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Article

The Effects of Social Support on Depression and Vital Exhaustion during the COVID-19 Pandemic

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Abstract: Background: Our study aimed to assess the differences between domestic and international students in terms of social support, vital exhaustion, and depression during the time of COVID-19. **Methods:** The online cross-sectional survey was conducted via Google Forms® at three time intervals during the pandemic. **Results:** Respectively 1320, 246, and 139 students completed our questionnaires in the different time intervals. International students reported significantly lower values of perceived social support. Women reached higher scores regarding vital exhaustion in both samples. Concerning depression, international female students had higher values than their male counterparts but the difference diminished with time. No differences could be found in the comparison of depression between domestic female and male students. Significant correlations were found between depression, perceived social support, and vital exhaustion. **Discussion:** International students perceive diminished social support just when they need more. Decreased levels of perceived social support may contribute to the development of their psychological problems.

Keywords: international students; social support; depression; vital exhaustion

1. Background

The first cases of coronavirus disease were declared on March 4, 2020, in Hungary and shortly after the educational institutes switched their teaching method to the online form, and a nationwide lockdown was announced (1).

1.1. Theoretical/conceptual framework

Anti-pandemic regulations can disrupt social interconnectedness which is associated with an increased risk of psychological difficulties (2). During these times, one particular topic has been the focus of interest and it was the role of social support as a psychosocial protective factor.

Previous researchers have found that college students are more likely to have mental health problems (3) and also the prevalence of depressive symptoms among them is higher than among the general population or non-college students (4). College students with depressive symptoms are less likely to participate in organized activities compared with healthy ones, which may impact negatively their status in social networks and even increase their suicidal tendency (5). Social support has been described to have a protective effect on college students' mental health and also its inadequacy may increase the risk of depressive symptoms (6,7).

The fact that international students who study in a host country away from home have more mental health problems than those who study in their home country has long been supported by research that has already drawn attention to the importance of social support, which can alleviate mental health problems for international students as well (8-10).

Concerning depression, men have a lower prevalence than women but a higher suicide rate, and because of this many kinds of research investigate gender differences regarding depression to be able to adequately detect it (11,12).

The conceptual separation of depression and vital exhaustion has been debated in the literature for years (13,14). In any case, we went beyond these debates and together examined vital exhaustion and depression. Vital exhaustion is a mental state characterized by extreme fatigue, increased irritability, and feelings of demoralization. It is considered to be a potential response to intractable problems in individuals' lives, particularly when they are not able to adapt to prolonged exposure to psychological stressors (15).

The purpose of our study was to assess the levels of perceived social support, vital exhaustion, and depression among university students in Hungary, during the COVID-19 in three periods, using three validated assessment tools for each factor. We wanted to see the differences not only in terms of student status (domestic vs. international) but also in terms of gender. We hypothesized that students away from home receive less social support, and this may be related to the degree of depression and vital exhaustion. Furthermore, we believed that it is easier for women to find social support that would be thought to counteract depression. And because there is more evidence that women have a higher incidence of depression, we tried to refute this discrepancy by using a more specific questionnaire among men and we expected that there will be no significant gender difference in the severity of depression.

2. Methods

2.1. Data collection

Our study used a cross-sectional design in three time intervals with the help of self-administered questionnaires we created via Google Forms.

The first round of survey administration was carried out in the period April 30, 2020, and May 15, 2020. At the start of the pandemic, it was often claimed that the virus was brought into the country by foreigners or Hungarians traveling home from abroad (16).

The second round took place between June 15, 2020, and June 29, 2020. During this phase, there were perhaps the fewest new cases, the lowest rate of positive tests, and minimal deaths. The restrictions have been lifted almost without exception (16).

The third round of questionnaires was filled out by the participants during the period July,20,2021, and August,07,2021. During this time, the country was past two real big waves, and the third wave's downturn took place. Vaccination has been released which was available also to international students and the Head of the Prime Minister's Office ranked Hungary as one of the safest countries (16).

2.2. Participants

We conducted our study at the second largest university in Hungary. According to the university's website, there are 28,593 students of which at least 6,297 are international students (17).

