

LARYNGEAL FINDINGS IN CHANT TALKERS

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ABSTRACT:

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Background: Religious officials are responsible for presiding over rituals, teaching the doctrines and practices of their respective religions/work, performing tasks as counseling, reciting daily prayers, teaching, singing and leading life cycle religious services, such as weddings during multiple religious services each day of every week. Unfortunately, they do not undergo voice assessment or ENT examination although their profession depends very much on their speaking voice and artistic voice.

Aim of the work: The aim of this study is to detect laryngeal changes among chant talkers who practice chanting more than 3 years for early diagnosis and proper intervention.

Patients and methods: This study included: I) Patient interview. II) Audio recording III) Laryngeal examination.

Results: This study was applied on 50 chanters with a mean age of 35.21. Only 42.6% of them received training before chanting, 52.5% received vocal hygiene advice, approximately 36% of the participants reported having a current voice disorder mostly voice fatigue but among them only 18% sought medical advice. Laryngeal problems found were mild laryngeal hyperemia (40%), mild free edge edema (60%), and moderate phonatory gap (46.7%).

Conclusions: This current cross-sectional study revealed the importance of vocal hygiene and voice care among chanters and provides valuable insights into voice disorders. Further investigations are needed to explore the reasons behind the underreporting of voice complaints and the barriers to seeking medical advice.

Keywords: Chanting – Chant talk - Choir- Laryngeal examination.

INTRODUCTION:

The chant in music is characterized by reciting many syllables on one continuous tone, creating a singing monotone. The words run continuously without stress or a change in prosody for the individual word segments. In singing, the legato is very similar to the chant we use in voice therapy. A common dictionary definition of legato is “smooth and connected with no break between tones.” The chant in therapy is characterized by an elevation of pitch, prolongation of vowels, lack of syllable stress, and an obvious softening of glottal attack⁽¹⁾.

The roles of religious officials vary. However, these professionals are responsible for presiding over rituals, teaching the doctrines and practices of their respective religions/work, performing tasks as counseling, reciting daily prayers, teaching, singing and leading life cycle religious services, such as weddings during multiple religious services each day of every week. Religious officials start their vocational training at high school ages without receiving formal voice training. Unfortunately, they do not undergo voice assessment or ENT examination although their profession

depends very much on their speaking voice and artistic voice⁽²⁾.

The use of chant in Christian worship continued to evolve over time, with different regions and religious orders developing their own unique styles of chant. One such example is the Anglican chant, which emerged in England during the 16th century. According to the book "The Music of the Anglican Rite" by Lionel Dakers, the Anglican chant was developed to incorporate English translations of the Psalms into worship, and is characterized by a simple, repetitive melody that is sung in a free rhythm, allowing for flexibility in the length of the text being chanted. Today, chant continues to be an important part of Christian worship, with various forms of chant being used in liturgy and devotional practices around the world⁽³⁾.

Currently, most churches have vocal groups, choirs and solo singers who are usually amateurs and develop this activity for personal satisfaction. Because they do not have specific preparation, many of them have complaints regarding vocal health. The main ones refer to difficulties in reaching high or low notes, shortness of breath to finish musical phrases, throat tenderness, and throat dryness. These complaints may be the result of lack of knowledge about vocal production, erroneous vocal classification, incorrect voice use and lack of vocal training regarding warm-up and cool-down techniques which emphasizes the importance of practicing singing lessons to promote the development of the entire vocal mechanism leading to a better quality of singing voice without effort⁽⁴⁾.

One method of primary prevention is voice training for professional voice users⁽⁵⁾. Although singing and acting professions often receive training in voice care and preservation, the vast majority of professional voice users, are unaware of how to maintain or improve their voice, which is

their greatest professional asset and communication tool⁽⁶⁾.

AIM OF THE WORK:

The aim of this study is to detect laryngeal findings among chant talkers who practice chanting more than 3 years.

PATIENTS AND METHODS:

This cross-sectional study was carried out at the Phoniatics Unit, Ain Shams university hospitals. Participants were selected conveniently from chanters from different churches.

Sample type and selection:

This study was conducted on 30 chanters, including those aged 20 to 40 years, with more than 3 years of regular practice (2-3 events per week, each event lasting on average 2-3 hour). The study excluded those with chronic respiratory tract problems, previous voice disorders, and those receiving voice therapy.

Methods:

Each participant in this study underwent the following assessment steps, as outlined in the voice assessment protocol⁽⁷⁾ structured and used by the Phoniatics Unit at Ain Shams University Hospitals.

