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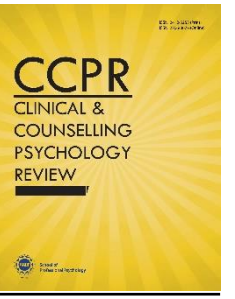

Title: **Workplace Stressors, Cognitive Emotion Regulation, Perceived Stress, and Quality of Life in Pilots**

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Workplace Stressors, Cognitive Emotion Regulation, Perceived Stress, and Quality of Life in Pilots

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Abstract

This study investigates the relationship between workplace stressors, cognitive emotion regulation, perceived stress, and quality of life in pilots. Data was collected from 80 pilots, both Captains and First Officers, working at different airports and flying clubs in Pakistan. A cross-sectional research design and non-probability purposive sampling was used in this study. Correlation, regression, *t*-test, and analysis of variance (ANOVA) were used to analyze the results. The outcomes revealed a significant positive correlation among workplace stressors, cognitive emotion dysregulation, negatively perceived stress, and low quality of life in pilots. These findings were thoroughly discussed and recommendations were also made for further study.

Keywords: cognitive emotion regulation, perceived stress, pilots, quality of life, workplace stressor

Introduction

Piloting is a unique profession that poses unconventional challenges such as showing cooperation, doing team work, fulfilling deadlines, working for days without any break, making quick decisions, and manifesting solidarity. These all are essential as they ensure the professional growth and competence of pilots. On the other hand, pilots' hectic routine creates occupational stress and affects their work-life balance (Log, 2023, Masi et al., 2023; Zhao et al., 2023).

Modern aviation started in the 18th century and since then it has taken a vast turn in terms of development and innovation (Sheriff, 2023). Even in Pakistan, the demand of air travelling has increased to a great extent (Cahill et al., 2021). This not only increases the accessibility of people to different areas of the world and also increases the demand of qualified, certified, competent, and professional pilots for safe traveling and protection of lives (Malik, 2021). With the increase in the need of expert

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pilots, their physical and mental health has become a major concern of many researchers. Although the trainings and practices of aviation officers like other professionals is increasing their skill and making them efficient; however, pilots continue to face a lot of issues in their professional life. Job insecurity is a constant concern of a pilot since they must pass routine medical examinations after every six months or year; otherwise, they face the risk of losing their license, which might put an end to their career (Atay et al., 2021). Since pilots must organize their daily routine in accordance with their schedule, they may not be able to attend their favorite person's birthday, wedding, or a relative's event, as well as holidays such as Eid. Even if they have the option of switching to another pilot's roster, they occasionally find themselves with no choice but to work and miss out on time with their loved ones. This can be unpleasant for them at times and ultimately has a negative impact on their mental and emotional health and quality of life (Cullen et al., 2021).

It has been noticed that employees, in general, face more workplace stress and pilots, in particular, have hectic duty hours so they face severe job stress (Rathi & Kumar, 2022). Job stress can be defined as the negative physical and emotional response that occurs when the demands of the job do not align with the employee's capabilities, resources, or needs (Luciani et al., 2022). Workplace stress can have a negative impact on one's health. Zhao et al. (2023) state that occupational stress, which is characterized as a combination of high job demands and the inability to meet those needs, is linked to the highest risk of developing general mental disorders and has an impact on the workers' quality of life and performance. Additionally, according to Fraher (2019), one of the stressors that affect workers' health more frequently than financial problems is work-related stress.

Emotional reactivity toward an event is the combination of two interactive processes, emotion generation and emotion regulation (Wilms et al., 2020). According to Cullen et al. (2021), cognitive emotion regulation is described as a person's thinking following an unpleasant experience. According to Hung et al. (2022), cognitive emotion regulation is the inherent and extrinsic process involved in accessing, observing, and altering emotional reactions to achieve one's goals. The ability to control one's emotional responses when confronted with bad situations is referred to as cognitive emotion regulation (Baltas & Odaman, 2019). In a flight

mission, the pilot's capacity to reason and interpret complex and constantly changing settings is assessed by their cognitive appraisal. A pilot's cognitive-emotional interactions during flight time in a demanding and combative situation can reportedly be assessed and tracked in real-time based on the computation of their cognitive appraisal and the estimates of their emotional state. It has been noticed that pilots also face the challenges of controlling their emotions and promoting positive cognitive pattern in order to make immediate and accurate decisions during takeoff, traveling, and landing, as they are responsible to bring back the passengers to ground (Wilms et al., 2020).