International and Hungarian students were included in our sampling. Targets were reached through social media platforms (e.g, Facebook) and also the university's official student administration system (Neptun) was used to reach out to them. We assumed, that our survey reached every student at the university. The questionnaires could be filled out anonymously during the determined periods meaning the utilization of a convenient sampling approach.

2.3. Measures

Four international scales were applied in the development of the survey collecting data about perceived social support, vital exhaustion, and male and female depression. Domestic students filled out Hungarian versions of the questionnaires while international students were asked to complete English versions of them.

To assess the amount of social support we used the *Multidimensional Scale of Perceived Social Support (MSPSS)*. The 12 items are rated on a seven-point Likert-scale in the English version while the 10-item Hungarian version uses a five-point Likert-scale. Three subscales were identified, each addressing a different source of support: Family, Friends, and Significant Others (18). The original version of the questionnaire has high internal consistency both in English (Cronbach- $\alpha=0,88$) and Hungarian (Cronbach- $\alpha=0,91$) versions (18,19).

The Shortened Maastricht Vital Exhaustion Questionnaire and its Hungarian version served as a tool to assess vital exhaustion. Vital exhaustion is related to individual's general well-being which is measured by five dichotomic items. The internal consistency of the item group proved to be good in Hungarian validation (Cronbach- $\alpha =0,78$) (20) and also in the English version of the questionnaire (Cronbach- $\alpha=0,86$) (21).

Female depressive symptoms in the sample were assessed using the revised version of the 21-item Beck Depression Inventory (BDI). Participants are asked to rate the range to which they have experienced particular depressive symptoms in the past week using a four-point Likert scale (22,23).

The level of male depression was measured with the Gotland Male Depression Scale (GMDS). Both the English and Hungarian versions of the questionnaire have 13 items and it assesses not only the so-called „traditional“ depressive symptoms but male depressive symptoms as well (lower stress threshold, aggression, substance abuse, over-involvement in work or sports). The respondents used a four-point Likert-scale to answer the questions (24,25).

To compare the extent of depression between the genders, we divided the results into three groups according to previous recommendations (22,26): no or minimal - mild or moderate - severe depression. The recommended point limits for BDI are respectively: 0-13, 14-28, 29-63; and for GMDS: 0-13, 14-26, 27-39.

2.4. Analysis

The required data were extracted from Google Forms in an Excel sheet. First, we checked the quality of the data and coded it in a format that we could analyze with SPSS (v.25). The presentation of descriptive and summary statistics was appropriate. To appraise the difference between groups (nationality, gender) in accordance with the level of perceived social support, vital exhaustion, and depression we used non-parametric Mann-Whitney U-tests since the variables had no normal distributions. We also used Spearman's rank correlation to evaluate the relationship between the investigated factors within the international and Hungarian groups. A p-value less than 0.05 was set for statistical significance.

2.5. Ethical considerations

The Hungarian Ethical Review Committee for Research in Psychology provided the ethical permission (Reference number: 2020-45).

3. Results

The demographic characteristics are shown in Table 1.

Table 1. Demographic characteristics of the respondents.

Variables	Hungarian	International	Chi-square test
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1.round	n=948	n=341
Gender		$\chi^2(1) = 35.06; p < 0.001$
Female	719 (75,8%)	201 (58,9%)
Male	229 (24,2%)	140 (41,1%)
2.round	n=142	n=104
Gender		$\chi^2(1) = 6.05; p = 0.014$
Female	102 (71,8%)	59 (56,7%)
Male	40 (28,2%)	45 (43,3%)
3.round	n=105	n=34
Gender		$\chi^2(1) = 5,56; p = 0.109$
Female	77 (73,3%)	20 (58,8%)
Male	28 (26,7%)	14 (41,2%)

3.1. Perceived Social Support

The perceived social support levels of the university students were investigated according to gender by Mann-Whitney U test in each round and also in both samples.

The examination of Hungarian students' perceived social support is shown in Figure 1, which shows that the Hungarian female students had significantly higher values ($M=45$) than male students ($M=41$) in the first round of our survey ($p < 0,001$). The other rounds showed no significant differences between genders.

