

Is it Just About Physical Health? An Online Cross-Sectional Study Exploring the Psychological Distress Among University Students in Jordan in the midst of COVID-19 Pandemic

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1 **Is it Just About Physical Health? An Online Cross-Sectional Study**
2 **Exploring the Psychological Distress Among University Students in**
3 **Jordan in the midst of COVID-19 Pandemic**

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19 **Keywords: COVID-19 Pandemic, Jordan, University Students, Psychological Distress, Kessler**
20 **Distress Scale.**

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30 **Abstract**

31 **Background** Since the spread of COVID-19 on a global scale, most of efforts at national and
32 international levels were directed to mitigate the spread of the disease and its physical harm , paying
33 less attention to the psychological impacts of COVID-19 on global mental health especially at early
34 stages of the pandemic.

35 **Objectives** This study aimed to assess and explore (i) The levels of psychological distress and its
36 correlates (ii) Motivation for distance learning (iii) Coping activities and pandemic related concerns,
37 among university students in Jordan in the midst of COVID-19 pandemic

38 **Methods** A cross-sectional study was conducted using an online self-administered questionnaire. The
39 measure of psychological distress was obtained using the 10-item Kessler Psychological Distress
40 Scale, while other questions have explored our study's second and third aims.

41 **Results** A total of 381 completed questionnaires were included in the analysis. Female participants
42 slightly predominated the sample (n=199, 52.2%). The respondents aged 18-38 years (mean 22.6 years,
43 SD: 3.16). Concerning distress severity, most of respondents were regarded as having severe
44 psychological distress (n=265, 69.5%). 209 students (54.9%) reported that they had no motivation for
45 distance learning. Ordinal logistic regression revealed a significant correlation between distress
46 severity and many predictors. Among the predictors that were found to act as a protective factors
47 against higher levels of distress included older age (aOR=0.64, P=0.022; 95% CI: 0.44 - 0.94) , and
48 having a strong motivation for distance learning (aOR=0.10, P=0.048 ; 95% CI: 0.01 - 0.96). In
49 contrary, being a current smoker (aOR=1.99, P=0.049 ; 95% CI: 1.10 - 3.39), and having no motivation
50 for distance learning (aOR=2.49, P=0.007; 95% CI: 1.29 - 4.80) acted as risk factors for having higher
51 levels of psychological distress among the students .The most common coping activity reported was
52 spending more time on social media platforms (n=269, 70.6%), and 209 students (54.9%) reported
53 distance learning was their most distressing concern.

54 **Conclusion** The COVID-19 pandemic and related control measures could impact the mental health of
55 individuals, including students. We recommend a nationwide psychological support program to be
56 incorporated into Jordan's preparedness plan and response strategy in combating the COVID-19
57 pandemic.

58

59 1 INTRODUCTION

60 COVID-19 is a highly transmissible respiratory disease caused by a new type of human coronaviruses;
61 SARS-CoV-2 (Al-Tammemi, 2020). Since its discovery in late December 2019, the disease has spread
62 widely across many countries and territories on a global scale. As of September 20,2020 more than 30
63 million confirmed cases, and over nine hundred thousand confirmed deaths across 216 countries and
64 territories were attributed to the COVID-19 (World Health Organization, 2020).

65 Epidemics and outbreaks can pose profound impacts on physical health, mental health as well as the
66 global economy resulting in disruptions of humans' daily life (Chakraborty and Maity, 2020). The
67 containment measures that were adopted by many countries worldwide in combating the COVID-19
68 such as quarantine, countries' lockdown, travel restrictions, physical distancing, social isolation as well
69 as local restrictions on individuals' mobility, can lead to a significant burden on mental health causing
70 emotional and behavioral changes (SAMHSA, 2014; Brooks et al., 2020; Cao et al., 2020; Center for
71 the Study of Traumatic Stress, 2020; Holmes et al., 2020).

72 In addition, the psychological impacts of outbreaks are considered a threat not only on individuals with
73 pre-existing psychiatric illness but also on those who are free of any psychiatric condition (Ho et al.,
74 2020). The fear of an epidemic can afflict individuals irrespective of their gender, age, race, or
75 socioeconomic status. Anxiety, insomnia, anger, loneliness, fear, shame, helplessness, blame, guilt,
76 and stigma were all found to be present during infectious diseases' outbreaks (Ho et al., 2020; Ornell
77 et al., 2020). Different psychiatric conditions, including depression, panic attacks, Post Traumatic
78 Stress Disorder, and even suicidality, were also reported to be associated with outbreaks, especially in
79 younger age groups (Ho et al., 2020).

80 In epidemics, certain groups in the society such as older people, children, health care workers, infected
81 patients, patients with pre-existing psychiatric conditions and students are at a greater risk of suffering
82 from a significant degree of psychological pressure and stress compared to other individuals (Ho et al.,
83 2020). It is essential to gather information about the impacts of the COVID-19 pandemic on the mental
84 health of the general population and specific vulnerable groups, and this will help in developing
85 appropriate interventions that would mitigate such pandemic's adverse effects (Holmes et al., 2020).
86 Since the beginning of the COVID-19 pandemic, most of the global efforts act on the biological and
87 physical aspects of the pandemic in order to limit its spread within the communities. However, much

88 less attention was paid to the mental health risks of the COVID-19 pandemic especially at early stages
89 of the pandemic.

90 Jordan is amongst the countries that have been struck by the COVID-19 pandemic , and in response to
91 that , many preventive and control strategies were enforced by the government to retard the viral spread
92 in the country. One of Jordan’s public health responses during early stages of the pandemic was
93 declaring the closure of all schools and higher academic institutions with shifting to online remote
94 learning since the middle of March 2020 (Al-Tammemi, 2020; Jordanian Ministry of Health, 2020;
95 Prime Ministry of Jordan, 2020). The COVID-19 pandemic alongwith the disruptions that happened
96 in various sectors including the academic sector has forced the students to live in a new experience at
97 both academic and personal levels. Consequently and in light of limited literatures that assessed mental
98 health status of university students in Jordan, our present study aimed at (i) Exploring the level of
99 psychological distress and its correlates amongst university students during the COVID-19 pandemic
100 (ii) Evaluating the students’ motivation for distance learning and , (iii) Exploring coping activities and
101 major pandemic related concerns from students’ perspective.

102 **2 MATERIALS AND METHODS**

103 **2.1 Study Design and Participants**

104 A cross-sectional study was conducted in May 2020, using an online self-administered questionnaire
105 of closed-ended questions. The participants in our study were recruited through social media platforms
106 employing a convenience sampling strategy. The questionnaire was distributed across seven randomly
107 selected Facebook groups of university students in Jordan and academic groups on WhatsApp
108 messenger for a duration of one day. These social media groups were created by students as a tool for
109 general and academic communication within the students’ community and involved students who are
110 currently enrolled in different study programs and levels at various academic institutions in Jordan.
111 The students who were available and voluntarily willing to be involved in the study could open a link
112 to get an information letter about the study, eligibility criteria, and informed consent as a prerequisite
113 to proceed in participation. Considering the nature of the web-based Google form surveys , the students
114 were instructed to fill out the questionnaire with probity after fullfilling the eligibility criteria,
115 consenting on voluantry participation and filling it only once. We did not provide any form of
116 compensation to the participants upon their involovement in our study.