Employees perception regarding their job affects their performance. A person's perception of the amount of stress at any one time or during a specific period of time is referred to as perceived stress. Numerous variables, such as an individual's lifestyle, personality traits, perception of stress, and social support, can affect the amount of stress felt and how the affected person responds to it. According to Castellano et al. (2019), one of the most stressful jobs on environmental, physiological, and psychological levels is being a pilot. Pilots may experience perceived stress due to physiological pressures, such as physical infirmity, weariness, bodily damage, and hunger or thirst, whereas environmental stressors include bad weather, loud noises, low oxygen levels, and defects in any aircraft component. Lastly, psychological stressors are connected to emotional elements including relationship issues with family or friends, job stress, money concerns, and the loss or illness of close relatives. Still, pilots are bound to complete their working hours. The manner that pilots experience these stressors affects how well they fly, and how they respond to a stressful situation which, in turn, determines whether the flight is successful or not (Cahill et al., 2019).

Wellbeing and quality of life enhance the satisfaction of employees. Moreover, the general well-being of people and the society is referred to as quality of life. This is an umbrella term that describes the level of satisfaction in numerous aspects of a person's life, such as family, religion, safety. Subsequently, freedom of speech, education, physical health, employment, wealth, and environment makeup the quality of life. For an airline pilot, the term "quality of life" can mean a variety of things. For example, some pilots define it as having good schools nearby for their kids while others define it as living in a reputable city (Baltas & Odaman,

2019). Other pilots could view the quality of life as having a job in their hometown that allows them to spend as much time as possible with their families. For pilots, the ability to fly more days to earn extra money to pay for luxuries like their own home, a private jet, or a family vacation to their preferred destination may also be viewed as a measure of the quality of life. Some even have the opportunity to select their own flight schedules which may improve their quality of life (Boyd et al., 2021). Therefore, the lifestyle of an airline pilot is in stark contrast to the typical office worker who is scheduled to work from 9 am to 5 pm, five days a week. Depending on their flying schedule, a pilot may experience a wide range of non-typical days. The pilot may begin working at 3 am one day and only have to fly for 3 hours, while beginning at noon the following day and having to consistently fly for 9 hours (Fraher, 2019). One of the benefits of this career is that a pilot can request vacation time (11 to 18 days per month) and during that time he won't have to be bothered by emails or calls. However, commercial pilots working for an airline must adjust to the extended shifts that require long stays away from home and non-traditional schedules. Junior pilots face such issues more as they have busy schedules. They even have to sacrifice their desire to be at home on weekends, holidays, birthdays, and anniversaries. The pilot is expected to spend a lot of time alone during layovers, yet, while they occasionally enjoy the companionship of other pilots and flight attendants, these interactions can also present personal and professional challenges (Zhao et al., 2023).

Although, pilots must be physically fit for duty they should be aware of the dangers of harm in passengers while takeoff and landing and not put their health, performance, well-being, or flight safety at risk. The character and intensity of a pilot's connections with others including those with their family, friends, and coworker are influenced by how well they are doing. Additionally, a pilot's mental and physical health affects his performance (that is, concentration, deliberation, and decision-making) and most critically, how pilots function as aviation professionals influence flight safety.

The quality of life of pilots is seriously threatened by work-related stress. Numerous studies have found a link between occupational stress and pilots' quality of life that is both positive and significant. Job stress had the greatest influence on life quality, followed by interpersonal,

perceived, and work environment stress. Stress perception has a direct impact on cognitive and physiological functions which raises the risk of disease and lowers the quality of life (Cullen et al., 2021).

Literature Review

Psychology and aviation have been continuously associated with each other since World War II where aviation department needed psychologists and their expertise in the pilot's selection for air battle (Boyd et al., 2021). After the war and with the rapid growth in commercial aviation, psychology was then employed in designing the structure of the flight deck of an aircraft, for enhancing interaction between pilots and air traffic controllers, setting staff schedule to ensure that crew was not affected by fatigue, coining the staff how to use the safest and most efficient means of escape from aircraft at the time of an accident, and in crew selection (Masi et al., 2023).

