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Flying Personnel and Stress

Abstract

The purpose of this research is to identify stress factors in flying personnel. The introduction of the article deals with the theoretical basis of the problem researched. In the following part the authors, using a questionnaire with a selected sample of pilots, investigate and identify stressors that affect their work and lives as well as stressors affecting their flight. Then they discuss the individual stress response factors and compare the results of the questionnaire with what is reported in the professional literature.

Key words: stress, stresor, flying personnel, incident, a questionnaire.

INTRODUCTION

Pilots of commercial airlines are responsible for the safe transport of thousands of people every day and must therefore be physically and mentally capable of doing this work.

However, as statistics show, 70% - 80% of air accidents and incidents are attributed to the failure of the crew or the air traffic control authorities. In particular situations often accompanied by high stress, these failures are the result of lack of readiness, conscious or unconscious negligence, non-compliance with standard operating procedures, reassessment of self-abilities, incompetence. [1]

Pilots are under constant pressure having to maintain their image and good public relations. They are constantly challenged to discipline, responsibility, vigilance and

economic awareness. They have to deal with unexpected situations during the flight, complicated weather conditions, unpredictable changes in plans, bad management, etc. It is not just the stress caused by responsibility to fulfill the tasks that pilots have to deal with, but stress related to family problems, personal problems, occupational and non-work conflicts, health problems, unexpected life situations can also negatively impact on work performance. Currently, high attention is paid to problems with stress and the possibilities of managing it in air transport. This article also points out, based on a questionnaire, on possible factors affecting the occurrence of stressful situations for flying personnel.

1. STRESS AND ITS EFFECTS

Stress is a daily reality in aviation. Stress can significantly affect pilots' responses and in-flight decision-making.

Stress is a concept to describe how the body reacts to the demands and requirements of the environment. Regardless of whether environment is pleasant or unpleasant, the organism basically responds to these changes. Such changes may occur, for example, when an unexpected lateral wind is acting on landing, or serious technical deficiencies are detected during the inspection. [2]

Stress has two basic components:

- Stress stimuli (or stressors), i.e. the current circumstances that cause stress.
- Reaction to stress, a person's response to stress stimuli.

These two components are the basis for the stress situation.

For the definition of a stressful situation the ratio between the degree of intensity (size, pressure, etc.) of the stressful situation and the "strength" (capabilities, possibilities, etc.) to deal with the situation is important.[3] We speak about the stressful situation (stress) only if the intensity of the stressful situation is higher than the capability or possibility of the person to handle this situation. The *stressor* is a factor in the external environment that causes a stress response in the body. Stress is, therefore, a response to a stress stimulus or stressor, resulting in a stressful situation.

Aviation psychologists have identified three types of stress that can affect flight personnel - physical stress, cognitive stress and affective stress. *Physical stress* can be caused by excessive physical load, unusual working positions, or adverse effects of working environment factors (lighting, noise, vibration...). *Cognitive stress* can be associated with the nature and the way of performing work tasks, excessive cabin load (flight crew), or insufficient information from which critical decisions such as landing in adverse weather conditions exceeding predetermined minima can result. *Affective stress* is determined by the predisposition of an individual to respond to a stress stimulus based on his or her personality traits and life experience. Unlike cognitive stress, which causes a slow increase in stressful stress, affective stress has a rapid onset, and the stress response occurs in seconds and can completely affect rational human behaviour. Another cognitive function, which is of great importance in aviation, is decision-making. Some studies have shown that many causes of air

accidents have their origin at some level of suboptimal decision-making by stress. They also revealed that stress may not be associated only with a specific work and organization, but the source of stress is also associated with certain personality traits such as mental illness, dissatisfaction with life, and marital disharmony. There are many psychomotor processes that are affected by stress and degraded. Stress can negatively affect brain function, memory, memory capacity. In addition, memory impairment may inappropriately affect visual and spatial perception, including spatial orientation and situational awareness. Concentration and alertness (vigilance) are also diminished. The phenomena often referred to as “perceptual tunneling” may include a real narrowing of the visual field measured by the visual angle and are associated with emotional stress. It is important to pay enough attention to the effect of stress in air transport. First of all, the effective solutions of their negative impacts on flying personnel should be sought.

2. RESEARCH QUESTIONNAIRE

The purpose of the questionnaire was to find out which factors most disturb the psychological well-being of the flying personnel. Questionnaires were focused on the evaluation of stressors in the workplace and personal life and during flight.

Working conditions

The working environment and conditions in which pilots work are physiologically and mentally challenging. The pilot’s working environment (cockpit) is limited to a small workspace where pilots spend long hours. Work tasks are performed under the influence of many psychophysiological changes depending on flight conditions. Also, irregularity of work rhythm, long-term workload, time shifts, little time for organism adaptation, lack of rest, irregular and interrupted sleep, changing work schedule, workload planning, study and application of legislative requirements and regulations, dealing with unusual situations, threat of terrorist attack, the risk of an incident, etc. leads to an increased psychological burden, and the conditions to stressful situations are created for the pilot who has to manage them effectively.

