

# **VOCAL HYGIENE PRACTICES IN MIZO CHORAL SINGERS**

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University of Mysore, Mysore.



**ALL INDIA INSTITUTE OF SPEECH AND HEARING**

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**MAY, 2014.**

## CERTIFICATE

This is to certify that this dissertation entitled “**Vocal Hygiene Practices In Mizo Choral Singers**” is a bonafide work submitted in part fulfilment for the Degree of Master of Science (Speech Language Pathology) of the student (Registration No.: 12SLP032). This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any of the University for the award of any other Diploma or Degree.

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May, 2014

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## **CERTIFICATE**

This is to certify that this dissertation entitled “**Vocal Hygiene Practices In Mizo Choral Singers**” has been prepared under my supervision and guidance. It is also certified that this has not been submitted earlier in other University for the award of any Diploma or Degree.

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## DECLARATION

This is to certify that this dissertation entitled “**Vocal Hygiene Practices In Mizo Choral Singers**” is the result of my own study under the guidance of Dr.K.Yeshoda, Reader & HOD, Department of Clinical Services, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier in other University for the award of any Diploma or Degree.

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## CHAPTER 1

### Introduction

Regardless of culture, ethnic, geographical diversities humans love singing. Some sing just for the love of music while some sing to earn. Music is universal language and singing is one of its dimensions. Singing is an act which can be in the form of solo, duet or in a choir formed by a group of people who sing. Singing may be in an acappella form (without instrumental music) or with instrumental music. A singer may be trained or untrained regardless of the training received the goal of singing could still be achieved.

India is a country with variety in culture, language, music and cuisine. The nature of music also varies from Indian classical music to Western music. Not very much music is seen in all cultures whereas, in an ethnic group the native people sing almost on all occasions such as social events, wedding ceremonies and funerals. Such is the culture seen in Mizo, people living in Mizoram.

The Mizo are an ethnic group who live in the north-eastern region of India. The word 'Mizo' is derived from *mi* meaning 'people' and *zo* meaning 'hill terrain'. *Ram* means 'land' or 'country', thus 'Mizoram' means 'Land of the Hill People'. The land called Mizoram is sandwiched between Burma in the east and south and Bangladesh in the west and is bordered by the other Indian states of Assam and Manipur to the north and Tripura to the west.

## **Ancient Mizo and Music**

Each society has their own traditional music and some Indian cultures have very long history of music. But in case of Mizo culture, the history and its origin is still a mystery. This fact makes it difficult to trace the chronological sequence of the development of music in its culture. However, earlier developments of music were found between 1300-1400 AD during the settlement of Thantlang in Burma. In the late 15<sup>th</sup> century to 17<sup>th</sup> century AD greater development of songs were seen by the same settlement. Mostly the songs developed were songs on gong, war chants, chants of hunting and cradle songs (Thanmawia, 2007). The reformation in singing style was evident in 1893, when, two young English missionaries, J. H. Lorrain and F. W. Savidge started Sunday Schools for children and taught them to read, write and sing. Before the 'Mizo' became Christian, their singing was associated with drunken orgies. The music offered by the Welsh missionaries gave a refinement to their existing music leading them to harmonize with the sol-fa scale. So, today, most of the Mizo people are a music-maker, using instruments such as handmade bamboo flutes, drums and stringed instruments. They sing together everywhere, in homes, fields, roads and buses (Strom, 1980)

## **Music and Mizo after Christianity**

### *Music in society*

Music is a passion of the Mizo people. Singing is an activity that is always central to their hearts since the ancient times. It is an important and crucial aspect of their social and religious life. Every occasion of celebration (wedding ceremonies, social activities) and mourning has singing as its central act.

Mizo people have a custom in their culture wherein, when a family in a society loses their loved one, the elders gather at that family home from early night until the youth take over their turn late at night. These youths comfort the family by singing the whole night until the dawn breaks. They sit on a bench with no back support the whole night comforting the family of the departed. Regardless of the fatigue in their voices and physically, they have to keep on singing as it is more socially acceptable in fulfilling the reason they sing for. Deprivation of sleep, slouched posture (due to improper seating) and strain takes a toll the singers which is evident in their voice too. These youth who sing on such occasions also participate in the Church Choir.

#### *Music in Church*

After Christianity, the music of Mizo refined and included much more variations in terms of singing style and instruments used. The musical instruments refined from gongs, drums to hollow guitar, acoustic guitar, electronic guitar, piano, keyboards, drums, electronic drums. Before Christianity, the style of singing was very gentle, the tune of the songs were limited to low pitch range. After Christianity, the tune of the songs had much more variations in it as the songs being sung transits from the traditional Mizo song into the Western influenced hymn songs which have many variations in the musical notes itself. The songs sung by the choir include the traditional songs, translated Western hymns – minor and major chorus songs which has one to three octaves in the sung scale.

