

Submitted: 3 April 2024  
Accepted: 22 July 2024  
Published online: 1 October, TAPS 2024, 9(4), 33-39  
<https://doi.org/10.29060/TAPS.2024-9-4/OA3282>

# Effect of the COVID-19 pandemic on health sciences students' individual entrepreneurship perception

Meltem Saygılı<sup>1</sup>, Aysun Kandemir Türe<sup>1</sup> & Şirin Özkan<sup>2</sup>

<sup>1</sup>Department of Health Management, Kırıkkale University, Kırıkkale, Türkiye; <sup>2</sup>Department of Medical Services and Techniques, Vocational School of Health Services, Uludag University, Türkiye

## Abstract

**Introduction:** Many societal changes threaten the sustainability of health systems. Entrepreneurs play a significant role in creating sustainable innovations necessary for development and structural change. This study aimed to evaluate how university students studying health sciences perceive individual entrepreneurship during the COVID-19 pandemic and to explore the impact of COVID-19-related hopelessness on their perception of entrepreneurship.

**Methods:** Six hundred eighty-one undergraduate students from the faculty of health sciences in Türkiye, participated in the study. The Individual Entrepreneurship Perception Scale and Beck Hopelessness Scale were used to collect data.

**Results:** The results revealed that the students' perception of individual entrepreneurship was high, while their hopelessness levels were moderate. In addition, a moderate negative relationship was found between the students' hopelessness levels and their perception of individual entrepreneurship. The regression analysis showed that the students' hopelessness levels and sub-dimensions (hope, loss of motivation, and future expectation) accounted for 26.3% of the total variance in individual entrepreneurship perception. Increased hopelessness regarding the sub-dimensions of hope, loss of motivation, and expectations for the future decreased their individual entrepreneurship perceptions.

**Conclusions:** These findings suggest that individual entrepreneurship perception among health sciences students could be negatively impacted during extraordinary periods related to health crises like pandemics. Developing hope, motivation, and expectations for the future is crucial to enhancing individual entrepreneurship perception among health sciences students.

**Keywords:** Individual Entrepreneurship Perception, Hopelessness, Health Sciences, University Students, COVID-19 Pandemic

## Practice Highlights

- University education plays a critical role in developing students' perceptions of entrepreneurship.
- Students' perceptions of entrepreneurship are affected by changing environmental conditions.
- The COVID-19 pandemic has led to a significant increase in awareness of Healthcare Entrepreneurship.
- The COVID-19 pandemic has negatively affected students' expectations and hopes for the future.
- Health sciences students experienced the psychological effects of the pandemic more intensely.

## I. INTRODUCTION

Entrepreneurs are described as individuals who "implement bold new ideas from the outset, taking on the risks of the business or venture that enables innovation to happen" (Suryavanshi et al., 2020). Entrepreneurship education seeks to provide students with in-depth knowledge, motivation, and skills to increase

entrepreneurial intentions' success in various settings (Sampene et al., 2023). In developing economies such as Türkiye, government efforts to improve unemployment conditions are directed towards developing students' positive attitudes towards entrepreneurship and increasing their interest in self-employment.

Universities are crucial in developing students' entrepreneurial intentions (Bagheri, 2018). It is critical to examine and develop the entrepreneurial potential of university students trained to fulfill important roles in the field of health services in the future. This is because students and newly graduated healthcare professionals with entrepreneurial skills are now needed to develop innovative healthcare delivery models that can improve the quality of healthcare services, improve treatment outcomes, and reduce the cost of care (Fashami et al., 2021; Mohamed et al., 2023). It is stated that healthcare is one of the main industrial areas where user entrepreneurship takes place worldwide (Schivone et al., 2020) and the pandemic environment brings unique opportunities for entrepreneurs, especially in healthcare. However, research shows that fear and worry due to the COVID-19 pandemic are making the future workforce anxious and hopeless about their professional futures (Duplaga & Grysztar, 2021; Tao et al., 2023). In such an environment, it is predicted that university students, especially those who are trained to work in health service delivery, may act in different ways in their decisions about their professional future.