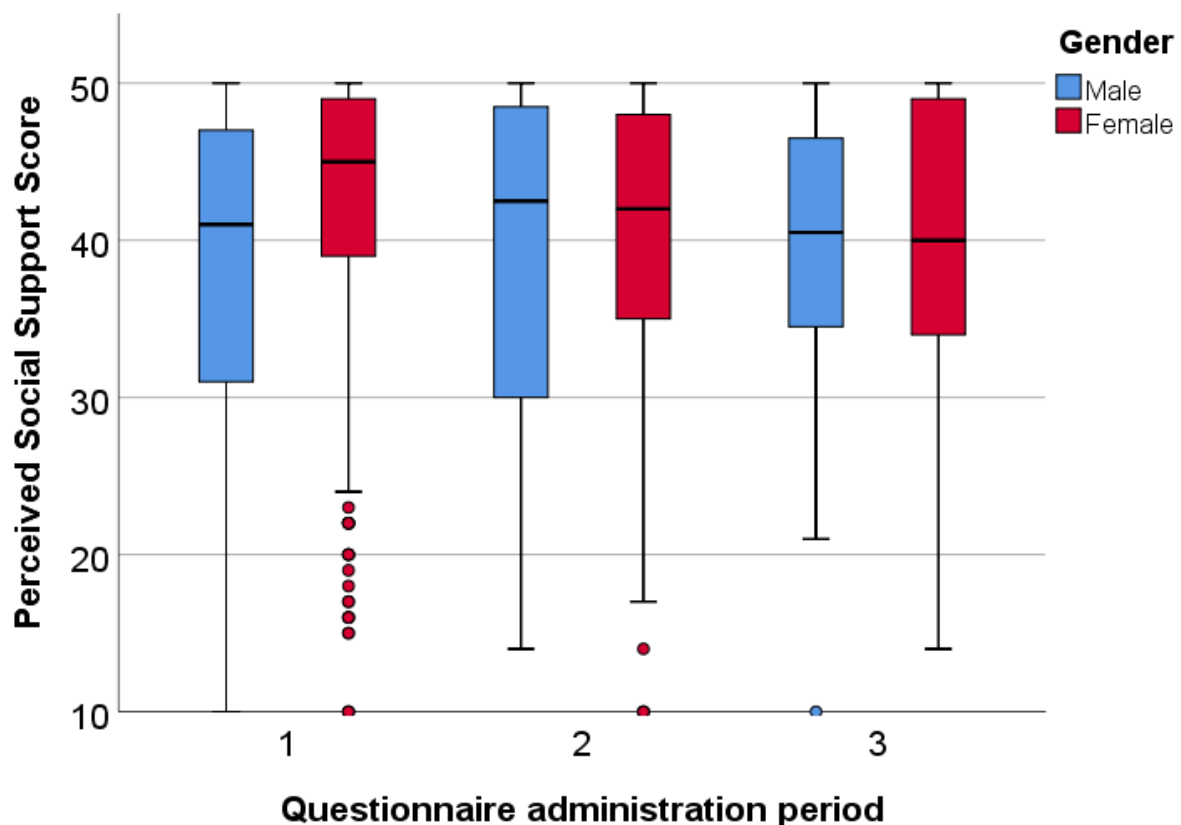


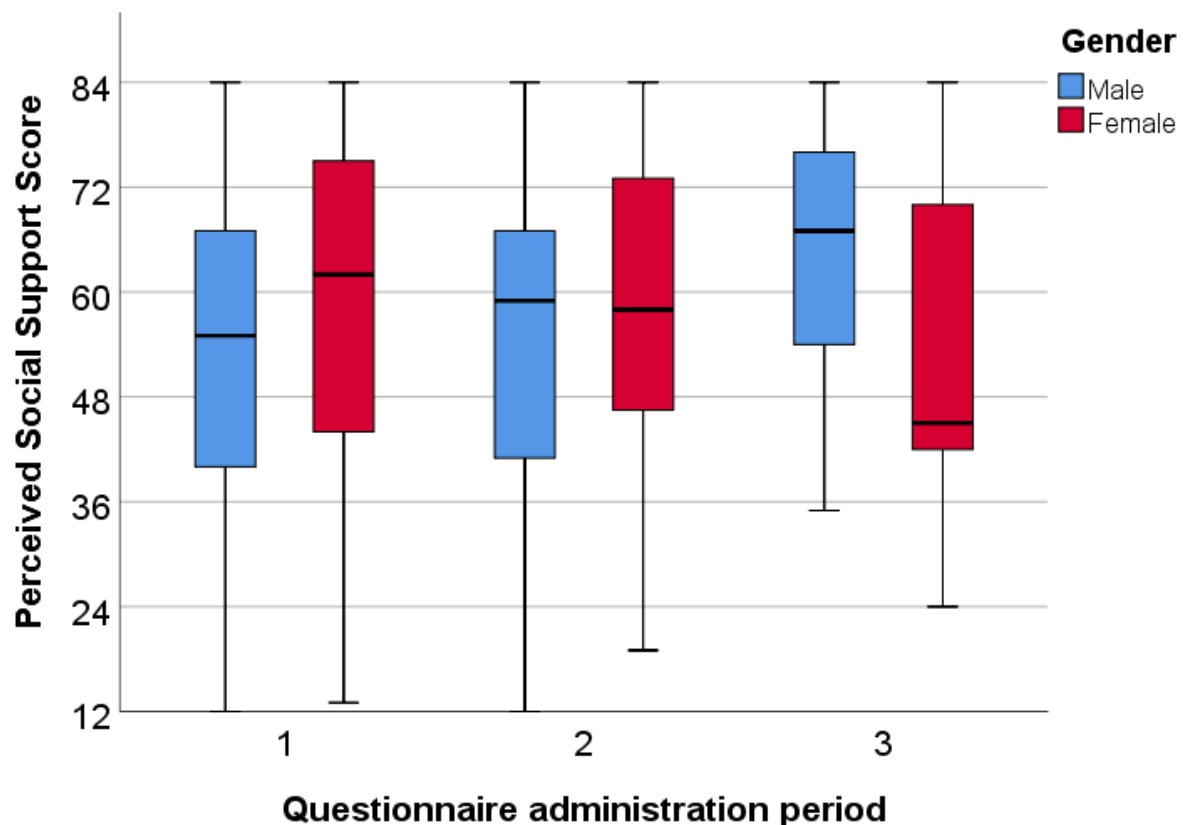
Figure 1. Gender differences in perceived social support among Hungarian students.

We also investigated gender differences among Hungarian students according to the MSPSS subscales. The perceived social supports differed significantly in the status of gender as women had significantly higher values in the first round in all aspects of the questionnaire (Table 2).

Table 2. Gender differences in perceived social support subscales among Hungarian students.

Questionnaire administration period and subscale medians	Male	Female	p-value
Round 1			
Family	15,00	17,00	<0,001
Friends	13,00	14,00	<0,001
Significant others	14,00	15,00	<0,001
Round 2			
Family	16,00	16,50	0,535
Friends	13,50	12,00	0,755
Significant others	15,00	15,00	0,255
Round 3			
Family	16,00	14,00	0,571
Friends	13,50	14,00	0,636
Significant others	14,00	15,00	0,146

In the international sample regarding the first round of questionnaire administration, female students had a significantly ($p=0,05$) higher median (62) than male students (55). In the last period, the median of female students was 45 compared to male students 67 ($p=0,036$) (Figure 2).