1. Elementary Diagnostic Procedures:

A. Subject's interview:

- Personal Data: name, age and gender, education, occupation, residence, marital status and number of children.
- Professional activity characteristics (length of time doing chanting and frequency of the practice).
- Complaint and analysis of symptoms: Duration - onset – course.
- Phonasthenic symptoms (throat dryness, throat tenderness, frequent throat clearing

or difficulty in swallowing sticky throat mucous).

- Symptoms related to the larynx and to voice: breathing and airway patency, chewing and swallowing, digestion and hearing.
- History of upper respiratory tract infection, laryngeal, neck and other surgeries.
- Habits and situations damaging to the voice include smoking, excessive or faulty use of the voice, and harsh working environmental factors.
- Associated health problems: chronic cough, asthma, autoimmune diseases, and allergies.

B. Auditory Perceptual Assessment (APA) of voice:

This is a subjective evaluation of voice to evaluate the voice stressing on the overall grade of dysphonia. Following modified GRBAS scale⁽¹⁴⁾ : a 4-degree scale, as follows:

- Overall grade of dysphonia: (0) Normal, (1) slight, (2) moderate, (3) severe.
- Character (quality): strained- leaky-breathy- rough (irregular).
- Pitch: overall increase- decrease-diplophonia.
- Loudness: excessively loud- excessively soft- fluctuating.

2. Clinical Diagnostic Aids:

A. Augmentation and documentation of the glottic picture by laryngeal examination as follows:

Rigid Video-laryngoscopic examination using a rigid laryngeal endoscope with a 70° viewing angle was positioned in the oropharynx to allow a clear view of the vocal folds. The subjects underwent a conventional evaluation, which involved deep mouth breathing and effortless emission of sustained /ae/ vowel.

B. Documentation of the auditory perceptual assessment of voice:

This includes listening and describing the patient 's aligning voice by the clinicians. Voice recording was used to document the patient 's voice. Voice recording of the aligning voice of the patients was done in a sound-treated room using a digital recording, and a professional microphone. The microphone was fixed in front of the patients to lips distance at about 15 -20 cm.

The protocol of voice recording was explained to the patients before starting voice recording. The protocol of voice recording used at Phoniatics Unit, Ain Shams University includes the followings: patient's name, date of the day, reading a short passage/reciting an automatic speech for illiterates, spontaneous speech, counting 1 - 10, and sustained vowels /a/, /i/, /u/ for 3 seconds.

Statistical analysis:

The collected data was revised, coded, tabulated and introduced to a PC using Statistical package for Social Science (SPSS 25).

Descriptive statistics included:

1. Mean, Standard deviation (\pm SD) and range for parametric numerical data.
2. Frequency and percentage of non-numerical data.

Ethical Considerations:

Informed consent was obtained from all participants after being informed about the process and aim of the study as well as applicable objectives.

The protocol carried out in the study is an accepted part of the main routine clinical assessment of cases of voice disorders.

The principal investigators have kept individuals' data as private information safely.

The study protocol has been approved by the Ain-Shams Institute’s Ethical Committee of Human Research. M.S 150/2023

about 5 hours per day at work, had been chanting for 13 years on average, chanted 3 times per week on average, and chanted regularly but only 42.6% received training before practicing.

RESULTS:

A. Demographic data:

The participants' ages ranged from 20 to 65 years, with a mean age of about 35 years and a standard deviation of 10.

Nearly 36.1% reported having a current voice disorder and among them only 18% sought medical advice. 52.5% of the participants received vocal hygiene advice.

B. Voice-related Information:

Table (1) indicates that most participants were not working a job with high vocal demand, had a mean work duration of approximately 10 years, used their voice for

Most of the participants (98.4%) did not smoke, while most of them (72.1%) had dust exposure and more than half (57.4%) had noise exposure. Only 19.7% of them had current respiratory problems or surgery under general anesthesia.

