



NORMATIVE DATA FOR MULTIDIMENSIONAL VOICE PROFILE IN ADULTS: A CROSS-SECTIONAL STUDY FROM CENTRAL INDIA

Otorhinolaryngology

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ABSTRACT

Introduction: Acoustic voice analysis provides quantitative measurements of phonatory characteristics. Local normative values may support interpretation of voice recordings in clinical practice. **Objective:** To describe selected multidimensional voice profile (MDVP) parameters in adults with perceptually normal voice and examine sex-related differences. **Methods:** This observational analytical study was conducted in the ENT and BASLP departments at Pt. J.N.M. Medical College and Dr. B.R.A.M. Hospital, Raipur, over one year after scientific and ethics committee approval. Sixty-four adults aged 25–55 years with perceptually normal voice were included. Participants provided voice history and underwent voice recording using the Computerized Speech Lab/MDVP system. Sustained /a/ was recorded for 10 seconds with the microphone 10–12 cm from the mouth. Fourteen selected acoustic parameters were assessed. Sex-based comparisons were performed using ANOVA, with $p < 0.05$ considered significant. **Results:** The normative cohort comprised 29 males (45.31%) and 35 females (54.69%); mean age was 33.21 ± 7.65 years. Female participants had higher mean Fo (233.27 ± 20.01 Hz) than males (127.16 ± 15.12 Hz; $p < 0.001$), and higher MFo (233.24 ± 20.01 vs 127.15 ± 15.12 Hz; $p < 0.001$). Jitt was higher in females (0.74 ± 0.41 vs 0.55 ± 0.24 ; $p = 0.029$), RAP was higher in females (0.43 ± 0.24 vs 0.31 ± 0.23 ; $p = 0.042$), and NHR differed by sex (0.12 ± 0.02 in females vs 0.14 ± 0.02 in males; $p < 0.001$). **Conclusion:** This study describes MDVP measurements in 64 adults with perceptually normal voice from Central India. Fo, MFo, Jitt, RAP and NHR differed significantly by sex in the source dataset. Larger studies are needed to establish reliable age- and sex-stratified reference intervals.

KEYWORDS

Normative Data; Multidimensional Voice Profile; MDVP; Acoustic Voice Analysis; Fundamental Frequency; Jitter; Shimmer

INTRODUCTION

Objective voice assessment is useful for documenting pitch and phonatory stability. Multidimensional Voice Program (MDVP), used with a Computerized Speech Lab, provides quantitative acoustic measures including fundamental frequency, jitter, shimmer and noise-related indices. These measurements may complement perceptual evaluation and laryngeal examination.

Acoustic values can vary with sex, age, vocal intensity, vowel and recording conditions. For this reason, local normative data may help clinicians interpret measurements in the population they serve. The thesis cites previous work on adult MDVP norms and sex-related differences in voice measures, including studies by Hema et al. and Geredakis et al. [1,2].

The present manuscript reports only the normative component of the thesis: 64 adults with perceptually normal voice. Its objective is to describe selected MDVP measurements and identify sex-related differences within this group.

MATERIALS AND METHODS

Study design and setting: Observational analytical study conducted in the outpatient departments of ENT and BASLP at Pt. J.N.M. Medical College and Dr. B.R.A.M. Hospital, Raipur, Chhattisgarh, over one year following scientific and ethics committee approval.

Study population: Adults aged 25–55 years with perceptually normal voice who were willing to participate. The thesis reports consecutive sampling. For this normative analysis, 64 normal participants were included.

Eligibility: Inclusion criteria were age 25–55 years and perceptually normal voice. The thesis exclusion criteria included known systemic health issues, sensory impairment such as sensorineural hearing loss, and organic vocal-fold pathologies such as polyp, cyst, nodule or laryngeal malignancy.

Voice recording and measures: A detailed personal and vocal history was obtained. Voice was recorded using MDVP in the Computerized Speech Lab. The microphone-to-mouth distance was maintained at 10–12 cm, and participants were asked to sustain the vowel /a/ for 10 seconds.

Statistical analysis: Fourteen selected MDVP parameters were assessed. Sex-based comparisons were performed using ANOVA. A p -value < 0.05 was considered statistically significant. The manuscript reports the normative values from the source thesis and does not add ROC analysis or comparisons with vocal cord paralysis.

RESULTS

The normative cohort included 64 adults: 35 females (54.69%) and 29 males (45.31%). Mean age was 33.21 ± 7.65 years. The mean age was 32.06 ± 6.77 years in females and 34.62 ± 8.52 years in males; this difference was not statistically significant ($p = 0.185$).

Table 1. Demographic characteristics of the normative cohort.