**Figure 2.** Gender differences in perceived social support among international students.

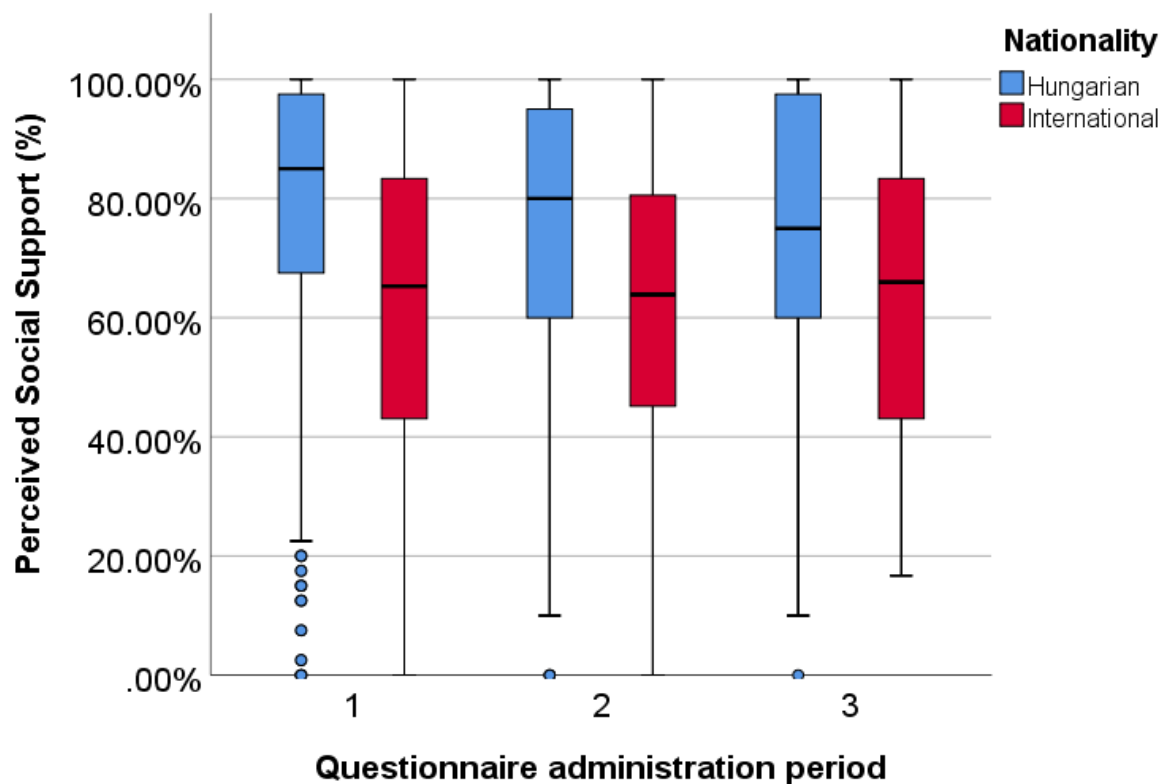
Similar to the Hungarian sample, international women's perceived social support subscale levels were higher in the first round than men's although it was only significant in the Family and Significant others subscales. We also found significantly higher values in the female group during the second period of administration in the Friends subscale. In contrast to these findings, the values of men's perceived social support from their family and friends were significantly higher in the third round (Table 3).

Table 3. Gender differences in perceived social support subscales among international students.

Questionnaire administration period and subscale medians	Male	Female	p-value
Round 1			
Family	20,00	22,00	0,047
Friends	19,00	20,00	0,062
Significant others	17,50	21,00	<0,001
Round 2			
Family	21,00	19,00	0,937
Friends	18,00	20,00	0,036
Significant others	19,00	20,00	0,137
Round 3			
Family	22,50	16,50	0,020
Friends	23,50	15,50	0,031
Significant others	25,50	15,50	0,089

As the Hungarian and English versions of the MSPSS differed both in the numbers of items and scales, we converted the results into percentages which allowed us to compare the samples.

In the first period of administration Hungarian students reached 85,00% median compared to the international student's 65,28% ($p < 0,001$). During the second round, the Hungarian level of perceived social support was also higher ($M = 80,00\%$) than the international students' ($M = 63,89\%$) ($p < 0,001$). Similar to the first two rounds in the last period domestic students also reached higher scores ($M = 75,00\%$) than international students ($65,97\%$), although it was not significant ($p = 0,056$) (Figure 3).

**Figure 3.** Differences in perceived social support among domestic and international samples.

Comparing the two samples in the aspect of subscales the international students had lower values of social support in all of the examined factors. The results were significant

in every subscale during the first period of questionnaire administration, also in the second and third round in the aspect of Friends and Significant others subscales (Table 4).