Every locality has its own church where choir singing is considered an act of worshipping the almighty. Children are engaged in singing as early as 4 years when they are enrolled in a Sunday school to worship God. As they grow into their youth,

children who are interested enrol themselves into the church choir. The church choir members are the youths whose age ranges between 14 to 40 years, though the strength of the members ranges from church to church varying from 50 to 150 members. These members receive minimal or no formal training in singing and the choral conductors are mostly self-trained conductors. The frequency of the practice ranges from 2 to 3 times per week and 2 to 4 hours with a break in between the practice sessions. This frequency increases during occasions of festivals.

### *Choral Singing*

Choral music exists in religious settings, school and community as well. There is a wide variety of styles and music services in religious settings. Choral singing goes by several different names (choir, chorus, chorale, ensemble, harmony, or part-singing), all meaning basically the same thing indicating that a number of people are singing together at the same time but on different musical lines. Choral music divides voices solely on the basis of vocal range. Choral music most commonly divides vocal parts into high and low voices within each sex (Soprano, Alto, tenor & bass - SATB). One group may sing the basic melody of the music (i.e. Soprano) while the other group sings the harmony (Alto, tenor & bass), which are complementary lines of music that make up the chords.

### *Vocal habits and singers*

Singing involves an opposite direction of energy flow of the breathing and the tone. That is, the flow of breath is taken inwardly while the tone is directed outwardly through the mouth and/or nose (Hixon, 2006). Benefits in singing are seen by optimal respiratory functions which maximize a singer's performance (Bunch, 1995). It also

involves an appropriate postural alignment which influence the voice production at all levels- respiratory, laryngeal and upper airway (Callaghan, 2000). A straighter alignment of the vertebral column and torso provides a better breath support for singing. Clear articulation and pronunciation during singing wins the whole purpose of art. A performer with poor pronunciation defeats the idea of the same (Bunch, 1995).

### *Exposure to irritants*

Any mucosal irritant can have detrimental effects in the delicate mechanism. Exposure to cold air and dry heat affects the mucosal secretion leading to reduced lubrication and a 'scratchy' voice and cough with tickling sensation (Sataloff, 1987). Allergies to dust and mold are common during performances and rehearsals in halls that have numerous curtains, backstage strappings and dressing rooms that are not cleaned thoroughly. Artificial fogs and smoke are often used while performing which are made of substances such as glycol-based products, oil-based products, organic chemicals and inorganic chemicals (Herman, & Rossol, 1997). Petroleum (oil-based) materials may cause serious lung problems and vegetable oils are used for making stage fog which may cause allergic reactions. Some organic substances are burnt in fog machines which are toxic if inhaled. Fragrances and dyes are often used for effects in theatre which causes allergy (Spandorfer, Curtiss, & Synder, 1995).

### *Smoke*

Smoking has detrimental effects on respiratory mucous causing erythema, mild edema and generalized inflammation throughout the vocal tract. Marijuana is supposed to have an irritating effect and the unfiltered smoke causing considerable

mucosal response (Sataloff, 1987). Smoking, apart from causing chronic irritation, can result in histological alterations in the epithelium of the vocal fold (Sataloff, 1980).

### *Drugs*

History of alcohol abuse may be suggestive of poor vocal technique. Many singers frequently take antihistamines to control “postnasal drip” or other symptoms which may result in decreased vocal cord lubrication, increased irritation and clearing of throat which leads to frequent coughing. Unsupervised use of diuretic drugs may result in dehydration and consequent mucosal dryness (Sataloff, 1987). Steroid inhalers used for a very long period of time may result in *Candida* laryngitis which may lead to atrophy of vocalis muscle (Watkin, & Ewanowski, 1985; Toogood, Jennings, Greenway, & Chuang, 1980). Cough suppressants (antitussives) have secondary drying effects on the vocal tract secretion as it often contains antihistamines and codein, a narcotic (Martin, 1988). Large amount consumption of ascorbic acid (Vitamin C) can cause irritation of stomach lining and aggravate gastroesophageal reflux laryngitis. Probably due to the mild diuretic effect, when consumed in large dose, in some patients, it may have a drying effect (Lawrence, 1978). Aspirin is known to contribute to vocal fold hemorrhages due to its anticoagulant properties (Sataloff, 1980). Using of other analgesics such as ibuprofen can cause vocal fold hemorrhage and as it has devastating effects on voice it is prohibited to be consumed by the laryngologist for professional voice users (Damste, 1963). Diazepam (Valium, Roche) and other medicines should be avoided as a means to reduce anxiety before performance as they have dangerous side effects to the

cardiopulmonary system and voice too. Self-medication must be avoided whenever possible and a professional voice user must be careful about the same (Birk, 2004).

