

Vocal Health Care amongst Hindustani Classical Singers— A Mixed Methods, Cross-Sectional Survey

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Summary: Objectives. The objective of the present survey was to profile the knowledge, attitude, and practices towards vocal health care amongst Hindustani classical singers.

Study Design. Mixed-methods, cross-sectional questionnaire-based study.

Methods. A self-reported questionnaire was developed and used to gather data on the knowledge, attitude, and practices of Hindustani classical singers towards vocal health care. An online survey link was generated, and responses were collected from self-identified trained Hindustani classical singers. Descriptive statistics was carried out for the closed-ended questions and inductive approach was used to analyse the responses of open-ended questions.

Results. Ninety-four self-identified trained Hindustani classical singers participated in the study. The responses indicate good knowledge towards vocal health measures and positive attitudes towards vocal health care. The open-ended responses were analysed using an inductive approach. Although, 70% were aware about role of a speech language pathologist, only 9.7% reported of consulting one in the event of voice problem. Further, 70% singers reported of following precautions to avoid voice problems while 85.1% considered voice rest as necessary before a performance. The singers reported of using home remedies, vocal and non-vocal measures as a part of vocal health measures.

Conclusions. The present study helps to profile the knowledge, attitude, and practices towards vocal health care amongst Hindustani classical singers. It also helps to provide a basis for further studies to establish an empirical basis for the reported practices towards vocal health care.

Key Words: Indian classical singers— Hindustani singers— India— Vocal health care.

INTRODUCTION

Singers are an elite group of professional voice users who engage in unique respiratory, phonatory and articulatory patterns during singing.¹ Singers are required to have high phonatory stamina, strength and liveliness as compared to non-singers. As a result of this, singers are commonly known as vocal athletes² due to the specific expectations from their voice and skilled, complex phonatory variations. Thus, the vocal load placed on a singer's voice exceeds the vocal demands placed on the general population.³ However, despite these high demands on the singing voice, studies have revealed a high rate of hesitancy among the singers towards seeking professional help for voice related concerns as compared to other medical issues.^{4,5}

Singers are the cultural ambassadors of their country and the backbone of their musical pedagogy and heritage. In India, the earliest evidence of music can be traced to the *Vedas* (which are ancient Sanskrit texts from the 1500–500 BC), namely *Rig Veda*, *Sama Veda*, *Yajur Veda* and *Atharva*

Veda. The *Sama Veda* (*sama* translates to song and *veda* to knowledge) includes chants and melodies. During the 14th to 18th century, music in the northern part of India, was influenced by Persian and Mughal music. This resulted in the emergence of the two schools of Indian classical music: the north Indian or the Hindustani classical and the south Indian or Carnatic music. The Hindustani classical singing pedagogy emphasises on the precision of melody and pitch. The range, timbre, and improvisations can vary across singers rendering the same composition.⁶ Another important aspect is the *guru-shishya parampara* (teacher-pupil tradition) where the pupil trains under the teacher in a one-on-one setting. The teacher exerts a strong influence on the student during their tenure together and often beyond the educational years.⁷

In a recent study among Hindustani classical singers (HCS), the most common complaints included feeling breathless during singing, fatigue after singing and tightness or tension in the neck or shoulder region. The most common phonotraumatic behaviors included excessive talking, loud-coughing or throat clearing. The most common non-vocal habits that could negatively affect the voice included excessive consumption of caffeinated beverages and spicy food. A majority of the singers reported consuming an adequate amount of water, getting adequate sleep and using soothing agents for their voice care.⁸

Voice is a source of livelihood for professional singers, and hence awareness about appropriate vocal health care is of utmost importance to the longevity of their careers. Singers need to be aware about their vocal organ, its use, and

Accepted for publication December 28, 2021.

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Journal of Voice, Vol. ■■■, No. ■■■, pp. ■■■–■■■
0892-1997

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<https://doi.org/10.1016/j.jvoice.2021.12.018>

the impact of their lifestyle on the voice to take vocal health seriously. Identifying the knowledge, attitudes, and practices of Hindustani classical singers towards vocal health care will help voice care professionals provide better and more individualized services. These professionals can specifically focus on the lacunae to provide better vocal health care. There is not much information available on the vocal health care among Hindustani classical singers. Thus, the present survey was carried out to profile the knowledge, attitude, and practices towards vocal health care amongst Hindustani classical singers.