Table 4. Differences in perceived social support subscales among domestic and international students.

Questionnaire administration period and subscale medians	Hungarian	International	p-value
Round 1			
Family	81,25%	70,83%	<0,001
Friends	91,67%	66,67%	<0,001
Significant others	100,00%	66,67%	<0,001
Round 2			
Family	75,00%	66,67%	0,073
Friends	83,33%	66,67%	0,001
Significant others	100,00%	66,67%	<0,001
Round 3			
Family	62,50%	66,67%	0,813
Friends	91,67%	68,75%	0,027
Significant others	100,00%	54,17%	<0,001

3.2. Vital exhaustion

Examining the level of vital exhaustion regarding genders in the Hungarian sample we found that women had higher values in each round (Figure 4), although this result was only significant in the first period of administration. In this case, the median of female students was 11,00 while male students' median was 9,00 ($p<0,001$).

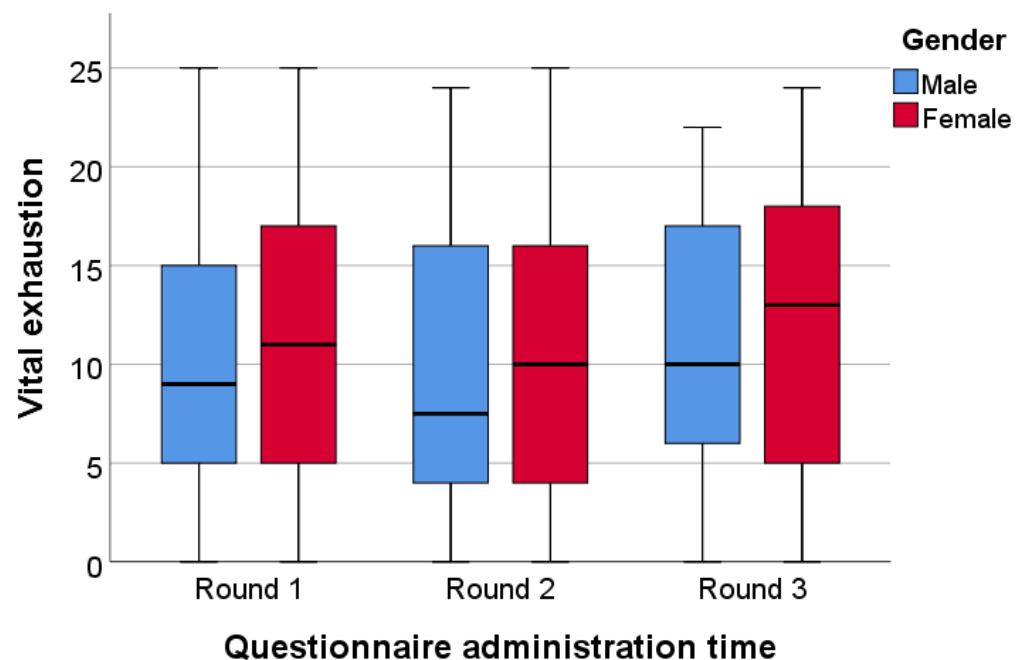


Figure 4. Gender differences in vital exhaustion among Hungarian students.

In the international sample, similar results can be observed (Figure 5). Women reached higher average scores in every round and it was significant in the second period with a median of 12,00 compared to male students 4,00 ($p=0,022$).

