

Original Research Article

An observational study on *Atiyoga* of *Vak-Karma* with special reference to *Atibhashya* among teachers: a cross-sectional study

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Received: 26 August 2026

Revised: 16 October 2026

Accepted: 24 October 2026

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ABSTRACT

Background: Ayurveda describes *Atiyoga* of *Vak Karma*, the Karmendriya of speech, as a causative factor for Vata vitiation and impaired vocal function, manifesting as *Atibhashya*. Teachers are at high risk of voice disorders owing to continuous, prolonged, forceful vocal use. This study evaluated the association between *Atiyoga* of *Vak Karma* and *Atibhashya Lakshanas* among teachers.

Methods: A cross-sectional observational study was conducted among 150 apparently healthy teachers (aged 25-60 years) from private and government schools of Moodubidire, Dakshina Kannada, selected by random sampling. *Atiyoga* of *Vak Karma* and *Atibhashya Lakshanas* were assessed using a structured, validated questionnaire (Cronbach's $\alpha=0.897$). Data were analysed in IBM SPSS using descriptive statistics, Spearman's rank correlation, and exploratory factor analysis (Kaiser-Meyer-Olkin=0.842; Bartlett's test $\chi^2=1499.00$, $df=378$, $p<0.001$).

Results: Mukha Shosha and Kantha Shosha were the most frequently reported symptoms, each rated "sometimes" by 52.7% of participants, followed by strain of voice (51.3%) and Shirasthapa (49.3%). A significant positive correlation was observed between *Atiyoga* of *Vak Karma* and overall *Atibhashya Lakshanas* ($r=0.148$, $p=0.036$). Pipasa ($r=0.245$, $p=0.001$), Mukha Shosha ($r=0.184$, $p=0.012$), Kantha Shosha ($r=0.179$, $p=0.014$), Shirasthapa ($r=0.152$, $p=0.031$), Timira ($r=0.135$, $p=0.049$) also showed significant associations.

Conclusions: *Atiyoga* of *Vak Karma* is significantly associated with *Atibhashya Lakshanas* among teachers, particularly dryness- and fatigue-related manifestations. Findings support the classical Ayurvedic concept of *Atiyoga* as a causative factor in functional vocal disturbance and underscore the need for preventive vocal hygiene measures in voice-intensive occupations.

Keywords: *Atibhashya*, *Atiyoga*, Ayurveda, Cross-sectional study, Occupational voice disorder, Teachers, *Vak Karma*, Vocal strain

INTRODUCTION

The concept of *Ayu* forms the fundamental basis for understanding life and health. *Ayurveda* does not consider life as merely the existence of the physical body; rather, it views life as a harmonious union of the body, sense organs, mind, and soul.¹ This holistic understanding reflects the depth of *Ayurvedic* philosophy, where health

is maintained through the balanced functioning of all these components. Among them, *Indriya* holds special importance because it acts as the medium through which an individual perceives and interacts with the external world. Proper functioning of *Indriyas* is therefore essential for maintaining both physical and psychological well-being. The judicious use of bodily functions and *Nidana Parivarjana*, the avoidance of causative factors of disease. Acharya Charaka describes *Heena Yoga*

(insufficient use), *Mithya Yoga* (improper use), and *Atiyoga* (excessive use) of *Kaala*, *Buddhi*, and *Indriyartha* as fundamental causes of disease.² *Vak* (speech) is one of the principal *Karmendriyas*, and its excessive use is termed *Atiyoga* of *Vak Karma*.³ Classical references to *Atibhashya* (excessive speaking) and *Ucchhairbhashya* (loud speaking) describe resultant manifestations such as *Shirasthapa*, *Shankha-Karna-Nistoda*, *Mukha-Talu-Kantha Shosha*, *Timira*, *Pipasa*, *Jwara*, *Hanugraha*, *Manyasthambha*, *Nishtivana*, *Uraha-Parshva Shoola*, *Swarabheda*, *Hikka*, and *Shwasa*.⁴ Although these symptoms are described in the context of *Panchakarma* complications in *Siddhi Sthana* rather than as an independent clinical entity, the principle of *Adhikarana Siddhanta* permits their logical extension to any condition arising from excessive speech, including occupational voice overuse.