METHOD

A mixed-methods, cross-sectional questionnaire-based study explored the knowledge, attitudes, and practices of Hindustani classical singers (HCS) towards vocal health care. The study was carried out after approval by the Institutional Ethical Committee (IEC KMC MLR 11- 19/516). The study was carried out in two phases; development and validation of the questionnaire followed by data collection and analysis.

Phase I- Development and validation of the questionnaire

A self-reported questionnaire was developed to gather data on the knowledge, attitude, and practices of Hindustani classical singers towards vocal health care. The questionnaire was developed based on previous literature.⁸⁻¹¹ This questionnaire was content-validated by three speech-language pathologists with over 10 years of experience in vocology and special interest in professional voice. Two of these speech-language pathologists were also trained professional Hindustani classical singers with over 20 years of singing training and experience. Each question was rated using a four-point rating scale; relevant, quite relevant, somewhat relevant and not relevant.¹² The items rated as relevant and quite relevant were retained in the final questionnaire. A Scale-level Content Validity Index score of 0.84 was obtained indicative of excellent content validity.¹³ This final questionnaire was given to three Hindustani classical singers to check for relevance and language use. In this way, a final version of the questionnaire was made available for use in the next phase. The questionnaire was similar to the questionnaire used in a previous study on vocal health among Indian Carnatic singers developed by the same authors.¹⁴ The questionnaire is available on request.

Phase two – Questionnaire administration and analysis

Self-identified Hindustani classical singers that were actively practicing the form with a minimum of 1 year of training were included. Trained singers above 18 years of age of both the sexes proficient in reading and writing English were included. Singers trained in other forms of singing or those who had discontinued their singing practice were not included. This was done to have a homogenous group as singers trained in multiple styles might have different practices and vocal health regimens. The developed questionnaire

was converted into a Google Form for administration. The Google Form was emailed to Hindustani classical singers identified from local music classes. The singers were asked to fill an online consent form prior to participation in the study, which provided access to the questionnaire. The questionnaire took approximately 7-10 minutes to be filled and the responses were anonymous. The survey was conducted from May 2020 to April 2021.

The statistical analysis was carried out using SPSS 22.0. The content validity of the assessed questionnaire was computed using Scale-level Content Validity Index. Demographic variables were summarised using descriptive statistics. Mean, standard deviation, and range were used to analyze continuous variables and discrete variables were analyzed using frequency and percentages. The items related to knowledge of factors that might influence voice were to be responded as yes, no, not sure. The responses to negatively worded items were reversed for the purpose of analysis. All the responses were converted to correct, incorrect and unsure. An inductive approach was used to analyse the responses of open-ended questions, where two researchers (DG and RMN) read each response multiple times and the data was coded into themes on mutual consensus.

RESULTS

A total of 94 self-identified trained Hindustani classical singers participated in the study. The demographic details and singing related experience have been displayed in (Table 1).

Knowledge towards voice and vocal health

Under the knowledge section, the singers were asked questions pertaining to being aware about the role of a speech-language pathologist (SLP), laryngeal anatomy and physiology and factors affecting the voice. Majority of the singers (70.2%) were aware about the role of an SLP. The singers

TABLE 1.
Demographic Details

	Mean ± SD	Range
Age (in ys)	34.68 ± 13.09	19 – 66
Experience (in ys)	16.01 ± 10.02	1 – 44
Started training (in ys)	11.93 ± 6.44	3 – 37
Frequency of singing (days/week)	5.4 ± 2.12	1-7
Sex		<i>n</i> (%)
	Female	40 (42.6%)
Extensive voice use in primary non-singing occupation	Male	54 (57.4%)
	Yes	55 (58.5%)
Warm-up before singing	No	39 (41.5%)
	Regularly	10 (10.6%)
	Occasionally	51 (54.3%)
		33 (35.1%)

