

Beyond Germanwings Flight 9525: Pilot mental health and safety

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Abstract. The likely suicide of the First Officer on Germanwings Flight 9525 and the deaths of all passengers and crew has focussed attention on the issue of assessing and monitoring pilot mental health as a crucial safety factor. The forthcoming EASA Directive on Aircrew will address ways in which this will be handled in Europe. This paper examines the prevalence of mental issues in the commercial pilot population, contributory factors for mental health issues amongst aircrew, review methods for assessing mental state and ways in which monitoring can happen, including the provision of peer support programmes.

Keywords: aircrew; mental health; assessment; peer support; safety

Introduction

The likely suicide of the First Officer on Germanwings Flight 9525 on the 25th March 2015 and murder of the passengers and crew focussed attention on the issue of pilot mental health, and its impact on safety. Subsequent regulatory changes are in progress (EASA 2016) that will make recommendations about pilot assessment and support. Within this context there are some key issues that need to be addressed, including:

- The distinction between mental health and mental wellbeing (WHO 2005)
- The incidence of common mental disorder amongst pilots
- The assessment mechanisms for pilot mental health (Bor et al in press 2017)
- The characteristics of the working environment for aircrew that has an impact on mental wellbeing (Bor and Hubbard 2008)
- Potential issues arising from the identification of mental health issues in pilots, and possible support mechanisms

There are a number of related issues that will be touched on, including the influence of pilot personality characteristics on mental health and the evidence linking mental issues to safety.

Mental health and mental wellbeing amongst pilots: Definition and incidence

The World Health Organisation (2005) set out the distinction between mental health and mental wellbeing, although there is an obvious close connection between the two concepts. Mental health generally means the presence or absence of a diagnosed psychiatric condition using an accepted diagnostic manual, whilst mental wellbeing is the presence or absence of factors reflecting the degree to which a person copes with everyday life and work. It is possible to have no diagnosable mental health but poor mental wellbeing, as conversely a diagnosis of serious mental illness but have a positive sense of wellbeing, coping with the

diagnosis in an effective way. The UK National Institute for Clinical Excellence (NICE) define mental wellbeing as:

“Mental wellbeing is a dynamic state in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others and contribute to their community. It is enhanced when an individual is able to fulfil their personal and social goals and achieve a sense of purpose in society.

Mental wellbeing at work is determined by the interaction between the working environment, the nature of the work and the individual” (NICE 2009, p7)

There are very clear guidelines concerning the impact of a psychiatric disorder on pilots. All for regulatory bodies (e.g FAA 2013) distinguish between conditions that mean mandatory exclusion from flying and those that allow a pilot to fly under controlled conditions. The FAA regulation is clear in that a pilot will require:

“ No established medical history or clinical diagnosis of any of the following:

1. A personality disorder that is severe enough to have repeatedly manifested itself by overt acts
2. A psychosis which has been manifested by delusions, hallucinations or grossly bizarre or disorganized behavior, or other commonly accepted symptoms of this condition
3. Bipolar disorder” (FAA 2013)

These constitute psychiatric disorders of the more evident and debilitating kind, falling at the more extreme end of the mental ill health continuum. What are more common, however, are conditions that influence poor mental wellbeing. Most researchers (e.g. Goldberg and Williams 1988) consider that these fall into four categories:

- Somatic and physical disorders
- Anxiety
- Depression
- Social dysfunction

Each of these corresponds to a subscale on the widely-used GHQ scales for assessing the presence of psychiatric disorder in the general population, which we will return to later in this paper.

Bor et al (2017 in press) list a number of common psychological problems in pilots, including:

- Adjustment disorder
- Mood disorder
- Anxiety and occupational stress
- Relationship problems
- Sexual dysfunction
- Alcohol problems

Stephoe and Bostock (2011) used to the Hospital Anxiety and Depression Scale in a survey commissioned by BALPA, and found an increased incidence of, and a positive correlation between, reported symptoms of anxiety and depression and fatigue and work patterns amongst

a sample of commercial pilots. A Brazilian study of commercial airline pilots (Feijó, Raggio Luiz and Camara 2012) looked at the incidence of “common mental disorders” and included:

- Non-psychotic depressive symptoms
- Anxiety
- Somatic complaints (headache, lack of appetite, tremors, indigestion)
- Difficulty in concentrating and making decisions
- Forgetfulness
- Insomnia
- Fatigue
- Irritability
- Feelings of uselessness

Findings showed that there was a lower incidence of each of these compared to the general population, but an increased incidence when workload and fatigue were factored in. My own research, using the GHQ-28 with a population of commercial rotary-wing pilots (Dickens 2013) showed a reduced incidence of common psychiatric symptoms compared to the general population.