The concept of *Indriya* as the instrument of perception and action is foundational to *Ayurvedic* physiology, and disturbance of a *Karmendriya* through *Atiyoga* is understood to disrupt normal physiological functions.^{5,6} Teaching is among the most voice-intensive occupations, requiring continuous, prolonged, and often forceful speech. Globally, teachers show a substantially higher lifetime prevalence of voice disorders than the general population, reported as high as 57.7% versus 28.8% in non-teachers, with pooled estimates suggesting that 37-63% of teachers experience a voice disorder at some point in their career.⁷

A cross-sectional study among school teachers in the United Arab Emirates similarly reported a high burden of vocal symptoms linked to classroom teaching load.⁸ In the Indian context, a study from Mangalore, geographically close to the present study setting, reported that 81% of teachers had experienced voice-related problems, while other Indian studies report prevalence rates of approximately 45-50%.^{9,10}

Despite this substantial occupational burden, contemporary management remains largely symptomatic. No study has been done to observe the effect of excess speech on health among teachers. This study was therefore undertaken to compile the classical *Lakshanas* of *Atiyoga* of *Vak Karma* with special reference to *Atibhashya*, by using a structured questionnaire, and to apply it among teachers, thereby assessing the association between excessive vocal use and the occurrence of *Atibhashya Lakshanas*.

METHODS

Study design

A cross-sectional observational study was conducted to assess the association between *Atiyoga* of *Vak Karma* (exposure) and *Atibhashya Lakshanas* (outcome) among teachers.

Study setting

The study was carried out among teachers employed in private and government schools of Moodubidire Taluk, Dakshina Kannada district, Karnataka, India.

Study period

The study was conducted from February 2025 to May 2026, including literature review, questionnaire development, content validation and data analysis.

Inclusion criteria

Apparently healthy teachers of either gender, aged 25-60 years, engaged in the teaching profession continuously for at least the preceding three years, with continuous teaching and normal conversation exceeding 20 hours/week, consistent with recommended pupil-contact norms for school teachers, and who provided informed consent were included.¹¹

Exclusion criteria

Subjects with any diagnosed systemic illness or malignancy, and those with a habit of alcohol intake, tobacco chewing, or smoking, as tobacco and alcohol use are independently associated with laryngeal epithelial changes and could confound the assessment of voice-related symptoms were excluded.¹²

Eligible participants were selected by simple random sampling from the identified schools.

Variables

Exposure: *Atiyoga* of *Vak Karma* (excessive use of speech), assessed through items on duration, frequency, and intensity of vocal use during teaching.

Outcome: *Atibhashya Lakshanas*, comprising 19 classically derived symptoms including *Pipasa*, *Mukha Shosha*, *Kantha Shosha*, *Shirasthapa*, *Timira*, *Shankha-Karna-Nistoda*, *Srotro Avarodha*, *Talu Shosha*, *Jwara*, *Shwasa*, *Hanu Graha*, *Manya Stambha*, *Nishtivana*, *Uraha-Parshva Shoola*, *Swarabheda*, strain and weakness of voice, *Hikka*, and *Kasa*.

Sociodemographic and occupational covariates recorded included age, gender, marital status, socioeconomic status, religion, teaching experience, teaching level, number of subjects taught, average daily teaching hours, class strength, microphone use, and habitual voice loudness.

Data sources and measurement

Data were collected using a structured, self-administered questionnaire developed from classical *Ayurvedic* references (*Charaka Samhita*, *Siddhi Sthana*) on the

manifestations of *Ucchairbhashya* and *Atibhashya*. The internal consistency of the 30-item questionnaire was assessed using Cronbach's alpha, which yielded a value of 0.897, indicating good to excellent reliability.

Selection bias was minimised through random sampling within the defined inclusion criteria. As the questionnaire was self-administered, recall and social-desirability bias could not be entirely excluded; distinguishing true selection effects from confounding requires cautious interpretation of cross-sectional associations, and the cross-sectional design also precludes inference of causality or temporal sequence between exposure and outcome.¹³

Study size

The required sample size was calculated using the formula $n = Z^2P(1-P)/d^2$, where; Z is the standard normal deviate at the 95% confidence level (1.96), P is the estimated prevalence of voice disorders among teachers (0.26), and d is the permissible error (0.07). This yielded a calculated sample size of 150.84, rounded to a minimum of 150 participants.

Statistical methods

Data were entered and analysed using IBM SPSS Statistics. Descriptive statistics (frequencies and percentages) summarised demographic and symptom data. The association between *Atiyoga* of *Vak Karma* and *Atibhashya Lakshanas* was assessed using Spearman's rank correlation coefficient, as the data were ordinal and non-normally distributed. Exploratory factor analysis (EFA) was performed to examine the underlying structure of the questionnaire, with sampling adequacy confirmed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. A p-value <0.05 was considered statistically significant.

