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Impact of the COVID-19 Pandemic on the Mental States of Airline Pilots in Turkey

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Abstract

Mental state of airline pilots is of paramount importance with regard to flight safety. The coronavirus (COVID-19) pandemic exposes individuals to psychological stressors, depression, and anxiety which are detrimental to the performance of airline pilots. While some research has been carried out on the psychological effect of COVID-19 pandemic among various groups including students, healthcare workers, and general public, no research has been found that explored the psychological impact of the COVID-19 outbreak among airline pilots to the best of authors' knowledge. With these consideration in mind, the aim of this study is set out to examine the impact of the COVID-19 pandemic on airline pilots' mental state. A cross-sectional study was designed. A 50-items questionnaire was administrated online. The questionnaire included demographic items, 18 items regarding psychological states of participants, and the Depression Anxiety Stress Scale-21 Scale (DASS-21). The response rate was 40%. It was found that 63.2% (N=127) of the participants had various levels of depression, 57.2% (N=115) had anxiety, and 76.6% (N=154) were stressed. Results showed that 44.3% of the participants had contact with COVID-19 suspected/ diagnosed patients. The findings of this study may help airlines and aviation authorities to take preventive and protective psychological measures against COVID-19 outbreak and can improve aviation safety.

1. Introduction

On 11th March, 2020, the outbreak of the novel coronavirus (COVID-19) was declared as a global pandemic by the World Health Organization (Cucinotta & Vanelli, 2020). As of 24th February, 2022, the number of confirmed COVID-19 cases were more than 426 million and there were over 5 million confirmed deaths worldwide (WHO, 2022). People's livelihoods, their health, and the economy has been adversely affected by the COVID-19 outbreak (WHO, 2021). This outbreak has had a devastating effect on public mental health as well (Xiong et al., 2020)·(Giorgi et al., 2020).

The pandemic has also had a significant impact on airline industry in the World (Dube et al., 2021)(Amankwah-amoah et al., 2021). The airline industry faces several challenges including closure of the borders, strict control measures, mandatory lockdowns, isolation periods and resulting economic crisis (Dube et al., 2021). As a result, employees in aviation industry have experienced job or income losses which are highly likely to result in mental outcomes among aviation industry workers (Grout & Leggat, 2021). Furthermore, many airlines completely stopped their operations and filed for bankruptcy (Czerny et al., 2021). Numerous studies have attempted to explain the impact of the COVID-19 pandemic on the aviation industry (HEİETS & XİE, 2021)(ICAO, 2021).

The health of pilots is an essential element in performing safety-related duties (Kilic & Soran, 2020) (Kilic, 2021b). Previous studies reported that adverse mental state of pilots gave rise to near-misses, incidents, and accidents (Kilic, 2019)·(Kilic, 2020)·(Havle & Kilic, 2019). Therefore, the mental state of aircrew is of paramount importance regarding safety in aviation (Kilic, 2021a) (Kilic & Ucler, 2019).

Investigating the impact of COVID-19 outbreak on mental state of individuals is a topic of growing relevance. There is a large volume of published studies describing the impact of the pandemic on medical care workers (Yas et al., 2020), students (Collins, 2021), and general population (Giorgi et al., 2020). Prior studies have noted that the COVID-19 gave rise to depression, stress and anxiety among healthcare workers (Yas et al., 2020). However, no previous study has investigated the effect of the COVID-19 pandemic on the mental state of airline pilots to the best of authors' knowledge.

2. Methods

2.1. Subjects

The survey participants were primarily identified from airline companies operating in Turkey. The questionnaire was sent online to 500 airline pilots from 4 different airline companies. Of the intended population, 201 pilots (40.2%) were reached. Participation to survey was anonymous and all

responses were collected electronically. Informed consent was obtained prior to start of the survey.

