



## Pattern of ENT Disabilities Amongst Aspiring Flyers

(A RETROSPECTIVE STUDY)

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Amongst the 3,416 medical evaluations carried out at AF CME in the five year period from 1978 to 1982, 2202 individuals were assessed for award of flying category at first instance. The rate of denial of flying category to serving personnel (for induction into AOP flight signaller and engineer duties and airmen for F (P) branch) was only 10.42% as compared to 35% for fresh entrants to NDA. However, ENT disabilities constituted as much as 21.81% of the total disabilities amongst serving personnel compared to only 8.41% for fresh entrants. The commonest ENT cause of rejection was substandard hearing (60%) followed by eustachian tube insufficiency (13.7%). The intake for AOP and aircrew duties will have to be from serving personnel. A hearing conservation programme to bring down the incidence of substandard hearing, the sole ENT cause for rejection in this group is recommended.

### Introduction

A normally functioning audiovestibular system is a prerequisite to any form of flying activity as aviation introduces factors like rapid changes of pressure, exposure to noise and frequent changes of posture. The cost of training aircrew being substantial, the importance of a thorough aeromedical evaluation of the potential flyer need not be reiterated. Otolaryngological examination which forms an integral part of any such evaluation, while ruling out infective foci in the ENT region also includes assessment of hearing acuity and vestibular function.

Analysis of the pattern of disabilities amongst serving aircrew<sup>1</sup>, commercial civil aircrew<sup>2</sup> and non commercial civil aircrew<sup>3</sup>, have been carried out in the past. However, no study dealing exclusively with otolaryngological disabilities has been undertaken to date. It was considered worthwhile to study the extent to which ENT disabilities result in denial of flying category during initial medical examination, the relative importance of the individual disabilities and suggest measures to decrease the



rejection rate. It was with this aim in mind that this study was carried out

### Material and Methods

The medical records of individuals evaluated at first instance for award of flying and non flying medical categories during the five year period from 1978 to 1982 at AF CME were analysed. The files of examinees for the ground duty branches were included for the sake of comparison. The records were studied in the following groups :

1. NDA : Candidates assessed for fitness for flying duties prior to NDA entry.
2. F(P) Direct : Examinees of the Combined Defence Services Examination (CDSE) and direct entry NCC candidates for flying duties.
3. F(P) Serving : Airmen with 2-3 yrs of service selected for training for flying duties.
4. Naval Aviation : Serving officers and direct entrants for pilot and observer duties in the Navy.
5. Aircrew : Officers of the technical branches and airmen of technical trades assessed for fitness for Flight Signallers, Flight Engineer and Flight Gunner duties.
6. AOP : Officers of the artillery regiment selected for air observation post duties.
7. GDOC : Individuals assessed for fitness prior to joining for Ground Duty Officers Course (GDOC).
8. AEC : Individuals assessed for fitness prior to Aeronautical Engineers course.

The data obtained was analysed in tables I-VI.

Table - I

	1978	1979	1980	1981	1982	Total
No. of Med Exams	773	695	647	648	653	3416
Flying Category	436	386	469	434	477	2202
Non Flying Category	337	309	178	214	176	1214

Table - I showing year-wise distribution of cases.

Table - II

Sl. No.	Groups	Total Number	Unfit (All Disab.)	Unfit %	ENT Disab.	ENT Unfit %
1	NDA	1171	436	37.23	29	2.47
2	F(P) Direct	321	87	27.10	14	4.36
3	F(P) Serving	94	13	13.82	1	1
4	Naval Aviat	96	21	21.87	0	0
5	Aircrew	219	23	10.5	8	3.65
6	AOP	301	29	9.63	6	2
7	GDOC	701	132	18.83	20	2.85
8	AEC	513	93	18.12	10	1.94

Groupwise distribution of disabilities due to a.i causes and ENT Disabilities.

Table - III

Sl. No.	Groups	All Dis-abilities	ENT Dis-abilities	ENT Dis-abilities % of all Disab.
1	NDA	436	29	6.65
2	F(P) Direct	87	14	16.09
3	F(P) Serving	13	1	7.6
4	Naval Aviation	21	1	0
5	Aircrew	23	8	34.7



6. AOP	29	6	20.68
<b>TOTAL</b>	<b>609</b>	<b>58</b>	<b>9.52</b>

ENT disabilities as a percentage of disabilities due to all causes amongst individuals assessed for flying categories.

Table-IV

		Unfitness all disabilities	ENT disabilities
Flying (2202)	+	608 (27.61%)	58 (2.63%)
Non Flying (1214)	++	225 (18.53%)	30 (2.47%)

+ Includes all the groups in Table-I except GDOC and AEC.

++ GDOC and AEC only.

Table - V

	% of all disabilities	ENT disabilities	ENT disabilities as a % of disabilities due to all causes
Serving *	10.42%	2.28%	21.87% n=64
Fresh Entries **	35%	2.94%	8.41% n=523

\* Includes F (P) serving, Aircrew, AOP

\*\* NDA, F (P) direct  
Naval Aviation candidates not included due to insufficient data.