### *Foods*

Milk and ice cream are said to increase the amount and viscosity of mucosal secretions and are often avoided by singers before performances. Chocolates are also presumed to have the same effects. Consumption of nuts may produce similar effects to those of milk products and chocolate, which causes irritation if aspirated. Highly spiced foods are known to be a direct mucosal irritant and also of reflux laryngitis. Coffee and other beverages which contain caffeine also cause gastric reflux and alter mucosal secretions and lead to frequent throat clearing in some people. Eating food in full stomach just before singing may result in reflux of gastric juice during abdominal muscle contraction and also interfering in abdominal support (Sataloff, 1987).

### *Reflux and voice*

There is a connection between vocal performers and reflux which is thought to be related to several physical and behavioral factors. Singing involves a significant abdominal contraction for the support for breathing which superimposes the impact of an exertion on reflux (Clark, Kraus, Sinclair, Castell, 1989). A few research done in a series of Italian singers demonstrated an increase in reflux issues during singing act which may be due to the decreased subglottal pressure that goes along with an a sudden and prolonged intra-abdominal pressure increase (Camarota, Elia, Cianci, Galli, Paolillo, Montalto, Gasbarrini , 2003). The reflux problem is reported to be often exacerbated by the performers when they consume large meals late in the evening after the performance (Naliboff, Mayer, Fass, 2004).

## *Sleep*

Literature shows that a good sleep is an essential factor for good vocal production. Deprivation of sleep is said to represent monotonic intonation and flattened voice quality and sleep disorders may affect rhythm, pitch, intensity and vocal quality (Harrison, & Horbe, 1997; Yiu & Chan, 2003). It has been reported that the body system functions are optimized when a person has an approximately 8.25 hours of sleep (Cauter, Marchand, Stickgold, Dinces, Caskadon, Krueger, 2001). Pamela, Harvey & Saxon (1997) study on 56 classical singers reported the consequences of sleep deprivation in voice were difficulty in breath support (82%), reduced vocal endurance/voice tiring easily (36%), huskiness/roughness to the voice (18%) and greater time needed for warm-up (8%). They also reported that the frequent impact of sleep deprivation on the total performance was a reduction in ability to focus and to concentrate (86%), increased frustration levels and irritation (37%).

## *Hydration*

Intake of liquids, water, is assumed to be a crucial aspect in the care and treatment of voice and is known that adequate hydration keeps enough fluids in the body system that enables proper functioning of the larynx which thereby maintains a healthy and unstrained vocal fold vibration (Moquin & Mazzeo, 2000; Murry & Rosen, 2003; Roy, Weinrich, Gray, Tanner, Toledo, Dove & Stemple., 2002; Sivasankar & Fisher, 2003; Timmermans, Vanderwegen, & De Bodt, 2005). Low intake of fluids may result in poor performance vocally because the dehydration in the vocal folds have effects like an increased phonatory subglottic pressure and voice



perturbation which further lead to phonotrauma (Sataloff, 1987; Solomon, Glaze, Arnold & Van Mersbergen, 2003; Verdolini-Marston, Sandage & Titze, 1994; Verdolini-Marston, Titze & Druker, 1990; Yu & Chan, 2003). This laryngeal dehydration was considered to have an increase in the viscosity of vocal folds which may decrease the vocal fold mobility (Verdolini-Marston, Titze & Fennel, 1994).

### *Vocal warm-up*

Regardless of a singing lesson, an individual practices or as with a choir, prior to stage performance, a vocal warm-up is considered by most people. But, an inappropriate warm-up using a poor technique only fatigues the voice by giving too much force to the air-flow and over-singing resulting in adverse effects on the voice. A warm-up involves both psychological as well as physiological warm-up (Barr, 2009).

### **Need for the study**

Literature regarding vocal hygiene/vocal habits is reported in professional voice users like teachers, musicians, radio announcers etc. But very minimal research is done in choral singers especially the untrained singers. As singing is close to the hearts of the people of Mizoram, and an integral part of their culture, it would be important to investigate whether the Mizo are aware about vocal practices necessary to maintain good voice. The results from this study will augment the existing knowledge and help in charting suitable sensitization programs for voice conservation in the Mizo population.

## **CHAPTER 2**

### **Review of literature**

Singing involves voice use in a precise, refined and controlled manner for extended periods of time. Pitch glides and transitions are common in singing along with precise resonance and articulation. Elite singers master these skills with years of training and practice but amateur singers do not have precise training. Carrying out the demands of singing without proper training or practise may result in misuse and abuse of voice resulting in varied voice problems. The effects of life style and environmental factors may also influence misuse and abuse of voice problems resulting in permanent vocal changes. Hence vocal hygiene and conservation play a major role in maintaining a good voice.

Vocal habits and hygiene play an important part in the conservation of voice quality especially for singing. Choral singing requires adequate knowledge about correct method of voice use and vocal habits and hygiene for performance. A study done by Teachy, Kahane and Beckford (1991) report of higher incidence of vocal problems such as hard glottal attacks, over-articulation, excessive loudness, throat clearing, over-participation in singing and improper breath support in untrained singers.

