

Supplementary Materials

Table S1. Descriptive characteristics and educational information of the student participants (N = 338)

Variable	Group	N	%	χ^2 , P, df
Gender	Male	118	34.9	31.3, < 0.001, 1
	Female	220	65.1	
Age groups	<= 17	4	1.0	603.1, < 0.001, 5
	18–27	237	70.1	
	28–36	65	19.2	
	37–46	26	7.7	
	47+	3	0.9	
	Missing	3	0.9	
Nationality	Saudi	311	92.0	280.3, < 0.001, 1
	Non-Saudi	27	8.0	
Marital status	Single	265	75.4	334.6, < 0.001, 2
	Married	76	22.5	
	Divorced	7	2.1	
Place of residence	On-campus	11	8.3	491.2, < 0.001, 4
	With family (parents)	242	71.6	
	With relatives	2	0.6	
	With spouse	55	16.3	
	Alone	28	8.3	
Academic level	First year (preparatory year)	81	24.0	146.1, < 0.001, 4
	Undergraduate	136	40.2	
	Master	78	23.1	
	PhD	16	4.7	
	Other	27	8.0	
Type of academic program	Public programs (no fees)	260	76.9	103.4, < 0.001, 1
	Private academic programs (fee-paying)	78	23.1	
Faculty	Faculty of Economics Administration	73	21.6	128.8, < 0.001, 9
	First year (Preparatory year)	51	15.1	
	Faculty of Arts and Humanities	34	10.1	
	Faculty of Science	27	8.0	
	Faculty of Human Sciences and Design	28	8.3	

	Faculty of Computing and Information Technology	19	5.6	
	Faculty of Engineering	10	3.0	
	Faculty of Comm. Media	13	3.8	
	Faculty of Law	16	4.7	
	Other	67	19.8	
Employment	Full-time job	64	18.9	422.8, < 0.001, 3
	Part-time job	7	2.1	
	Business-owner / freelancer	16	4.7	
	Unemployed	251	74.3	
Monthly household income	Less than 4000 SAR	73	17.3	29.0, < 0.001, 5
	4000 to < 6000 SAR	49	14.5	
	6000 to < 8000 SAR	36	10.7	
	8000 to < 10 000 SAR	46	13.6	
	10 000 to < 15 000 SAR	65	19.2	
	15 000 SAR or more	84	24.9	

Each *P*-value is for the likelihood chi-square value of a goodness-of-fit test comparing the proportions (df: degrees of freedom).

Table S2. Sample distribution stratified by food security status of student participants during COVID-19 in Saudi Arabia

	1. Food secure (N = 206)	2. Mild food insecurity (N = 69)	3. Moderate food insecurity (N = 44)	4. Severe food insecurity (N = 19)	χ^2 , P
Age in years (mean \pm SD)	25.2 \pm 7.6	24.1 \pm 5.3	24.9 \pm 6.0	26.4 \pm 7.9	H = 1.03, = 0.794, df = 3
Gender, n (% by row)					
Male	67 (56.8)	26 (22.0)	17 (14.4)	8 (6.8)	1.44, = 0.719
Female	139 (63.2)	43 (19.5)	27 (12.3)	11 (5.0)	
Nationality, n (% by row)					
Saudi	192 (61.7)	60 (19.3)	41 (13.2)	18 (5.8)	2.76, = 0.494
Non-Saudi	14 (51.9)	9 (33.3)	3 (11.1)	1 (3.7)	
Marital status, n (% by row)					
Single	156 (61.2)	55 (21.6)	33 (12.9)	11 (4.3)	7.59, = 0.309
Married	47 (61.8)	11 (14.5)	10 (13.2)	8 (10.5)	
Divorced	3 (42.9)	3 (42.9)	1 (14.2)	0 (0.0)	
Place of residence, n (% by row)					
On-campus	7 (63.6)	2 (18.2)	1 (9.1)	1 (9.1)	8.18, = 0.813
With family (Parents)	145 (59.9)	54 (22.3)	33 (13.6)	10 (4.1)	
With relatives	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	
With Spouse	34 (61.8)	8 (14.5)	8 (14.5)	5 (9.1)	
Alone	19 (67.9)	4 (14.3)	2 (7.1)	3 (10.7)	
Academic level, n (% by row)					
First year (Preparatory year)	51 (62.9)	17 (21.0)	8 (9.9)	5 (6.2)	9.57, = 0.708
Under-graduate (Bachelor)	76 (55.9)	31 (22.8)	20 (14.7)	9 (6.6)	
Master	53 (67.9)	11 (14.1)	10 (12.8)	4 (5.1)	
PhD	11 (68.8)	3 (18.8)	1 (6.2)	1 (6.2)	
Other	15 (55.6)	7 (25.9)	5 (18.5)	0 (0.0)	
Type of academic program, n (% by row)					
Public programs (no fees)	159 (61.1)	54 (20.8)	34 (13.1)	13 (5.0)	0.80, = 0.872