The first study on the effects of stress on pilot's cognition was conducted after World War II, which is based on the findings that pilots who were highly skilled during peacetime frequently crashed their planes in the battle of stress due to mental and emotional errors. A study aimed to investigate the relationship between life orientation and cognitive emotion regulation with work related stress. The results of the study showed that work-related stress had a significant relationship with life orientation, self-blame, rumination, positive-refocusing, positive reappraisal, catastrophizing, and other-blame. This finding also indicated that more positive life orientation and decrease of emotion regulation related disorders will lead to less work-related stress (Atay et al., 2021).

Furthermore, perceived stress can be a reason that aviators commit thinking errors and to make mental shortcuts that could be potentially fatal (Feher da Silva et al., 2023). There is a study that aimed to know the relationship between perceived stress and job satisfaction among military pilots. A total of 89 military pilots were selected and results indicated that there is a positive relationship between perceived stress and job satisfaction. The results also showed that 33.7 % pilots had mild stress, 48.3% pilots indicated moderate stress, and only 13.5% pilots showed high stress. According to this study, the stress level in pilots is because of their life stressor, organizational stressor, flight environmental stressor, and task-based stressor (Malik et al., 2020). Many researchers identified

that pilots are suffering with the same health problems as the general people are (especially those related to mental health), and possibly to a larger extent than the general public. A study concluded that Health and Safety Executive (HSE) Management Standards (MS) are positively connected with job satisfaction and negatively associated with anxiety and job-related depression (Toor & Malik, 2022).

A research study was conducted that determined the level of stress among the pilots stationed at a base in Pakistan. A total number of 74 aviators participated in this study. The results of the stress questionnaire revealed that 35% of pilots had below average stress level, 27% of pilots had more than average stress level, 23% of the pilots exhibited stress of an average person, and 9.45% of the pilots that was only 7 out of 74 showed high stress level. In this way, this study concluded that majority of Pakistani pilots have faced stress (Asghar & Mohsin, 2023). Moreover, a research study was conducted on the topic of techno stress and productivity in aviation department. The study aimed to know the relationship between techno-stress and crew productivity. It examined three aspects of techno-stress, namely techno-uncertainty, techno-complexity, and techno-overload and the results showed that techno-stress had negative relationship with crew productivity (Shahid, 2022).

There is a research that investigated the association between work-home life balance and job satisfaction in commercial pilots in Pakistan. The research identified that family-work conflicts result in higher level of job dissatisfaction on other side unbalance in managing responsibilities at work and home leads towards lower level of job satisfaction in employees. Whereas, the work-family balance has a stronger correlation with job satisfaction (Malik et al., 2020). Malik (2021) revealed that in 2017 different airlines of Pakistan transported around 7.17 billion passengers which highlighted the increasing demand of these professionals Many researches are showing that workplace stressors effect a person badly along with his emotional and cognitive components (Boyd et al., 2021). Whereas, quality of life and good home environment can support a person and motivate the person towards betterment. Due to the significant requirement of these professionals, this study aimed to identify the link between their job stress and hectic routine with their ability to channelize their emotions and make best decisions by utilizing their stress management skills. Such management skills affect their wellbeing and

mental health in collectivistic culture of Pakistan where family support and friends can be protective factors however, their absence effects negatively.

Hypotheses

1. There will be significant positive relationships in workplace stressors, cognitive emotional dysregulation, negatively perceived stress and poor quality of life among pilots.
2. It is hypothesized that marital status(married), increased work hours, perceived stress and cognitive dysregulation will be the positive predictors of quality of life in pilots

Method

To find the relationship among workplace stressors, cognitive emotional regulation, perceived stress, and quality of life among pilots, an accurate systematic research procedure, methodology, and sampling technique were required.

Research Design

In this quantitative research, a cross-sectional research strategy was employed.

Research Question

What is the relationship among workplace stressors, cognitive emotional regulation, perceived stress, and quality of life in pilots?

Sample

Purposive sampling technique was used to collect the data from pilots. A sample of 80 male pilots ranked as Captain and First Officer were selected for the research. Out of which, 65 were first officers and 15 were captains who had worked for various airlines and flying clubs in Pakistan.

Procedure

Before searching the scales, approval from the organization overseeing the research was obtained. A list of several airports and flying clubs with captains and first officers was then made. Four standardized instruments and a demographic form were used for this purpose. An online Google form was created with the permission of the authors who developed the

scales. The sample was accessed through different social media resources as it was the time of COVID-19 and in person data collection was not easy. Afterwards, informed consent was taken from the participants and the survey was sent to them through direct message and email. Firstly, participants were informed that survey was conducted online while research ethics were considered, such as the confidentiality of their information, anonymity and right to withdraw. They were also made aware of the investigation's main goal. They received assistance with the form's instructions before being invited to complete the questionnaires. Participants completed the form carefully by checking each item before submitting it. At the end, they were appreciated for spending time while filling the form.