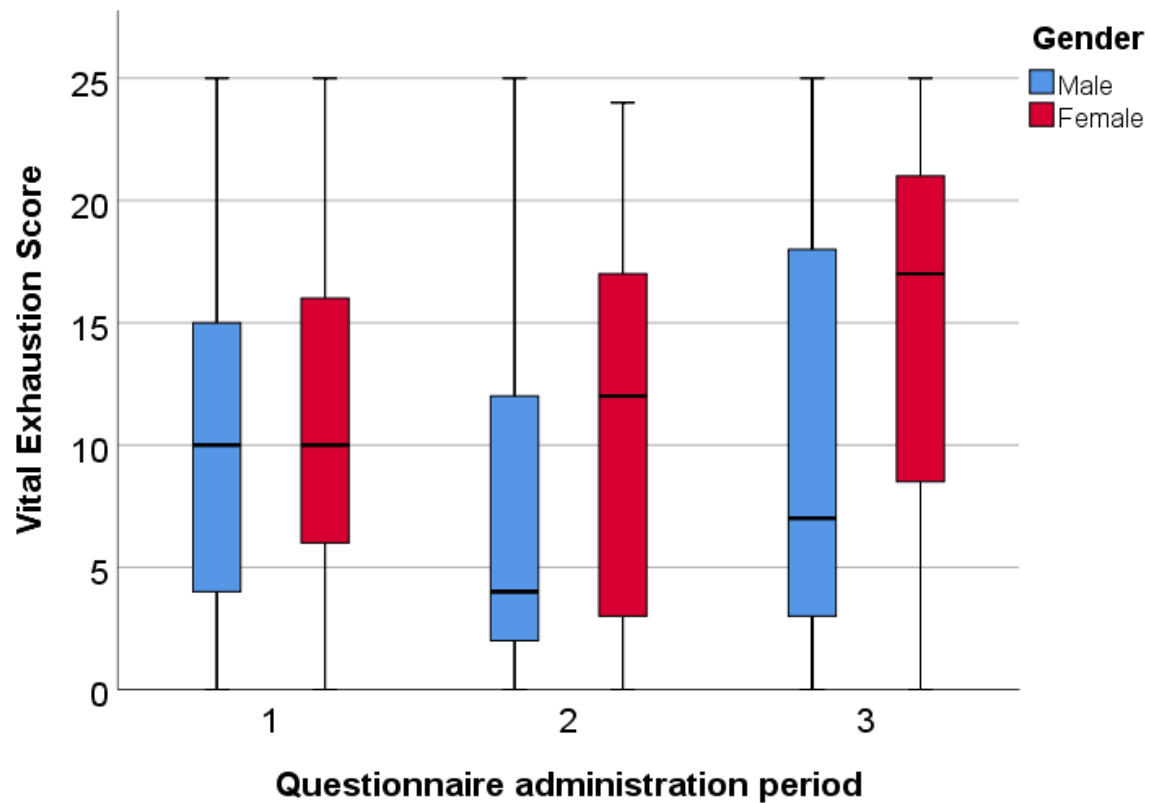


Figure 5. Gender differences in vital exhaustion among international students.

There was no significant difference between the Hungarian and international students concerning vital exhaustion.

3.3. Depression

According to the results of the BDI completed by females, the average scores of international students were significantly higher than domestic students' in every period. There were no significant differences in GMDS scores between the two samples. The results of the depression questionnaires are shown in Table 5.

Table 5. Male and female depression scores.

Questionnaire administration period and subscale medians	Male			Female		
	Hungarian	International	p-value	Hungarian	International	p-value
Round 1	13,00	13,00	0,347	11,00	17,00	<0,001
Round 2	11,00	10,00	0,217	10,50	15,00	0,018
Round 3	12,50	8,00	0,362	13,00	23,00	0,020

As mentioned previously, both scales can be aggregated into 3 groups according to the scores, thus allowing us to examine the differences between the genders in the aspect of depression. In the Hungarian group, there were no significant differences and both genders' medians were the same. Among international students, women suffered from significantly more severe depressive symptoms in the first round, this difference decreased during the second round, while the difference was not significant in the third round (Table 6).

Table 6. Differences in depression levels between domestic and international students.

Questionnaire administration period and nationality	Male	Female	p-value
Hungarian			
Round 1	1,00	1,00	0,062
Round 2	1,00	1,00	0,478
Round 3	1,00	1,00	0,707
International			
Round 1	1,00	2,00	0,006
Round 2	1,00	2,00	0,027
Round 3	1,00	2,00	0,259

3.4. Correlations

We correlated the vital exhaustion, perceived social support, and depression values using Spearman's rang-correlation (Table 7). Significant positive correlations can be observed in both samples between vital exhaustion and depression, and moderate negative correlations were associated with perceived social support and depression.

