

UNIVERSITY OF EDUCATION WINNEBA

AN INVESTIGATION OF THE PREVALENCE OF VOICE PROBLEMS AMONG  
TEACHERS IN THE BEKWAI MUNICIPALITY, ASHANTI REGION.



ATTA OWUSU BOATENG

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TEACHERS IN THE BEKWAI MUNICIPALITY, ASHANTI REGION.

ATTA OWUSU BOATING



**A Dissertation in the Department of Educational Leadership, Faculty of Education  
and Communication Sciences, submitted to the School of Graduate Studies,  
University of Education, Winneba in partial fulfillment of requirements for award  
of the Master of Arts (Educational Leadership) degree**

DECEMBER, 2020

## DECLARATION

### STUDENT'S DECLARATION

I, ATTA OWUSU BOATING, declare that this project report, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE.....

DATE.....

### SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of project report as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. KOFI ASIAMAH YEBOAH

SIGNATURE.....

DATE.....

## **DEDICATION**

This dissertation is dedicated to my father, Barimaba Owusu Boateng, the occupant of Twafo Stool in the “Adumasaman” Traditional Council, who has been my source of inspiration, my supervisor and my wife for her, Mrs. Mabel Owusu Boateng for her support in diverse ways including prayers and encouragement that has supported me to reach this far.



## ACKNOWLEDGMENT

First and foremost, I thank God who is the source of my knowledge, wisdom and strength with which I am able to accomplish this work.

Secondly, I would like to extend my heartfelt acknowledgment to the management of Ghana Education Service (GES) in the Bekwai Municipality for the assistance I received from them.

I am also grateful to my supervisor Dr. Kofi Asiamah Yeboah for his support and guidance. I also thank the Department of Educational Leadership lectures and all staff. May God richly bless you all.



## TABLE OF CONTENT

DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGMENT	v
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
ABSTRACT	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem	3
1.3 Purpose of the Study	5
1.4 Objectives of the Study	5
1.5 Research Questions	5
1.6 Significance of the Study	6
1.7 Limitations of the Study	6
1.8 Delimitations of the Study	6
1.9 Chapter Outline	7
CHAPTER TWO: LITERATURE REVIEW	8
2.0 Introduction	8
2.1 Overview of Voice Functioning and Disorders	8
2.2 Defining Voice Disorder	9



2.3 Early Signs of Voice Disorders	10
2.4 Voice Disorders in Teachers	12
2.5 Vocal Loading	15
2.6 Environmental factors associated with vocal loading	16
2.7 Health-related factors	17
2.8 Stress-related Factors	18
2.8 Risk Factors for the Development of Voice Problems in Teachers	19
2.9 Effects of Voice Problem in Teachers and Preventive Measures	21
CHAPTER THREE: RESEARCH METHODOLOGY	23
3.0 Introduction	24
3.1 Research Design	24
3.2 Study Area	24
3.3 Study Population	25
3.4 Sampling Techniques	26
3.5 Data Collection Procedure	26
3.6 Data Collection Instrument	27
3.7 Ethical Consideration	28
3.8 Data Analysis Procedure	28
CHAPTER FOUR: RESULTS AND DISCUSSION	29
4.0 Introduction	29
4.8 Association between Lifestyle Factors and Voice Problem	40
4.9 Association between Teaching Activities and Voice Disorder	42
4.10 Level of Knowledge and Awareness of Voice Problem	43



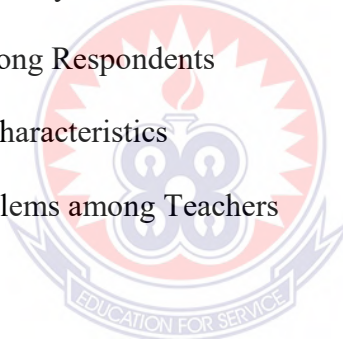
4.11 Work Environment Characteristics	45
4.12 Adverse Effects of Voice Problems among Teachers	47
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	49
5.0 Introduction	50
5.1 Summary of Findings	50
5.2 Conclusions	52
5.3 Recommendations	53
5.4 Suggestions for Future Research Work	53
REFERENCES	54
QUESTIONNAIRE	57