RESULTS

Participants

A total of 150 teachers who fulfilled the inclusion criteria were enrolled, and complete data were obtained from all participants (100% response, no missing cases).

Descriptive data

Table 1 summarises the sociodemographic characteristics and Table 2 the occupational and speech-usage characteristics of the study population.

Outcome data

The response distribution for all 19 *Atibhashya Lakshanas* is presented in Table 3. Dryness- and phonatory-strain-related symptoms predominated over systemic manifestations: *Mukha Shosha* and *Kantha Shosha* were each reported as “sometimes” occurring by 52.7% of participants, followed by strain of voice (51.3%) and *Shirasthapa* (49.3%). In contrast, systemic symptoms such as *Hikka* (66.7%), *Nishtivana* (60.0%), *Jwara* (58.0%), and *Hanu Graha* (57.3%) were predominantly reported as “never,” indicating limited systemic involvement. The questionnaire showed high sampling adequacy for factor analysis (KMO=0.842; Bartlett's test $\chi^2=1499.00$, $df=378$, $p<0.001$), and exploratory factor analysis revealed clustering of variables reflecting a multidimensional pattern of vocal load and symptom expression.

Table 1: Sociodemographic and professional characteristics of participants (n=150).

Parameters	Category	Frequency (N)	Percentage (%)
Age group (years)	21-30	44	29.3
	31-40	61	40.7
	41-50	30	20.0
	51-60	17	11.3
Gender	Female	126	84.0
	Male	24	16.0
Marital status	Married	121	80.7
	Unmarried	28	18.7
	Not disclosed	1	0.6
Socioeconomic status	Middle	131	87.3
	Upper	9	6.0
	Lower	10	6.7
Religion	Hindu	126	84.0
	Christian	12	8.0
	Jain	12	8.0
Teaching experience (years)	3-10	86	57.3
	11-18	40	26.7
	19-26	13	8.7
	27-34	11	7.3

Table 2: Occupational profile and speech-usage pattern (*Atiyoga* of *Vak Karma*) of study participants (n=150).

Parameters	Category	Frequency (N)	Percentage (%)
Number of subjects taught	1 subject	105	70.0
	2 subjects	30	20.0
	3 subjects	7	4.7
	4 subjects	6	4.0
	More than 4 subjects	2	1.3

Continued.

Parameters	Category	Frequency (N)	Percentage (%)
Teaching level	High school	61	40.7
	Higher primary	58	38.7
	Primary	20	13.3
	Mixed levels	11	7.3
Class strength (students)	31-40	94	62.7
	41-50	23	15.3
	More than 50	19	12.7
	Less than 30	14	9.3
Average teaching in hours/day	3-4	31	20.7
	4-5	48	32.0
	5-6	47	31.3
	More than 6	24	16.0
Microphone use	No	127	84.7
	Yes	23	15.3
Voice loudness during lessons	Normal	69	46.0
	Loud	55	36.7
	Raised	19	12.7
	Relaxed/very loud/shouting	7	4.6
Speak loudly during teaching	Sometimes	90	60.0
	Occasionally	24	16.0
	Often	19	12.7
	Always	15	10.0
	Never	2	1.3
Feel speaking more than necessary	Sometimes	73	48.7
	Never	39	26.0
	Occasionally	17	11.3
	Often	16	10.7
	Always	5	3.3
Repeat instructions multiple times	Sometimes	80	53.3
	Occasionally	28	18.7
	Often	20	13.3
	Never	12	8.0
	Always	10	6.7
Increased effort due to inattentiveness	Sometimes	77	51.3
	Often	28	18.7
	Occasionally	25	16.7
	Never	14	9.3
	Always	6	4.0
Use of vocal rest methods	Sometimes	79	52.7
	Occasionally	28	18.7
	Never	28	18.7
	Often	8	5.3
	Always	7	4.7

Table 3: Response distribution (%) for all 19 Atibhashya Lakshanas (n=150).

Atibhashya Lakshana	Never (%)	Occasionally (%)	Sometimes (%)	Often (%)	Always (%)
<i>Shirasthapa</i> (headache)	26.7	9.3	49.3	8.7	6.0
<i>Shankha-Karna Nistoda</i> (temporal/ear pain)	36.0	7.3	43.3	10.0	3.3
<i>Srotro Avarodha</i> (hearing blockage)	46.7	12.7	35.3	4.0	1.3
<i>Mukha Shosha</i> (oral dryness)	15.3	9.3	52.7	13.3	9.3
<i>Talu Shosha</i> (palate dryness)	23.3	16.0	45.3	11.3	4.0
<i>Kantha Shosha</i> (throat dryness)	13.3	12.0	52.7	9.3	12.7
<i>Timira</i> (visual disturbance)	51.3	8.0	34.0	3.3	3.3

Continued.