2.2. Questionnaire

Based on the reported two questionnaire (Yas et al., 2020)·(Verma & Mishra, 2020), we developed the survey consisting of three parts: 1) demographics (e.g., age, gender, marital status, ranking, type of flying aircraft, total flying experience, comorbidities, and whether they had contact with COVID-19 suspected or diagnosed person (11 questions); 2) psychological state of the person regarding the COVID-19 pandemic (18 questions); 3) the Depression Anxiety Stress-21 scale (21 questions). Questions in the second part of the survey were to be answered on a 5-point Likert-type scale (1. Strongly Disagree – 5. Strongly Agree. Questions of the DASS-21 scale were to be answered on a 4-point Likert-type scale (1. Never – 4. Always) (Appendix A1).

2.3. Statistical Analysis

Descriptive statistical methods (frequency, percentage, and standard deviation) were carried out. We performed Alpha test to analyze the reliability of the survey questionnaire and factor analysis to investigate the consistency. The Cronbach's alpha coefficient of 18 expressions (2nd part of the survey) used to determine was found to be 0.85. Furthermore, the Cronbach's alpha coefficient of the DASS-21 scale was found to be 0.93. Regression analysis and Spearman correlation analysis were performed to test the degree of association between variables. To test collected data, Mann-Whitney U and Kruskal-Wallis H tests were used. A significance level of $P<0.05$ and a 95% confidence interval were used for the interpretation of the results. The statistical analyses were carried out by using the SPSS (the Statistical Package for the Social Sciences) for Windows 25.0

3. Results

The majority (93.5%, N=188) of the respondents were male. Among the participants, there were 125 (62.2%) commander, 34 (16.9%) first officer and 42 (20.9%) senior first officer (cruise relief pilot). The majority (75.6%, N= 152) of the participants were married and 68.7% (N=138) had children. Almost one quarter of the respondents (22.4%, N= 45) had elderly or high-risk individuals among the family or they lived with those. Almost half of the participants (44.3%, N= 89) reported that they got in contact with a COVID-19 suspected person. A minority of the respondents (2.5%, N=5) received psychological support during the pandemic period. Of all participants (2.5%, N=5) requested psychological support. Among participants, 6% (N=12) had comorbidities.

Based on the results, it was found that of all participants, 63.2% had various levels of depression, 57.2% had anxiety, and 76.6% had stress. It was found that request for psychological support was associated with psychological state of the person regarding the COVID-19 pandemic (p=0,01). Furthermore, the findings indicated that demographic items (e.g., age, gender, marital status, type of aircraft, flying experience, additional diseases, and contact with a COVID-19 suspected/diagnosed person) did not demonstrate a positive and statistically significant correlation with negative impact of the COVID-19 pandemic (e.g., depression, anxiety, and stress) (p>0,05). Table-1.

The findings showed that 63.2% of the respondents had various levels of depression. The frequency of mild depression was 13.4%, moderate depression was 40.8%, and severe depression was 9%. Based on the results, it was detected that 57.2% of the participants had various levels of anxiety, which were moderate anxiety at 27.9%, severe anxiety at 18.4%, and extreme severe anxiety at 10.9%. The results revealed that 76.6% of participants had various levels of stress. The frequency of moderate stress was 22.9%, severe stress was 18.4%, and extremely severe depression was 35.3%.

Furthermore, the results, as shown in Table 2, showed that there was a positive correlation between the levels of depression, anxiety and stress of participants and the negative impact of the COVID-19 pandemic. The negative impact of the pandemic was measured by evaluating the results of the 18 expressions in the second part of the survey.

Based on the findings, it has been found that pilots who received psychological support during the pandemic period showed depression, anxiety and stress at various levels. Participants living with their elderly or high-risk individuals had various levels of stress.

Based on the results of factor analysis, it was found that the scale of the second part of the survey has one subscale. The KMO value was found to be 0.56.

4. Discussion

This study set out to examine the impact of the COVID-19 pandemic on mental state of airline pilots. To the best of authors' knowledge, this is the first study investigating the effect of the COVID-19 outbreak on the psychological status of airline pilots. In this work, we created 18 expressions to determine the psychological effect of the COVID-19 pandemic. It was found that 18 expressions were significantly associated with depression, anxiety and stress levels of participants. It appears that the COVID-19 outbreak had a negative psychological impact on airline pilots. The most important finding was that more than half of the participants had stress, anxiety and depression at various level. Contrary to expectations, this study did not find a significant difference between long-haul pilots and short-haul pilots in levels of stress, anxiety, and depression.