Pilot mental health and safety

The current interest in the effects of pilot mental health on aviation safety has been triggered by the aftermath of the Germanwings crash in 2015. This highlighted the issue of pilot suicide, and the subsequent discovery of mental health concerns about the pilot flying who had caused the CFIT incident. Pilot suicide itself remains, thankfully, rare. Lewis et al (2014) in a systematic review of aircraft-related suicides in the United States between 2003 and 2012 reported that pilot suicides accounted for less than 1% of aircraft fatalities. When they do happen, however, media attention is disproportionate to occurrence, particularly in the rare cases that involve commercial aircraft operations. A number of accidents have this cause as the main factor;

- 1994 Royal Air Maroc flight 630
- 1997 SilkAir flight 185
- 1999 EgyptAir flight 990
- 2013 LAM Mozambique Airlines flight 470
- 2014 Malaysian Airlines flight 320 (suggested)
- 2015 Germanwings Flight 9525

More common are aviation incidents where flight safety has been compromised by mental health issues involving the pilots. Examples include;

- 1982: Japan Airlines flight crashed into Tokyo Bay after the captain who had previously been grounded for mental illness reversed some engines.
- 1996: Co-pilot of Maersk Airlines broke into a sweat and told pilot he was afraid of heights – emergency landing.
- 2008: Air Canada co-pilot forcibly removed from the cockpit and restrained after experiencing a breakdown in flight.

- 2012: JetBlue Airways captain became delusional, manic, incoherent and physically threatening - restrained and aircraft made emergency landing

However severe psychological disturbance amongst operational pilots is rare, and in most cases transient and susceptible to treatment (Bor and Hubbard 2008). There are some exclusions conditions – for example overt psychosis – that prohibit flying, but the most mental issues experienced during day-to-day operations fall into the category of “mild mental disorder” described in the Brazilian study quoted above. In some ways these have a more severe impact on flight safety as they will have an impact on the working cockpit environment and the relationship between crew members.

There is a relationship between pilot personality characteristics and safety. There has long been an interest in defining the personality characteristics of pilots (Ganesh and Joseph 2005) but there are few studies directly relating this to objective personality measures – an exception being King et al (2001). Research amongst military and commercial fixed wing pilots (King 2014) and commercial rotary wing pilots (Dickens 2014) using the Big 5 personality factors shows that pilots tend to show

- Lower than average general levels of anxiety
- Higher than average levels of conscientiousness

The former suggests a trait of resilience amongst pilots that should indicate lower than average incidents of anxiety-related disorders in the pilot population. The latter – as King et al (2001) have suggested, could be linked to a higher level of safety-related incidents during flying because of a tendency to resort to checklists and process when flexibility and alertness and situational awareness are needed.

Dealing with pilot mental health

Bor et. al. (2017 in press) suggest a number of ways in which pilot mental health issues can be mitigated, and these follow the recommendations made in the final report of the Task Force on Measures Following the Accident of Germanwings Flight 9525 (EASA 2015). Amongst the recommendations made in that report were:

“Recommendation 2: The Task Force recommends that all airline pilots should undergo psychological evaluation as part of training or before entering service. The airline shall verify that a satisfactory evaluation has been carried out. The psychological part of the initial and recurrent aeromedical assessment and the related training for aero-medical examiners should be strengthened. EASA will prepare guidance material for this purpose.

Recommendation 3: The Task Force recommends to mandate drugs and alcohol testing as part of a random programme of testing by the operator and at least in the following cases: initial Class 1 medical assessment or when employed by an airline, post-incident/accident, with due cause, and as part of follow-up after a positive test result.

Recommendation 6: The Task Force recommends the implementation of pilot support and reporting systems, linked to the employer Safety Management System within the framework of a non-punitive work environment and without compromising Just Culture principles. Requirements should be adapted to different organisation sizes and maturity levels, and provide provisions that take into account the range of work arrangements and contract types.”

(EASA 2015)

Three areas are key in implementing these recommendations

Assessment

The EASA recommendations suggest the routine psychological evaluation of pilots. This will entail a strengthening of the current Class 1 medical examination to include more searching and direct questions on mental health issues, along the lines suggested by the Aerospace Medical Association Working Group on Mental Health (2016). The routine use of psychological assessment by trained and accredited aviation psychologists remains under discussion, but the introduction of brief reliable screening measures such as the GHQ (Goldberg and Williams 1988) to form part of selection procedures represents a cost-effective way forward with proven validity.

Mental health awareness as part of the CRM curriculum

Crew Resource Management (CRM) the mandated training for aircrew typically covers behavioural awareness and communication skills between pilots in the cockpit. (Moriarty 2015), and usually included training on stress management. One additional topic could be the inclusion of straightforward awareness of mental health issues, and ways of identifying such issues in the cockpit. The Mental Health First Aid model (Bovopoulos et.al. 2016) may provide an example of effective, realistic intervention in an operational context.

Pilot peer support programmes

Peer support programmes operate in many work settings and are based on a shared understanding and mutual respect amongst people in similar situations. Gibbs (2017 in press) has reviewed such programme in the aviation industry, including the Stiftung Mayday programme that operates in Germany, and he sets out the necessary conditions under which such programmes operate. He raises the question of confidentiality and stigmatisation, both of which are key factors in understanding the impact of mental health issues on pilots.

Conclusion

The purpose of this paper has been to highlight a number of topical issues concerning pilot mental health and the impact that has on aviation safety. There is need for further research into incidence, and causal links with safety related incidents amongst commercial pilots. There will be more interest in this topic generated by the forthcoming EASA directive on aircrew assessment, and a likelihood that the demand for psychological assessment and interventions aimed at pilots will increase.

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