<i>Atibhashya Lakshana</i>	Never (%)	Occasionally (%)	Sometimes (%)	Often (%)	Always (%)
Pipasa (thirst)	22.7	14.7	42.0	12.7	8.0
Jwara (low-grade fever/warmth)	58.0	11.3	23.3	6.0	1.3
Shwasa (shortness of breath)	52.0	10.7	27.3	8.0	2.0
Hanu Graha (jaw stiffness)	57.3	10.0	29.3	2.7	0.7
Manya Stambha (neck stiffness)	38.7	14.0	36.0	8.0	3.3
Nishtivana (urge to spit)	60.0	7.3	26.7	6.0	0.0
Uraha-Parshva Shoola (chest/flank pain)	54.7	10.0	32.0	2.7	0.7
Swarabheda (hoarseness)	47.3	11.3	31.3	7.3	2.7
Strain of voice	22.0	12.0	51.3	8.0	6.7
Weakness of voice	34.7	12.0	42.7	3.3	7.3
Hikka (hiccup)	66.7	9.3	20.7	3.3	0.0
Kasa (cough)	36.7	15.3	43.3	4.0	0.7

Table 4: Spearman's rho correlation between *Atiyoga* of *Vak Karma* and each *Atibhashya Lakshana*, ranked by correlation strength (n=150; 1-tailed).

Symptom (Lakshana)	Spearman's r	P value	Significance
Pipasa (thirst)	0.245	0.001	Highly significant
Mukha Shosha (oral dryness)	0.184	0.012	Significant
Kantha Shosha (throat dryness)	0.179	0.014	Significant
Shirasthapa (headache)	0.152	0.031	Significant
Timira (visual disturbance)	0.135	0.049	Significant
Shwasa (shortness of breath)	0.129	0.058	Not significant
Hanu Graha (jaw stiffness)	0.121	0.070	Not significant
Kasa (cough)	0.080	0.167	Not significant
Uraha-Parshva Shoola (chest/flank pain)	0.088	0.141	Not significant
Shankha-Karna Nistoda (temporal/ear pain)	0.070	0.196	Not significant
Strain of voice	0.067	0.206	Not significant
Swarabheda (hoarseness)	0.068	0.206	Not significant
Hikka (hiccup)	0.065	0.214	Not significant
Srotro Avarodha (hearing blockage)	0.060	0.233	Not significant
Nishtivana (urge to spit)	0.045	0.294	Not significant
Manya Stambha (neck stiffness)	0.044	0.297	Not significant
Talu Shosha (palate dryness)	0.039	0.318	Not significant
Jwara (low-grade fever/warmth)	0.015	0.429	Not significant
Weakness of voice	-0.019	0.409	Not significant
Overall <i>Atibhashya Lakshanas</i> (composite)	0.148	0.036	Significant

Main results

Spearman's rank correlation revealed a statistically significant positive association between overall *Atiyoga* of *Vak Karma* and *Atibhashya Lakshanas* ($r=0.148$, $p=0.036$). Table 4 presents the correlation of every individual *Lakshana* with the *Atiyoga* of *Vak Karma*.

DISCUSSION

Key results

This cross-sectional study of 150 teachers found a statistically significant positive correlation between *Atiyoga* of *Vak Karma* and *Atibhashya Lakshanas* overall (Table 4), with the strongest and most consistent

associations seen for dryness- and fatigue-related symptoms, namely *Pipasa*, *Mukha Shosha*, *Kantha Shosha*, *Shirasthapa*, and *Timira*. Systemic manifestations such as *Jwara*, *Nishtivana*, and *Hikka* were infrequent (Table 3) and not significantly associated with the exposure, suggesting that excessive vocal use predominantly affects the upper vocal tract rather than producing systemic pathology.