Measures

Demographic Form

It was used to gather information about age, city, education, flying license, rank, work experience, income, total number of flying hours, and family system of the pilots.

Work-Related Stress Questionnaire (WRSQ; Frantz & Homgren, 2019)

Work-related stress questionnaire is a questionnaire with 39 items. The Health and Safety Executive indicator tool (WRSQ) aims to measure an organization's performance in dealing with the primary stressors at the workplace identified by Health and Safety Executive management standards. It highlighted six management standards representing different factors of work that, if they are poorly managed will lower the level of worker health and productivity and increase absence because of sickness from work.

Cognitive Emotion Regulation Questionnaire (CERQ; (Garnefski et al., 2001)

The CERQ is a multidimensional questionnaire, designed to investigate the cognitive emotion regulation techniques (or cognitive coping strategies) someone uses after experiencing any negative event or situation. The CERQ is a self-report tool having 26 items. It is consisting of nine hypothetical subscales, each subscale consists of four items and each item is referring to someone’s thinking after experiencing stressful life events; Self-blame, Other-blame, Rumination, Catastrophizing,

Putting into Perspective, Positive refocusing, Positive reappraisal, Acceptance, and Refocus. The questionnaire makes it possible to distinguish a person's cognitive techniques and compare them to norm scores in different age groups. It can be administered to normal as well as clinical populations, in different age groups.

Perceived Stress Scale (PSS; Cohen et al., 1983)

The PSS is a psychological tool for measuring the perception of stress. It was developed by Cohen and colleagues in 1983. It is a 10 items questionnaire that measures the degree to which a person appraises any situation as stressful. The PSS also identified psychological stress about sex, age, education, income, job status, and several other demographics. Items were designed to tap how much a respondent finds life unpredictable, uncontrollable, and overloaded. Person scores on the PSS can range from 0 to 40; a higher score indicates a higher level of perceived stress in a person. Scores ranging from 0-13 would be taken as low stress. While scores ranging from 14-26 would be indicated as a sign of moderate stress and scores ranging from 27-40 would be considered as high perceived stress.

The World Health Organization Quality of Life- Brief (WHOQOL-BREF, 1996)

The WHOQOL-BREF was developed in 1996 by WHO. This tool measures the individual's perception in the way of their culture and values system related to their personal goals, concerns, and standards. The scale consists of 26 items, having four sub-scales; Physical health domain, psychological health domain, social relationship domain, and Environment domain.

Results

This part of result contains the mean and standard deviation of demographics and frequency of categorical demographics of sample in the main research (*N*=80).

Table 1

Mean and Standard Deviation of Pilots Age and Flying Hour

Demographic Variables	*M*	*SD*
Participant's Age (Years)	28.49	6.16
Flying Hour	565.7	635.0

This table consists of the mean age of research participants that was 28.49. Average flying hours of pilots were recorded to be 565.7.

Table 2

Frequencies, Percentages and Total Number of Demographic Variables of the Participants(N=80)

Demographic Variables	*f*	*(%)*
Other Provinces	9	
Qualification		
Matric - Intermediate	28	35
Graduate - Postgraduate)	52	65
License		
Lower License (SPL and PPL)	15	19
Higher License (CPL and ATPL)	65	81
Rank		
First Officer	65	81
Captain	15	19
Flying Hour		
Flying Hours (5-300) at Lower Rank	37	46
Flying Hours (301-3562) at Higher Rank	43	54
Income		
High	43	54
Elite	37	46
Marital Status		
Single	57	71
Married and Divorced	23	29
Family System		
Nuclear Family System	44	55
Joint Family System	36	45

This table revealed that sample contained majority of pilots who were in their early and middle adulthood lifespan with 36% and 38 %. Mostly, pilots were from Punjab with 89% and had higher studies with 65 %. Whereas, majority of the pilots had higher license with 81%. First officers were in majority with 81%. Most of the pilots had flying hours of (301-3562) with 54%. Some of the pilots had high income with 54%. However, a large number of pilots were single with 71% and most of them were living in nuclear family system with 55%.