Because an individual's perception of current conditions can significantly, positively, or negatively affect the formation of entrepreneurial intentions and the likelihood of starting an enterprise (Krichen & Chaabouni, 2022). Considering the increasing entrepreneurship opportunities in healthcare and the negative effects of the COVID-19 pandemic on healthcare services, it has become important to address the entrepreneurship perceptions of students who will serve in this field in the future and to evaluate the hopelessness experienced. When the literature was examined, no other research addressing entrepreneurship in the context of hopelessness was found. Therefore, we believe that our research findings will make a valuable contribution to filling this gap in the literature.

#### *A. Universities, Health Sciences Education and Entrepreneurship*

Recent years have focused on the role of universities in industrial competitiveness and their impact on social change (Hart & Rodgers, 2023), and universities in teaching and initiating entrepreneurship have emerged as leading actors. Recent research examining students' attitudes toward entrepreneurship reveals that universities have a critical role in developing entrepreneurial spirit and perceptions of entrepreneurship in students (Krichen & Chaabouni, 2022; Liao et al., 2022; Sampene et al., 2023). Moreover, university students now value real experience more and prefer universities that offer entrepreneurship opportunities and experiences (Taneja et al., 2024).

Universities providing education in healthcare have traditionally emphasised vocational training and unfortunately, there are very few university programs with curricula that focus on innovation and entrepreneurship in healthcare (Suryavanshi et al., 2020). Consequently, most newly graduated physicians and other healthcare professionals start their careers without the knowledge, experience, and courage to integrate their medical knowledge with the healthcare business world, and thus are unable to commercialise new healthcare delivery methods (Boore & Porter, 2011).

#### *B. Hopelessness Experienced by Students Due to the COVID-19 Pandemic and Perception of Individual Entrepreneurship*

Students are one of the groups that experience the psychological effects of the pandemic most intensely (Marahwa et al., 2022). Studies conducted with students during the pandemic period showed that students experienced higher levels of anxiety and depressive symptoms due to uncertainties about the future and the negative effects of the pandemic on their educational lives (Almaçık et al., 2021; Hajinasab et al., 2022; Kaplan Serin & Doğan, 2023; Zhang et al., 2021). Moreover, it was also determined that students' hopelessness levels were higher in the first wave of the pandemic and during the quarantine period and decreased with normalisation (Tao et al., 2023). In addition, it has been found that students who are educated in the field of health and have clinical experience are more anxious and hopeless than undergraduate students who are educated outside the field of health (Pretorius, 2021). Although entrepreneurship is a future-oriented orientation and is perceived as the ability to turn negative situations into opportunities, it is estimated that the psychological effects of COVID-19 may negatively affect entrepreneurial intention in students. Therefore, this study aims to examine the effect of hopelessness experienced by health sciences faculty students during the COVID-19 pandemic on their perception of individual entrepreneurship.

## II. METHODS

#### *A. Sampling and Participants and Data Collection*

The study was conducted with university students studying at the Faculty of Health Sciences in Türkiye. The faculty consists of six departments, namely Physiotherapy and Rehabilitation, Health Management, Social Work, Nutrition and Dietetics, Child Development and Nursing, and has 2335 students. The sample size required for the study was calculated using the formula  $(n = [z^2 \cdot p(1-p)/d^2] / 1 + [z^2 \cdot p(1-p)/d^2 N])$  and it was determined that a minimum of 337 participants would be sufficient with a 5% error level and 95%

confidence level. Participants were selected using a simple random sampling technique and volunteerism was taken as a basis in obtaining the data. The study was conducted between April and May 2022 and 681 valid questionnaires were returned from the participating students.

Data were collected using the socio-demographic information form, Individual Entrepreneurship Perception Scale, and Beck Hopelessness Scale. The Individual Entrepreneurship Perception Scale is a 5-point Likert scale consisting of 31 items and six sub-dimensions: planning, locus of control, self-confidence, communication, motivation, and self-discipline. This scale was developed by Incik and Uzun in 2017 to assess university students' perceptions of entrepreneurship. The reliability coefficients (Cronbach's Alpha) of the sub-dimensions of the Individual Entrepreneurship Perception Scale and the total scale were found to be 0.80, 0.84, 0.75, 0.75, 0.75, 0.72, 0.75, 0.60 and 0.92, respectively (Incik & Uzun, 2017). For this study, it was determined that the Cronbach Alpha values of the Individual Entrepreneurship Perception Scale ranged between 0.69 and 0.93 (Table 2).