TABLE 2.
Descriptions of Singers' or Vocal Nodules

Broad categories	Some descriptions
Based on appearance	<i>"Hardened, sometimes painful nodules found in the throat" "Like small knots on the vocal folds"</i>
Based on cause	<i>"Swelling on the vocal folds because of straining voice", "Small growths found in vocal cords caused because of overuse of voice" "Singing without proper idea of own pitch. . .may create nodules problem. "It happens when we talk loudly for a longer period or yelling"</i>
Based on their impact	<i>"Vocal nodules result in difficulty in singing or talking" "Growth that may hamper voice quality, pitch, loudness and projection of voice. pain while singing".</i>
Heard about nodules but unable to describe	<i>"Cannot explain have heard about it: the last thing you want as a singer to have."</i>

were asked if they had heard of vocal/singers' nodules and to describe them in their own words. Approximately, 66 singers (70.21%) were familiar with vocal/singers' nodules. Their descriptions of the nodules were based on appearance, cause, impact, some examples are provided in (Table 2).

Further, 79.8% singers responded that psychological factors could affect the voice. The effects included difficulty with voice projection, lack of voice stability/consistency, tonal and quality difficulties, stress, mood, and impact on overall health. Some singers provided interesting elaborate responses such as *"Vocal cords are the most sensitive part of your body and is directly connected with your emotional sense. If you are stressed, disturbed, it directly affects your voice"*, *"I have noticed that my emotions have a huge effect on my voice. When overwhelmed with emotions like anger, sadness, grief, my voice is often muffled. When I'm blissful, peaceful, and happy my voice opens, the volume is up, and the tonal quality is also better"*, *"Staying happy and positive always is definitely one of the very important things to maintain a good crystal-clear voice. Negative emotions always have affected my voice in a bad way"*, *"The first organ that gets affected when you are sad, is your voice. Psychological status affects your voice to a great extent."*

The singers were asked to identify the factors that might influence their voice. Their response have been displayed in (Table 3).

As observed in Table 3, three-fourth of the participants (over 75%) portrayed accurate knowledge on factors that might influence the voice such as warm-up, hydration, and avoiding talking with sore throat. However, mixed responses were noted for negative impact of throat clearing and excessive caffeine consumption and, positive effect of early dinner. On being asked to rate their knowledge about the larynx (noted as voice box in the survey), 12.8% had limited or no knowledge, 67% had basic knowledge, while 20.2% had thorough knowledge.

Attitudes towards vocal health care

The singers were asked to rate their fear of losing their voice, 46.8% responded that they would be unable to lead their life normally, 24.5% would be stressed, 17% would be mildly anxious, and the remaining 11.7% would not be afraid or bothered by it. Further, the singers were asked to indicate their reactions to a change in their voice. As observed in Table 4, in the event of a change in voice, 72.3% singers would rely on home remedies and 63.8% would go to the doctor but only 20.4% would always self-medicate.

The participants had to rate their attitudes towards vocal health using a three-point scale of agree, disagree and neutral. Based on their responses, 86.2% did not feel any hesitation in seeking help for voice problems. Singing was the most important thing in the life of 79.8% singers. Further,

TABLE 3.
Knowledge of Factors That Might Influence Voice

Factors that might influence voice	Correct n (%)	Incorrect n (%)	Unsure n (%)
Positive effect of adequate hydration	81 (86.2%)	8 (8.5%)	5 (5.3%)
Positive effect of warm-up before singing	88 (93.6%)	2 (2.1%)	4 (4.3%)
Positive effect of an early dinner	57(60.6%)	8(8.5%)	29(30.9%)
Negative effect of talking with a sore throat	77 (81.9%)	8 (8.5%)	9 (9.6%)
Negative effect of throat clearing	42(44.7%)	39(41.5%)	13(13.8%)
Negative effect of excessive caffeine consumption	65(69.1%)	8(8.5%)	21(22.3%)

TABLE 4.
Reactions to a Change in the Voice

If my voice is affected/changed I would,			
	Always	Sometimes	Never
Stop using my voice	29 (30.9%)	37 (39.4%)	28 (29.8%)
Self-medicate	19 (20.4%)	19 (20.4%)	55 (59.1%)
Use home remedies	68 (72.3%)	14 (14.9%)	12 (12.8%)
Go to the doctor	60 (63.8%)	23 (24.5%)	11 (11.7%)
Go to an SLP	52 (55.3%)	21 (22.3%)	21 (22.3%)

81.9% felt that extensive voice use throughout the day would harm their voice, however only 56.4% gave a lot of importance in taking care of their voice.

