The Present Disability Pattern In Aircrew

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Introduction

THE time honoured mission of the military medical service is to conserve the fighting strength. The fundamental principles of flight safety and the welfare of the individual are the major factors while assessing any disability. It is important to review the disability pattern in aircrew periodically on account of the following reasons :-

(a) To see the changing trends in nature of disability,

(b) To find out possible cause for such a change,

(c) With a view to suggest remedial measures to that the disabilities are kept at the minimal level.

Indian Air Force came into existence more than 40 years ago with few young Indian pilots. It was in the early fifties that a properly functioning aeromedical evaluation system was established. Following factors need a passing reference since they do have a bearing on disability pattern :-

(a) Normal aging process.

(b) Changing pattern of society of India.

(c) Better organisation of medical evaluation services thus providing better follow up facilities.

Materials and Methods

In the present study, the medical records of all aircrew reporting for evaluation of disabilities to the evaluating centres for the last 10 years were checked and tabulated. All new cases reporting each year to the centres have been taken into sideration for collecting the data. For conve certain diseases have been grouped together Diabetes Mellitus and GTT abnormality, Isch Heart disease and ECG abnormality and va psychiatric disturbances.

The period under review has been from 1975. For consideration of change in patter disabilities the 5 years period of 1966-1970 is c pared to the period of 1971-1975.

The disabilities are grouped under follow main heads :

(a) Medical disabilities.
(b) Surgical disabilities.
(c) ENT disabilities.
(d) Eye disabilities.
(e) Psychiatric disabilities.

Results and Discussion

Table 1 shows the total disabilities with breal down.

Total Disabilities 1966 — 1975

TABLE — I

Medical	Surgical	ENT	Eye	Psychiatric	Tota
773	841	134	136	64	1948
39.8%	43.3%	6.8%	6.9%	3.2%	100%

The distribution of disabilities for block periods is given in Table II.

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TABLE — II

Distribution of Disabilities for Block Periods of 1966–70 and 1971–1975

Disabilities	No. of cases	1966-1970 %	No. of cases	1971-1975 %
Medical	341	37.0	432	42.2
Surgical	433	46.9	408	39.8
E. N. T.	66	7.2	68	6.6
Eye	52	5 6	84	8.2
Psychiatric	31	3 3	33	3.2
Total	923	100	1025	100

From the above it is evident that the major disabilities were either medical or surgical. The surgical disabilities showed a decrease from 46.9% in 1966–1970 to 39.8% in 1971–1975 while the medical disabilities showed an increase from 37% in 1966–1970 to 42.1% in 1971–1975.

The pattern of surgical disabilities is given in Table III, comparing the two periods under review.

TABLE — III

Pattern of Surgical Disabilities

Period	Genito-urinary	Head injuries	Spinal-injuries	Other injuries
1966-1970	45	87	37	264
1971-1975	49	47	52	260

It may be seen that head injuries showed a marked decline, confirming the protecting roll of crash helmets in scooter/motor cycle accidents. There is slight increase, however in spinal injuries in 1971-1975 period, perhaps due to the large number of ejections in 1971 operations.

Distributions of various categories of medical disabilities is given in Table IV.

TABLE — IV

Pattern of Medical Disabilities

Year	Dia-betes/ GTT abnor-malities	IHD/ ECG abnor-malities	Obe-sity	Res-pira-tory	GTT	Other catego-ries
1966-1970	45	75	12	32	98	79
1971-1975	106	125	19	34	75	73

There is marked increase in cases of Diabetes Mellitus/GTT abnormality and IHD/ECG abnormality cases in the period 1971-1975.

ENT Disabilities

Major ENT disabilities seen were :

(a) CSOM
(b) Perceptive deafness
(c) Conductive deafness
(d) Allergic Rhino-sinusitis

These formed 6.8% of total disabilities and their pattern remained more or less same throughout the period of survey.

Eye Disabilities

The common eye disabilities seen over the period were as follows :

(a) Defective or Substandard vision
(b) Mixed Astigmatism
(c) Myopia

They formed 6.9% of total disabilities and distribution and pattern of eye disabilities showed a slight increase in incidence for period 1971–1975 probably due to aging. Improved methods of detecting the disability could also contribute to the larger number.

Psychiatric Disabilities

These represented 3.2% of total disabilities. The major categories considered, are as given in Table V.

TABLE — V

Psychiatric Disabilities

Year	ECG abnormality	Fits	Other cases of Psychiatric disorders
1966-1970	6	6	19
1971-1975	3	13	17

It will be seen from the data so far presented that the following disabilities form the major diseases of aeromedical importance for assessment of aircrew :

(a) Ischaemic heart disease and ECG abnormality
(b) Diabetes mellitus and GTT abnormality
(c) Obesity
(d) Head injuries
(e) Psychiatric disorders

IHD and ECG abnormality

Early detection of IHD is a major challenge to modern cardiology. Correct history, detailed physical examination, appropriate investigations and surveillance for risk factors are all very important.