The Hopelessness Scale was initially developed by Beck et al. in 1974 and subsequently adapted into Turkish by Durak and Palabıyıkoglu in 1994. This scale comprises 20 items divided into three sub-dimensions: expectations for the future, loss of motivation, and hope. Each question in the scale requires a 'yes' or 'no' response, and the maximum achievable score is 20. An increase in the overall score denotes a higher level of hopelessness. The reliability coefficients for the sub-dimensions of the scale were calculated to be 0.78, 0.72, and 0.72, respectively (Durak & Palabıyıkoglu, 1994). Table 2 presents the Cronbach's alpha coefficients for the sub-

dimensions and the scale, which were found to be 0.75, 0.77, 0.74, and 0.88, respectively.

### *B. Statistical Analysis*

The statistical analyses used were performed in SPSS v23.0. Descriptive analyses such as percentage, mean, standard deviation, reliability analysis (Cronbach's Alpha), and normality tests were performed to obtain the results. To test the normal distribution, kurtosis, and skewness values were calculated for each scale's sub-dimensions and total scores. It was determined that the values obtained were in the range of -1.5 to +1.5 and the data showed a normal distribution (Tabachnick & Fidell, 2013). The results of the analysis are presented in Table 2. In addition, multiple linear regression analysis was used to investigate the relationship between hopelessness and students' perception of individual entrepreneurship.

## III. RESULTS

The study involved students with an average age of 21.3 years, ranging from 18 to 44 years old. 86% of the participants were female students, and the majority (52.3%) reported a grade point average of 3 or above (with a scale of 0 to 4). 68.3% of the students lived in the city center with their families. Among the students' mothers, 37.7% had a primary school graduate degree, and 81.4% were not working. On the other hand, 32.2% of the students' fathers had a high school graduate degree, and 78.4% were actively working. Most of the students (68.3%) stayed in dormitories. Regarding career plans after graduation, most students expressed their interest in working in a health institution (public or private). At the same time, only 15.6% said they wanted to start their own business. 15% of the students were still undecided about their work plans (Table 1).

Variables	n	%	Variables	n	%
<b>Department</b>			<b>Place of Residence Outside Education</b>		
Health Management (HM)	122	17.9	City Centre	465	68.3
Nursing (HEM)	124	18.3	District	171	25.1
Child Development (CDE)	114	16.7	Village	45	6.6
Nutrition and Dietetics (ND)	116	17.0	<b>Education Level of Mother</b>		
Physiotherapy and Rehabilitation (FTR)	140	20.6	Illiterate	23	3.4
Social Work (SW)	65	9.5	Primary School	257	37.7
<b>Classroom</b>			Middle School	171	25.1
Grade 1	159	23.4	High School	178	26.2
Grade 2	188	27.6	University	52	7.6
Grade 3	165	24.2	<b>Education Level of Father</b>		
Grade 4	169	24.8	Primary School	173	25.4
<b>Gender</b>			Middle School	141	20.7
Woman	585	85.9	High School	219	32.2
Male	96	14.1	University	148	21.7
<b>Age</b>			<b>Employment Status of Mother</b>		
18-20 years old	277	40.7	Working	127	18.6
21-22 years old	272	39.9	Not working	554	81.4
23 years and older	132	19.4	<b>Employment Status of Father</b>		
<b>Academic Average</b>			Working	534	78.4
2.99 and below	260	38.2	Not working	147	21.6
3 and above	356	52.3	<b>Income Status</b>		
Total	616	90.5	Scholarship	190	27.9
Not specified	65	9.5	Tuition loan	211	31.0
<b>Career Future Plan After Graduation</b>			Working	51	7.5
I will definitely be working in an organization (public-private)	225	33.0	Only my family supports me	229	33.6
I tend to be an employee in an organization (public-private)	240	35.2	<b>Where Do You Live During Your Education?</b>		
Undecided	102	15.1	Dormitory	465	68.3
I tend to start my own business. I have my own business	114	16.7	Apart	171	25.1
<b>Total</b>	<b>681</b>	<b>100</b>	Home+ Staying with my family	45	6.6
			<b>Total</b>	<b>681</b>	<b>100</b>

