

## A Prospective study on Acuphenometry in tinnitus patients reporting to ENT department of Government Medical College, Rajouri

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### Abstract

**Introduction:** Tinnitus is one of the common ENT symptom or otological complaint. Acuphenometry means to measure tinnitus. **Objective:** The purpose of this paper is to study pitch and loudness of tinnitus in individuals with tinnitus. **Material and methods:** This descriptive, prospective study was done on 50 patients with symptom of tinnitus from february 2021 to November 2022. After otological examination; these were referred for TRT (tinnitus retraining therapy) in audiology section (tinnitus clinic). Before TRT, pitch and loudness matching of tinnitus was done and recorded. **Results:** The study showed male: female ratio of 1.77. Most common frequencies was 1000 HZ and most common loudness range was 21-30 db and average loudness was 38 db with SD of 15.43.

**Keywords:** Tinnitus, Pitch, Loudness, Acuphenometry.

### INTRODUCTION:

Tinnitus is an otological symptom which may or may not be associated with hearing loss. It is sensation of sound without presence of external sound generator (1). Matching the characteristics of tinnitus i.e pitch and loudness can be useful for diagnostic value as well as a part of TRT (tinnitus retraining therapy) for giving sound therapy (2). Foundation symposium on tinnitus advocated general adoption of four tinnitus measures: 1) Pitch 2) Loudness 3) Maskability and 4) residual inhibition (3). Acuphenometry is an exam that aims to find the frequency and intensity that matches

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the pitch and loudness of tinnitus respectively. Acuphenometry means “to measure accuphens (tinnitus)”. It is highly important in the treatment by masking.(4,5).

**MATERIAL AND METHOD:**

This descriptive, quantitative, prospective study was conducted in department of ENT& HNS, GMC & AH, Rajouri and was done on 50 patients with complaint of tinnitus & referred for TRT after otoscopic examination. Before TRT, Acuphenometry ie tinnitus pitch and loudness matching was done. Audiometer with frequency range from 125HZ to 12 KHZ and loudness upto 110 db and proper sound proof room was used. Data obtained was collected, tabulated and analysed descriptively and statistically using special statistically tools.

**RESULTS:**

The sample consists of 50 patients (34 males & 18 females). 1KHZ was most common frequency found in Acuphenometry. Table 1. Shows distribution of studied cases according to pitch matching. The most common intensity found in Acuphrnometry ranges from 31-40 db. Average of loudness matching shows 38 db withstandard deviation of 15.43 db. Table 2 shows distribution of studied cases according to loudness matching.

**Table 1: Distribution of the studied cases according to the pitch matching (n=50)**

Frequency HZ	N	%
125	2	4
250	8	16
500	8	16
750	3	6
1000	11	22
1500	2	4
2000	8	16
3000	1	2
4000	5	10
6000	1	2
8000	1	2

**Table 2: Distribution of the studied cases according to the loudness matching (n=50).**

Loudness db	N	%
0-10	2	4
11-20	5	10
21-30	12	24
31-40	11	22
41-50	13	26
51-60	4	8
61-70	1	2
71-80	2	4

## **DISCUSSION:**

The results of this study shows that number of males were more than females (M:F=1.77). This finding is in contradiction to the finding by Bruna et al in which females outnumber males (1). Reason for this may be regional variation for seeking medical treatment for tinnitus. In literature also there is controversy about the influence of gender in the prevalence of tinnitus(6).e.g Mings study shows male predominance(8).

Most common frequency in pitch matching was 1000HZ .And 60% of the cases in our study on pitch matching shows frequency ranging from 250Hz -1000Hz.Henry and Meikle had observed that pitch matches for tinnitus can occur practically any where in frequency region where there is hearing loss(3).Barnea study shows pitch matching in the range from 0.25 to 16 KHZ with 6.8 KHZ as mean(5).Variation in pitch may be due to difficulty in establishing tinnitus pitch .

In loudness matching,41-50 db was most common range of intensity observed in tinnitus loudness matching.Average calculated was 38 db with standard deviation of 15.43.Same study by Barnea showed loudness matching ranged from 14-60 db with mean of 31.42 db Hz.Moore BC study shows loudness match in the range of 6-20 db SL and over series of days ,the match can range upto 30-45 db SL (9,10).

## **CONCLUSION:**

Acuphenometry being subjective test depending upon intellectual capacity may have variation in pitch and loudness among patients in same study or different study.But these measurements are important before giving sound therapy (part of TRT).

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