Table 7. Spearman's rank correlations in the samples.

		Vital exhaustion	Perceived social support
Hungarian			
Round 1	Male depression	0,795**	-0,219**
	Female depression	0,763**	-0,186**
Round 2	Male depression	0,776**	-0,088
	Female depression	0,772**	-0,157
Round 3	Male depression	0,886**	-0,283*
	Female depression	0,822**	-0,058
International			
Round 1	Male depression	0,775**	-0,208**
	Female depression	0,702**	-0,004
Round 2	Male depression	0,693**	-0,205*
	Female depression	0,708**	-0,090
Round 3	Male depression	0,441	0,231
	Female depression	0,509*	-0,479*
		*p<0,05	
		**p<0,001	

4. Discussion

Previous studies have proven that social networks among individuals play an essential role to mitigate psychological problems (27,28). As expected, we found significant differences in perceived social support among domestic and international students of the University of Debrecen. According to our findings, international students felt that they acquire less social support from family, friends, and also special persons in their lives. The international students' lack of perceived social support compared to domestic students was in line with previous investigations (29,30).

By the previous investigations (31,32), our results indicate that female and male university students tend to differ in their perceptions of support availability, with female students obtaining higher total scores in the first period of questionnaire administration.

Indications from some studies show that females do receive more support than males and they are more likely to demand and also provide support (33,34).

International students are prone to be exposed to more psychological stressors because of separation from their home environment, different cultural values, language, academic preparation, study habits and they also tend to have less social support (35,36) which can be expected to lead to higher levels of vital exhaustion although this study could not confirm the difference in vital exhaustion levels among domestic and international students. In our present study, we found significantly higher vital exhaustion levels among females in the first period of survey administration in the Hungarian sample and also in the international sample during the second round.

Among university students, depression is one of the most prevalent psychological disorders (37,38). International students suffer more from depressive symptoms and it can be the consequence of multiple sources such as the lack of social support, the adverse effect of high vital exhaustion values, and also isolation and loneliness (29,30,39,40). Our findings also suggest that depressive symptoms are more prevalent among international students although it was only significant in female students' cases. Moreover, in the gender comparison, we found a significant difference only between international students, and women suffered more from depressive symptoms, and only in the first and to a lesser extent in the second measurement, in the third round, the difference was no longer significant.

Strong positive correlations were observed regarding depression and vital exhaustion in both samples which indicates the potential role of vital exhaustion as a risk factor related to depression. On the other hand, the moderate negative correlations between depression and perceived social support designate one's perceived social support as a protective factor and a moderator against depression among university students.

4.1. New Contribution to the Literature

The differences between the social support of domestic and international students gradually decreased. The reasons behind that phenomenon could be numerous: the vaccine, that gave the freedom and courage to international students to re-open to the world; the decreasing number of restrictions; the initial shock caused by the poor quality of media communications has been alleviated.

The shift between the extent of perceived social support and the severity of depressive symptoms is an interesting phenomenon: while international female students perceived greater social support at the onset of the virus, males experienced less, and this difference gradually narrowed; in contrast, depressive symptoms started higher in women, and the gender gap disappeared again over time. It is worth comparing this phenomenon with the change in the correlations between social support and depressive symptoms in international women and men. While initially, the correlation is negative for men, it is reversed in the third round, and in women, there is a huge negative correlation change in the last round.

At the onset of the virus, domestic students seemed to perceive significantly more social support in all areas than their international counterparts, but social support seems to level off between domestic and international students as a result of the increasing time spent under the threatening factor. This raises the possibility that, in the event of an outbreak of a protracted danger, the provision of well-chosen information and communication and mental support to foreigners by a host country can have a particularly constructive effect and even serve preventive purposes. This is because, as it can be seen, social support can counteract vital exhaustion and depression. Regarding depression, the most vulnerable seemed to be the female international student group. Using different gender-specific questionnaires, it became apparent that after the initial shock men are just as vulnerable as women when it comes to depression.

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