Table 1. Sociodemographic characteristics of the students

Variables	Cronbach's Alpha	Mean	SD	Skewness	Kurtosis
Planning	0.770	21.72	3.82	-0.271	0.233
Focus of Control	0.810	30.96	4.73	1.141	1.157
Self Confidence	0.792	23.42	3.86	-0.231	0.772
Communication	0.694	15.54	2.57	0.880	0.424
Motivation	0.709	15.18	2.78	-0.559	0.596
Self-Discipline	0.726	11.14	2.31	-0.306	-0.031
<b>Individual Entrepreneurship Perception Scale Total Score</b>	<b>0.937</b>	<b>117.95</b>	<b>16.85</b>	<b>-0.406</b>	<b>0.899</b>
Hope	0.739	3.01	2.09	0.292	-0.991
Loss of Motivation	0.766	3.76	2.33	0.295	-0.971
Future Expectations	0.750	2.28	1.71	0.157	-1.273
<b>Beck Hopelessness Scale Total Score</b>	<b>0.885</b>	<b>9.06</b>	<b>5.36</b>	<b>0.232</b>	<b>-0.981</b>

Table 2. Average scores of the participants from the Individual Entrepreneurship Perception Scale and Beck Hopelessness Scale

The data above show the mean scores of the participants obtained from the Individual Perception of Entrepreneurship Scale and Beck Hopelessness Scale used for the research. Despite the difficulties brought on by the pandemic and other negative experiences, students

within the health sciences field scored high in individual entrepreneurship perception (Mean: 117.95±16.84 Min:44-Max:155). The study also found that the student's level of hopelessness was moderate (Mean: 9.06±5.36 Min:0-Max:20) (Table 2).

<i>Variables</i>	<i>B</i>	<i>SE</i>	<i>β</i>	<i>t</i>	<i>p</i>	<i>VIF</i>
(Constant)	131.996	1.113		118.644	<.001	
1. Hope	-19.278	2.611	-.342	-7.383	<.001	1.974
2. Loss of Motivation	-6.568	2.659	-.114	-2.470	.014	1.949
3. Future Expectations	-5.830	2.589	-.119	-2.252	.025	2.547

*R = 0.513    R<sup>2</sup> = 0.263    F = 80.449    p < 0.001    Durbin Watson = 1.895*

Table 3. Multiple Linear Regression Analysis results on hopelessness levels and its effect on individual entrepreneurship perception

\*Criterion: Perception of Individual Entrepreneurship

In Table 3, the regression model proved significant and reliable ( $F=80.449$ ;  $p<0.001$ ), with the hopelessness levels and sub-dimensions of the participants accounting for 26.3% of the total variance in individual entrepreneurship perception. The study found that the participants' hopelessness perceptions about the sub-dimensions of hope ( $t=-7.383$ ;  $p<0.001$ ), loss of motivation ( $t=-2.470$ ;  $p=0.014$ ), and expectations for the future ( $t=-2.252$ ;  $p=0.025$ ) had a statistically significant impact on their individual entrepreneurship perceptions. As participants' levels of hopelessness increased, their individual entrepreneurship perceptions decreased. Based on the standardised regression coefficient ( $\beta$ ), the predictor variables' relative order of importance on individual entrepreneurship perception is hope ( $\beta=-0.342$ ), expectations about the future ( $\beta=-0.119$ ), and loss of motivation ( $\beta=-0.114$ ) shown in Table 3.

#### IV. DISCUSSION

The results obtained from this study; health sciences students have a positive outlook on individual entrepreneurship despite the challenges created by the adverse conditions due to the pandemic. Studies conducted among health sciences students in Türkiye before the pandemic revealed that students' perceptions of individual entrepreneurship were at a moderate level (Baltacı & Baydin, 2023; Göktekin et al., 2022). According to these results, it can be said that the pandemic process increased the awareness of individual entrepreneurship in students studying in the field of health sciences. This is a phenomenon that should be considered in discussions about current market trends and potential business opportunities.