## LIST OF TABLES

<b>TABLE</b>	<b>PAGE</b>
4.1: Gender of the Respondents	29
4.2: Age Group of Respondents	30
4.3: The Marital Status of Respondents	31
4.4: Educational Background of Respondents	32
4.5: Standard Level Taught by Respondents	33
4.6: Distribution of Voice Problem among Respondents	35
4.7: Voice Problem Symptoms Distribution	38
4.8: Association between Lifestyle Factors and Voice Problem	40
4.9: Job Characteristics among Respondents	42
4.10: Work Environment Characteristics	45
4.11: Effects of Voice Problems among Teachers	47



## LIST OF FIGURES

<b>FIGURE</b>	<b>PAGE</b>
4.2 Age Group of Respondents	30
4.3 Marital Status of Respondents	31
4.4 Educational Background of Respondents	32
4.5 Standard Level Taught by Respondents	33
4.7 Voice Problem Symptoms Distribution	37
4.1 Socio-Demographic Characteristics of Respondents	29
4.6 Prevalence of Voice Problem among Teachers	34



## ABSTRACT

Teachers face one of the highest demands of any professional group to use their voices at work. Thus, they are at higher risk of developing voice problem than the general population. The consequences of voice disorder may have impact on teacher's social and professional life as well as their mental, physical and emotional state and their ability to communicate. The objective of this study was to determine the prevalence of voice disorder and the relationship between voice disorder with associated risk factors such as teaching activities and lifestyle factors among teachers in Bekwai Municipality. A cross sectional study design was used for this study. A total of 100 full-time school teachers were invited to participate in the study. Data were collected through a self-administered questionnaire addressing the prevalence of voice disorder and potential risk factors. Descriptive analysis and chi-square test was used to measure the relationship between voice disorder and associated risk factors. Statistical test was used to measure the relationship between voice disorder and associated risk factors. The response rate for this study was 80% (80/100). The study found that the prevalence of voice disorder among teachers in Bekwai Municipality was 28.75%. Teachers (1.25%) sought medical care and eventually 47.5% had missed at least 1 day of work because of voice problems. This study strongly recommends that voice education course should be included into the new teacher training program that would provide basic knowledge about normal voice mechanism operation, voice disorders, their possible causes, and prevention.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

The human voice is a complex and powerful communication tool. One of the basic roles of the human voice is to provide the major sound source for speech and singing, through vocal fold vibration and vocal tract resonance. In addition to conveying thoughts, (the pivotal role of voice) the voice has other important roles in human daily life (Colton, Casper, & Leonard, 2011). By varying pitch, loudness, quality, resonance, and speech rhythm and rate, the voice produces music and can be used to express emotion, mood, persuade or dissuade, influence the emotional state of others, command/get attention, attract or repel people, and communicate the subtleties/refinements of meaning and intention. In addition, considerable information about a speaker's characteristics can be acquired from the voice such as the speaker's sex, age, personality, attitudes, social status and physical and psychological health (Colton et al., 2011).

Voice problems are associated with a number of symptoms and signs (Colton et al., 2011). Common symptoms reported by speakers with voice difficulties include changes in voice quality, pitch, loudness and resonance. Individuals with voice problems may also report vocal fatigue, pain, throat discomfort, increased vocal effort and/or other negative sensations related to voice use. The signs of voice problem can be seen as perceptual, acoustic, aerodynamic and physiological changes in voice function (Colton et al., 2011).