A number of limitations need to be considered. First, the study group was composed of airline pilots, most of them male (93.5%). Second, participants flying long-haul aircraft were occasionally exposed to strict quarantine measures abroad which might have additional negative psychological impacts. Therefore, the findings might not be generalizable to general population. Further research might explore the negative psychological impacts of COVID-19 outbreak on student pilots and cabin crews.

The COVID-19 pandemic has created significant challenges for employees (e.g., pilots, cabin crews, and ground staff) and organizations (airlines, flight training organizations, and local and international aviation authorities).

Table 1. Factors associated with depression, anxiety, and stress at any level

Properties		Depression	p	Anxiety	p	Stress	p
Gender	Male	13.50±5.15	0.06	11.94±5.77	0.08	29.96±11.63	0.05
	Female	10.15±4.95		8.00±1.68		22.31±7.51	
Age	20-30	12.00±6.23	0.15	12.14±6.78	0.19	28.36±12.44	0.10
	31-40	13.42±5.46		11.82±6.10		29.00±11.76	
	41-50	12.14±4.69		10.34±4.15		27.17±10.00	
	51 and older	14.64±4.80		12.78±6.05		32.78±12.13	
Marital Status	Married	13.53±5.15	0.22	11.74±5.47	0.28	30.07±11.23	0.18
	Single	12.51±5.27		11.49±6.34		27.59±12.45	
Do you have children?	Yes	13.33±5.03	0.43	11.83±5.60	0.37	29.77±11.74	0.28
	No	13.19±5.55		11.37±5.88		28.79±11,2	
Which position do you hold?	Commander	13.09±5.11	0.19	11.36±5.47	0.25	29.23±11.76	0.32
	First Officer	12.85±5.22		11.53±5.59		29±10.9	
	Senior Officer	14.21±5.4		12.76±6.33		30.52±11.66	
How long have you been flying? (Total Flight experience)	less than 5	13.36±6.28	0,11	11.57±6.99	0.35	28.14±11.30	0.30
	6-10 years	13.59±5.39		12.49±6.18		30.22±12.02	
	11-15 years	11.75±.,91		10.20±4,30		25.00±10.19	
	16-20 years	12.14±5.84		10.0±4.240		26.64±10.16	
	More than 21	13.58±4.84		11.72±5.54		30.57±11.66	
What type aircraft do you fly? (Current Type Rating)	Long Haul	13.41±5.14	0.32	11.78±5.77	0.39	29.72±11.73	0.38
	Short Haul	12.96±5.36		11.43±5.46		28.79±11.15	
Do you have any comorbidities	Yes	13.58±4.01	0.34	13.67±6.47	0.11	30.92±13.45	0.36
	No	13.26±5.26		11.56±5.62		29.37±11.46	
Do you have elderly or high-risk individuals among the	Yes	13.71±5.5	0.27	13.44±6.13	0.14	33.73±11.40	0.07
	No	13.16±5.11		11.17±5.46		28.23±11.34	
Have you ever got in contact with a COVID-19 suspected	Yes	13.65±4.92	0.22	12.07±5.81	0.28	31.53±11.16	0.25
	No	12.99±5.40		11,38±5.58		27.82±11.64	
Have you ever received psychological support during the pandemic	Not Requesting	13.06±5.09	0.01*	11,35±5,37	0.01*	28.87±11.38	0.01*
	Requesting	15.60±5.86		15.80±7.95		39.00±10.42	
	Received	19.60±4.93		20.20±7.82		42.60±7.96	

Table 2. The association between the impact of the COVID-19 and the DASS-21 results

		Depression	Anxiety	Stress
The negative mental impact of the COVID-19 on	r	0.316*	0.397*	0.453*
airline pilots	p	0.01	0.01	0.01

*0,01 statistically significant

5. Conclusion

In summary, we were able to demonstrate conclusively that COVID-19 outbreak had a negative impact on the mental status of airline pilots. The current findings add to a growing body of literature on the negative impact of the COVID-19 pandemic. Airlines should implement preventive strategies against the negative psychological impact of the COVID-19 in addition to anti-contagion measures Our work towards investigating the negative impact of the COVID-19 outbreak on ab-initio pilots is in progress in our research group.