117 We decided to carry out this study using an internet-based survey due to the current pandemic crisis
118 and the national strict measures on the face to face communication coupled with the closure of all
119 academic institutions in Jordan at the time of data collection In addition, using the internet and social
120 media for the recruitment and sampling procedures in this study has shown to be an effective and time-
121 efficient method to reach inaccessible potential participants from different Jordanian regions by
122 eliminating any geographical boundaries. A recent systematic review of 109 published articles that
123 aimed at evaluating the use of social media such as Facebook for recruitment of research participants
124 in various psychological and medical studies came into evidence, which supported the effectiveness
125 and efficiency of this strategy (Thornton et al., 2016).

126 For a student to be able to participate in this study, all the following eligibility criteria were
127 implemented:

- 128 1- Age \geq 18 years
- 129 2- Residing in Jordan during the pandemic crisis
- 130 3- Active enrollment in an undergraduate or postgraduate study at a Jordanian University.

131

132 **2.2 Instruments and Measures**

133 The online questionnaire was created using *Google Forms* provided by Google TM and was constructed
134 in modern standard Arabic. The questionnaire consisted of three sections, with a total of 24 questions.
135 The first section comprised of seven questions about sociodemographic information including age,
136 gender, region of residence, study level, type of academic institution, marital status, and smoking status
137 alongwith two questions about any history of pre-existing psychiatric conditions and related
138 medication use.

139 The second section included an Arabic version of the 10-item Kessler Psychological Distress Scale
140 (K10). This Arabic version was translated from the original English version by a team of linguistic
141 experts from multiple Arab countries (Egypt, Libya, Lebanon, and Tunisia) in addition to Arab experts
142 in Psychology in the United States. The Arabic version is provided by Harvard Medical School on the
143 webpage of the National Comorbidity Survey (National Comorbidity Survey, 2013).

144 The 10-item Kessler Psychological Distress Scale (K10) is an internationally validated tool for simple
145 and rapid assessment/screening of non-specific psychological distress in which 10 questions with 5-

146 point Likert scale responses are present (Andrews and Slade, 2001; Kessler et al., 2002; Fassaert et al.,
147 2009; Easton et al., 2017). On a sample of Arabs, the Arabic version of the 10-item Kessler
148 Psychological Distress Scale (K10) has shown satisfactory psychometric properties with high internal
149 consistency and reliability (Cronbach's $\alpha = 0.88$) (Easton et al., 2017).

150 The questions of the 10-item Kessler Psychological Distress Scale (K10) are:

151 **Question 1 (Q1)**. "During the last 30 days, about how often did you feel tired out for no good reason?"

152 **Question 2 (Q2)**. "During the last 30 days, about how often did you feel nervous?"

153 **Question 3 (Q3)**. "During the last 30 days, about how often did you feel so nervous that nothing could
154 calm you down?"

155 **Question 4 (Q4)**. "During the last 30 days, about how often did you feel hopeless?"

156 **Question 5 (Q5)**. "During the last 30 days, about how often did you feel restless or fidgety?"

157 **Question 6 (Q6)**. "During the last 30 days, about how often did you feel so restless you could not sit
158 still?"

159 **Question 7 (Q7)**. "During the last 30 days, about how often did you feel depressed?"

160 **Question 8 (Q8)**. "During the last 30 days, about how often did you feel that everything was an effort?"

161 **Question 9 (Q9)**. "During the last 30 days, about how often did you feel so sad that nothing could
162 cheer you up?"

163 **Question 10 (Q10)**. "During the last 30 days, about how often did you feel worthless?"

164 The response choices with their correspondence score weights are *None of the time* (1 point), *A little*
165 *of the time* (2 points), *Some of the time* (3 points), *Most of the time* (4 points), and *All the of time* (5
166 points). With having 10 questions and five weighted responses as previously described, the total
167 minimum and maximum scores for the Kessler distress scale (K10) are 10 and 50, respectively. As per
168 the scale's guide, **Q3** and **Q6** were not asked in our study and were automatically scored as one point
169 if the preceding questions **Q2** and **Q5** were answered as *None of the time*.

170 The severity of psychological distress was then categorized into four groups as the following based on
171 the total K10 distress score for each participant: 10-19 = no psychological distress, 20-24 = mild
172 psychological distress, 25-29 = moderate psychological distress, and 30-50 = severe psychological
173 distress (Andrews and Slade, 2001).

174 The third section of the questionnaire included five questions about the following topics: one question
175 about *coping activities during COVID-19 pandemic and the nationwide curfew in Jordan*. This question
176 included a list of 13 activities from which the students were able to choose all that applies to their
177 situation and to add any activity that was not listed among the choices using the option “*others , please
178 specify*”. Most of the listed activities were suggested by the authors and few others were adapted from
179 another resource (USCF, 2020). Amongst these activities were spending more time on social
180 networking platforms ,talking to friends, watching television, more engagement with family, listening
181 to music, practicing sports at home, studying and preparing for exams, increase smoking, reading
182 Books / novels, meditation, herbal drinks, practicing Yoga, talking to a psychological counselor and
183 others. Two questions about *the use of medications to cope with COVID-19 related distress*, in which
184 one of the questions was with yes/no response to know whether the student used a medicinal drug to
185 cope with pandemic distress or not and if yes, to report the frequency of usage, while the other question
186 included different classes of medications with examples on most common trade names in each class
187 and the students could add any medication that was not listed using the option “*others , please
188 specify*”. Additionally, one question about *students’ motivation for online distance learning* ,using a
189 single-answer item with responses as no motivation, low motivation, moderate motivation, and strong
190 motivation, and lastly, a question about *major pandemic related concerns as perceived by the students*.
191 This question was a single-answer question with five response choices including being infected by
192 COVID-19, online distance learning, the economic impacts of the COVID-19 pandemic , curfew and
193 social isolation, and other concerns.

194 The questionnaire was piloted on 10 students who were approached by the first author to test the
195 phrasing, suitability, and understandability of the questions. The responses from these 10 students, as
196 well as incomplete questionnaires, were excluded from the analysis.

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200 **2.3 Data Management and Analysis**

201 Completed questionnaires were extracted from Google Forms as an Excel sheet and were then
202 incorporated into STATA IC 16.1 (StataCorp LLC., Texas, USA). Descriptive analysis and summary
203 statistics were used in which numerical variables were described as mean and standard deviation, while
204 categorical variables were described as frequency and percentage. In addition, non-parametric tests
205 were used including Wilcoxon Rank-Sum test to compare the mean of total K10 distress scores
206 between males and females while Spearman's rank correlation to test the relationship between age and
207 total K10 distress scores. Besides, ordinal logistic regression was employed to assess the correlation
208 between psychological distress severity (outcome variable with ordinal responses) and other
209 independent sociodemographic predictors. The confidence level was set at 95% and a *P*-value less than
210 0.05 was considered statistically significant.

211 **2.4 Ethical considerations**

212 The study was conducted according to the *Declaration of Helsinki*. Ethical approval was granted by
213 the Institutional Review Board at Al-Zaytoonah University of Jordan. Besides, the questionnaire
214 ensured the privacy and confidentiality of participants by not asking any questions about names, phone
215 numbers, physical addresses, or emails; thus, all participants were anonymous. Also, an information
216 letter was incorporated into the first page of the questionnaire and included explicit information about
217 the researchers and their affiliations, the study description and objectives, eligibility criteria for
218 participation, voluntary participation and withdrawal, benefits and risks, privacy and confidentiality
219 aspects, data handling, as well as the contact details for any enquiry. Furthermore, at the end of the
220 information letter, electronic informed consent was requested from participants as a prerequisite to join
221 the survey voluntarily.