Voice problems can affect work capacity in professions with heavy voice loading such as teaching. The voice is the main tool for teaching work and needs to be effective and flexible in a wide range of circumstances and, for the majority, almost every day of the week. Teaching is a stressful profession (Naghieh, Montgomery, Bonell, Thompson, & Aber, 2015) with high work load, heavy vocal demands, and few periods of voice rest. In addition, teachers often work in environments with poor acoustic and air quality. There is evidence that teachers have a higher risk of developing voice disorders and other vocal problems than other occupations and the general population (Van Houtte, Claeys, Wuyts & Van Lierde, 2011).

Voice disorders in teachers may lead to absence from work, lost income, changes in teaching style and quality, prolonged rehabilitation periods, and in more severe cases, the teacher with a voice disorder may need to change profession and face early career termination (Van Houtte, et al., 2011). Furthermore, there is evidence that students' learning is also affected by their teacher's unhealthy voice (Lyberg-Ahlander, Rydell, & Lofqvist, 2011).

There are several challenges facing education delivery in Ghana. One of such problems is poor classroom acoustics. In particular, classroom acoustics is a very important aspect of the learning environment but it is often neglected. About sixty percent of activities in the classroom involve spoken language or verbal communication between the teachers and school children or between children themselves. For ideal academic achievement, the accurate transmission of acoustical information in a classroom is crucial. There is therefore the need to have good acoustic environments that support speech intelligibility (Decor Systems, 2017).

Poor acoustic environment can deter a child's ability to hear and learn. Excessive reverberation and ambient noise can affect the educational performance and achievement of children with impaired hearing and those with normal hearing (Knecht, Nelson, Whitelaw, & Feth, 2002). Both children with or without learning difficulties and hearing disability are affected by poor classroom acoustics environment (Knecht et al., 2002)

Noise in the environment creates nuisance and stress. In schools, noise exposure is often at a high risk level. According to Sundaravadhanan, Selvarajan, & McPherson (2017), noise in schools can be grouped into two broad types; internal and external noise. Sources of internal noise include student conversation, desks movement, humming of lights, ceiling or wall fans while external noise result from road traffic, lawn mowers, birds, nearby playground and construction sites. These internal and external noises add up to the background noise in a classroom setting which affects speech intelligibility.

## **1.2 Statement of the Problem**

Voice problems in teachers have been the focus of a large number of studies in the occupational voice use area. It is well documented that teachers are at greater risks of developing voice problems than the general population and other professional groups (Behlau et al., 2012). It is estimated that 19% to 33% of teachers report frequent voice problems during their teaching career, around 20% to 25% during a year interval (Charn & Mok, 2012), and prevalence is 11% to 13% (Behlau et al., 2012). The voice is the teacher's main tool for their work, thus any voice problem may negatively impact teachers' physical, emotional, social and economic status.

Voice health problems are considered as one of the important occupational hazards affecting school teachers. Teachers need an effective functioning of the phonatory system for the exercise of their profession. The phonatory dysfunctions that develop and exacerbate in the course of their activity manifest as symptoms of voice disorders. In the process of teaching, certain conditions such as: excessive hour load spent on direct activities with students, intensive use of loud voice as a resource in noisy classroom, deficient acoustics, ventilation and aeration in the classrooms and the exaggerated number of students in the classroom (Akinbode, Lamk, Ayres, & Sadhra, 2014), exist that trigger disorders in the phonatory system especially in developing countries like Ghana. Demographic variables like gender and age have been considered to be possible risk factors for the development of voice disorders (Behlau et al., 2012; Van Houtte et al., 2011).

There has been an increasing media focus on the non-optimal sound environment in schools. Conversely the focus has been on the listeners and the sound environment in general, not so much on teachers' voice use and the consequences of vocal problems.

However, although much is known about teachers' voices and voice use, only a few studies such as (Akinbode et al., 2014 Behlau et al., 2012; Van Houtte et al., 2011) have taken into account the teachers' voice. Thus, very little evidence does exist on the effect of voice problems among teachers in Bekwai Municipality, and Ghana in general. The study therefore aims to fill this gap by examining the prevalence of voice problems among teachers in Bekwai Municipality.