In addition, this research revealed that students had moderate levels of hopelessness during the pandemic period. Although this result is slightly higher than the findings of a previous study conducted with associate degree students in Türkiye during the pandemic (Okur & Şentürk, 2022); similar results were obtained in studies conducted with undergraduate students of the faculty of health sciences in the international literature (Pretorius, 2021).

Finally, regression analysis findings showed that participants' hopelessness levels and their sub-dimensions collectively explained 26.3% of the total variance in their individual entrepreneurship perceptions. This result suggests that hopelessness significantly affects students' perceptions of entrepreneurship. Similarly, a study conducted with Chinese university students supports these findings by showing that the COVID-19 pandemic had a significant and negative impact on students' entrepreneurial intentions and behaviors (Wang et al., 2023). However, this regression analysis result also implies that hopelessness caused by negative emotions during the pandemic cannot alone determine students' perceptions of individual entrepreneurship. Other factors that may affect the individual entrepreneurship perceptions of students studying in the field of health sciences in similar health crises such as the COVID-19 pandemic should also be investigated.

Although it is stated that the pandemic period is full of opportunities for health entrepreneurship, it should be taken into consideration that entrepreneurial intention/perception is affected by many environmental factors. The related literature points out that 'hope' is a

critical source of motivation for individuals who want to become entrepreneurs (Górány et al., 2021). However, studies conducted during the pandemic period revealed that students perceived a high level of individual entrepreneurship risk (Krichen & Chaabouni, 2022). On the other hand, studies show that fear and anxiety caused by the COVID-19 pandemic negatively affect students' perceptions of entrepreneurship (Loan et al., 2021). In particular, health sciences students are reported to experience higher levels of anxiety compared to other students studying in non-health fields, which leads to hopelessness and changes in career plans (Almıaçık et al., 2021). Therefore, the results of this study are supported by the findings of previous studies.

## V. CONCLUSION

Our research has shown that students who are trained to provide health services during periods of extraordinary health crises such as pandemics may experience hopelessness about their professional future and that students' perceptions of individual entrepreneurship are negatively affected by this situation. The content and purpose of the university education received play a critical role in the development of students' individual entrepreneurship perceptions.

Therefore, entrepreneurship courses should be carefully integrated into the curricula of all students studying in the field of health sciences, students should be motivated to take the course and encouraged to become entrepreneurs. In addition, interviews, company visits, and project studies with successful health entrepreneurs during similar crisis periods can increase students' interest in health entrepreneurship and reduce their level of hopelessness. For a more comprehensive understanding of the relationships examined in the study, the inclusion of qualitative research methods in future studies may increase the depth of the analysis.

## Notes on Contributors

MS, reviewed the literature, designed the research, analyzed data, co-wrote the manuscript, critically reviewed and edited the manuscript, and then read it through before final approval.

AKT, co-wrote the manuscript, and critically reviewed and edited the manuscript.

ŞÖ, prepared the manuscript for publication, critically reviewed, and edited the manuscript.

## Ethical Approval

This study was conducted according to the ethical standards of the 1964 Declaration of Helsinki. Approval was obtained from Kırıkkale University Faculty of Health Sciences (Date: 30.03.2022; Number: E.88159)

and Kırıkkale University Non-Interventional Research Ethics Committee (Date: 07.04.2022, Decision No: 2022.04.13).

## Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## Acknowledgment

All authors would like to thank all participants.

## Funding

No financial support was received from any institution or organisation in the conduct and publication of this research.

## Declaration of Interest

There is no conflict of interest between the authors.