Tepe, Deutsch, Sampson, Lawless, Reilly and Sataloff (2002) carried out a pilot survey on vocal health in 129 young singers (3 to 25 years) and found that half of the singers had vocal difficulty and reported hoarseness in voice and one-third of the total singers had an incidence of straining and over singing. There was no evidence of difference seen in the vocal habits exhibited between singers who were trained and

untrained. Boominathan, Chandrasekhar, Nagarajan, Madraswala & Rajan (2008) did an evaluation study on vocal hygiene awareness program for professional voice users (Teachers) in which 65 teachers completed the same questionnaire twice (before and after education) and found that the post-test scores were 9% higher than the pre-test scores.

Boominathan, Rajendran, Nagarajan, Seethapathy, Gnanasekar, Muthukumaran (2008) did a survey on vocal abuse and vocal hygiene practices among different level professional voice users in India where a questionnaire regarding vocal abuse and vocal hygiene practices was administered to 400 voice professionals (singers, teachers, politicians and vendors). The results revealed politicians and vendors had the highest prevalence and frequency of voice problems. Politicians had highest prevalence of abusive non-vocal habits. About 84.3% of voice professionals considered that abusive (nonvocal) habits had a negative influence on voice. All subjects indulged in throat clearing, loud speaking/singing for long durations (abusive vocal habits).

Rajasudhakar, Pramoda, Yeshoda & Geetha (2011) checked the awareness about vocal hygiene in a group of professional voice users (prospective teachers) using a questionnaire which was administered before and after the awareness program. The results revealed that the average percent scores improved from 58% (pre-test) to 73% (post-test).

The review indicates there are a few studies done in singers and teachers regarding voice characteristics in these professionals. But studies investigating the vocal practices, vocal demands and vocal hygiene are scanty. Still, research with aims of investigating the domain of choral singing and characteristics of choral singers (which are considered untrained) are a very few. Vocal hygiene and vocal practices

and vocal demands in this considerably large group of singers is warranted to understand the professional vocal demands in these group of professional voice users. Choir singing is an important part of the Mizo culture and these individuals are professional voice users. Hence, the present study was planned to investigate the awareness regarding vocal practices and vocal hygiene in the Mizo choral singers.

Aims of the study are as follows,

- To investigate the general awareness of vocal practices and vocal hygiene in Mizo choral singers.
- To check the reliability of the questionnaire developed.

## CHAPTER 3

### Method

**Participants:** A total of 72 Mizo in the age range 21- 39 years (mean 27.24 years,  $\pm$  4.1 years) were recruited for the study. The participants who took part in choral singing in the churches of Aizawl city in the state of Mizoram were considered. They were chosen from church choir and informed consent was obtained from all. There were 33 males and 39 females in the study.

The participants were divided into four groups based on the type of voice they sung: soprano, contralto, tenor and bass. The details are as shown below:

Group I: Consisted of 20 female participants who sang in the soprano voice.

Group II: Consisted of 19 female participants who sang in the contralto voice.

Group III: Consisted of 17 male participants who sang in the tenor voice.

Group IV: Consisted of 16 male participants who sang in the bass voice.

### Inclusion Criteria

1. A choir singing experience of at least 2 years
2. Current members of any choir and actively performing with the choir group

**Procedures:** The study was conducted in three phases.

Phase I: Preparation of the questionnaire

A questionnaire was prepared by compiling information from existing questionnaires and vocal hygiene for singers and all the questions were open ended.

Modifications were done to suit the choir singers. The questionnaire addressed demographic details of the singers, general health and lifestyle, vocal habits, voice conservation and singing related habits.

#### Phase II: Validation of the questionnaire

The prepared questionnaire was given to 3 male Speech-Language Pathologists, who had more than 2 years of experience in the field of voice and its care to check for the validity. Suitable modifications were done based on the suggestions received. There were a total of 37 questions. All the questions were open-ended having a 5-point rating scale [0 = Never ; 1 = Rarely; 2 = Sometimes; 3= Frequently and 4 = Always] except for questions 6, 12, 32, 33, 34 and 35 which required the participants to answer in detail. The questionnaire had general health and lifestyle domain (total score = 48), vocal habits domain (total score = 56), voice conservation domain (total score = 24) and singing related domain (total score = 20) The questionnaire is shown in the Appendix.

#### Phase III: Administration of the questionnaire

The validated questionnaire was administered to the participants on an individual basis. They were instructed to read the questions carefully and circle the number from the rating scale which corresponds to their answer appropriately for each question and clarifications regarding the questions were answered while the administration was in process. Test- retest reliability was checked by re-administering the questionnaire to 10% of the participants after 2 weeks of the first administration.