Table 1: Voice-related Information

Vocal load and chanting experience		Percent
Work (occupation) with high vocal demand	Yes	45.9%
	No	54.1%
Work duration (years)	Range	1 - 30
	Mean ± SD	10.19 ± 7.53
Daily voice usage at work (hours)	Range	1 - 12
	Mean ± SD	4.88 ± 2.93
Duration of chanting (years)	Range	1-30
	Mean ± SD	13.13 ± 7.93
Frequency of chanting	Range	1-7
	Mean ± SD	3.24 ± 2.01
Regularity of chanting	Yes	82%
	No	18%
Vocal training before chanting	Yes	42.6%
	No	57.4%
History of voice disorders and management		Percent
Current voice disorder	Yes	36.1%
	No	63.9%
Seeking medical advice	Yes	18%
	No	82%
Vocal hygiene advice given	Yes	52.5%
	No	47.5%
Influencing factors		Percent
Smoking	Yes	1.6%
	No	98.4%
Dust exposure	Yes	72.1%
	No	27.9%
Noise exposure	Yes	57.4%
	No	42.6%
Current respiratory problems	Yes	19.7%
	No	80.3%
Surgery under general anesthesia	Yes	19.7%
	No	80.3%

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C. Analysis of the voice complaint:

Table (2) reveals that the most common symptom was voice fatigue, affecting 16 chanters (72.7%), followed by frequent throat

clearing, affecting 13 chanters (59.1%). The least common symptom was change of chanting voice, affecting only 5 chanters (22.7%).

Table 2: Analysis of the voice complaint

Symptom	Yes/No	Number (Percent)
Throat Dryness	Yes	10 (45.5%)
	No	12 (54.5%)
Voice fatigue	Yes	16 (72.7%)
	No	6 (27.3%)
Change of chanting voice	Yes	5 (22.7%)
	No	17 (77.3%)
Throat Pain	Yes	6 (27.3%)
	No	16 (72.7%)
Frequent Throat Clearing	Yes	13 (59.1%)
	No	9 (40.9%)
Foreign body sensation in the throat	Yes	7 (31.8%)
	No	15 (68.2%)

D. Descriptive results of the tools of assessment used in this study:

1. Results of the Auditory Perceptual Assessment (APA) of the voice by the modified GRBAS scale:

Most patients had dysphonia (66.7%), mainly mild degree (56.7%). Strained voice was the most prevalent (70%), followed by leaky voice (55%) and rough voice (45%) as shown in Table (3). No abnormality was detected regarding pitch or loudness.

Table 3: Auditory Perceptual Assessment (APA) of the voice by the modified GRBAS scale

Voice quality		Finding	Number (Percent)
Grade of dysphonia		No dysphonia	10 (33.3%)
		Mild degree	17 (56.7%)
		Moderate degree	3 (10%)
Character	Strained	Yes	14 (70.0%)
		No	6 (30%)
	Leaky	Yes	11 (55%)
		No	9 (45%)
	Rough (irregular)	Yes	9 (45%)
		No	11 (55%)

2. Results of laryngeal examination:

The most common findings were mild laryngeal hyperemia (40%), mild free edge edema (60%), and moderate phonatory gap

(46.7%). Most patients did not have Minimally associated pathological lesions (MAPLs) (70%), only nine had MAPLs, such as vocal fold polyp, Reinke's edema, or vocal fold nodules. This is shown in Table (4).

Table 4: Laryngeal examination findings

Laryngeal finding	Grading	Number (Percent)
Laryngeal hyperemia	Absent	3 (10%)
	Mild	12 (40%)
	Moderate	11 (36.7%)
	Severe	1 (3.3%)
	Very severe	3 (10%)

Free edge edema	Absent	2 (6.7%)
	Mild	18 (60%)
	Moderate	8 (26.7%)
	Severe	2 (6.7%)
Phonatory gap	Absent	4 (13.3%)
	Mild	12 (40%)
	Moderate	14 (46.7%)
Ventricular band hypertrophy	Absent	22 (73.3%)
	Mild	6 (20%)
	Moderate	2 (6.7%)
Ventricular band hyperadduction	Absent	29 (96.7%)
	Moderate	1 (3.3%)
Minimal-Associated Pathological Lesions (MAPLs)	Absent	21 (70%)
	Vocal fold polyp	6 (20%)
	Reinke's edema passing to polypoid degeneration	1 (3.3%)
	Early starting vocal fold nodules	2 (6.7%)

DISCUSSION:

This cross-sectional study shows that about 33% of participants are not engaged in vocally demanding occupations but still they encounter voice-related issues. This finding challenges the assumption that only those with high vocal demands experience voice problems. This finding is against another study done by *Zabret et al.*,⁽¹⁸⁾ that reported 35% of professional voice users work in the field of education so they lecture and carry out tutorial activities outside of working hours and this work-related voice overuse or abuse is an important cause for the occurrence and recurrence of vocal fold lesions.