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228 3 RESULTS

229 3.1 Respondents' Characteristics

230 A total of 397 questionnaires were received, and 16 were excluded due to incompleteness. So, the
231 remaining 381 were included in our analysis. There was a slight predomination of female participants
232 (n=199, 52.2%) compared to male participants (n=182, 47.8%). The mean age was 22.6 years
233 (SD=3.16) and ranged between 18-38 years. The vast majority of participants were single (n=352 ,
234 92.4%) , undergraduates (n=323 ,84.8%) , studying at governmental/public universities or colleges
235 (n=209 , 54.9%) , living in the central region of Jordan (n=302 , 79.3%) , currently non-smokers (n=267
236 ,70.1%) as well as with no history of pre-existing psychological or mental illness (n=366 , 96.1%).
237 More details about the sociodemographic characteristics of the respondents are provided in **Table 1**.

238

239 3.2 Kessler Psychological Distress Scale (K10) Results

240 The total K10 distress scores had a mean of 34.2 (SD=9.4). The mean K10 distress score was slightly
241 higher among women (mean=34.7, SD=8.56) compared to men (mean=33.7, SD=10.3); however,
242 Wilcoxon Rank-Sum test showed that this difference is statistically insignificant ($P=0.566$).
243 Concerning age, Spearman's rank correlation test revealed a statistically significant inverse
244 relationship between age and total K10 distress score ($Rho = -0.1645$, $P=0.001$), which indicates that
245 younger age groups were more likely to have higher total K10 distress scores; thus, more distress.
246 **(Figure 1)**.

247 Regarding psychological distress severity categorization and based on K10 scale's categories described
248 earlier in study instrument, most of respondents were regarded as having severe psychological distress
249 (n=265, 69.5%), followed by moderate psychological distress (n=48, 12.6%), mild psychological
250 distress (n=41, 10.8%), and no psychological distress (n=27, 7.1%). **Tables 2** and **Figure 2** show more
251 descriptive results of the K10 distress scale by severity level and gender.

252 Ordinal logistic regression was employed to assess the correlation between distress severity (ordinal
253 outcome variable) and other sociodemographic predictors, however, considering our sample size
254 (n=381) and in order to achieve sufficient statistical power for the regression test, we have merged *no*
255 *distress* and *mild distress* in one ordinal category as well as *moderate distress* and *severe distress*
256 together in another ordinal category. Therefore , we had an ordinal outcome variable with two severity

257 levels/categories. After that, we tested each independent variable against the outcome variable .All
258 independent variables that had a P value less than 0.25 in univariable regression were included in the
259 final ordinal logistic regression model. The regression model revealed a significant correlation
260 between distress severity and some predictors. Among the predictors that were found to act as a
261 protective factor against higher levels of distress were *older age* (aOR=0.64, P=0.022; 95% CI: 0.44 –
262 0.94) , and having a *strong motivation for distance learning* (aOR=0.10, P=0.048 ; 95% CI: 0.01 -
263 0.96) .In contrary, being a *current smoker* (aOR=1.99, P=0.049 ; 95% CI: 1.10 - 3.39), and having *no*
264 *motivation for distance learning* (aOR=2.49, P=0.007; 95% CI: 1.29 - 4.80) acted as risk factors for
265 having higher levels of psychological distress among the students The detailed results of ordinal
266 logistic regression are presented in **Table 3**

267

268 **3.3 The motivation for Distance Learning**

269 Surprisingly, a significant proportion of the students have reported that they had *no motivation at all*
270 toward the online distance learning (n=209, 54.9%), , and as described earlier , students with no
271 motivation for distance learning were more likely to suffer from higher degrees of psychological
272 distress (aOR=2.49, P=0.007; 95% CI: 1.29 - 4.80).**Table 4 and Figure 3** demonstrate more
273 descriptive details about the motivation for distance learning .

274

275 **3.4 Coping Activities and Concerns during the COVID-19 Pandemic**

276 The students have selected many coping activities that the they frequently practiced during the
277 nationwide curfew in Jordan. Interestingly, the responses with highest frequencies were *spending more*
278 *time on social networking platforms like Facebook and Instagram* (n=269, 70.6%), *talking to friends*
279 *on mobile phones and internet* (n=217, 57%), *watching television and movies* (n=210, 55.1%), *more*
280 *engagement with family* (n=202, 53%), and *listening to music* (n=162, 42.5%). More details about
281 these activities are provided in **Table 5**.

282 In addition, among the 381 respondents, 332 students (87.1%) reported no use of any medications
283 during the last 30 days for coping with the distress accompanied the COVID-19 pandemic and the
284 nationwide curfew, while 49 students (12.9%) reported the use of various types of medications at
285 different frequencies with occasionally (1-2 times in a month) as the most common frequency. Sedative

286 hypnotics (38%) reported being on the top of the used medications followed by others (28%), which
287 included over-the-counter medications like Paracetamol and other simple analgesics. More details are
288 demonstrated in **Figures 4, 5, and Table 6**.

289 Moreover, 209 students (54.9%) reported that *online distance learning* was the highest and most
290 serious issue of concern, followed by 75 students (19.7%) who reported *curfew and social isolation* as
291 their highest issue of concern. Unexpectedly, only 53 students (13.9%) reported *being infected by*
292 *COVID-19* as their most serious concern. **Figure 6** for more illustration.

293

294 **4 DISCUSSION**

295 In our study, the vast majority of the students (92.9%) suffered from different levels of psychological
296 distress ranging from mild to severe degrees during the COVID-19 pandemic. The psychological
297 wellbeing of university students in the midst of the current pandemic has been established and reported
298 in recently published literatures as well. A recent study which was conducted by Cao et al. (2020) in
299 China and aimed at exploring the psychological impact of COVID-19 on college students using the 7-
300 item Generalized Anxiety Disorder Scale (GAD-7) has revealed that 24.9% of students suffered from
301 anxiety during this pandemic with a positive association of the level of anxiety with different economic
302 and academic stressors (Cao et al., 2020). Similar to Cao et al. (2020) study, our study found that there
303 was no significant difference in the total psychological distress scores between men and women. In
304 addition, Cao et al. found that social support was negatively associated with anxiety status among
305 students, and we have that as one of our most reported coping mechanisms, i.e., socialization through
306 social networking sites. Nevertheless, in our study, age was statistically and significantly associated
307 with distress severity; i.e the younger the age, the more likely to suffer from higher levels of
308 psychological distress. The difference in distress proportions between our study (92.9%) and Cao et al
309 study (24.9 %) could be attributed to the use of different scales, i.e. GAD-7 vs. K10 as well as the
310 sample size. In addition, we carried out the survey in a period close to final examinations, which might
311 have had an additional negative impact on the students' psychological status.