Table - VI

Cause of Disabilities	Number of Cases	%
Substandard Hearing	35	60
Eust. tube Insufficiency	8	13.7
CSOM	4	6.8
DNS (Optd) Effects of	3	5.1
Chr. Sinusitis	2	3.4
Tympanosclerosis	2	3.4
Stammering	2	3.4
Weak Scar TM	1	1.72
Tympanic Mob.	1	1.72

Table - VII

	All disabilities	Substandard Hearing	%
Serving	64	14	21.87%
Ab initio	523	21	4.015%

### Observations & Results

Out of total of the 3,416 Initial medical examination conducted at AF CME from 1978 to 1982, 2202 individuals were evaluated for flying categories while the remainder underwent assessment for non flying duties (Table-I).

A groupwise breakdown of the medical examinees has been made in Table-II. The maximum number of individuals assessed were for NDA and ground duty officers (GDOC) for flying and non flying medical categories respectively. The unfitness rate of 37.23% was highest for NDA candidates. The unfitness rate on account of ENT disabilities was highest for F(P) direct entry candidates (4.36%) followed by serving airmen of technical trades assessed for aircrew duties (3.65%).

ENT disabilities as a percentage of all disabilities for all the groups considered for flying categories is 9.52%. The corresponding figures for the



Individual groups show the maximum percentage in case of aircrew (34.7%) followed by AOP (20.68%) (Table-III).

The rejection rate of aspiring flyers was 27.61% compared to 18.53% for inductees for the ground duty branches. However, the ENT rejection rate was almost similar amongst the two groups (Table-IV).

The rate of denial of flying category at first instance to serving personnel was only 10.42% while the rate in case of fresh entrants was as high as 35%. However, ENT disabilities constituted as much as 21.87% of the total disabilities amongst serving personnel compared to only 8.41% among fresh entrants (Table-V).

The maximum number of individuals rejected for flying duties on account of ENT disabilities were for Substandard hearing (60%) followed by Eustachian tube insufficiency (13.7%) (Table-VI).

Substandard hearing contributed to 21.87% of disabilities due to all causes in case of serving personnel the corresponding rate for ab initio individuals being 4.01% (Table-VII). This constituted the sole cause of ENT rejection among serving personnel aspiring for flying duties.

### Discussion

Most of the initial medical evaluations done at AFCME during the five year period from 1978 to 1982 were for award of flying categories. Understandably the maximum number of rejections were among NDA candidates examined prior to their entry into the academy.

ENT disabilities constituted 6.8% of all disabilities in a 10 year study of the disability pattern amongst serving aircrew<sup>5</sup>. In our study 9.52% of all disabilities entailing rejection of individuals (which includes fresh entrants and serving personnel assessed for award of flying medical categories for the first time) are due to otolaryngological problems. The higher rate in the present study is due to the more stringent audiological requirements at the time of the initial medical evaluation.

The minimum standard for flying categories being higher the rejection rate (for all disabilities) is higher at 27.61% compared to 18.5% for non flying categories (Table-IV). The ENT disability rate on the other hand does not show a marked difference probably because the ENT standards for both the groups are similar.

A large percentage (21.87%) of all disabilities causing denial of flying categories is due to otolaryngological problems in case of serving personnel assessed for fitness for flying duties for the first time compared to 8.51% for fresh entrants. The percentage of ENT disabilities as the contributory factor to the overall disability rate is maximum. The higher rate in case of serving personnel is likely to be due to age and or occupation causes. Substandard hearing which has been identified as the commonest cause (60%) of rejection due to ENT disabilities is both age and occupation related. In fact all the serving personnel who were denied flying categories due to otolaryngological problems had this disability.

The incidence of hearing loss amongst aircraft maintenance personnel below 30 yrs of age with less than 5 yrs of active service in a flying station has been reported to be as high as 44.1%<sup>4</sup>. This corroborates with our finding that amongst serving individual, the maximum ENT disability percentage out of all disabilities (34.7%) is for the aircrew category.

An earlier onset of presbycusis has been shown in the Indian population<sup>1</sup>. The effect of acoustic trauma and age related deafness being additive, the incidence of hearing loss is quite high in this group. All artillery officers evaluated for AOP duties were between 25-30 years and had a strong history of noise exposure. Audiometric assessment showed high tone hearing loss typical of noise induced hearing loss (NIHL) in all the five individuals.

Serving personnel are the exclusive source of intake for AOP duties and aircrew duties (Flight engineers and signallers). The high incidence of NIHL amongst aircrew and maintenance personnel



has been repeatedly shown by several studies. A comprehensive hearing conservation programme as suggested by earlier workers (Murty 1975) is bound to reduce the rate of denial of flying category for this group besides decreasing the rate of attrition amongst flying personnel in general.

The programme will involve monitoring base level audiometry for all susceptible personnel and maintenance of a central registry for overall surveillance of the programme. It has been suggested that the threshold shift rather than actual hearing level be used to identify the individual in trouble<sup>9</sup>. The effectiveness of a similar hearing conservation programme initiated in 1956 has resulted in USAF personnel having better hearing than their civilian counterparts for all equivalent age levels<sup>9</sup>.

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