Quality academic programs (fees, example: diploma, etc.)	47 (60.3)	15 (19.2)	10 (12.8)	6 (7.7)	
Employment, n (% by row)					
Full-time job	42 (65.6)	8 (12.5)	9 (14.1)	5 (7.8)	13.54, = 0.181
Part-time job	6 (85.7)	1 (14.3)	0 (0.0)	0 (0.0)	
Free business/ freelancer (unsteady income)	6 (37.5)	7 (43.7)	3 (18.8)	0 (0.0)	
Unemployed	152 (60.6)	53 (21.1)	32 (12.7)	14 (5.6)	
Monthly income, n (% by row)					
Less than 4000 SAR	21 (42.9)	16 (32.6)	5 (10.2)	7 (14.3)	40.0, < 0.001
4000 to < 6000 SAR	25 (43.1)	15 (25.9)	15 (25.9)	3 (5.1)	
6000 to < 8000 SAR	20 (55.6)	7 (19.4)	7 (19.4)	2 (5.6)	
8000 to < 10 000 SAR	27 (58.7)	11 (23.9)	6 (13.0)	2 (4.3)	
10 000 to < 15000 SAR	52 (80.0)	6 (9.2)	4 (6.2)	3 (4.6)	
15 000 SAR or more	61 (72.6)	14 (16.7)	7 (8.3)	2 (2.4)	

The *P*-values are for likelihood chi-square values for contingency table testing based on 4999 permutations; df is the degrees of freedom. For 'Age, the *P*-value is instead for the statistic for the Kruskal–Wallis test.

Table S3. Observed counts and proportions for answers to four questions about the academic performance of the students (N = 338), and their overall score value (1–4)

Question	Poor (1)	Fair (2)	Good (3)	Excellent (4)	χ^2 , <i>P</i>	Mean \pm SD
How would you rate your overall progress in school including graduating on time?	11	18	115	194	292.8, < 0.001	3.45 \pm 0.7
	3.3%	5.3%	34.0%	57.4%		
How would you rate your class attendance?	5	9	73	251	456.6, < 0.001	3.69 \pm 0.6
	1.5%	2.7%	21.6%	74.3%		
How would you rate your attention span in class?	19	39	158	122	170.4, < 0.001	3.13 \pm 0.8
	5.6%	11.5%	46.8%	36.1%		
How would you rate your understanding of concepts taught in class?	14	36	162	126	199.8, < 0.001	3.18 \pm 0.8
	4.1%	10.7%	47.9%	37.3%		

Each *P*-value is for the likelihood chi-square value of a goodness-of-fit test comparing the proportions (degrees of freedom = 3).

Table S4. Descriptive statistics for general health of the student participants

General health	Frequency	Percentage
Excellent	75	22.2
Very good	120	35.5
Good	87	25.7
Fair	36	10.7
Poor	20	5.9
Total	338	100

Table S5. Observed counts and proportions for answers to 10 questions about the mental health of the students (N = 338), and their overall score value (0–4)

Question	Never	Almost never	Sometimes	Fairly often	Very often	χ^2 , P	Mean \pm SD
In the last month, how often have you been upset because of something that happened unexpectedly?	69	73	129	54	13	113.7, < 0.001	1.61 \pm 1.09
	20.4%	21.6%	38.1%	16.0%	3.8%		
In the last month, how often have you felt that you were unable to control the important things in your life?	47	80	109	71	31	55.6, < 0.001	1.88 \pm 1.17
	13.9%	23.7%	32.2%	21.0%	9.2%		
In the last month, how often have you felt nervous and “stressed”?	21	42	93	121	61	98.6, < 0.001	2.47 \pm 1.11
	6.2%	12.4%	27.5%	35.8%	18.0%		
In the last month, how often have you felt confident about your ability to handle your personal problems?	18	41	115	112	52	119.4, < 0.001	1.59 \pm 1.06
	5.3%	12.1%	34.0%	33.1%	15.4%		
In the last month, how often have you felt that things were going your way?	27	63	148	77	23	144.0, < 0.001	1.99 \pm 1.00
	8.0%	18.6%	43.8%	22.8%	6.8%		
In the last month, how often have you found that you could not cope with all the things that you had to do?	39	80	137	57	25	108.4, < 0.001	1.85 \pm 1.07
	11.5%	23.7%	40.5%	16.9%	7.4%		
In the last month, how often have you been able to control irritations in your life?	35	66	129	79	29	93.0, < 0.001	2.00 \pm 1.09
	10.4%	19.5%	38.2%	23.4%	8.6%		
In the last month, how often have you felt that you were on top of things?	35	66	148	68	21	134.4, < 0.001	2.08 \pm 1.03
	10.4%	19.5%	43.8%	20.1%	6.2%		
In the last month, how often have you been angered because of things that were outside your control?	21	69	97	105	46	80.8, < 0.001	2.25 \pm 1.12
	6.2%	20.4%	28.7%	31.1%	13.6%		

In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	47	88	96	69	38	38.6, < 0.001	1.89 ± 1.21
	13.9%	26.0%	28.4%	20.4%	11.2%		

Each *P*-value is for the likelihood chi-square value of a goodness-of-fit test comparing the proportions (degrees of freedom = 4).