312 Additionally, a recent study by Olimat et al (2020) (Olaimat et al., 2020) was conducted to assess
313 attitudes, anxiety, as well as behavioral practices among university students in Jordan amidst the
314 COVID-19 pandemic using an online survey developed by the authors to serve their study objectives .
315 The study has found that 69.2 % of participants reported being anxious as a result of fear of infection

316 by COVID-19 and resultant disruptions in their lives. Among the predictive factors that affected the
317 students' anxiety levels were age, gender and academic discipline of their study programs. Older
318 students and female students were found to have more anxiety due to the fear of infection. However,
319 in our present study the mean total K10 distress score was higher among women compared to men, but
320 this difference in means was statistically not significant. In contrast, older age was amongst the
321 protective factors against higher levels of psychological distress in our present study.

322 Moreover, a cross-sectional study was conducted in Turkey which aimed at assessing anxiety status
323 of university students using an online survey. The measure of anxiety levels were obtained using the
324 Turkish version of abbreviated Beck Anxiety Inventory. The study has found that 44% of students
325 reported a moderate level of worrisome and fear of catching COVID-19, while 80% of students
326 reported a 'severe level' of scare and worries about their close relatives' health. The authors expected
327 that the high levels of anxiety among the students in their study could be attributed to shifting to online
328 learning along with other pandemic control measures such as social isolation and financial constraints
329 (Akdeniz et al., 2020). Similarly, the aforementioned worries were also reported by the students in our
330 study as part of their major concerns during the COVID-19 pandemic.

331 Furthermore, Stress and anxiety were assessed in France among university students during the current
332 pandemic. University students were asked to complete the World Mental Health International College
333 Student survey which was distributed as an online survey. Among the 291 participants in the study, the
334 majority of them experienced significant proportions of psychological distress of which 60.2% of
335 students reported escalation of their anxiety to moderate-severe levels during the COVID-19
336 pandemic. However, 82.2% of the students in our study reported moderate to severe distress. This
337 difference in distress proportions could be as a result of different scales used and cross-cultural
338 factors. In the same study, the researchers found significant factors that affected the students' anxiety
339 level including the economic situation of the students, and the disruptions in students' life (Husky et
340 al., 2020). These factors were also reported in our study as pandemic-induced concerns as perceived
341 by the students. However, in our study, we have not collected data about the students' or their families
342 financial status; thus we could not consider it in our regression analysis to examine its influence on
343 the distress levels.

344 Jordanian universities have been taking humble attempts to implement distance learning into their
345 educational system since 2015. Nevertheless, this strategy has been considered as a "challenging
346 pedagogy" of the learning system in the country due to many obstacles (Al-Jaghoub et al., 2009; Atoum

347 et al., 2017; Al Nawas, 2020). During the COVID-19 pandemic and after realising the need to
348 implement an emergency distance learning strategy, more serious steps were taken by decision makers
349 at higher education sector and the Jordanian universities trying to guarantee a smooth shifting process
350 coupled with ensuring a quality education as well. Besides, psychological distress was reported to be
351 associated with distance learning and working from homes during the current pandemic. A recent
352 qualitative study has addressed many of the distance learning's challenges including personal,
353 technological, course-related as well as cultural challenges (Almaiah et al., 2020). These challenges
354 might explain why most of the students (n=209, 45.9%) in our study resported the lack of motivation
355 for distance learning, especially within the Jordanian context where most of educational activities were
356 used to be delivered by in-person attendance to universities/colleges with less attention to distance
357 learning .

358 Besides, smoking exhibited a risk factor for suffering from higher levels of psychological distress
359 among the students in our study, and this could be explained by the *bi-directional* relationship between
360 smoking and mental wellbeing as addressed previously in a longitudinal study in Australia (Leung et
361 al., 2012). Emotional and behavioural reactions toward the COVID-19 pandemic could vary . The type
362 of coping strategy and the extent of adopting it also differs between individuals . In the present study,
363 some students (12.9%) reported the use of various medicinal drugs as a result of pandemic induced
364 distress. Although the figure is small but this raises a concern about the psychosocial response of some
365 individuals in response to crisis which might lead to a risky behaviour such as substance abuse
366 .Therefore, more serious efforts should be done to spread awareness about healthy coping styles among
367 different social components of the community (Pfefferbaum and North, 2020).

368 To the best of our knowledge, this is the first study in Jordan to assess the psychological distress
369 among university students using the 10-item Kessler Psychological Distress Scale (K10) during the
370 COVID-19 pandemic. In addition, this study is amongst the limited litratures to highlight the
371 distressing concerns brought about by online distance learning on university students in Jordan. Still,
372 there are limitations that should be carefully taken into consideration when interpreting the results and
373 include (i) using a non-probabilistic convenience sampling, which affects the representativeness of our
374 sample and limits the generalizability of our results. However, this sampling strategy was believed to
375 fit in lieu of the current circumstances of the nationwide curfew, the closure of all universities and
376 colleges in the country and shifting to online platforms (ii) the majority of respondents were
377 undergraduates; we could have seen different results if our sample had more postgraduate students,

378 and (iii) We had a relatively small sample size which could be attributed to the limited period of data
379 collection .There was a technical difficulty to follow up the survey and keep it visible to students within
380 social media groups due to the large number of academic enquiries posted on these groups ;thus,
381 enforced our survey link to lose its visibility among the numerous recent posts .Also, the busy schedule
382 of students (in the midst of a new distance learning strategy) might have affected their interests to
383 participate in the survey (iv) The survey represented self reported states thus , over reporting or
384 underreporting of psychological status could be expected , (v) The inherent limitation of cross-
385 sectional studies which prevent assessing temporality of events i.e psychogoligcal distress could be
386 present prior to the pandemic and just escalated during it, and lastly , (vi) We missed the perspectives
387 of non-arabic speaking students in Jordan as the questionnaire was designed in Arabic only.
388 Nevertheless, findings from our study shed the lights on various degrees of psychological distress that
389 the university students have experienced during the current pandemic, and they could be considered as
390 a vulnerable group. Also, the findings of our study encourage for further follow up research on this
391 topic using a nationally representative sample of university students with more specific scales for
392 psychological distress symptoms.

393 The results of this study provide new insights to direct policy makers and decision makers in the fields
394 of higher education, as well as mental health. More attention and monitoring of college students'
395 mental health should be sought. Since distance learning was the highest reported concern among
396 students, faculty members should implement effective methods to make distance learning more
397 interactive and students friendly. Psychological interventions should be implemented by psychologists
398 and psychiatrists to provide guidance, psychoeducation, and mental health counseling to university
399 students. There should be more active involvement with students' psychological health, coupled with
400 educating them on how to deal with psychological distress during unprecedented situations like the
401 current pandemic.

402 At the current circumstances of COVID-19 preventive measures in Jordan (curfew and social
403 distancing), psychological support could be provided to university students through publicly available
404 online videos, television programs, and online/phone consultations. Also, mental health support could
405 be provided through a hotline service to provide students with instructions about dealing with their
406 academic stressors and other related mental health issues during this pandemic.

407 Moreover, efforts should be made to improve communications with college students' and guide them
408 on how to access only evidence-based information from reliable resources about the pandemic.

409 Besides, a comprehensive nationwide psychological support program should be developed and
410 incorporated into Jordan's response strategy in combating the COVID-19. Future studies should assess
411 the effect of implementing these suggested interventions on students' mental health. Furthermore, as
412 the levels of psychological distress are expected to be dynamic over the upcoming period, it is wise to
413 monitor and assess the impact of easing up the governmental restrictions, i.e. ending the curfew and
414 returning to on-campus teaching, on the levels of psychological distress and anxiety among university
415 students in Jordan.