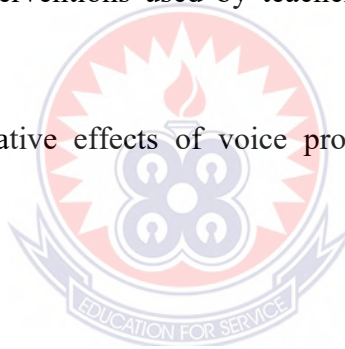
### **1.3 Purpose of the Study**

The study seeks to investigate the prevalence of voice problems among teachers in the Bekwai Municipality, and especially the risk factors associated with voice problem.

### **1.4 Objectives of the Study**

The main objective of this study is to investigate the prevalence of voice problems among teachers. The specific objectives are to:

1. To determine the risk factors for occupational voice problems among teachers in Bekwai Municipality.
2. To verify early interventions used by teachers with voice problems in Bekwai Municipality.
3. To assess the negative effects of voice problems among teachers in Bekwai Municipality.



### **1.5 Research Questions**

In relation to the above research objectives, the questions of this study are:

1. What are the risk factors for occupational voice problems among teachers in Bekwai Municipality?
2. What early interventions are used by teachers with voice problems in Bekwai Municipality?
3. What are the negative effects of voice problems among teachers in Bekwai Municipality?



## **1.6 Significance of the Study**

- This study will be of interest to academicians and future researchers who will be undertaking other researches related to this. This is because the study will increase their knowledge on the prevalence of voice problems among teachers and provide the necessary information to be incorporated into their work.
- The recommendations of the study will be of importance to the management of Ghana Education Service (GES) in Bekwai Municipality because they will point out ways of improving the quality of the teaching environment.
- The study will also add to the existing knowledge.

## **1.7 Limitations of the Study**

Small, inadequately selected populations, lack of clear criteria for the presence of voice problem, reliance on subjective and perceptive data (without the support of instrumental data) and not using comparison groups have limited this study. Also, some of the respondents did not return their questionnaire since it touches on their operational performance

## **1.8 Delimitations of the Study**

There are a number of delimitations in this study. Firstly, the study is delimited to only 100 respondents in terms of size and composition. Secondly, the data collection was delimited to only within the Bekwai Municipality, which may fail to represent the actual scenario of the whole country.

## 1.9 Chapter Outline

The research project is organized into five chapters. The introductory part is chapter one. It deals with background information on the topic, the problem statement, research objectives, and significance of the study, research questions, limitations and delimitations.

Chapter two is a review of the relevant literature of the study. Some of the notable areas reviewed included overview of voice functioning and disorder, defining voice disorder, early signs of voice disorders, voice disorders in teachers, risks factors for the development of voice disorders in teachers, and effects of voice disorders in teachers and preventive measures.

Chapter three is the methodology of the study. It consists of research design, target population, sampling techniques, sampling procedures, data collection instrument, ethical consideration and data processing and mode of analysis.

Chapter four presents the results of the study through an analysis of the data from the field survey and discussing the findings from the study.

Finally, the summary, conclusions, recommendations, limitations and suggestions for future research work are presented in chapter five.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter presents literature related to the study. The section focused on; overview of the voice function and disorder, defining voice disorder, and early signs of voice disorder. The rest are risks factors for the development of voice problems in teachers as well as the effects of voice problems among teachers and preventive measures in Bekwai Municipality.

#### **2.1 Overview of Voice Functioning and Disorders**

In order to understand the effects of a disordered voice, one must first have an adequate understanding of how the voice functions under normal circumstances, and the ways in which voice disorder manifests itself. Speech requires four main systems: respiration, phonation (voice), resonance, and articulation. Voice, or phonation, is the major source of sound in speech. It does not refer to aspects of speech controlled by movement of the tongue, jaw, or lips. Rather, voice provides the source of the sound, which is then modified by the structures above the larynx (Stemple, Glaze & Klaben, 2000).