Table 3

Psychometric Properties of Work-Related Stress Questionnaire, Cognitive Emotion Regulation Questionnaire, Perceived Stress Scale, and World Health Organization Quality of Life- Brief (N=80)

Variables	*k*	*M*	*SD*	*a*	*Range*	
					Potential	*Actual*
Work-Related Stress Questionnaire	39	143.56	18.42	.89	2-52	4-52
Cognitive Emotion Regulation Questionnaire	36	109.40	16.18	.84	1-92	4-00
Perceived Stress Scale	10	18.48	7.81	.86	1-10	2-25
World Health Organization Quality of Life- Brief	26	93.81	8.50	.76	1-81	4-30

Above-mentioned table shows high internal consistency (Cronbach's α) of the WRSQ of .89. Alpha value for the CERQ has a high internal consistency of .84. Moreover, the PSS also has a high internal consistency of .86. Furthermore, the alpha value for WHOQOL-BREF has an internal consistency of .76.

Table 4

Correlation between Work Related Stress, Cognitive Emotion Regulation, Perceived Stress Scale and World Health Organization Quality of Life- Brief and Their Factors (N=80)

Factors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1.WRSQ	---	-.26**	.19	-.04	.10	.25*	.35**	.08	.38***	.41***	-.01	-.66***	.56***	.44***	.51***	.58***	.57***
2.Self-blame	---	---	.27**	.45***	.15	-.04	.00	.45***	.51***	.48***	.59***	.34**	-.23*	-.09	-.14	-.21*	-.18
3.Acceptance	---	---	---	.35**	.40***	.25*	.13	.20	.23*	.17	.54***	-.01	.06	.13	.00	.05	-.00
4.Rumination	---	---	---	---	.37***	.18	.07	.30**	.41***	.33**	.65***	-.00	-.11	-.03	.03	-.18	-.06
5.Positive Refocusing	---	---	---	---	---	.33**	.24*	.28**	.38***	.26**	.62***	-.06	.02	-.02	.10	-.17	-.10
6.Refocus on Planning	---	---	---	---	---	---	.67***	.24*	-.09	-.09	.49***	-.25*	.33**	.02	.20	.16	.25*
7.Positive Reappraisal	---	---	---	---	---	---	---	.32**	-.13	-.14	.45***	-.27**	.33**	.35**	.47***	.19	.37***
8.Putting into Perspective	---	---	---	---	---	---	---	---	.39***	.38***	.69***	-.00	-.00	.16	.14	-.03	.09
9.Catastrophizing	---	---	---	---	---	---	---	---	---	.76***	.64***	.46***	.40***	-.20	-.27**	-.48***	-.44***
10.Other Blame	---	---	---	---	---	---	---	---	---	---	.58***	.35**	-.27**	-.17	-.37***	-.42***	-.41***
11.CERQ	---	---	---	---	---	---	---	---	---	---	---	.08	-.04	.07	.05	-.20	-.072
12. PSS Total	---	---	---	---	---	---	---	---	---	---	---	---	-.45***	-.32**	-.48***	-.56***	-.60***
13.Physical Health	---	---	---	---	---	---	---	---	---	---	---	---	---	.46***	.45***	.62***	.64***
14.Psychological	---	---	---	---	---	---	---	---	---	---	---	---	---	---	.55***	.44***	.62***
15.Social Relationships	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	.48***	.71***
16.Environment	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	.88***
17.WHOQOL	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
M	143.56	9.88	12.05	11.76	12.13	15.43	15.66	11.85	10.35	9.58	109.40	18.47	27.53	20.13	11.37	31.53	93.81
SD	18.42	2.50	2.96	2.96	2.58	3.00	3.34	2.89	3.37	3.17	16.18	7.81	3.64	2.38	2.50	4.04	8.50

Note. WRSQ, CERQ, PSS, WHOQOL=work related stress questionnaire, cognitive emotion regulation questionnaire, perceived stress scale and world health organization quality of life-brief. *p<.05. **p<.01. ***p<0.001.

From above table, it was concluded that the WRSQ had significant positive relationship with one factor of the CERQ i.e., positive reappraisal. Whereas it had highly positive significant relationship with its two subscales: catastrophizing and other blame. The WRSQ also had highly positive significant relationship with the WHOQOL-BREF and with its all subscales; like physical health, psychological, social relationship and environment. The WRSQ also had significant negative relationship with one factor of the CERQ i.e., self-blame. It also had negative relationship with one factor of the CERQ i.e., rumination and CERQ Total.

