Original Article

Morbidity pattern in civil aircrew and the medical assessment system for civil aviator in India

Sqn Ldr PC Ghosh[@] Gp Capt JK Gupta[$]

This paper studies the pattern of existing health problem in civil aviators in India. This study has taken into account all medical examinations held for commercial aircrew during the period between 1987 to 1995 and also the initial conversion medical of noncommercial licence holders conducted between 1990 to 1995. During the period of study, 42 cases were declared permanently unfit and 432 cases were declared temporarily unfit amongst commercial aircrew. 143 cases were declared unfit amongst the non-commercial aircrew who underwent medical examination for initial conversion. CAD accounted for 50% of the permanently unift cases and nonspecific ECG abnormality was the prime cause of temporary unfitness in commercial licence holders. On the other hand, amongst the non-commercial licence holders during the initial conversion medical, substandard vision and defective colour vision were the major causes for rejection accounting for 44.36% of total rejections. This paper also takes a look at the prevalent medical evaluation system for different commercial and non-commercial licences in civil aviation in India.

Keywords : Aircrew licensing, cardiovascular morbidity, medical examination.

Civil aviation in India has made tremendous strides with the throwing open of the domestic sky to private air taxi operators. It has witnessed uprecedented growth, dynamism and competition heralding a new era which will well spill over deep into the next millennium. In keeping with the boom in the aviation industry, an ever increasing number of youngsters are taking civil aviation as their career. This has necessitated to examine the existing health status of the civil aviators of India and find out if this industry is plagued with any specific health problem to which this large number of budding aviators are likely to get exposed to. There is no denying that India has a well streamlined medical evaluation system for its civil aviators. This study also endeavours to assess how effective it has been to look after the health needs of those for which it is meant. With these twin objectives in view, a study was taken up in the Directorate of Training and Licensing, Directorate General Civil Aviation, where the Previous Medical Records (PMRs) of all civil aviators were scrutinised and the medical examination held during the period of 1987 to 1994 were reviewed.

[@] *Graded Specialist (Av Med), IAM, IAF, Vimanapura PO, Bangalore - 560 017*

[$] *Senior Adviser (Av Med), IAM, IAF, Vimanapura PO, Bangalore - 560 017*

Material and Method

The data for this study were collected from both initial and renewal medical examination records of the commercial aircrew within the time period of 1987 to 1994. The data pertaining to permanent rejection of non-commercial aircrew at their initial medical for commercial conversion were also analysed for a period of 5 years spanning from 1990 to 1994.

Source of data - The information was obtained from the previous medical examination records conducted in different Air Force medical examination centres and held in the Department of Licensing and Training in the office of DGCA. The PMRs contain health record of both initial and renewal medical examinations of an aircrew.

Analysis of collected data - The available data regarding various disabilities were sorted out systemwise and for each system the most frequently encountered disability causing maximum permanent and temporary unfitness was identified. Accordingly, most frequently involved type of licence holder and age group of the affected pilot population discerned.

Results and Observations

During the period of this study i.e. August 1995 about 12000 various categories of aircrew licences were issued by DGCA in India along with more than 15000 student pilot licences.

The licence holders are required to undergo medical examination during initial issue and renewal thereafter from time to time. The frequency of medical examination varies as per the type of licence and age of the holder. It has been revealed that on an average 3757 renewal and initial medicals are conducted annually. Out of these initial issue medical numbers around 657/yr. Further, AFCME does 74% and IAM IAF conducts 26% of the total initial issue medicals. Out of total renewal medicals for commercial pilots, AFCME has the share of 64% and IAM on the other hand carries out 24% and 12% are done by the other 9 AF centres.

Incidence of unfitness - Analysis of total number of unfitness during medical evaluation at 11 AF centres during the period from 1990 to 1994, it is observed that 2.5% of them lead either to permanent or temporary denial of licences. About 64% of these are temporary and 36% are permanent in nature. On an average, 34 aircrew, are declared Permanent Unfit (P/U) every year during initial and renewal medical examination. This is roughly about 0.5% of total commercial licence holders.