416 **5 CONCLUSION**

417 The control and preventive measures that are implemented during the COVID-19 pandemic resulted
418 in a severe disruption of various human life activities. The fear of the infection itself, along with the
419 strict public health measures could impact the mental health of individuals. Our study highlighted a
420 significant psychological distress among university students in Jordan during the COVID-19 pandemic
421 and its related control measures.. A significant proportion of the students were highly concerned about
422 and distressed by the distance learning strategy; thus, prompt actions should be taken to improve the
423 distance learning experience and solve any associated technostress. In addition, a nationwide
424 psychological support program should be incorporated into Jordan's preparedness plan and response
425 strategy in combating the COVID-19 pandemic and other crisis, considering students and other
426 vulnerable groups in the community.

427

428 **Conflict of Interests**

429 The authors have no conflicts of interest to declare that are relevant to the content of this article.

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441 **Authorship statement**

442 Al-Tammemi conceptualized the study, designed, and prepared the questionnaire with inputs from
 443 Akour and Alfalah. Data collection was carried out by Al-Tammemi and Akour . The statistical
 444 analyses were done by Al-Tammemi.

445 Alfalah wrote the introduction. Al-Tammemi wrote the methods, materials, and results. Al-Tammemi
 446 and Akour wrote the discussion. All authors have substantially and critically contributed to editing and
 447 revising the manuscript and providing critical feedback. All authors have approved the submission of
 448 this version of the manuscript.

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534 **1 Data Availability Statement**

535 The dataset generated and analyzed for this study are available from the corresponding author on a
536 reasonable request

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538 **2 Figure Legends**

539 **Figure 1.** The levels of total K10 distress scores among different age groups of the respondents.

540 **Figure 2.** Distribution of students (by gender) within different distress categories based on the overall
541 K10 score for each student.

542 **Figure 3.** Students’ Motivation for Distance Learning per Distress Category

543 **Figure 4.** Reported medication use for coping with the COVID-19 related psychological distress
544 among respondents (percentage)

545 **Figure 5.** Types of medications that were used by 49 students for coping with the COVID-19
546 induced psychological distress.

547 **Figure 6.** The issue of the greatest concern as perceived by the 381 students (percentage)

548 **3 Tables**549 **Table 1. Sociodemographic characteristics of the Respondents (n=381)**

Variables	Results
Sex	
Male	n=182 (47.8%)
Female	n=199 (52.2%)
Age (Mean, SD)	
18-22	n= 208 (54.6%)
23-27	n=142 (37.3%)
28-32	n=22 (5.8%)
33-38	n=9 (2.3%)
Marital Status	
Single	n=352 (92.4%)
Married	n=29 (7.6%)
Region of residence	
Northern governorates	n=60 (15.7%)
Central governorates	n=302 (79.3%)
Southern governorates	n=19 (5.0%)
Smoking Status	
Current Smoker	n=117 (29.9%)
Currently non-smoker	n=267 (70.1%)
Academic Institution	
Public university/college	n=209 (54.9%)
Private university/college	n= 172 (45.1%)
Study Level	
Undergraduate	n=323 (84.8%)
Postgraduate	n=58 (15.2%)
History of pre-existing psychiatric conditions	
Yes	n=15 (3.9%)
No	n=366 (96.1%)
Current use of medications among the 15 students who reported a history of pre-existing psychiatric conditions	
Yes	n=8
No	n=7

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556 **Table 2. The severity of Psychological distress among respondents based on K10 distress scale's**
 557 **categorization.**

K10 Psychological Distress Category	Total K10 Score range	Frequency (n)	Percentage (%)
No Distress	10-19	27	7.1
Mild Distress	20-24	41	10.8
Moderate Distress	25-29	48	12.6
Severe Distress	30-50	265	69.5
Total		381	100

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578 **Table 3. Results of Ordinal Logistic Regression for the correlation between psychological**
 579 **distress severity and independent predictors.**

Predictors	Crude OR [95% CI]	P-value	Adjusted OR [95% CI]	P-value
Age	0.67 [0.50 - 0.90]	0.008	0.64 [0.44 - 0.94]	0.022
Gender				
Female	Reference		Reference	
Male	0.67 [0.40 - 1.1]	0.141	0.56 [0.30 - 1.03]	0.063
Smoking				
No	Reference		Reference	
Yes	1.48 [0.81 - 2.72]	0.206	1.99 [1.10 - 3.39]	0.049
Study Level				
Postgraduate	Reference		Reference	
Undergraduate	0.59 [0.26 - 1.36]	0.216	0.53 [0.17 - 1.64]	0.272
University/College				
Private	Reference		Reference	
Public	1.96 [1.15 - 3.34]	0.013	1.43 [0.74 - 2.77]	0.287
Motivation for Distance learning				
Low	Reference		Reference	
No	2.62 [1.40 - 4.93]	0.003	2.49 [1.29 - 4.80]	0.007
Moderate	0.99 [0.49 - 2.02]	0.983	1.27 [0.59 - 2.73]	0.535
High/Strong	0.08 [0.01 - 0.76]	0.028	0.10 [0.01 - 0.98]	0.048

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584 **Table 4. The degree of motivation for online distance learning among respondents.**

Degree of Motivation	Frequency (N)	Percentage (%)
No Motivation	209	54.9
Low Motivation	98	25.7
Moderate Motivation	69	18.1
Strong Motivation	5	1.3
Total	381	100

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587 **Table 5. Coping activities during the COVID-19 pandemic and the nationwide curfew in**
588 **Jordan among the respondents.**

Coping Activity	Frequency (n)	Percentage (%)
Spending more time on social networking platforms like Facebook and Instagram	269	70.6
Talking to friends on mobile phones and internet	217	57
Watching television and movies	210	55.1
More engagement with the family	202	53
Listening to music	162	42.5
Practicing sports at home	113	29.7
Studying and preparing for exams	102	26.8
Increase smoking	69	18.1
Reading Books / Novels	68	17.8
Meditation	58	15.2
Herbal drinks	57	15
Practicing Yoga	6	1.6
Talking to a psychological counselor	6	1.6
Others	33	8.7

589

590 **Table 6. Medicinal drugs' usage frequency among the 49 students who reported the use of**
591 **different medications in response to the COVID-19 induced distress.**

Frequency of usage	Number of students	Percentage (%)
1-2 times in a month	17	34.7
1-2 times in a week	13	26.5
3-4 times in a week	10	20.4
Everyday	9	18.4
Total	49	100