**Analysis:** The frequency of vocal hygiene habits were calculated by summing the responses (score) of each questions across each domains and then the frequency of occurrence of that total score by the participants were calculated. These scores were further subjected to statistical analysis. The percentage of the vocal hygiene habits practiced by the participants and other descriptive analysis and non-parametric tests were done using SPSS 17.0 version.

## **CHAPTER 4**

### **Results**

The present study aimed at investigating the general awareness of vocal practices and vocal hygiene in Mizo choral singers and to check the reliability of the questionnaire developed.

#### **Analysis of Questionnaire**

The questionnaire consisted of demographic detail and 37 questions which were grouped into four domains as follows:

1. General health and life style (12 Questions)
2. Vocal habits ( 14 Questions)
3. Voice Conservation (6 Questions)
4. Singing related (5 Questions)

Question 6, 12, 32, 33, 34 and 35 required detailed answer and were not estimated for statistical analysis. The responses from the participant are briefed below.

All the female participants were secondary smokers and only 7 participants out of 33 male participants were secondary smokers. All most all participants sometimes experience change in their voice mainly during cold season with notreatment taken for it. Except for one participant who garglse with warm water at night and avoids dusty environment, all the rest of the participants take precautions to avoid these infections. Majority of the participants did not warm up before choral performance. The common warm-up exercise they employed includes taking deep breath and exhale, singing a



musical note, simply singing a song that has high notes and lip trill. Majority of the participants sometimes sing out of their limit range which is not often, mainly while singing in the choir. Very few practiced to improve their voice. Additionally, the frequency of vocal music they practiced ranged from once to thrice in a week and none of the participants were formally trained.

Based on the demographic detail, descriptive analysis was done for the number of years of experience the participants had in the choir and the results are in Table 4.1.

Table 4.1.

*Mean Of Years Of Experience And Frequency Of Years Of Experience*

Years of experience (mean)	Frequency of years of experience	
17 years	2-10 years	11-25 years
	60	12

### **Frequency of vocal hygiene practices**

Responses to questions for the four domains were calculated by summing the total score of each question for each participants which were then averaged and frequency was obtained. The following results were observed:

- I. General health and lifestyle: The frequency is calculated based on the total score for 72 participants.

Table 4.2.

*Frequency Table For General Health And Lifestyle*

Score	Frequency of occurrence
10	2
11	2
12	2
13	1
14	3
15	2
16	8
17	6
18	5
19	6
20	4
21	8
22	2
23	5
24	4
25	1
26	5
27	1
30	2
31	1
33	1
34	1

Table 4.2. depicts that the participants's general health and lifestyle scores range from 10 to 34 with scores 16 and 21 being the most frequently occurring total score.

On comparing these scores to the maximum obtainable score of 48, it can be interpreted that the participants scored less than 50 %.

II. Vocal Habits: The frequency is calculated based on the total score for 72 participants.

Table 4.3.

*Frequency Table For Vocal Habits*

Score	Frequency of occurrence
1	1
4	1
6	2
8	1
9	1
10	2
11	2
12	1
13	3
14	2
15	8
16	6
17	3
18	3
19	6
20	1
21	5

22	4
23	3
24	2
25	1
26	3
27	2
28	2
29	2
30	1
32	2
35	2

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Table 4.3. depicts that the participants’s vocal habits scores range from 1 to 35 with score 15 being the most frequently occurring total score. On comparing this score to the maximum obtainable score of 56, it can be interpreted that the participants scored less than 50 %.

II. Voice Conservation: The frequency is calculated based on the total score for 72 participants.

Table 4.4.

*Frequency Table For Voice Conservation*

Score	Frequency of occurrence
1	1
2	1
3	2
4	4
5	4
6	4
7	7
8	9
9	7
10	5
11	6
12	3
13	3
14	3
15	7
16	1
17	2
19	3

Table 4.4. depicts that the participants's voice conservation scores range from 1 to 19 with score 8 being the most frequently occurring total score. On comparing this

score to the maximum obtainable score of 24, it can be interpreted that the participants scored less than 50 %.

IV. Singing Related : The frequency is calculated based on the total score for 72 participants.

Table 4.5.

*Frequency Table For Singing Related*

Score	Frequency of occurrence
0	1
1	1
2	1
3	3
4	6
5	4
6	4
7	4
8	7
9	10
10	8
11	5
12	6
13	5
14	1
15	5
19	1

Table 4.5. depicts that the participants’s singing related scores range from 0 to 19 with score 9 being the most frequently occurring total score. On comparing this score to the maximum obtainable score of 20, it can be interpreted that the participants scored less than 50 %.

### **Comparison of frequency of vocal hygiene habits across the domains**

On comparison of the most frequent scores across the domains (Table 2-5), it was observed that the participants had fair general health and lifestyle and vocal habits but poor singing related habits and below average voice conservation habits.

### **Median, range, minimum and maximum response score of the four domains**

The median, range, minimum and maximum of total scores of each domain is represented in Table 4.6.