Profile of unfit aircrew - During the period of 1987 to 1994 total of 42 commercial licence holders were declared P/U during their renewal medical examination. On the other hand 143 aspirant commercial licence seekers have been denied licence permanently during 1990 to 1994. There have been a total of 432 temporary denials during 1987 to 1994 involving both initial and renewal medical examination for commercial licences. Around 69% of the P/U amongst commercial licence holders belong to the age group of 46 to 55 years. 71% of them are ALTP holders. In Temporary Unfit (T/U) group 61% belong to the age group of 26 to 50 years. Out of them 44.6% are ALTPL holders and 43.7% are CPL holders.

Permanent Unfit cases in initial issue medical - During the period of 1990 to 1994 total of 143 cases were denied commercial licence permanently. Most frequent system involved has been found to be Eye accounting for 44.36% of total rejection in this group, followed by CVS being responsible for 32.3%. In the first group substandard vision is the

commonest cause followed by defective colour perception. In the CVS group MVP is detected to be the most frequently encountered cause followed by specific ECG abnormality like LGL syndrome, BB block and VPBs.

P/U cases in commercial aircrew - Amongst 42 permanent unfit commercial aircrew, cardiovascular causes were found to be responsible for 61.9% of denials. CAD and MI are more important causes followed by hypertension and cardiomyopathy. CAD and MI are seen to account for 50% of rejectees in this group. Other significant causes include neuropsychiatric (15%) and visual (9%) group of diseases.

T/U cases during issue and renewal of commercial licences - Total of 432 aircrew were denied licences temporarily during the period between 1987 to 1994. Cardiovascular causes were seen to be most important in this group accounting for 30.1% of cases, ECG abnormality and hypertension being the prime culprits. Other important causes include sinus and middle ear diseases (7.32%), eosinophilia (5.30%), diabetes mellitus (5.30%), IGT (4.30%) and hepatomegaly (4.30%).

Discussion

DGCA in India issues about 10 different types of pilot licences for various categories of civil aircrew. There are different medical and flying experience requirements for these. The medical standards required are classified into three groups. These are class 1, 2 and 3 [1]. The highest degree of physical fitness is envisaged in class - 1 medical standard. All commercial licences like CPL, SCPL, & ALTPL for pilots, FNL and FEL need to have class-1 medical fitness. Private Pilot Licence holder requires only class-2 medical fitness. Medical examination for these licences are carried out by different authorities at varied intervals dictated by the type of licence and age of the aircrew. Medical examination of Student Pilot Licence (SPL) is done by any registered medical practitioner both for its issue and renewal. The responsibility of conducting all other medical examination for other licences like PPL, CPL, ALTPL etc. lies with 11 AF centres including IAM and AFCME. Initial issue medical for commercial aircrew, 3rd year renewal, licence lapsed for more than two years, renewal after a period of unfitness and special medical examination are exclusively carried out in IAM or AFCME only. In India, privileges of commercial licences are curtailed to private pilot licence on the 60th birthday of the pilot and so does the medical requirement from class-1 to class-2.

Medical requirements are classified into -

a) Physical and Mental

b) Visual and colour perception

c) Hearing

The requirement standard in these vary as per the class of medical assessment like class 1, 2 and 3. We will confine our discussion to class 1 requirement only which pertains to commercial pilots. The different requirements for this group are detailed below.

ECG requirements - ECG will form a part of initial exam and at renewal between the age of 30 to 40 years and there after annually. In 1995 a Medical and Aeronautical Circular was issued requiring Stress test and Biochemical tests for class I medical over and above the existing ECG requirements [2,3]. The frequency of stress test (TMT) will be 5 yearly after starting at the age of 35 years of age up to 55 years, then 2 yearly upto the age of 60 years. Biochemical Tests in the form of Blood Urea, Sugar (F & PP), Serum Creatinine, Lipid profile, Uric acid are also to be done

whenever an aircrew is due for his Stress test.

Radiography - X-ray chest is required to be done during initial medical and periodically thereafter.