Participants were asked about their own opinion of their daily voice demand and this was done also by *Behrman et al.*,⁽¹⁾ who divided the vocal demands into three groups: professional, high, and routine. People who sing, act, work in radio, or students majoring in vocal performance were in the professional group. People who had jobs like teaching, sales, technical support, or office work were in the high group. This group also included mothers of young children and people who had to talk over loud noises. People who said they did not use their voice much, such as

those who did not have to give presentations, talk a lot on the phone, or chat with hard of hearing people, were in the routine group. They found that their opinions of the patients' vocal demand, which they based on how the patients talked during the office visit and what they said about their work and hobbies, were mostly the same as what the patients thought about their own vocal demand.

This finding is likely influenced by these two factors: each person has a different capacity to cope with, adjust to, and recover from voice disorders, regardless of how they use their voice. Another is that using self-reported data and occupation as indicators of vocal load is inaccurate and introduces error in the measurement. A more precise way to measure vocal load is hard to implement in regular clinical settings.

Participants in this study had been chanting for an average of 13 years and on average, chanted 3 times per week. This long duration and regularity of chanting suggests a dedicated and consistent practice. This is similar to a study by *Hocevar-Boltezar*⁽⁹⁾ on priests who teach religious lessons from 1 to 26 hours per week; the mean was 8 hours. The priests estimated that they talk from 0.5 to 11 hours per day.

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This study found that only 42.6% of chanters received training before chanting. This is in agreement with study of *Sharma et al.*,⁽¹⁶⁾ revealing that no less than 60% of the chanters performed no vocal warm-up before singing while this result disagrees with *Iris et al.*, (2022)⁽¹⁰⁾ as vocal warm-up was clearly more represented, with half of the participants warming-up the voice prior to every singing performance and half of them warming-up sometimes.

This study revealed that approximately 36% of the participants reported having a current voice disorder. This finding is consistent with previous research by *Hocevar-Boltezar*⁽⁹⁾ that has also identified a high prevalence of voice disorders in Catholic priests in Slovenia as 85.6% of them had voice problems at some point in their careers and this is also in agreement with a study by *Sharma et al.*,⁽¹⁶⁾ who examined the vocal health of 148 church choir singers and found that 84% of the participants had two or more vocal symptoms sometimes or more often during or after chanting.

Surprisingly, a great proportion of participants (82%) did not seek medical advice despite experiencing voice complaints. This is also reported by *Chitguppi et al.*,⁽⁴⁾ who mentioned that among the subjects who reported at least one voice complaint, 18% of the professional voice users had sought medical care. This may be attributed to various factors, such as lack of awareness, perceived inconvenience, or underestimation of the severity of their symptoms. Another study by *Karulkar and Gunjawate*⁽¹¹⁾ revealed that the professionals tend to wait for some time before seeking help for treating voice problems and they try home remedies.

Interestingly, 52.5% of the participants received vocal hygiene advice. The advice typically includes recommendations on hydration, rest, and avoidance of harmful behaviors like smoking or excessive shouting. However, the fact that only about half of the chanters received this advice

suggests a gap in vocal health education. This finding is in agreement with a study by *Keerthiga and Kumaraswamy*⁽¹²⁾ showing that the knowledge on vocal health and voice hygiene practices is less among the spiritual chanters. While our findings disagree with *Büyükkatalay et al.*,⁽³⁾ who found that 79.4% of religious officials had voice hygiene knowledge. This knowledge and use of proper vocal technique could decrease voice fatigue and help in improving self-confidence before talking in public on subjects with such psychological burden.

This study found that voice fatigue is the most prevalent symptom among the chanters surveyed, affecting 72.7% of the sample. This could be due to the physical strain placed on the vocal folds and the surrounding muscles during chanting. This agrees with *Welham and Maclagan*⁽¹⁷⁾ who found that voice fatigue is one of the frequent complaints reported by most of professional voice users.

Interestingly, the least common symptom was a change in chanting voice. This could suggest that most chanters are able to maintain their vocal quality despite experiencing other vocal symptoms.

There is high prevalence of dysphonia among the participants (66.7%) but it is typically not severe in nature as 56.7% of participants were of a mild degree. Strained voice was found to be the most prevalent characteristic, affecting 70% of the patients. This could be indicative of the strain and stress that the vocal folds undergo, leading to the manifestation of dysphonia. Leaky voice was the second most common characteristic, observed in 55% of the patients. This could be due to weak closure of the vocal folds, leading to air leakage. Rough voice, characterized by irregular vocal fold vibrations, was the least common, observed in 45% of the patients. This might be due to less damage or irregularities in the vocal folds among our patient population. This is in accordance with a study by *Hansen and Thibeault*⁽⁸⁾ showing that there was a high

prevalence of self-reported dysphonia in professionals but this disagrees with *Kim*⁽¹³⁾ who reported that dysphonia was more severe in non-professionals.