Table 4.6.

*Depicting Median, Range, Minimum And Maximum Score Of The Four Domains*

Domains (Total Score)	Median	Range	Minimum	Maximum
General Health & lifestyle	19.00	24	10	34
Vocal habits	18.50	34	1	35
Voice Conservation	9.00	18	1	19
Singing related	9.00	19	0	19

The median was maximum for general health and lifestyle (19.00), maximum range for vocal habits (34), minimum total score obtained for singing related domain (0) and maximum total score obtained for vocal habits (35).

### **Comparison of vocal habits exhibited and across the domains**

Pearson Chi-square was done to estimate the comparison of vocal hygiene practiced across the domains.

#### *General Health & lifestyle*

Table 4.7.

*Percentage For General Health And Lifestyle*

	Never (%)	Rarely (%)	Sometimes (%)	Frequently (%)	Always (%)
Soprano	0.0	5.0	40.0	40.0	15.0
Contralto	0.0	5.0	60.0	25.0	10.0
Tenor	0.0	0.0	10.0	65.0	25.0
Bass	5.0	10.0	30.0	35.0	10.0

Pearson Chi-square revealed  $X(63) = 55.766, p = 0.729$ . Table 4.7. depicts the percentage for general health and lifestyle and results showed that across the groups, participants from tenor group had the poorest general health and lifestyle awareness over the other groups which was followed by soprano, contralto and bass groups had the best general health and lifestyle awareness.



### *Vocal Habits*

Table 4.8.

#### *Percentage For Vocal Habits*

	Never (%)	Rarely (%)	Sometimes (%)	Frequently (%)	Always (%)
Soprano	30.0	35.0	35.0	0.0	0.0
Contralto	25.0	30.0	30.0	10.0	5.0
Tenor	10.0	25.0	40.0	20.0	5.0
Bass	20.0	20.0	30.0	30.0	0.0

Pearson Chi-square revealed  $X(81) = 98.862, p = 0.086$ . Table 4.8. depicts the percentage for vocal habits and results showed that across the groups, participants from tenor group had the poorest vocal habits awareness over the other groups which was followed by contralto, soprano and bass groups had the best vocal habit awareness.

### *Voice Conservation*

Table 4.9.

#### *Percentage For Voice Conservation*

	Never (%)	Rarely (%)	Sometimes (%)	Frequently (%)	Always (%)
Soprano	15.0	35.0	20.0	25.0	5.0
Contralto	10.0	25.0	25.0	15.0	25.0
Tenor	0.0	30.0	50.0	15.0	5.0
Bass	2.0	15.0	25.0	20.0	20.0

Pearson Chi-square revealed  $X(51) = 53.346, p = 0.834$ . Table 4.9. depicts the percentage for voice conservation and results showed that across the groups, participants from contralto group had the most awareness of how to conserve voice over the other groups which was followed by bass, soprano and tenor groups had the least awareness about how to conserve their voice.

*Singing Related*

Table 4.10.

*Percentage For Singing Related*

	Never (%)	Rarely (%)	Sometimes (%)	Frequently (%)	Always (%)
Soprano	35.0	10.0	5.0	40.0	10.0
Contralto	30.0	20.0	35.0	10.0	5.0
Tenor	30.0	15.0	20.0	20.0	15.0
Bass	25.0	25.0	25.0	5.0	20.0

Pearson Chi-square revealed  $X(48) = 46.200, p = 0.547$ . Table 4.10. depicts the percentage for singing related and results showed that across the groups, participants from bass group were most aware about singing related vocal hygiene practice over the other groups which was followed by tenor, soprano and contralto groups had the least awareness about the same.

**Correlation between number of years of experiences and the four domains**

Spearman’s correlation was carried out to check if there was a correlation between the number of years of experiences and the four domains. The results

indicated that there was a poor correlation between general health and lifestyle and number of years of experience ( $\rho = 0.327$ ,  $p = 0.005$ ). The correlation between vocal habits and number of years of experiences was also found to be poor ( $\rho = 0.407$ ,  $p = 0.000$ ). There was no correlation between the number of years of experiences and voice conservation (Spearman's coefficient,  $\rho = 0.056$ ,  $p = 0.642$ ) and for singing related domains (Spearman's coefficient,  $\rho = 0.127$ ,  $p = 0.288$ )

### **Significance level**

MANOVA was done to estimate the significance level of the vocal hygiene practice exhibited across the four domains. The results showed that there was no significance difference across the domains – in particular, general health and lifestyle domain [ $F(3,68) = 1.126$ ,  $p > 0.05$ ], vocal habits [ $F(3, 68) = 1.385$ ,  $p > 0.05$ ], voice conservation [ $F(3, 68) = 1.385$ ,  $p > 0.05$ ] and singing related habits [ $F(3,68) = .696$ ,  $p > 0.05$ ].