One of the factors of the CERQ; Self- Blame had highly positive significant relationship with the CERQ total and with its other subscales; Rumination, Putting into Perspective, Catastrophizing and other- blame. It also had positive significant relationship with the PSS. It had negative relationships with the WHOQOL-BREF and with its all subscales; like Physical Health, Psychological, Social Relationship and Environment.

One more factor of the CERQ; Acceptance had highly positive significant relationship with the CERQ total score and with one of its subscales; i.e., Positive Refocusing.

Furthermore, one more factor of the CERQ i.e., Positive Reappraisal had significant positive relationship with two subscales of the WHOQOL-BREF i.e., Physical Health and Psychological. Whereas highly positive significant relationship with WHOQOL-BREF total and with its subscale; Social Relationships. Positive Reappraisal also had significant negative relationship with PSS.

Whereas one factor of the CERQ i.e., Catastrophizing had highly positive significant relationship with CERQ total and with its one subscale; Other Blame. It also had highly positive significant relationship with the PSS. Furthermore, it also had highly positive significant relationship with one of the subscales of the WHOQOL-BREF i.e., Physical Health whereas it had highly significant negative relationship with the WHOQOL-BREF and with its two sub scales; social relationships and environment. Furthermore, one more factor of the CERQ; Other-Blame had highly positive significant relationship with CERQ total. It also had positive significant relationship with PSS. Other-blame had highly negative significant relationship with the WHOQOL-BREF and with its two subscales; Social Relationships and Environment whereas PSS had highly

negative significant relationship with the WHOQOL-BREF and with its all subscales; like physical health, psychological, social relationship and environment. One factor of the WHOQOL-BREF i.e., Physical Health had highly positivesignificant relationship with the WHOQOL-BREF total and with its other subscales; Psychological, Social Relationships and Environment One more factor of the WHOQOL-BREF; Psychological had highly positivesignificant relationship with the WHOQOL-BREF total and with its two subscales i.e., Social Relationships and Environment.

Hierarchical regression was used to determine the prediction of work-related stressors, cognitive emotion regulation and the WHOQOL-BREF with perceived stress. The research analysis consisted of 4 steps where the Step I consisted of demographics of the research, named as age, city, qualification, license, rank, flying hour, income, marital status, and family system. On the other hand, step II consisted of the WRSQ, while step III consisted of the CERQ, and Step IV consisted of the WHOQOL-BREF in pilots.

Table 5

Hierarchical Regression Analysis of Predictors of Perceived Stress in Pilots (N= 80)

Model	*SEB*	β	*t*	*p*
Step I (R=.54, ΔR^2=.20)				
Age	1.39	.22	1.561	.123
Home City	2.54	.04	0.470	.634
Education	2.08	-.23	1.854	.067
License	2.31	-.01	0.132	.893
Rank of the Pilots	2.18	.14	1.324	.190
Total Number of Flying Hours	2.01	-.37	2.900	.005
Income	2.02	-.02	0.182	.851
Family System	1.72	.22	2.034	.046
Pilots Marital Status	2.31	-.20	1.545	.127
Step II (R=.73, ΔR^2=.47)				
WRSQTOTAL	0.03	-.56	6.201	.001
Step III (R=.82, ΔR^2=.56)				

Model	*SEB*	β	*t*	*p*
Self-Blame	0.66	.23	1.122	.267
Acceptance	0.62	.21	0.903	.369
Rumination	0.72	-.04	0.142	.882
Positive Refocusing	0.65	-.01	0.042	.963
Refocus on Planning	0.74	-.06	0.233	.813
Positive Reappraisal	0.70	.23	0.771	.442
Putting into Perspective	0.75	.08	0.284	.773
Catastrophizing	0.67	.62	2.171	.034
Other-Blame	0.67	-.01	0.053	.955
CERQ Total	0.60	-.62	0.504	.617
Step IV (R=.85, ΔR^2=.60)				
Physical Health	0.25	.14	1.220	.224
Psychological	0.39	.11	0.942	.348
Social Relationships	0.47	-.00	0.002	.995
Environment	0.48	.28	1.131	.262
WHOQOL-BREF Total	0.28	-.66	2.162	.035

Note. Step I, F (9, 79) =3.19, $^{**}p<0.01$, Step II, F (10, 79) = 8.27, $^{***}p<0.001$, Step III, F (20, 79) = 6.03$^{*}p<0.05$, Step IV, F (25, 79) =6.77$^{*}p<0.05$

In the above-mentioned table, it was shown that in step I all of the demographics and variables were found to be non-significant except one demographic that is, categories of the total number of flying hours of pilots and family system of the pilots. Whereas, total of work-related stress (from step II), catastrophizing (from step III), and in step IV WHOQOL-BREF total were found to be the strong predictors of perceived stress.