Laryngeal problems were found among chanters, with the most common findings being mild laryngeal hyperemia (40%), mild free edge edema (60%), and moderate phonatory gap (46.7%). These findings are consistent with previous research by *Karulkar and Gunjawate*⁽¹¹⁾ that has identified similar voice problems among professional voice users and found that phonotrauma is extensive in professional voice users due to the cumulative effect of daily voice use and professional demands.

Interestingly, most participants did not have Minimal-Associated Pathological Lesions (MAPLs). This suggests that the voice problems experienced by chanters may be primarily functional in nature, rather than being caused by organic pathologies which was also reported by *Kim*⁽¹³⁾ who compared between self-reported voice problems in professional and non-professional voice users and reported that the most common voice problems in professionals were functional followed by organic. On the other hand, a study by *Nacci et al.*,⁽¹⁵⁾ done on a group of asymptomatic singing students found benign lesions, vocal nodules, and cysts in the vocal folds. Another study by *Franco and Andrus*⁽⁷⁾ found that one of the most common vocal fold lesions which occur in PVUS is a hemorrhagic polyp.

Recommendations:

Further research with larger sample size is needed to explore the underlying causes of the symptoms and to develop effective strategies for prevention and treatment. Also, to explore the reasons behind the underreporting of voice complaints and the barriers to seeking medical advice.

Longitudinal studies of singers would be more helpful in documenting changes in vocal function over time.

Conflict of interest:

No conflict of interest.

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نتائج الفحص الحنجري للمرتلين بالكنائس.

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المقدمة : إن مستخدمي الصوت المحترفين هم الأفراد الذين تعتمد مهنتهم كلياً أو جزئياً على استخدام الصوت. تحتاج هذه المهن إلى متطلبات صوتية عالية مما يؤدي إلى زيادة نسبة حدوث اضطرابات الصوت لديهم. تختلف أدوار المسؤولين الدينيين مثل الإشراف على الشعائر الدينية، تعليم العقائد والممارسات الخاصة بأديانهم، القيام بمهام مثل تقديم المشورة، تلاوة الصلوات اليومية، التعليم وتقديم خدمات دينية متعددة - مثل إقامة حفلات الزفاف- طوال أيام الأسبوع. ويبدأ المسؤولون الدينيون تدريبهم المهني في سن المدرسة الثانوية دون تلقي تدريب صوتي محترف. ولسوء الحظ، إنهم لا يخضعون لتقييم صوتي أو لفحص حنجري على الرغم من أن مهنتهم تعتمد إلى حد كبير على صوتهم أثناء التحدث و الترتيل.

الهدف من العمل : تهدف هذه الدراسة إلى تحديد أي اضطرابات بالصوت لدي ممارسي الترتيل الذين مارسوا الترتيل لمدة أكثر من ٣ سنوات دون تلقي أي تدريبات صوتية و ذلك لكشف أي اضطرابات بالصوت غير ملحوظة لديهم و تضمنت هذه الدراسة مرشحين تتراوح اعمارهم بين ٢٠ و ٤٠ عاما من كنائس مختلفة.

الحالات وطرق البحث : كانت هذه الدراسة عبارة عن دراسة مقطعية. تم اختيار ٣٠ مرتل من كنائس مختلفة و تم عمل تقييم عن طريق مقابلة الحالة و اجراء اتقييم السمعي الادراكي و المنظار الحنجري الغير مباشر.

النتائج : معظم المرتلين يعانون من اعراض وهن صوتي و هناك نسبة كبيرة من المرتلين يعانون من مشاكل بالصوت لكن لا يذهبون لرؤية طبيب و تقريبا نصف المرتلين كانوا قد حصلوا علي ارشادات صوتية من قبل و اظهر التقييم السمعي للمشاركين درجات من البحة الصوتية و باجراء التصوير الحنجري تبين وجود تغييرات مثل تورم الثنايا الصوتية و وجود علامات النهائية.

الخلاصة : توضح الدراسة اهمية نشر الوعي بين فئة المرتلين عن اهمية المتابعة الدورية مع طبيب امراض التخاطب للاطمئنان علي سلامة الحنجرة و اجراء اللازم في حالة وجود اي علة للحفاظ علي الصوت بأفضل جودة تلائم احتياجات هذه الفئة.