Appendix
Survey

Part-1. Demographic Factors

1. Gender
    a. Female
    b. Male
2. Age
    a. 21-30
    b. 31-40
    c. 41-50
    d. 51 and older
3. Marital Status
    a. married
    b. unmarried
4. Do you have children?
    a. Yes
    b. No
5. Which position do you hold?
    a. First officer
    b. Senior first officer
    c. Commander
6. How long have you been flying? (Total Flight experience)
    a. Less than 5
    b. 6-10 years
    c. 11-25 years
    d. 16-20 years
    e. More than 21 years
7. What type aircraft do you fly ? (Current Type Rating)
   Short-haul (e.g. Boeing 737 and Airbus 320)
   Long-haul (e.g. Boeing 777, 787, 747, and Airbus 330, 340, 350, 380)
8. Do you have any comorbidities?
    a. Yes
    b. No
9. Do you have elderly or high-risk individuals among the family or do you live with those?
    a. Yes
    b. No
10. Have you ever got in contact with a COVID-19 suspected person?
    a. Yes
    b. No
11. Have you ever received psychological support during the pandemic period?
    a. Received
    b. Requesting
    c. Not requesting

Part-2 Situations related to the COVID-19 Pandemic

12. Worried about being infected
13. Thinking I already got the infection
14. Worried about my/my family's other problem
15. Afraid of spreading the infection to my family or others.
16. Afraid of my parents being infected.
17. Thinking the virus spread cannot be controlled.
18. Don't feel safe myself.
19. Feeling my life is under threat
20. Feeling I lost control of my life.
21. Feeling stressed because of the increased in my workload
22. Afraid of flying to countries where confirmed COVID cases have rapidly increased.
23. Afraid of doing my job
24. Thinking there is not enough equipment (e.g., disinfection kit and protecting mask) in training aircraft to prevent contamination and to be protected.
25. Thinking I have been excluded by my relatives and other people because of my job
26. Afraid of being isolated or restricting my activities
27. Thinking if I get an infection, I will suffer financially
28. Thinking I have a lack of information about preventing the epidemic and protecting myself.
29. News/ TV/ social media increases my stress level.

Questions in the second part of the survey were to be answered on a 5-point Likert-type scale (1. Strongly Disagree – 5. Strongly Agree.

Part-3 DASS-21 scale

30. I found it hard to wind down during the past week
31. I was aware of dryness of my mouth during the past week
32. I couldn't seem to experience any positive feeling at all during the past week
33. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion) during the past week
34. I found it difficult to work up the initiative to do things during the past week
35. I tended to over-react to situations during the past week
36. I experienced trembling (e.g., in the hands) during the past week
37. I felt that I was using a lot of nervous energy during the past week
38. I was worried about situations in which I might panic and make a fool of myself during the past week
39. I felt that I had nothing to look forward to during the past week
40. I found myself getting agitated during the past week
41. I found it difficult to relax during the past week
42. I felt down-hearted and blue during the past week
43. I was intolerant of anything that kept me from getting on with what I was doing during the past week
44. I felt I was close to panic during the past week
45. I was unable to become enthusiastic about anything during the past week
46. I felt I wasn't worth much as a person during the past week
47. I felt that I was rather touchy during the past week

48. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat) during the past week
49. I felt scared without any good reason during the past week
50. I felt that life was meaningless during the past week

Questions of the DASS-21 scale were to be answered on a 4-point Likert-type scale (1. Never – 4. Always)

Ethical approval

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References

Amankwah-amoah, J., Khan, Z., & Osabutey, E. L. C. (2021). COVID-19 and business renewal: Lessons and insights from the global airline industry. International Business Review, 30, 101802.

