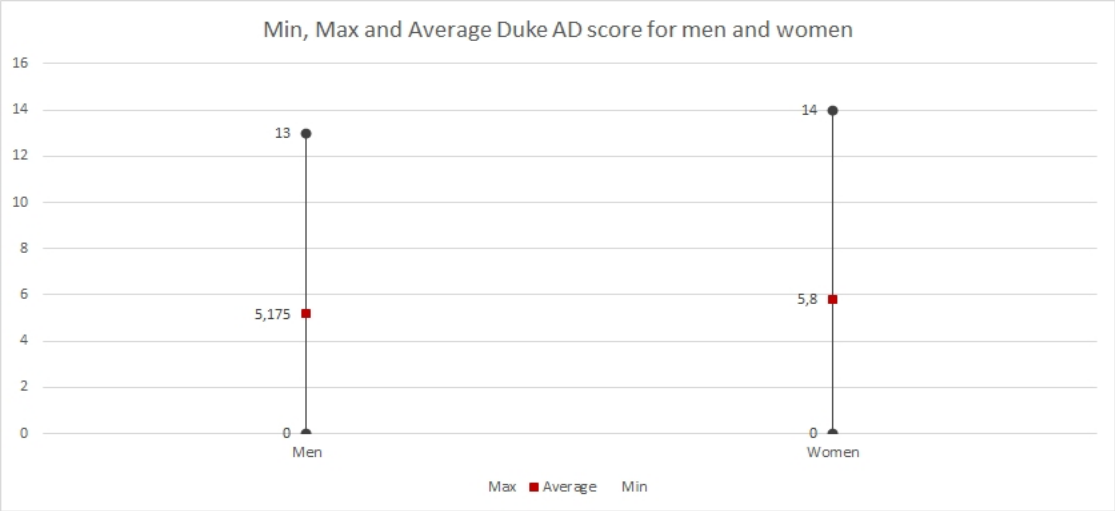

Figure 2. The minimum, maximum and average Duke AD scores for men and women

Figure 2 displays the minimum, maximum and average values of the Duke Anxiety-Depression scores for men and women participants. For both cases, the minimum was 0 while the maximum reached 13 and 14 respectively. The average score however, is higher for women, at 5.8 versus 5.175 for men. The general average score for the sample is 5.53, which is more than the threshold of 5, which is used to determine if a score is High or Low.

4. DISCUSSION

University students in Greece are a representative section of the young generation that was deeply affected by the pandemic in their daily life and activities. Using vulnerable university students as the target group lends to the strength of this study since at the time the research was conducted, no other studies had been found to delve on the effect of monitoring vulnerable university students' stress perceptions in terms of the pandemic in Greece. This study was conducted in an effort to cover this gap in evidence.

Provided the possibility of continuous psychological distress due to the COVID-19 pandemic, universities should consider assisting students maintain a healthy mental state rather than just avoiding stress (Bavel et al., 2020). Recent research suggests that avoidance (i.e., avoiding exposure and difficult situations related to the pandemic) was the constant denominator of increased feelings of depression and anxiety.

The required lockdown measures brought about psychological health issues to university students, including the expression of anxiety, stress, and depression, as recorded in

a study of (Huang & Zhao, 2020) in China. This study also identifies university students as a vulnerable group and aims to add to the growing literature on the subject of the mental state of higher education institute students (Van de Velde et al., 2021). It confirmed increased levels of negative psychological feelings in students during the pandemic. Students of a worse social or financial status, with less access to societal support, were especially affected during this crisis. This suggests that it was not COVID-19 directly, but mostly its secondary effects that impacted the students' mental health.

The contributions of this work corroborate past findings, that the student population is more exposed in a psychological and social aspect (Reznik et al., 2020). They also validate the observation that the measures taken have heightened the anxiety and depression levels of undergraduate students (Santini et al., 2020). Our own results indicate that women, within this group, might require additional consideration in terms of strategies or further actions.

Accordingly, as a result of the widespread need to establish specialized tools to comprehend the effect of the pandemic on students (Sahu, 2020), efforts were applied on monitoring, hoping that it could foster positive results. The establishment of mentoring groups can enable communication of ideas and provision of advice, while addressing the fear of isolation. This can be especially beneficial for vulnerable groups, thus mentoring groups and platforms created during the pandemic should continue operations beyond its duration (Sharma & Bhaskar, 2020).

Despite its strengths and contributions, this study had some limitations that should be noted. Firstly, the questionnaire administration was web-based, possibly restricting access to the participation in the study for those without Internet access. Nevertheless, considering the target population (mostly of young age and with access to distance learning), this limitation should not have a significant impact on the findings to a great extent. In addition, the sample comprised of students registered only in one institute and specifically on one Campus. As a result, additional research on larger samples would be required to confirm the findings of this study (e.g., a nationally representative sample).

5. CONCLUSION

The burden of psychological distress has impacted vulnerable university students, regardless of the level of infection risk. The Duke AD scores for men and women follow the same pattern with almost identical minimum and maximum, however the sample of female participants provided a higher score of 5.8 vs the one provided by the sample of male

participants 5.175, which suggests that women are more affected and express elevated levels of depression and anxiety. There is a noted increase across all symptoms, with women appearing to be more affected than men at all levels, but especially in terms of quitting easily and being uncomfortable around other people. Vulnerable Greek university students have shown an inclination to preserve safety and good health during the COVID-19 crisis, however the effect of lockdown restrictions and continued uncertainty has negatively affected their mental state. Mentoring can help address this issue, helping students cope with the presented challenges through the pandemic. It would be beneficial to further expand such programs beyond the crisis.

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