Table 6

Means, Standard Deviations, t and p values, Lower and Upper Limits and Cohen's d Values of Undergraduate Pilots and Those with Higher Studies (N=80)

Factors	Education Group	*M*	*SD*	*t*	*p*	95 % *CI*		Cohen's d
						LL	*UL*	
WRSQ	Undergraduate	135.42	17.24	3.040	.003	20.69	4.33	0.717
	Higher Studies	147.94	17.68					

CERQ	Undergraduate	104.46	16.96					
	Higher Studies	112.05	15.25	2.042	.045	14.99	0.18	0.470
PSS	Undergraduate	21.71	7.02					
	Higher Studies	16.73	7.71	2.841	.006	1.49	8.47	0.675
WHO (QOL)	Undergraduate	90.17	10.00					
	Higher Studies	95.76	6.92	2.934	.004	9.38	1.79	0.650

Note. WRSQ, CERQ, PSS and WHOQOL= Work-Related Stress Questionnaire, Cognitive Emotion Regulation Questionnaire, Perceived Stress Scale and World Health Organization Quality of Life-Brief.

The table above describes undergraduate pilots and those who have higher education. Both categories of pilots showed different work-related stressors, cognitive emotion regulation, perceived stress ability and quality of life. Pilots who have higher education faced less work-related stressors and had positive cognitive emotion regulation and good quality of life whereas pilots who are undergraduate perceived more stress.

Table 7

Means, Standard Deviations, t and p values, Lower and Upper Limits and Cohn's d values of Pilots having flying hour of lower rank and of those who have of higher rank(N=80)

Factors	Flying Hours Group	*M*	*SD*	*t*	*p*	*95% CI*		Cohen's *d*
						LL	*UL*	
WRSQ	Lower Rank	138.72	18.46	2.230	.029	17.01	0.96	0.500
	Higher Rank	147.72	17.55					
CERQ	Lower Rank	108.10	14.42	0.660	.511	9.65	4.84	0.150
	Higher Rank	110.51	17.64					
PSS	Lower Rank	22.02	6.10	4.142	.001	3.43	9.78	0.938
	Higher Rank	15.41	7.88					
WHOQOL -BREF	Lower Rank	91.70	8.78	2.103	.039	7.64	0.20	0.469
	Higher Rank	95.62	7.91					

Note. WRSQ, CERQ, PSS and WHOQOL= work-related stress questionnaire, cognitive emotion regulation questionnaire, perceived stress scale and world health organization quality of life.

Table 7 describes pilots who have lower rank flying hours and higher rank flying hours. The results showed that both categories of pilots have different work-related stressors, perceived stress and quality of life. Pilots

who have higher rank flying hours faced less work-related stressors and had good quality of life. Whereas, pilots who have lower rank flying hours perceived more stress and showed no significant difference on cognitive emotion regulation.

Discussion

The main objective of conducting this study was to find the relationship between stressors usually faced at the workplace by pilots, their cognitive emotion regulation, the way they perceive stress, and how it affects their quality of life. Both cognitive emotion regulation and quality of life has proven to be beneficial for pilots in regulating and managing stress and emotions (Log, 2023; Masi et al., 2023; Wilms et al., 2020).