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Figures

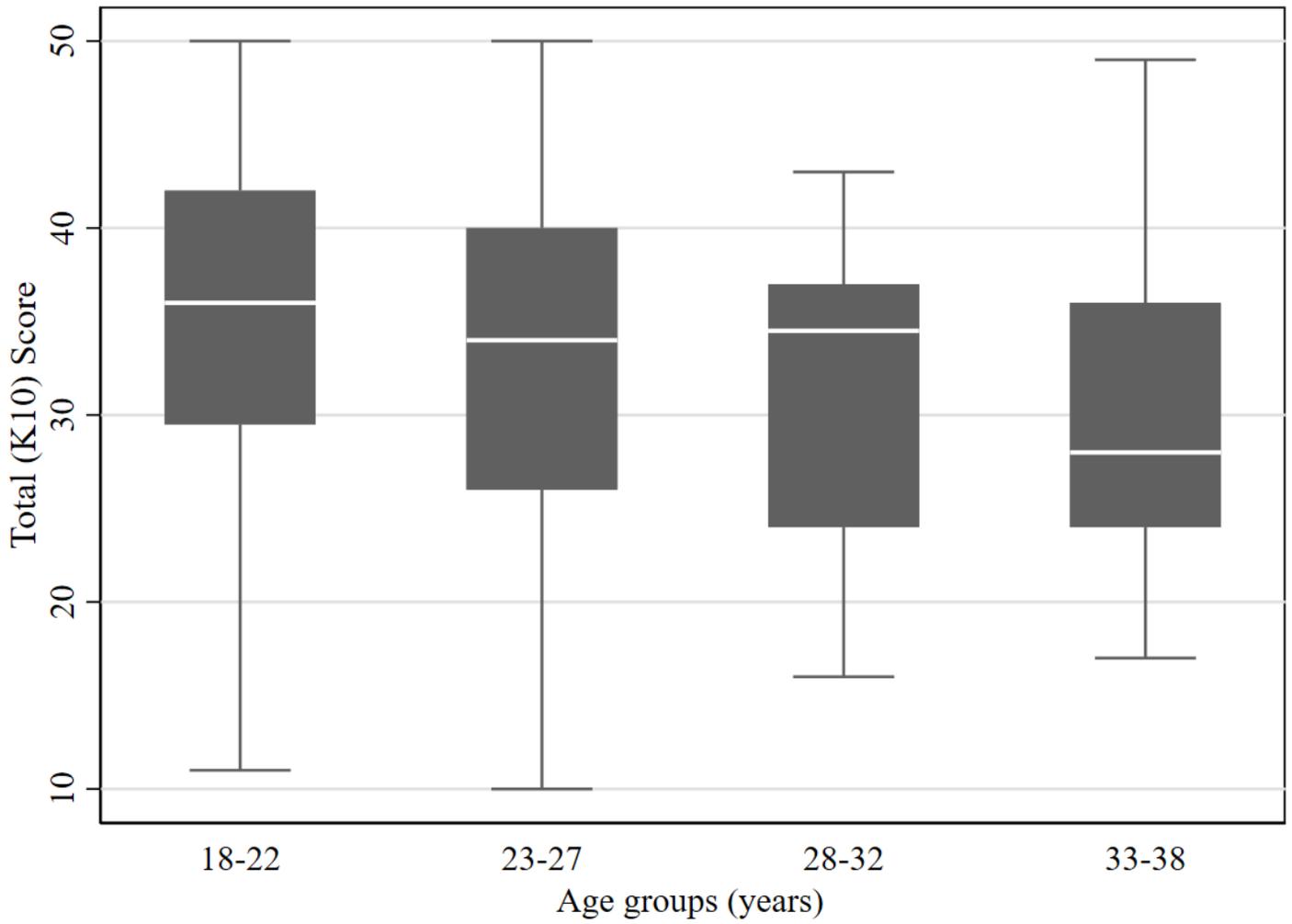


Figure 1

The levels of total K10 distress scores among different age groups of the respondents.

Distribution of Students (by gender) within Different Distress Categories

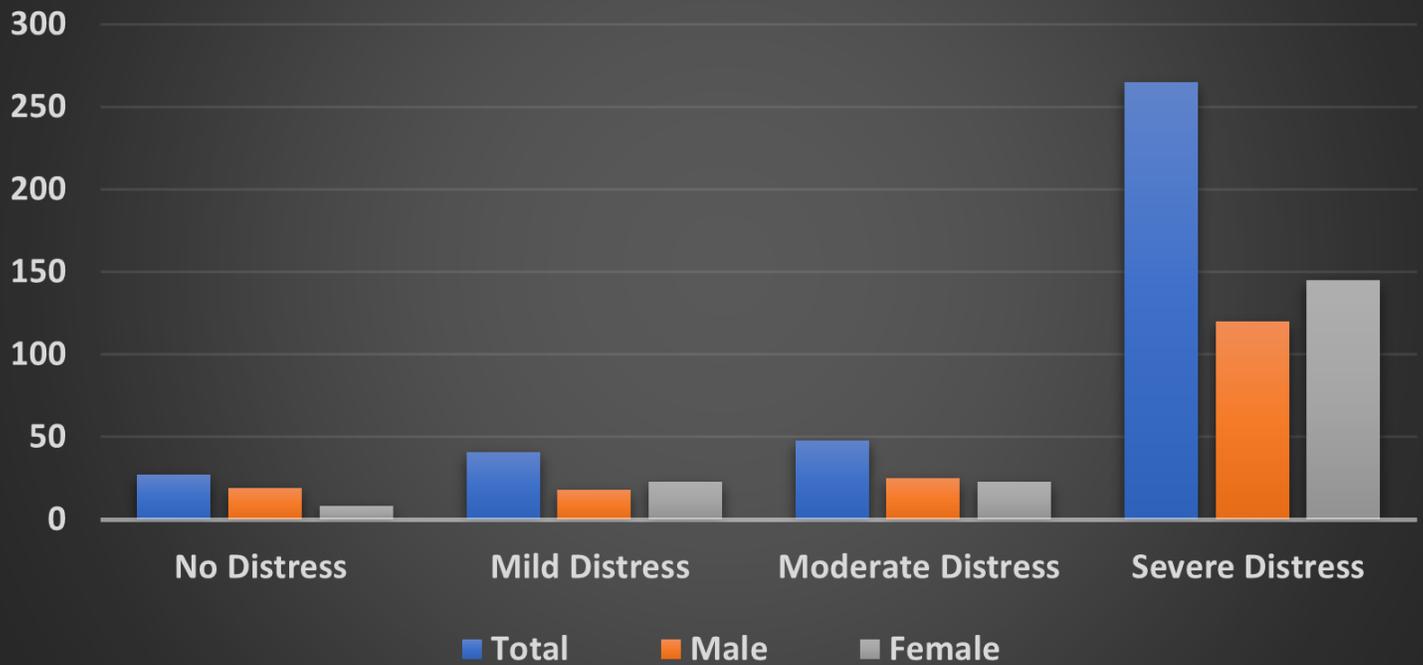


Figure 2

Distribution of students (by gender) within different distress categories based on the overall K10 score for each student.