Practices towards vocal health care

The questions on practices towards vocal health care included questions related to professionals consulted for voice problems, use of the internet to gain information on care, the importance of voice rest, soothing agents, and measures for vocal health care. In the event of a voice problem, an equal proportion of singers consulted either an otolaryngologist (32.3%) or a family doctor (32.3%) followed by their music teacher (25.8%) and only 9.7% would consult a voice therapist. The use of the internet for vocal health related questions was reported by 57.4% singers, while the remaining (42.6%) did not use it. The preference for home remedies over a medical consultation was reported as always by 39.4% and sometimes by 42.6% singers. Only 18.1% never relied on home remedies over a medical consultation. Further, 46.8% singers used soothing agents for their

voice while 53.2% did not use. The commonly consumed soothing agents included honey, plant-based products such as ginger, turmeric, clove, cardamom, cinnamon, rock sugar (“khadi sakhar”) or liquorice (“jyeshtmadh”), sips of water, Ayurvedic herbal decoctions (“kaadhas/kashyam), and dairy products (such as warm milk, warm turmeric milk, and clarified butter).

A majority of the participants (70.2%) took precautions to avoid voice problems while 85.1% considered voice rest as necessary before a performance. The singers were asked to elaborate on why they consider resting the voice to be important before a performance. These included improvement in vocal projection, prevention of trauma/strain/fatigue to the voice and aiding in relaxation. Some interesting descriptions were as follows; “For better voice quality, consider your vocal cords as workers, they have to execute the commands given, therefore they must be happy”, “Preserve your voice for your performance, keep your best for the show”, “I’ve read that, allow the body to heal on its own. Anything over stressed is not good”, “As from my personal experience, my voice gets affected by the amounts of practices in the final days and anxiety related to the performance. Taking a day’s break for vocal rest as well as mental rest with one or two practices that day is important for me.”

The final question probed the singers about the measures taken to maintain good vocal health. Based on their response, three major themes emerged, home remedies, vocal measures, and non-vocal measures. Their responses have been illustrated in (Figure 1).

DISCUSSION

The current study was conducted to explore the knowledge, attitudes, and practices amongst Hindustani classical singers towards vocal health care. Ninety-four self-identified trained adult Hindustani classical singers across 19–66 years