After carrying out the analysis, the following significant and non-significant results were found from the research. There were significant positive relationships between workplace stressors, cognitive emotion dysregulation, negatively perceived stress, and poor quality of life among pilots and it supported the hypothesis of correlation. In the current study, correlation results showed that the work-related stress had a significant positive relationship with one of the factors of the cognitive emotion regulation that is, positive reappraisal. Whereas, it had a highly positive significant relationship with other subscales like catastrophizing and other-blame. Work-related stress also had a highly positive significant relationship with the scale of quality of life and with all of its subscales such as, physical health, psychological, social relationship, and environment. Work-related stress also had a significant negative relationship with one factor of the cognitive emotion regulation that is, self-blame. It also had a negative relationship with rumination and cognitive emotion regulation questionnaire total. A research study results showed that work-related stress had a significant relationship with life orientation, self-blame, rumination, positive-refocusing, positive reappraisal, catastrophizing, and other blame. The findings indicate that a more positive life orientation and a decrease in emotion-regulation-related disorders will lead to less work-related stress (Zhao et al., 2023). The self-blame factor of the cognitive emotion regulation had a highly positive significant relationship with complete cognitive emotion regulation and its other subscales such as, rumination, putting into perspective, catastrophizing, and other-blame. It also had a positive significant relationship with the PSS. It has been observed that positive relationship

among stress, emotion regulation, and quality of life in the workplace is an obvious factor and the emotion regulation process acts as a moderator for the positive relationship among workplace stressors, strain, and well-being (Boyd et al., 2021). Similarly, catastrophizing had a highly positive significant relationship with complete cognitive emotion regulation questionnaire and with its one subscale that is, other-blame. It also had a highly positive significant relationship with the PSS. Furthermore, it also had a highly positive significant relationship with one of the subscales of the WHOQOL-BREF, namely physical health. The results of a previous research indicated that quality of life positively moderates the relationship between cognitive emotion regulation and handling job stress (Wilms et al., 2020). One of the studies conducted in Pakistan showed that balance of work and home life affects person as job stressors and hectic routine affects them emotionally. Moreover, it also influences their perception and the meaning they give to the situation and decision-making power that affects their job performance, loyalty to their work, and ultimately progress of the field (Malik, 2021).

In this study, the results of regression analysis of work-related stress total and cognitive emotion regulation in terms of catastrophizing and the WHOQOL-BREF total were found to be strong predictors of perceived stress. It supported the hypothesis of regression. Another research study revealed that emotion regulation had the most contribution in predicting the perceived stress (Cullen et al., 2021). One more study's results revealed that quality of social support (an aspect of quality of life) and age significantly predicted the perceived stress (Asghar & Mohsin, 2023). A study conducted in Pakistan showed that personality, age, and coping mechanism affect the perception of stress in aviators that ultimately influences their emotional balance, point of view, and mental health (Toor & Malik, 2022).

In the *t*-test, it was assessed that pilots' qualifications showed significant differences in work-related stressors, cognitive emotion regulation, perceived stress, and quality of life thus, the hypothesis is supported. Whereas, it was concluded that pilots flying hours showed a highly significant difference in perceived stress and a significant difference in work-related stress and quality of life but it didn't show a significant difference in cognitive emotion regulation. Researches conducted in Pakistan showed that increase in education affects the way of

handling tasks even for many hours in pilots (Malik et al., 2020). It was inferred that the pilot's income showed a significant difference in perceived stress but did not show a significant difference in work-related stress, quality of life, and cognitive emotion regulation. Furthermore, it was evaluated that the pilot's family system showed a significant difference in the quality of life but did not show significant differences in work-related stress, cognitive emotion regulation, and perceived stress. Literature reveals that balance between work and personal life affects the mental health whereas their low salaries and few facilities increase their stress to hold their expenses in modern time because of inflation in Pakistan (Malik, 2021). The effectiveness of a pilot's flying performance, technical proficiency, psychological and physical health, and welfare are all directly linked with the safety of aircraft (Cullen et al., 2021).

Limitations of the Research

Data collection was challenging because the study was carried out when Pakistan's airports and flying clubs were closed due to general lockdown during COVID-19. As, the questionnaire was conducted online, there may be biases in the responses of the subject and data collected. The sample size was also particularly restricted to pilots, captains, and first officers with ages ranging from 19 to 56 years.

Future Suggestions

The sample size should be increased and all institutes should be studied equally to get the knowledge in detail. Future research can be extended by including more variables such as, job satisfaction. This will allow for a more comprehensive understanding of the relationship among variables.

Conclusion

This study highlighted the occurrence of several stress factors that pilots face in their professional life. Work stressors, cognitive dysregulation have been found to be linked with poor quality of life in pilots. Study concluded that pilots experience higher stress levels on a daily basis than those in other occupations, mostly because they deal with difficult events like handling a lot of information and complex aircraft technology. They must successfully control their emotions because failing to do so will impair their ability to fly, manage stress level, and effectively lead a balanced life.

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