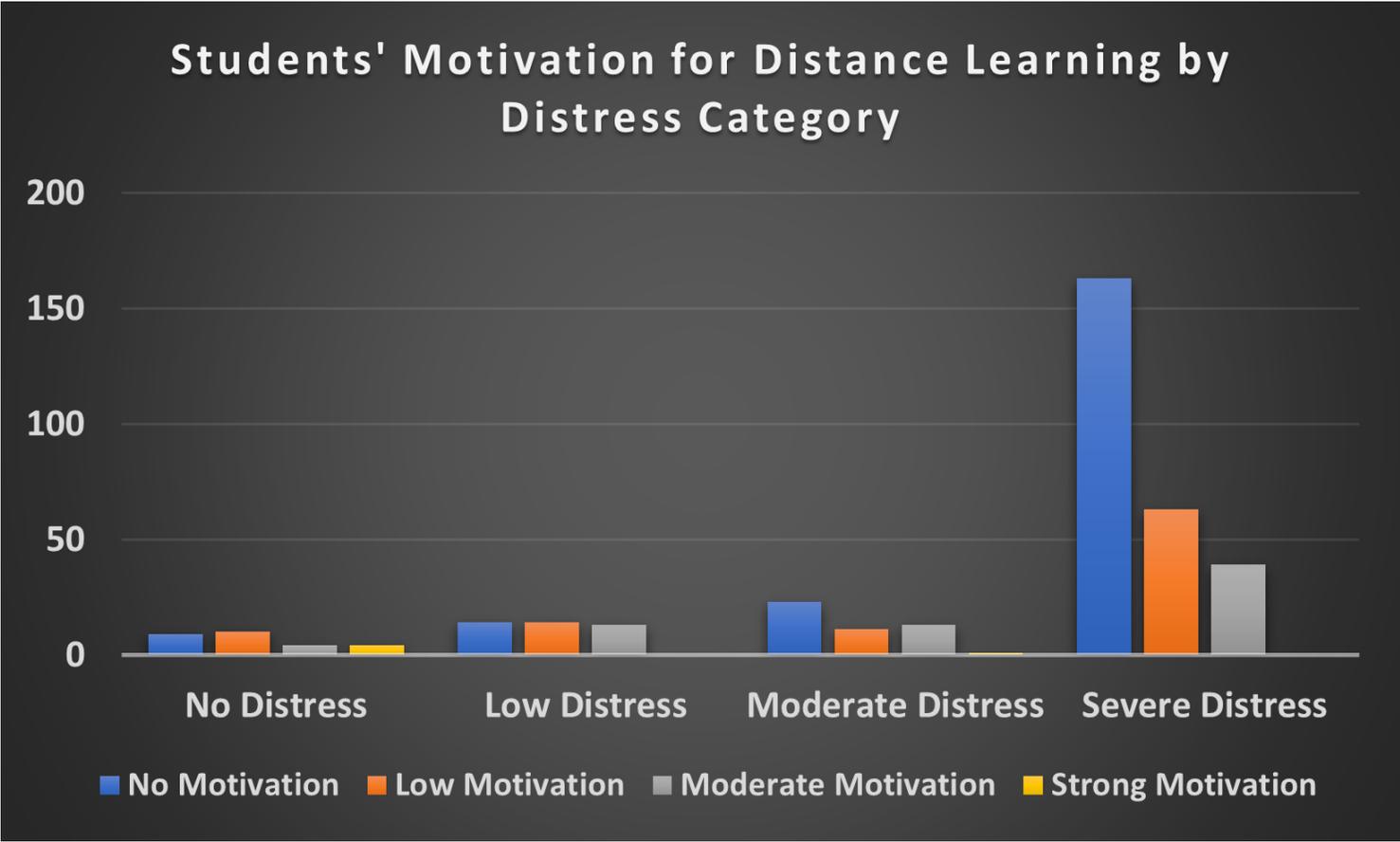


Figure 3

Students' Motivation for Distance Learning per Distress Category

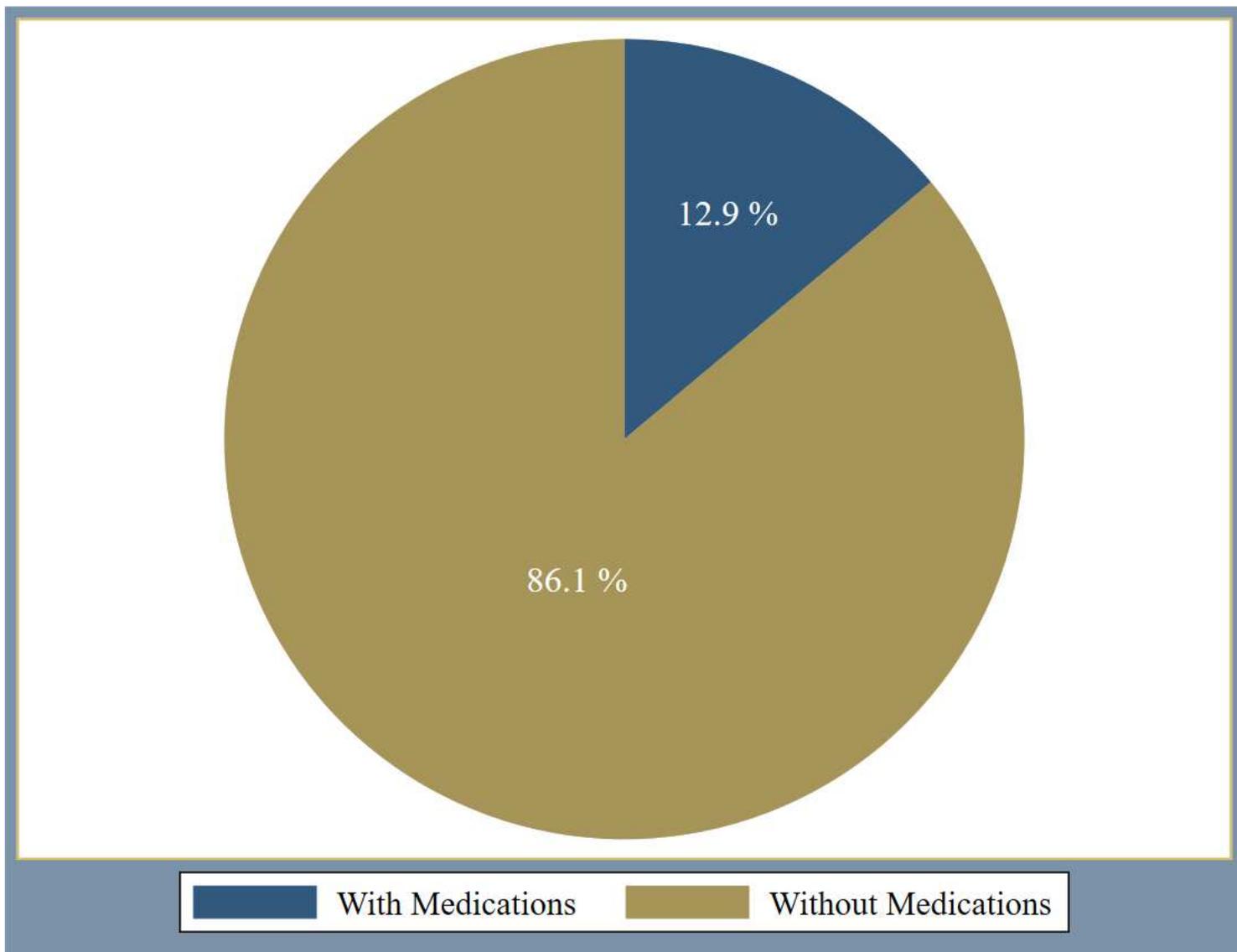


Figure 4

Reported medication use for coping with the COVID-19 related psychological distress among respondents (percentage)