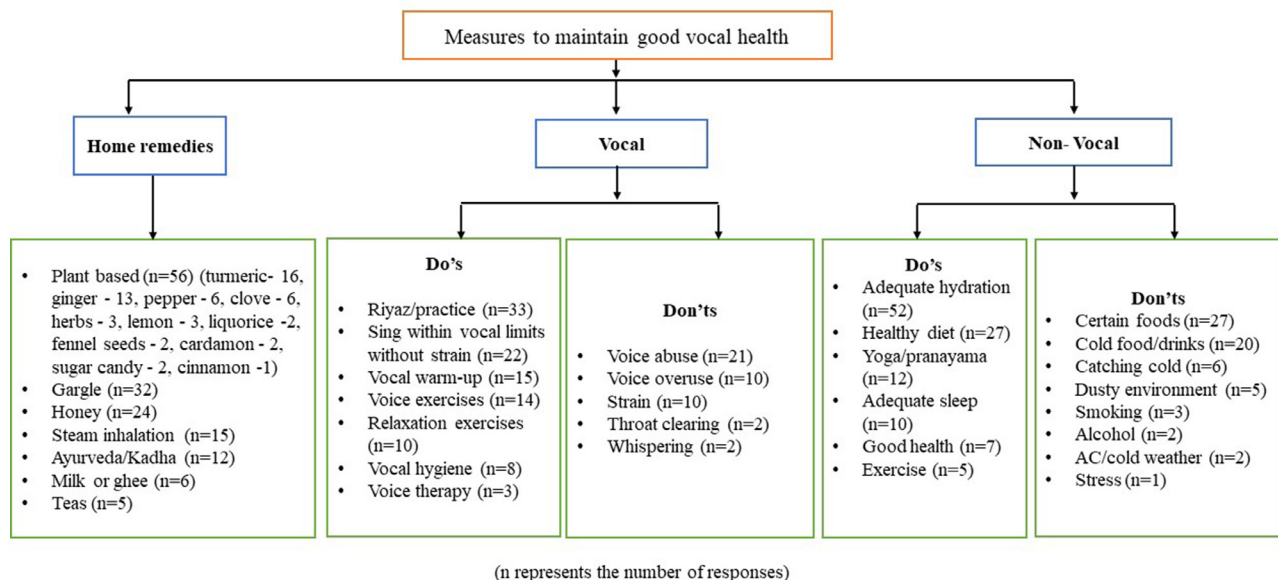


FIGURE 1. Measures to maintain good vocal health.

of age were included. On average, the singers started singing training at 11 years of age (range 3– 37 years) and had a mean experience of 16 years (range 1– 44 years). More male than female singers participated in the study and almost 58% singers used their voice extensively in their primary occupation outside of singing. Regular warm-up before singing was reported by 54.3% and occasionally by 35.1% singers which is similar to 64% of Carnatic Indian classical singers who reported regular warm-up before singing.¹⁵ Over 70% singers in the present study were aware about the role of an SLP as compared to the mere 23.6% previously.⁴ Further, on being asked for their reaction to voice change, 55.3% opted for consultation to a SLP, however, only 9.7% practiced consulting a voice therapist in case of a voice problem. Voice therapists are trained in assessing and intervening professional voice users, delay in consultation could lead to further progression of voice problem. Thus, although, the awareness about these professionals seems to have improved, there is need to bring about a change in the attitude and practices towards seeking consultation.

Knowledge toward vocal health

The data showed that a majority of the participants in this study were aware of singer's nodules and the effects of psychological factors on the voice. Seventy-five percent of the participants were also aware of practices that would lead to good vocal care such as warming-up the voice, adequate hydration and limiting voice use when experiencing a sore throat. However, there seemed to be mixed results on the negative impact of throat clearing and excessive caffeine consumption and the positive effect of eating an early dinner. Higher occurrence of throat clearing, and caffeine consumption have been reported in a recent study among Hindustani classical singers.⁸ The effect of excessive caffeine consumption on voice has been a topic of research since a very long time, however, the exact effect is yet unclear due to the absence of strong empirically valid studies in humans.^{16,17} Avoiding throat clearing and ensuring a longer duration between dinner and bedtime to reduce or prevent laryngopharyngeal reflux are common recommendations in a vocal hygiene program especially for professional voice users.¹⁸ On being asked to rate their knowledge about the larynx, 67% rated their knowledge to be basic while 20.2% rated it to be thorough. This is similar to our findings in the previous study on Indian Carnatic singers where 59% rated their knowledge to be basic while 27% rated it to be thorough¹⁴ and, in a study among choir singers, where 66% rated their vocal anatomy and physiology knowledge to be basic or thorough while 34% rated it as limited.¹⁹ The use of voice in singers is very versatile and different from other professional voice users and especially non-singers. Therefore, having a very good understanding of the voice mechanism is important to nurture and maintain it. The findings from the questions on knowledge bring to attention, the need to have more specific and specialized programs to

make these singers aware about the larynx, its functioning and the factors that affect the voice.

Attitudes towards vocal health

The ability to skilfully manipulate the voice is extremely critical in adequately expressing emotions during singing. When asked to rate the fear of losing their voice, only 11.7% were unaffected while the remaining expressed concern about being unable to lead a normal life, feeling stress or anxiety. In the event of a voice change, a high percentage (72%) of singers resorted to taking home remedies followed by visiting a doctor (63.8%). These findings are similar to our recent studies among Indian Carnatic singers¹⁴ and Hindustani classical singers.⁸ Further, more than 85% singers did not have face any hesitation in seeking help for voice problems. This changing trend is promising as lesser Indian singers seem to be stigmatized by seeking help for voice problems.¹⁴ In addition, the shift towards seeking out healthcare professionals for voice care shows less dependence on a single music teacher or guru and expands the resources available to the singers while also incorporating more evidence-based practices.