Audiometry - Pure tone audiometry is to be done during initial medical and 5 yearly upto the age of 40 years and then every 3 yearly. No aircrew shall have hearing loss in either ear separately of more than 35 Db at 500, 1000 and 2000Hz or more than 50 Db at 3000 HZ.

Visiual Standard - For class 1 medical standard the laid down visual standard is 6/9 each eye separately with or without specs and the refractive error should be within + – 3D.

Colour perception - Should be able to understand the colour of vital importance like red, green and white.

EEG - This forms the mandatory part of initial exam for class 1 medical standard in India.

Over and above all these, the individual should not be suffering from any chronic disease nor should have any physical or mental disability which may adversely affect his flying capability.

The analysis of the collected data reveals that during the time period of 1987 to 1994 a total number of 42 commercial aircrew were declared permanently unfit during renewal medical and 432 were declared temporarily unfit either during initial or renewal medical examination. During the period between 1990 to 1994 143 aspirants for commercial licence were rejected permanently at their initial medical examination itself. On an average annually 3,757 medicals are conducted in 11 AF centres both for initial issue and renewal of commercial licence. Of them 2.4% leads to some kind of denial either Temporary or Permanent. As brought out earlier, in the permanent unfit group amongst commercial licence holder, CVS causes account for 61.9% CAD has been seen to be the singlemost important cause for maximum rejection in this group. The permanent rejection during initial medical for commercial conversion is found mostly due to failure to meet visual and colour perception requirements. Substandard vision and defective colour perception are seen to be the cause for maximum rejection followed by MVP and Specific ECG abnormality. Nayar in his study, "Disability pattern in civil aircrew" conducted in 1983, found CAD and DM to be the leading cause for permanent unfitness in commercial aircrew [4]. Dogra et al found Specific ECG abnormality to be the most frequently encountered cause for permanent rejection in initial medical for commercial conversion [5]. Comparing the present trend with that of the past it is obvious that DM which used to be the major cause of Permanent Unfitness in commercial aircrew during the study period of 1969 to 1982 has been contained considerably. But CAD including MI continues to reign supreme accounting for 50% of total permanent unfitness in commercial aircrew during this study period.

In the temporary unfit group Non specific ECG changes and Hypertension have been found to be the major cause followed by Diabetes Mellitus, IGT and Hyperlipidaemia. In the previous study of Nayar it was observed that ECG abnormality and IGT were the main cause of rejection in this group. Evidently, as brought out in this study, hypertension has become more prevalent amongst civil aircrew and incidence of both Diabetes Mellitus and IGT has shown a downward trend. One more fact of concern, as observed in this study, is the growing incidence of obesity amongst civil aircrew. It is noted that about 10% of commercial aircrew are obese (>20%). Keeping in view the association of obesity with CAD, DM and Hypertension this unhealthy trend needs to be curbed. This calls for

increased health awareness and more intense CVS monitoring in civil air crew to detect any aberration at the earliest which will help to minimise the occurrences of CVS disorders and curtail wastage of trained manpower and limit disability. The introduction of TMT at the age of 35 years and periodically thereafter along with Biochemical tests is a timely and right step in this direction. As regards the efficay of the existing medical assessment system in civil aviation, it may be safely inferred that it is adequately effective. This fact is vindicated by failure of this study to bring out prevalence of any specific disease at an unaccetable and alarming level amongst civil aircrew and almost uniform rate of permanent and temporary unfitness during the period of this study.

Conclusion

This study revealed the following -

a) Coronary Artery Disease is the most common cause of permanent unfitness in commercial aircrew.

b) Nonspecific ECG Abnormality is the main reason for temporary unfitness in both initial and renewal medical for commercial licences.

c) In initial medical for commercial conversion, substandard vision and defective colour vision are found to be the most frequently encountered cause for permanent denials.

d) Amongst commercial licence holders ALTP and CPL holders are the most affected by different disabilities.

e) Existing medical evaluation system for civil aircrew is adequately effective.

References

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