Flight activity

In the questionnaire, the questions were focused also on the stressful factors associated with the flight. The pilot’s main flight activities include piloting techniques and keeping flight parameters, monitoring and evaluation of airborne equipment, control of aircraft systems, interior cabin work, monitoring of airspace, flight, and ground operations, aircraft navigation on fixed flight paths, tracking and assessment of meteorological conditions, spatial orientation, implementation of operational procedures, communication, etc.[4]During the flight, the pilot carries out a large number of operations that require coordination of movements, are demanding on making decisions and preservation of input information in memory.[5]All this has to be solved by internal factors such as noise, vibration, change of light and lighting.

Personal life

Personal stressors refer to life events that occur outside the workplace and can affect work performance. These include, in particular, family problems, health problems,

loss of social security and social background, conflict resolution, relationship problems and poor economic situation. If these stressors are not solved in a timely manner, unmanageable life events can lead to the development of mental disorders such as anxiety, depression, etc. Frequent absence in the family due to the high workload of the pilot can lead to disruption of marital living together, social ties and sexual relations. Disputes with relatives and persistent difficulties in relationships often lead to emotional disturbance, which can negatively affect the ability to fully concentrate on fulfilling the assigned tasks. Stress in life often disturbs the sleep rhythm, which can cause increased fatigue that disturbs and reduces social and cognitive performance. Some studies which solved the causes of air accidents found a link between personal life problems, financial problems and career tensions. They also have a close connection among fatigue, lack of social support, work autonomy and mental illness.[6] As indicated by The event of March 2015, when an Airbus A 320, an aircraft of Germanwings, crashed, a suicide pilot's plan in which 144 passengers and 6 crew members died indicates that a great deal of attention has to be paid to the mental health of the flying personnel.

The questionnaire investigation was attended by 72 respondents, of whom 62 were men and 10 women. The largest group consisted of 34 respondents (47.2%) aged 31-40. A further large group consisted of 25 respondents (34.7%) aged 20-30 years. Among the participants of the questionnaire investigation, 9 respondents (12.5%) were holders of the PPL (private pilots), 15 respondents (20.8%) CPL (Commercial Pilot Licence) and 48 respondents (66.7%) are holders of the ATPL (Air Traffic Pilot Licence).

3. DISCUSSION

Not all what is written in the professional literature has been confirmed by a questionnaire. According to the literature the most common emerging stress factors associated with pilot work has been inadequate motivation, lack of financial evaluation, frequent medical check-ups and inspections, nocturnal changes and bad relationships at the workplace. The questionnaire investigation showed that only 11.1% of the respondents (20-30 years of age) reported frequent medical check-ups as a source of stress that disturbed their well-being. Also, poor relations at the workplace (15.3%) and insufficient motivation (29.2%) as a source of work-related stress were reported by a relatively low percentage of respondents. Bad relationships at work were reported by women in particular. Despite widespread global emancipation, women may still encounter discrimination among colleagues, therefore, when considering this work stress factor, this possibility has been taken into account as it may create impression of tensions in relations. On the other hand, up to 69.5% of the respondents expressed dissatisfaction with the financial evaluation, and more than half of the respondents reported pressure of supervisors (61.1%), nocturnal changes and shifts (52.9%). In a more in-depth analysis, it was found that most respondents who reported poor financial ratings are mostly pilots who work and gain experience in low-cost airlines. On the other hand, pilots working in classical airlines have declared the source of work-related stress to be, in particular, time shifts related to violation and disrupting circadian rhythms of humans, which can cause sleeping and digestive problems. When assessing work stressors, it is important to take into

account indicators such as a pilot's age, experience and the type of airline in which he/she operates. The literature highlights the most common stress factors associated with flight: vibration, turbulence, noise, discomfort, poor communication quality, and the like. In the questionnaire, respondents declared vibration and turbulence (52.9%), noise (43%) and discomfort (38.9%) to be the source of stress. Respondents reported as a source of in-flight stress (20.8%), poor communication quality (11.1%), unadaptable passengers (18.1%) and night flying (5.6%). Vibrations, turbulence, and emergency landing were the most common sources of stress among younger respondents which implies that the stress factor depends on the pilot's experience. All age categories of respondents identified unadaptable passengers as a certain risk factor.

Stressors that cause stressful situations in pilots' personal lives and can be negatively reflected in the workplace of flying personnel, according to the professional literature, are especially relationship problems, whether in a relationship of partners, family, friends, divorce, family separation, near death, and a loan from the bank. The questionnaire revealed that a loan in a bank is causing tension in personal life for up to 50% of respondents. In particular, they were younger questionnaire participants who borrowed funding for air training or new home facilities. Respondents, in particular, aged 20 to 31, reported a stressful factor "lack of time for the development of social life" (25%). Another significant stressor, creating tensions in personal life, is, as stated by 45.8% of respondents, separation from the family or tension in relationships (33.3%). It is a combined absence in child upbringing and irregular, sometimes even long-term disconnection.

CONCLUSION

The identification of factors that may be the cause of stressful situations is particularly important in air transport in terms of safety level constantly increasing. Identifying and naming a range of issues that may negatively affect flight crew operations is important in for finding appropriate methods and tools to manage and eliminate them. One of the methods of detecting possible factors causing a stress response in flying personnel is to conduct a questionnaire investigation for this target group. Based on a questionnaire investigation, findings are mostly confirmed by professional literature which emphasises stressors on a general level and does not take into account a narrower target group that can be significantly affected. The questionnaire investigation showed that when assessing stressful factors affecting flight staff it is necessary to take into account their age, flight hours, experience, family status, type, and employer.

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