Routine ECG has now been accepted as a part of cardiovascular system examination. There is still a controversy on the inclusion of post exercise ECG for routine examination of pilots. Depression of the ST segment in post exercise electrocardiograms of apparently healthy individuals is definitely correlated with an increased frequency of subsequent IHD and a shortened life expectancy. Since the criteria for interpretation are not yet finalised, exercise ECG is not introduced as routine for civil aircrew. However, for service personnel, post exercise ECG is done regularly for assessment of cardiovasuclar system.

From the records of aircrew available at AF CME, Table VI is prepared, which gives the number of cases of IHD/ECG abnormalities deteted along with complicating high risk factors.

TABLE — VI

IHD/ECG Abnormalities with risk factors

Block Period	Total No of casess of IHD/ ECG abnormalities	With Obesity	With GTT abnormalities	With hypertension	With cholesterol above 240 mg%
1966–1970	53	14	3	—	3
1971–1975	88	22	1	5	1

In our present study obesity rates are higher as a risk factor than hypertension.

During the study of routine ECG taken on 5000 asymptomatic Air Force personnel (2), it was observed that over 20% of cases showing doubtful ECG changes were associated with conditions like obesity, GTT abnormalities and potential diabetes. These changes were seen to improve after correction of these conditions.

Diabetes Mellitus and GTT abnormalities

Diabetes is known to accelerate vascular disease and mild asymptomatic diabetic can suddenly become a severe diabetic under stress. The diagnosis of diabetes mellitus can be made easily when clinical signs and symptoms are present. It has been observed that over 50% of cases of adult diabetes required GTT for diagnosis. The well recognised pointers for getting a GTT done in aircrew are:

(*a*) Sudden variation in body weight, especially sudden increase in weight.
(*b*) Family history of diabetes mellitus
(*c*) Known deterioration of GTT under stressful condition

Table VII gives the number of cases of Diabetes Mellitus/GTT abnormality from the records available at AF CME in relation to positive family history and obesity.

TABLE—VII

Diabetes Mellitus/GTT abnormalities with positive family history & Obesity

Block	Total No. of cases diabetes mellitus/ GTT abnormalities	With positive family history	With obesity
1966–1970	45	3	10
1971–1975	106	10	30

Here again obesity shows a high degree of association with diabetes mellitus.

Obesity

During selection and subsequent acromedical check up of aircrew, obesity was not given its due importance till recent times.

A limited survey was carried out to find out the extent of this problem in serving Air Force personnel. This survey covered Air Force personnel, civilian candidates for ground duties, NDA and Direct Entry and Army personnel. Results are given in Table VIII.

TABLE — VIII

Comparative Values of Over/Under Weight Persons

	AF Personnel	Army Personnel	Candidates
Total	272	116	105
No. overweight	112	31	13
No. underweight	18	9	28
Percentage overweight	41	27	12
Percentage underweight	7	8	27

It may be seen from the Table that 41% of Air Force personnel are overweight as per the present standards. Attention at various levels is needed for all those who are responsible for maintenance of physical fitness of aircrew.

Psychiatric Disorders

These form only about 3% of total disabilities but their importance is enhanced because these disorders often lead to permanent grounding of aircrew. Cases of Fits NYD and EEG abnormality pose a major problem for evaluation. In definite cases of epilepsy disposal is simple and straight-forward. With the introduction of base line EEG for all new entrants for aircrew, it is hoped that cases of gross EEG abnormalities will be reduced.

Special Problems of Ageing Pilots

The performance of pilot is not only dependent on his physical fitness but also on mental and emotional well being. The task of aeromedical evaluation thus becomes more complex with advancing age.

The ageing process does affect the various aspects of physical fitness like muscular strength and cardio respiratory capacities. It also affects other bodily functions and CNS.

In physical fitness, there is a predictable decline with advance in age in muscular strength and in cardio respiratory capacity. The fall in these parameters, however, is not vital as the physical work required for flying is relatively small. The process of ageing also affects various other systems especially CNS. The deterioration in certain functions is, however, compensated by experience and reflex actions.

Ageing effect on cardiovascular system is important and one has to keep in mind early detection of cardiovascular diseases which are more frequent in ageing pilots.

Conclusion

Ischaemic Heart disease and Diabetes Mellitus have shown a significant increase during last 5 years. The causes of this can be manifold. Two important factors could be :—

(a) Lack of exercise and relatively poor physical fitness

(b) Better methods of detection of disabilities,

A significant fall in cases of head injuries has been observed. This appears to be due to the use of crash helmets.

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