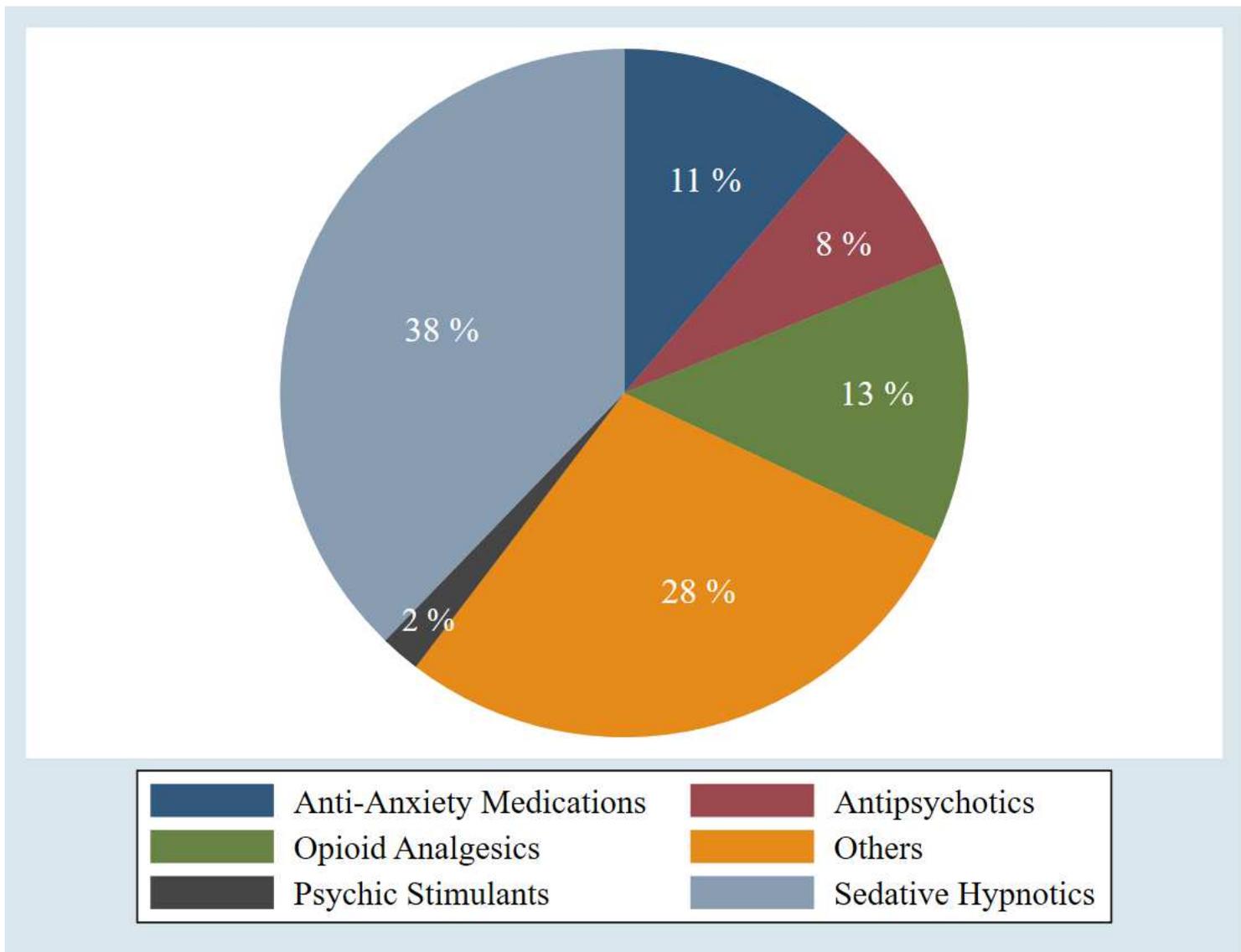


Figure 5

Types of medications that were used by 49 students for coping with the COVID-19 induced psychological distress.

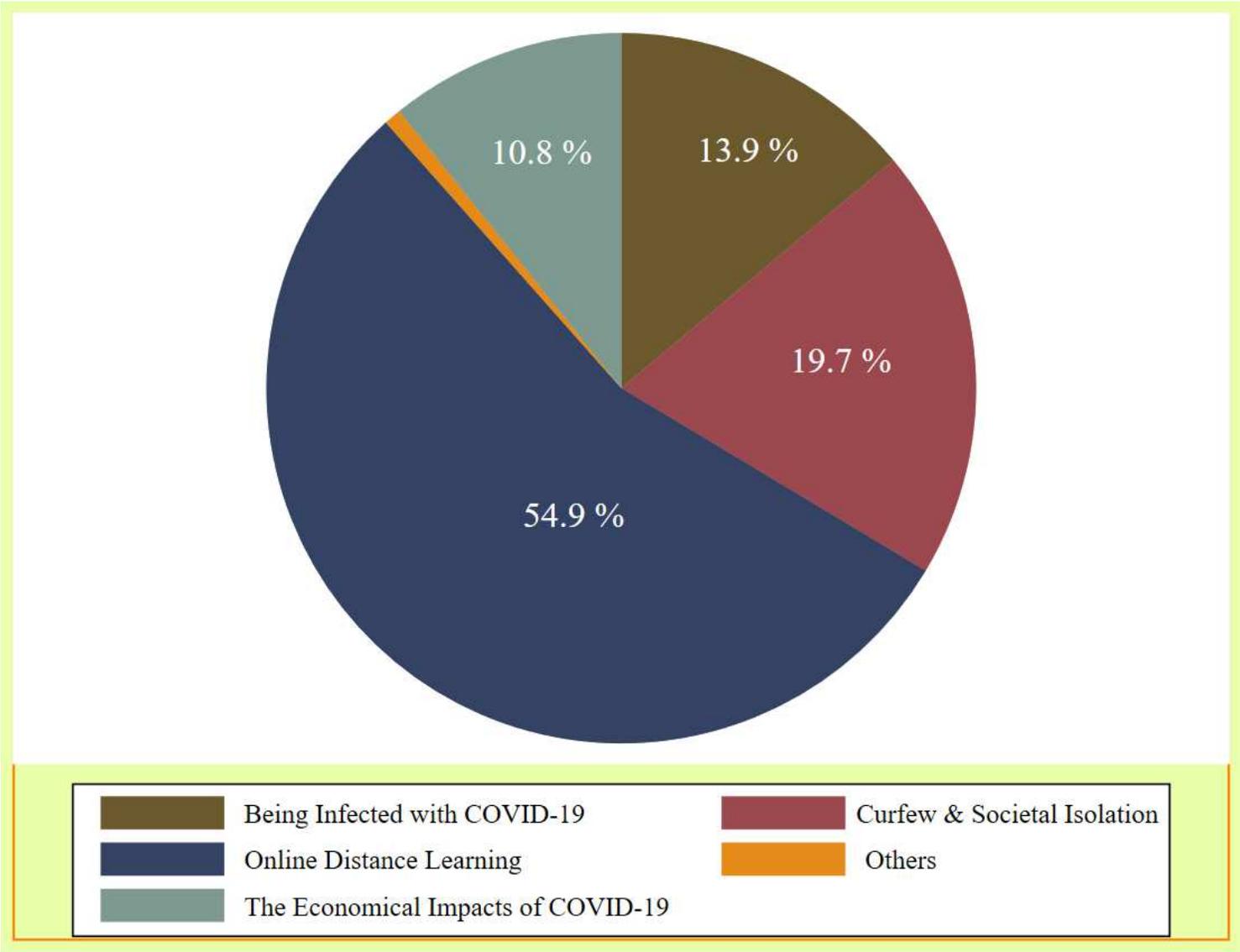


Figure 6

The issue of the greatest concern as perceived by the 381 students (percentage)