Practices towards vocal health

Ayurveda is an ancient practice of natural medicine in India. It is based in lifestyle practices, herbal and natural medicines along with yoga. It is akin to traditional Chinese medicinal practices and requires individuals to be certified and trained to be practitioners of Ayurveda in India. Ayurveda also is deeply woven in the diet and lifestyle practices of Indians and the knowledge is passed down through the generations. Hence, it is not surprising that when asked about the preference for home remedies over medical consultation, 82% singers preferred home remedies. Previous studies among different western singers have also highlighted the inclination towards home remedies and readily available remedies.^{14,20,21} As compared to Carnatic singers,¹⁴ a higher percentage of Hindustani classical singers (46.8%) reported of using different types of soothing agents for their voice. Most of these included plant-based products, honey, dairy products Ayurvedic decoctions. These soothing agents are often consumed based on anecdotal information and may lack a strong empirical basis.

Vocal health care

A high percentage of Hindustani classical singers took precautions to avoid voice problems and rested their voice before a performance. The singers were also able to provide insight on the benefits they experienced when practicing voice rest before a performance. The final question probed the measures taken to maintain good vocal health and responses included home remedies, vocal measures, and non-vocal measures. India being the spice capital of the world, the use of spices for remedial purposes as well as daily use is very common. Among the different plant based

products used by the singers, turmeric and ginger are common remedies for cough and throat issues.²² After plant-based products, gargling was the next most preferred home remedies. Although there is limited evidence to support the benefits of gargling, nevertheless, it is a commonly reported remedy.²³ Among the vocal measures, the most common was *Riyaz*. *Riyaz* is a word from Urdu language and means a systematic singing practice. The *Riyaz* is that time spent by a Hindustani classical singer for himself, being self-absorbed, explorative, and listening to oneself sing and improvise.²⁴ The *Riyaz* is usually planned and guided by the singing teacher and practicing the *kharaj* ie notes in the lower end of the scale in the early morning is encouraged.²⁵ The second most reported vocal measure was singing within vocal limits without staining their voice. It was indeed encouraging to note that the singers were aware and practiced singing within the vocal limits. The most reported vocal measures under avoidance was voice abuse. More than 50% of the singers reported of practicing hydration by adequate water intake as a non-vocal measure for good vocal health. A systematic review has emphasized on the importance of adequate hydration and its inclusion under a vocal hygiene program.²⁶ These findings should be included in programs for professional voice users in order to encourage better hydration habits. On the contrary, there are studies indicating need for more empirical evidence on effect of hydration on voice.^{27,28} Thus, it is best suited to follow hydration habits based on one's body type and activity. One's intake of food is influenced by one's choice, location as well as cultural preferences. The Hindustani classical singers in the present study reported of avoiding certain foods like spicy or oily food as well as cold food/drinks. These are mostly based on their personal experiences with different foods and their effects.

Limitations

This survey was distributed online and hence only those singers with access to the internet could be included. The survey did not include questions on the participant's history of voice use and previous history of voice disorders. This information may have provided more insight into the experiences and practices of the individual respondents.

Future recommendations

Future studies need to be conducted involving face-to-face interviews to have a better understanding of the specific measures towards vocal health care. There is a need for methodologically valid studies for testing the efficacy of the home remedies for vocal health. One of the vocal measures reported by the singers was singing within vocal limits without causing any strain, further objective studies are needed to explore whether singers are actually singing without causing any strain. The long-term goal for this survey and the previous studies on Indian singers is to identify gaps in the care of professional singers and to create programs and protocols to improve their care. Vocal health care is still in its

infancy as a field in India and the need for more systematic programs, an increased number of trained voice professionals and an increase in awareness amongst singers about the resources available are all essential needs for improved healthcare.

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