Collins, F. E. (2021). Measuring COVID-19-related fear and threat in Australian, Indian, and Nepali university students. Personality and Individual Differences, 175, 110693.

Cucinotta, D., & Vanelli, M. (2020). WHO Declares COVID-19 a Pandemic. Acta Biomedica, 91(1), 157–160.

Czerny, A. I., Fu, X., Lei, Z., & Oum, T. H. (2021). Post pandemic aviation market recovery: Experience and lessons from China. Journal of Air Transport Management, 90(October 2020), 101971.

Dube, K., Nhamo, G., & Chikodzi, D. (2021). Journal of Air Transport Management COVID-19 pandemic and prospects for recovery of the global aviation industry. Journal of Air Transport Management, 92, 102022.

Giorgi, G., Lecca, L. I., Alessio, F., Finstad, G. L., Bondanini, G., Lulli, L. G., Arcangeli, G., & Mucci, N. (2020). COVID-19-Related Mental Health E ff ects in the Workplace: A Narrative Review. International Journal of Environmental Research and Public Health Review, 17(7857), 1–22.

Grout, A., & Leggat, P. A. (2021). Cabin crew health and fitness-to-fly: Opportunities for re-evaluation COVID-19 amid. Travel Medicine and Infectious Disease, 40, 101973.

Havle, C. A., & Kilic, B. (2019). A hybrid approach based on the fuzzy AHP and HFACS framework for identifying and analyzing gross navigation errors during transatlantic flights. Journal of Air Transport Management, 76, 21–30. https://human-factors.arc.nasa.gov/publications/NASA_TM_2015_218930-2.pdf

HEİETS, I., & XİE, Y. (2021). The Impact of the COVID-19 Pandemic on the Aviation Industry. Journal of Aviation, 5(2), 111–126.

ICAO. (2021). Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis Air Transport Bureau Contents. https://www.aaco.org/Library/Files/Uploaded%20Files/Economics/Corona%20studies/3dec%20ICAO_Coronavirus_Econ_Impact.pdf

Kilic, B. (2019). HFACS Analysis for Investigating Human Errors in Flight Training Accidents. Journal of Aviation, 3(1), 28–37.

Kilic, B. (2020). The Analysis of Hot-Air Balloon Accidents by Human Factor Analysis and Classification System. Journal of Aeronautics and Space Technologies, 13(1), 17–24.

Kilic, B. (2021a). Fatigue Among Student Pilots. AEROSPACE MEDICINE AND HUMAN PERFORMANCE, 92(1), 20–24.

Kilic, B. (2021b). Self-Medication Among Ab Initio Pilots. AEROSPACE MEDICINE AND HUMAN PERFORMANCE, 92(13), 1–6.

Kilic, B., & Soran, S. (2020). Awareness level of airline pilots on flight-associated venous thromboembolism. AEROSPACE MEDICINE AND HUMAN PERFORMANCE, 91(4), 1–5.

Kilic, B., & Ucler, C. (2019). Stress among ab-initio pilots: A model of contributing factors by AHP. Journal of Air Transport Management, 80.

Verma, S., & Mishra, A. (2020). Depression, anxiety , and stress and socio- demographic correlates among general Indian public during COVID-19. International Journal of Social Psychiatry, 66(8), 756–762.

WHO. (2021). Impact of COVID-19 on people's livelihoods, their health and our food systems. https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people%27s-livelihoods-their-health-and-our-food-systems

WHO. (2022). WHO Coronavirus (COVID-19) Dashboard. https://covid19.who.int

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-li, D., Iacobucci, M., Ho, R., Majeed, A., & Mcintyre, R. S. (2020). Impact of COVID-19 Pandemic on Mental Health in the General Population: A Systematic Review. Journal of Affective Disorders.

Yas, S. C., Bildik, F., Aslaner, M. A., Aslan, S., Keles, A., Kilicaslan, I., Yazla, M., & Demircan, A. (2020). The Effect of the Covid-19 Pandemic on the Psychological Status of Hospital Workers. Psychiatry and Clinical Psychopharmacology, 30(3), 264–272.

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