Comparison with ayurvedic concepts and modern studies

These findings substantiate the classical description of *Ucchairbhashya* and *Atibhashya* as causative factors for *Mukha-Talu-Kantha Shosha*, *Shirasthapa*, and *Pipasa*³. The application of *Adhikarana Siddhanta*, extending

Siddhi Sthana Lakshanas to occupational voice overuse, appears justified by the clinical pattern observed. The predominance of dryness and phonatory strain over systemic involvement is consistent with the modern occupational-health literature on teachers' voice disorders, in which vocal fatigue, hoarseness, and throat dryness are the most frequently reported complaints, a pattern also reported among school teachers in the United Arab Emirates.⁷⁻⁹ The significant correlation between *Atiyoga* of *Vak Karma* and *Shirasthapa* parallels reports linking prolonged, effortful speech to headache-type symptomatology.¹⁵ The strong association observed for *Pipasa* is consistent with intervention studies showing that surface and systemic hydration measurably improve teachers' voice quality, supporting hydration status as a key mediator of vocal strain.¹⁶ Similarly, the significant association with *Timira* aligns with evidence that sustained cognitive and physical workload can alter ocular accommodation and pupillary response, providing a plausible physiological basis for visual strain accompanying prolonged vocal exertion.¹⁷ The high proportion of participants not using a microphone (84.7%) parallels reports linking unamplified, prolonged classroom speech to greater vocal loading and supports the biological plausibility of the observed associations.

Interpretation

The correlation coefficients obtained, though statistically significant, were weak in magnitude, indicating that *Atiyoga* of *Vak Karma* is one of several contributing factors to Manifestation of *Atibhashya Lakshana* rather than its sole determinant. Occupational variables such as class strength, teaching level, daily teaching hours, and habitual voice loudness (Table 2) are plausible co-contributors. Only 11.3% of participants reported awareness of any *Ayurvedic* technique for voice care (Table 5), indicating a substantial gap between occupational vocal demand and preventive health literacy among teachers.

The relatively higher proportion of early- and mid-career teachers (57.3% with 3-10 years of experience) in the sample is consistent with observations that vocally demanding occupations show attrition with advancing career stage, which may partly explain the lower representation of senior teachers in this study.¹⁴

Table 5: Awareness of vocal health and prior Ayurvedic exposure among study participants (n=150).

Parameters	Category	Frequency (N)	Percentage (%)
Awareness that excessive speaking may cause health problems	Yes	115	76.7
	No	35	23.3
Received training in voice modulation/vocal care	No	129	86.0
	Yes	21	14.0
Perceived importance of vocal health for a teacher	Very important	107	71.3
	Essential	32	21.3
	Moderately important	9	6.0
	Not important	2	1.3
Prior Panchakarma/Ayurvedic treatment	No	143	95.3
	Yes	7	4.7
Awareness of Ayurvedic therapies for voice health	No	133	88.7
	Yes	17	11.3

This study has few limitations. The cross-sectional design precludes causal or temporal inference between exposure and outcome. Data were collected through a self-administered questionnaire, which is subject to recall and reporting bias. The sample was drawn from a single taluk and a single occupational group, limiting generalisability, and clinical or instrumental voice assessment (e.g., laryngoscopy, acoustic analysis) was not performed to corroborate self-reported symptoms.

Generalisability and implications

Given the setting and occupational homogeneity of the sample, these findings are most directly generalisable to school teachers in comparable semi-urban Indian settings, and should be extended to other populations or voice-

intensive occupations with caution. The results nonetheless support incorporating vocal-hygiene education, judicious use of microphones, adequate hydration, and scheduled voice rest into occupational health programmes for teachers, alongside further research using larger, multi-centric samples and objective diagnostic tools.

CONCLUSION

Atiyoga of *Vak Karma* is significantly associated with *Atibhashya Lakshanas* among teachers, with dryness- and strain-related symptoms predominating over systemic manifestations. These findings support the classical *Ayurvedic* concept of *Atiyoga* as a causative factor in functional vocal disturbance and establish its relevance to

modern occupational voice-disorder frameworks. Preventive vocal-hygiene practices, workload regulation, and greater awareness of voice care are warranted to reduce occupational voice strain among teaching professionals. Larger, multi-centric studies incorporating objective clinical assessment are recommended to strengthen and generalise these observations.

ACKNOWLEDGEMENTS

Authors would like to thank all the participating teachers and the schools of Moodubidire Taluk, Dakshina Kannada, for their cooperation, and Alva's Ayurveda Medical College, Moodubidire, for institutional support.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Alva's Ayurveda Medical College, Moodubidire, Karnataka [IEC approval number AAMC/2024/021]

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Cite this article as: Ankalagi SM, Saraswathi SM, Radhika MS, Sandesh S. An observational study on Atiyoga of Vak-Karma with special reference to *Atibhashya* among teachers: a cross-sectional study. Int J Community Med Public Health 2026;13:6685-91.