## References

- Almıaçık, E., Of, M., Balkaş, J., Tülemmez, S., Mirzayev, M., & Alfara, H. (2021). The effects of university students' psychological resilience and hopelessness on their perception of career future during the pandemic process. *Business & Management Studies: An International Journal*, 9(1), 248-266. <https://doi.org/10.15295/bmij.v9i1.1757>
- Bagheri, A. (2018). University students' entrepreneurial intentions: Does education make a difference? In N. Faghih, & M. Zali (Eds.), *Entrepreneurship education and research in the Middle East and North Africa (MENA) perspectives on trends, policy and educational environment: Contributions to management science* (pp. 131-154). Springer. [https://doi.org/10.1007/978-3-319-90394-1\\_8](https://doi.org/10.1007/978-3-319-90394-1_8)
- Baltacı, N., & Baydin, N. Ü. (2023). Analysis of individual innovativeness, entrepreneurship, curiosity, and exploration characteristics of nursing students. *Journal of İnönü University Vocational School of Health Services*, 11(2), 1440-1454. <https://doi.org/10.33715/inonusaglik.1164998>
- Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The hopelessness scale. *Journal of Consulting and Clinical Psychology*, 42(6), 861-865. <https://doi.org/10.1037/h0037562>
- Boore, J., & Porter, S. (2011). Education for entrepreneurship in nursing. *Nurse Education Today*, 31(2), 184-191. <https://doi.org/10.1016/j.nedt.2010.05.016>
- Duplaga, M., & Grysztar, M. (2021). The association between future anxiety, health literacy and the perception of the COVID-19 pandemic: A cross-sectional study. *Healthcare*, 9(1), 1-18. <https://doi.org/10.3390/healthcare9010043>
- Durak, A., & Palabrykoğlu, R. (1994). Beck hopelessness scale validity study. *Crisis Journal*, 2(2), 311-319. [https://doi.org/10.1501/Kriz\\_0000000071](https://doi.org/10.1501/Kriz_0000000071)