### **Test-retest Reliability:**

The test-retest reliability of the questionnaire was estimated by Kappa coefficient. The results estimated are shown in Table 4.11.

Table 4.11.

*Test-Retest Reliability Of The Questionnaire Developed*

Question Number	Kappa Coefficient (k)	Test-retest reliability
1	0.563	Poor
2	0.000	Poor
3	0.200	Poor
8	0.382	Poor
18	0.774	Good
20	0.079	Poor
24	0.806	Good
25	0.432	Poor
37	0.731	Good

The test-retest reliability was found to be in good agreement for questions 18, 24, 37 and poor agreement for questions 1, 2, 3, 8, 20, 25.

Due to symmetrical values obtained, kappa coefficient could not be computed for the following questions : 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 19, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36.

## **CHAPTER 5**

### **Discussion**

The aim of the study was to investigate the general awareness of vocal practices and vocal hygiene in Mizo choral singers and to check the reliability of the questionnaire developed. The results of the present study revealed that there was a poor awareness regarding positive vocal hygiene. There have been several studies done by various researchers in Carnatic singers and Hindustani singers and other related professional voice users. However, research investigating the awareness of vocal hygiene practices in the domain of choral singers (untrained) are quite scanty to support or oppose the results of the present study.

The population that was undertaken in the present study seemed to have a fair awareness about their general health and lifestyle. The participants were found to maintain quite healthy vocal habits which is in disagreement with study done by Teachy et al (1991) on 30 untrained professional singers using a questionnaire which revealed poor vocal habits such as hard glottal attacks, over-articulation, excessive loudness, throat clearing, over-participation in singing and improper breath support. This present study result is also in disagreement with a pilot survey study done by Tepe et al (2002) on vocal health in 129 young singers (3 to 25 years) using a questionnaire revealing that half of the singers had vocal difficulty and reported hoarseness in voice and one-third of the total singers had an incidence of straining and over singing. Present finding also showed disagreement with Boominathan et al (2008) study on 400 voice professionals which revealed that all the participants indulged in abusive vocal habits like throat clearing and loud speaking/singing for long durations.

However, the results showed they failed to follow a good voice conservation and had a poor awareness regarding singing related voice use. The reason for this may be the fact that almost all of the choir singers along with the conductors are not

formally trained in music. Due to this reason, knowledge about voice and its healthy usage, how to conserve the voice, voice warm-up exercises, the do's and don'ts before choral performances, posture and many other related issues are minimally understood by this population.

The vocal hygiene related behaviors across the groups were measured to see the habits practiced. There was difference seen among the groups although not statistically significant. The reason why one voice group had poorer scores over the other for every domain was difficult to delineate. However, assumptions can be made that a poor general health and lifestyle and vocal habits reflected by the tenor group (all male participants) can be secondary to the fact that they were involved in debilitating habits such as smoking, chewing tobacco, betel nuts and also were more vocal than females and therefore were more involved in vocal-related activities such as games and cheering a game. There was a relatively good voice conservation reflected by the contralto group (all female participants). Such a result may infer the fact that the voice they sing itself may have an effect in conserving the voice. The reason that can be assumed for the bass group (all male participants) in having the most positive singing related behavior is the experience in the choir as the voice group are always the individuals who are elder and have more number of years of experiences over the other voice group comparatively.

The results for number of years of experience correlation with the vocal hygiene related behaviors showed that there was a poor correlation for general health and lifestyle and vocal habits. This indicates that more number of years of experience in the choir does not account for maintaining a good general health and lifestyle and vocal

habits. No correlation was seen for voice conservation and singing related habits which indicates that the number of years of experience in the choir does not have effects on the two domains.

The present study is a preliminary attempt in the field of voice in the studied population and culture. The findings cannot be generalized to the Mizo population as participants are not drawn from all churches in Aizawl. The number of participants is not large enough to deliver generalization from the results obtained.

## CHAPTER 6

### Summary & Conclusion

The main purpose of this study was to know how aware are the Mizo choral singers are about vocal hygiene habits and what kind of habits do they practice. Another was to check how reliable was the questionnaire developed.

The nature of the present study was very explorative as it was a study that was never explored in the present population investigated. The present study employ questionnaire to arrive at the results. The questions were drawn from books, articles that mention about vocal hygiene tips and also from the observation nature of the studied population culture, lifestyle and the schedule and pattern of the majority choir followed. 72 participants from Mizo choirs from Aizawl city were selected randomly for the study.

The general health and lifestyle and vocal habits exhibit was found to be fair but the voice conservation and singing related behaviors were poor. The results across the different voices in comparison with the vocal hygiene behaviors were varied. There was no direct relationship between number of years of experience in the choir and the four domains.

#### **Clinical Implication:**

The results of the present study revealed the vocal demands of choir singers and the practiced vocal habits in choir singers. These results substantiates existing knowledge in the area of professional voice use. The need of preventive programs to sensitize choral/ choir singers regarding voice conservation is revealed. It



further provides a data base of choral singers as a separate group of professional voice users.