Characteristic	Value
Total participants	64
Female	35 (54.69%)
Male	29 (45.31%)
Overall mean age	33.21 ± 7.65 years
Female mean age	32.06 ± 6.77 years
Male mean age	34.62 ± 8.52 years

Table 2. Sex-wise comparison of MDVP parameters in participants with perceptually normal voice. Values are transcribed from the thesis normative results table.

Parameter	Female Mean $\pm$ SD	Male Mean $\pm$ SD	F	p
Fo (Hz)	233.27 ± 20.01	127.16 ± 15.12	553.055	< 0.001
MFo (Hz)	233.24 ± 20.01	127.15 ± 15.12	553.019	< 0.001
Jitt	0.74 ± 0.41	0.55 ± 0.24	5.005	0.029

Jita	30.46 ± 19.17	37.93 ± 17.71	2.577	0.114
RAP	0.43 ± 0.24	0.31 ± 0.23	4.207	0.042
vFo	1.06 ± 0.35	1.04 ± 0.34	0.042	0.838
ShdB	0.29 ± 0.10	0.28 ± 0.09	0.093	0.761
Shim	3.26 ± 0.94	3.07 ± 0.93	0.656	0.421
APQ	2.30 ± 0.73	2.54 ± 0.80	1.554	0.217
NHR	0.12 ± 0.02	0.14 ± 0.02	27.351	<0.001
SPI	9.64 ± 5.59	13.23 ± 9.17	3.706	0.059
VTI	0.06 ± 0.11	0.07 ± 0.09	0.009	0.925
DSH	0.62 ± 1.94	0.00 ± 0.00	3.006	0.088
NVB	0.00 ± 0.00	0.00 ± 0.00	—	—

Table 2. Sex-wise comparison of MDVP parameters in participants with perceptually normal voice. Values are transcribed from the thesis normative results table.

The most prominent sex differences were in Fo and MFo. Jitt and RAP were also significantly higher in females, whereas NHR was higher in males. The reported differences for Jita, vFo, ShdB, Shim, APQ, SPI, VTI and DSH did not reach the $p < 0.05$ threshold. NVB was zero in both sexes; the thesis did not report an inferential statistic for this parameter.

DISCUSSION

The normative cohort showed a pronounced difference in fundamental frequency between female and male participants. Mean Fo was 233.27 Hz in females and 127.16 Hz in males. MFo showed a similar pattern. These observations align with the sex-related differences discussed in the thesis literature review, including Geredakis et al. and other studies of adult voice characteristics [1,2].

Jitt and RAP were significantly higher in females in the present dataset. In contrast, absolute jitter (Jita) was numerically higher in males but the difference was not statistically significant. NHR was significantly different between sexes, with a higher mean value in males. These findings illustrate the importance of considering sex when interpreting acoustic voice measurements.

The practical contribution of this study is a preliminary local dataset from 64 adults with perceptually normal voice. It should not be described as a definitive population reference interval because the sample is modest, age-stratified analyses are not provided here, and recording conditions and the specific MDVP system may affect comparability with other cohorts.

LIMITATIONS

This is a single-centre normative cohort with 64 participants. The sample is not large enough to define reliable reference intervals across age strata. The thesis reports a selected set of 14 parameters; the normative section contains a few inconsistencies in explanatory prose and table statistics. This manuscript follows the numerical sex-comparison table where available and does not recalculate missing values.

CONCLUSION

In 64 adults with perceptually normal voice, female participants had significantly higher Fo, MFo, Jitt and RAP, while NHR was significantly higher in males. Other reported MDVP parameters did not show statistically significant sex differences in the thesis analysis. These findings provide preliminary local normative observations and support interpreting acoustic voice measurements with consideration of sex. Larger, age-stratified studies are needed before formal reference intervals can be recommended.

ETHICS AND DECLARATIONS Ethics approval and consent: The source thesis states that the study was undertaken after scientific and ethics committee approval and that participant consent was sought. The committee name/reference number should be inserted from the approval documentation before submission.

Funding: Not stated in the thesis material reviewed.

Conflict of interest: To be declared by the authors.

Data availability: To be confirmed by the authors.

Author roles: Primary Author – Dr. Varsha Mungutwar, Professor; Secondary Authors – Dr. Manya Roy Thakur, Professor, and Prema Devi, Assistant Professor; Corresponding Author –

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Submission note: This manuscript is restricted to the normative cohort of 64 participants. Vocal cord paralysis cases, case-control comparisons, and ROC analysis are intentionally excluded. Ethics approval number, corresponding-author contact details, funding, conflict-of-interest and final bibliographic details should be verified from the source records before submission.

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