- Fashami, F. M., Nili, M., Farahani, A. V., Shaikh, N., Dwibedi, N., & Madhavan, S. S. (2021). Determining the entrepreneurial and intrapreneurial intentions of student pharmacists in Iran. *American Journal of Pharmaceutical Education*, 85(2), 113-122. <https://doi.org/10.5688/ajpe8080>
- Gódnány, Z., Machová, R., Mura, L., & Zsigmond, T. (2021). Entrepreneurship motivation in the 21st century in terms of pull and push factors. *TEM Journal-Technology Education Management Informatics*, 10(1), 334-342. <https://doi.org/10.18421/TEM101-42>
- Göktekin, Z., Aslan, R., & Yildiz, E. (2022). Determination of the entrepreneurship levels of the students of the faculty of health sciences and the factors affecting these levels. *Ahi Evran University Journal of Institute of Social Sciences*, 8(2), 379-392. <https://doi.org/10.31592/aeusbed.907637>
- Hajinasab, N., Amiri, M., Sharifi, M., Sanati, T., Dolatabadi, Z., & Amiri-Farahani, L. (2022). The relationship between social support and hopelessness among Iranian students during Coronavirus disease 2019 (COVID-19) pandemic. *The Open Public Health Journal*, 15(1), 1-9. <https://doi.org/10.2174/18749445-v15-e2209290>
- Hart, P. F., & Rodgers, W. (2023). Competition, competitiveness, and competitive advantage in higher education institutions: A systematic literature review. *Studies in Higher Education*, 1-25. <https://doi.org/10.1080/03075079.2023.2293926>
- Incik, E. Y., & Uzun, N. B. (2017). Validity and reliability study of individual entrepreneurship perception scale. *Mustafa Kemal University Journal of Institute of Social Sciences*, 14(39), 471-485. <https://dergipark.org.tr/tr/pub/mkusbed/issue/31632/331276>
- Kaplan Serin, E., & Doğan, R. (2023). The relationship between anxiety and hopelessness levels among nursing students during the COVID-19 pandemic and related factors. *OMEGA-J Death Dying*, 87(3), 793-813. <https://doi.org/10.1177/00302228211029144>
- Krichen, K., & Chaabouni, H. (2022). Entrepreneurial intention of academic students in the time of COVID-19 pandemic. *Journal of Small Business and Enterprise Development*, 29(1), 106-126. <https://doi.org/10.1108/JSBED-03-2021-0110>
- Liao, Y. K., Nguyen, V. H. A., Chi, H. K., & Nguyen, H. H. (2022). Unraveling the direct and indirect effects of entrepreneurial education and mindset on entrepreneurial intention: The moderating role of entrepreneurial passion. *Global Business and Organizational Excellence*, 41(3), 23-40. <https://doi.org/10.1002/joe.22151>
- Loan, L. T., Doanh, D. C., Thang, H. N., Nga, N. T. V., Van, P. T., & Hoa, P. T. (2021). Entrepreneurial behaviour: The effects of the fear and anxiety of COVID-19 and business opportunity recognition. *Entrepreneurial Business and Economics Review*, 9(3), 7-23. <https://doi.org/10.15678/EBER.2021.090301>
- Marahwa, P., Makota, P., Chikomo, D. T., Chakanyuka, T., Ruvai, T., Osafo, K. S., Huang, T., & Chen, L. (2022). The psychological impact of COVID-19 on university students in China and Africa. *PLoS ONE*, 17(8), Article e0270824. <https://doi.org/10.1371/journal.pone.0270824>
- Mohamed, M. E., Elshaer, I. A., Azazz, A. M., & Younis, N. S. (2023). Born not made: The impact of six entrepreneurial personality dimensions on entrepreneurial intention: Evidence from healthcare higher education students. *Sustainability*, 15(3), 2266-2278. <https://doi.org/10.3390/su15032266>
- Okur, E., & Şentürk, A. Y. (2022). Coronavirus anxiety in vocational school students studying in the field of health in the coronavirus pandemic period. *Journal of Adnan Menderes University Faculty of Health Sciences*, 9(3), 499-512. <https://doi.org/10.46237/amusbfd.978275>
- Pretorius, T. L. (2021). Depression among health care students in the time of COVID-19: The mediating role of resilience in the hopelessness-depression relationship. *South African Journal of Psychology*, 51(2), 269-278. <https://doi.org/10.1177/0081246321994452>
- Sampene, A. K., Li, C., Khan, A., Agyeman, F. O., & Opoku, R. K. (2023). Yes! I want to be an entrepreneur: A study on university students' entrepreneurship intentions through the theory of planned behavior. *Current Psychology*, 42(25), 21578-21596. <https://doi.org/10.1007/s12144-022-03161-4>
- Saygılı, M., Kandemir Türe, A., & Özkan, Ş. (2022). *The effect of hopelessness on individual entrepreneurship perception in health science students*. Research Square. <https://doi.org/10.21203/rs.3.rs-2381250/v1>
- Schiavone, F., Tutore, I., & Cucari, N. (2020). How digital user innovators become entrepreneurs: A sociomaterial analysis. *Technology Analysis & Strategic Management*, 32(6), 683-696. <https://doi.org/10.1080/09537325.2019.1696955>
- Suryavanshi, T., Lambert, S., Lal, S., Chin, A., & Chan, T. M. (2020). Entrepreneurship and innovation in health sciences education: A scoping review. *Medical Science Educator*, 30, 1797-1809. <https://doi.org/10.1007/s40670-020-01050-8>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson Education.
- Taneja, M., Kiran, R., & Bose, S. C. (2024). Assessing entrepreneurial intentions through experiential learning, entrepreneurial self-efficacy, and entrepreneurial attitude. *Studies in Higher Education*, 49(1), 98-118. <https://doi.org/10.1080/03075079.2023.2223219>
- Tao, Y., Niu, H., Hou, W., Zhang, L., & Ying, R. (2023). Hopelessness during and after the COVID-19 pandemic lockdown among Chinese college students: A longitudinal network analysis. *Journal of Clinical Psychology*, 79(3), 748-761. <https://doi.org/10.1002/jclp.23439>
- Wang, J., Xu, M., Li, X., & Ni, Y. (2023). A latent class analysis of hopelessness in relation to depression and trauma during the COVID-19 pandemic in China. *Journal of Affective Disorders*, 329, 81-87. <https://doi.org/10.1016/j.jad.2023.02.077>
- Zhang, Y., Bao, X., Yan, J., Miao, H., & Guo, C. (2021). Anxiety and depression in Chinese students during the COVID-19 pandemic: A meta-analysis. *Frontiers in Public Health*, 9, Article 697642. <https://doi.org/10.3389/fpubh.2021.697642>

---

\*Meltem Saygılı  
 Department of Health Management,  
 Prof. Dr. Fuat Sezgin Health Campus,  
 Faculty of Health Sciences,  
 Kırıkkale University  
 71450 Merkez/Kırıkkale, Türkiye  
 +90 318 3423738/7732  
 Email: meltemsaygili@kku.edu.tr