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## APPENDIX

### Questionnaire on “Vocal hygiene Practices in Mizo Choral Singers”.

Instruction: Kindly read the questions given below and indicate your choice by a circle on the number provided. The numbers correspond as : 0 = Never ; 1 = Rarely; 2 = Sometimes; 3= Frequently and 4 = Always. Your responses will provide us the insight to devise special assessment/ management options in Choral singers.

Name:

Age/Sex:

Years of experience in choir:

The voice you sing in the choir: Soprano/ Contralto/Tenor/ Bass

Name of choir currently participating in:

How often do you practice vocal music?

Are you formally trained in vocal music?

If yes, mention the type or scale and years of training?

---

---

#### **General health & Life style**

1. Do you eat spicy/hot/oily food?

0                                  1                                  2                                  3                                  4

2. Do you eat chocolate/ dairy products/ ice-cream?

0                                  1                                  2                                  3  
4

3. Do you consume tea/coffee/soda (coca-cola, pepsi, sprite, diet coke)?

0                      1                      2                      3  
4

4. Do you consume water after consumption of tea/coffee/soda/ ice-cream?

0                      1                      2                      3  
4

5. Do you consume alcohol?

0                      1                      2                      3  
4

6. Do you smoke or are you a secondary/ passive smoker?

0                      1                      2                      3  
4

(If you are a secondary smoker, please mention)

---

7. Do you chew beetle nut/ tobacco/ pan/ supari?

0                      1                      2                      3  
4

8. Do you use self-prescribed drugs for common illnesses, such as,common cold, fever?

0                      1                      2                      3  
4

9. Do you live in a noisy/dusty environment?

0                      1                      2                      3  
4

10. Do you live in a dusty/polluted environment?

0                      1                      2                      3  
4

11. Do you suffer from cold/ allergies ?



0                      1                      2                      3  
4

12. Do you have voice problem/change any time?

0                      1                      2                      3  
4

If yes, please mention when and whether treatment was done.

---

---

**Vocal habits**

13. Do you indulge in loud/ long/ continuous speaking/singing?

0                      1                      2                      3  
4

14. Do you speak/sing in noisy/dusty/smoky environments?

0                      1                      2                      3  
4

15. Do you speak/sing in presence of competing noise, such as, TV/ music system/  
kitchen gadgets?

0                      1                      2                      3  
4

16. Do you speak/sing when you have cold/sore throat?

0                      1                      2                      3  
4

17. Do you indulge in excessive talking/screaming/yelling at home?

0                      1                      2                      3  
4

18. Do you speak excessively over a phone?

4            0                            1                            2                            3

19. Do you clear your throat frequently?

0                            1                            2                            3  
4

20. Do you indulge in loud whisper?

0                            1                            2                            3  
4

21. Do you continue singing with a fatigued voice?

0                            1                            2                            3  
4

22. Do you use voice to discipline children at home?

0                            1                            2                            3  
4

23. Do you have a habit of making funny noise/ mimicking others voice?

0                            1                            2                            3  
4

24. Do you participate in choral performance on empty stomach?

0                            1                            2                            3  
4

25. Do you often feel breathless/ choking sensation while singing?

0                            1                            2                            3  
4

26. Do you continue singing even when you have difficulty in sustaining musical notes?

0                      1                      2                      3  
4

**Voice conservation**

27. Do you drink at least 8-10 glasses of water a day?

0                      1                      2                      3  
4

28. Do you avoid speaking in dusty/smoky/noisy environment?

0                      1                      2                      3  
4

29. Do you remain silent/ quiet after continuous speaking (singing/singing practice) in a day?

0                      1                      2                      3  
4

30. Do you avoid speaking when you have common cold/ throat infections, fever?

0                      1                      2                      3  
4

31. Do you take precautions to avoid frequent ear/ nose/ throat infections?

0                      1                      2                      3  
4

If yes, explain:

---

32. Do you sleep early the previous night of choral performance?

0                      1                      2                      3  
4

**Singing-related**

33. Do you practice vocal/ voice warm-up before choral performance?

0                                  1                                  2                                  3  
4

If yes, explain: \_\_\_\_\_

34. Do you sing in a voice that is out of your normal limit/ range?

0                                  1                                  2                                  3  
4

If yes, how often do you sing out of your normal range:

\_\_\_\_\_

35. Do you practice any vocal exercise to project/improve your voice?

0                                  1                                  2                                  3  
4

If yes, explain: \_\_\_\_\_

36. Do you have an adequate time gap between your meal and choral performance?

0                                  1                                  2                                  3  
4

37. Do you maintain proper posture while singing?

0                                  1                                  2                                  3  
4

*We appreciate your time and effort in participating in this study. Thank you!*