Voice is produced by movement of the vocal folds in the larynx. Air pressure from the lungs builds up below the vocal folds, then is forced through, causing the vocal folds to vibrate rapidly. This vibration is perceived as pitch; the faster the frequency of vibratory cycles, the higher the pitch (Stemple et al., 2000). Overuse and misuse of the vocal mechanism can lead to physiological changes in the vocal folds. These

physiological changes can include fatigued muscles, pathology such as nodules or polyps, and/or muscle tension. These physiological changes can connect to a variety of symptoms, including, but not limited to hoarseness, decreased pitch control, decreased volume control, breathiness, increased effort, and/or discomfort (Stemple et al., 2000).

## **2.2 Defining Voice Disorder**

In previous research, there has been remarkable inconsistency in defining what constitutes a voice disorder. Three key sources of inconsistency appear to be (1) the severity that the condition needs to reach before a voice disorder is diagnosed, (2) anatomical and physiological evidence of laryngeal dysfunction, and (3) the relative importance of clients, clinicians, and society in their perceptions of a deviation from typical or appropriate vocal sound. It is not difficult to find several examples of how researchers vary in their definitions of voice disorder. In the study by Verdolini & Ramig (2001), voice disorder was defined as "a condition of sufficient concern for the bearer to report it, register functional disruption because of it, and/or seek treatment because of it".

Roy et al. (2004) defined voice disorder as "any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication,".

Stemple et al. (2004) provide three possible definitions, each with its own criteria. One definition describes the speaker's voice differing from the voices of others within their culture, age range, etc. The second states that a voice disorder may be present when deviant characteristics of voice draw attention to the speaker. Stemple's third definition describes both physical and functional aspects of voice, suggesting that a voice disorder

may be present when there are problems with the structure, the function, or both, of the laryngeal mechanism.

It is likely that researchers differ in their definitions of voice disorder partly because the demands of their individual studies vary. Pitch range is often included as an important determinant of vocal problems in studies of singers (Sandage & Emerich, 2003). This is because professional singers rely upon their particular pitch range, and even slight changes in this pitch range can cause considerable difficulty in vocal performance. The concept of an operational definition is important in approaching these differences across studies (Portney & Watkins, 1993). An operational definition specifies how a phenomenon is identified for the purpose of a particular study. Operational definitions clarify how conditions and other variables were determined in a detailed manner. This process allows a better understanding of how the study was conducted and how it might be replicated. In contrast, a conceptual definition corresponds closely to a dictionary definition, conveying general characteristics that are likely to be agreed upon by large numbers of people. Although the differences across studies in prevalence of voice disorders might first appear to be disagreement over how many individuals are identified with a conceptual definition, it is likely that differences in operational definitions explain the majority of variation.

### **2.3 Early Signs of Voice Disorders**

While vocal overuse may lead to severe disorders such as aphonia, subtle problems may result as well. One subtle form of voice disorder is referred to as "vocal fatigue" (Welham & Maclagan, 2003). Vocal fatigue has been defined as a "negative

vocal adaptation that occurs as a consequence of prolonged voice use" (Welham & Maclagan, 2003). This negative adaptation may be associated with perceptual differences, such as voice quality, range in pitch and amplitude, and the level of effort required to phonate. It may also cause physical changes by affecting tension and comfort of the vocal mechanism, diminishing the control thereof, or changing respiratory support. Several researchers have attempted to induce vocal fatigue in order to study its effects (e.g., Welham & Maclagan, 2003). Unfortunately, the value of these studies in understanding vocal fatigue is questionable. Welham and Maclagan suggested that lack of success could be attributed to the studies' "artificiality" (Welham & Maclagan, 2003). That is, subjects were not required to participate in vocal loading tasks for a long enough period of time, and/or were not in a realistic situation with multiple factors affecting the vocal mechanism.

Vocal fatigue may be considered a precursor to, or a mild form of voice disorder. Symptoms of vocal fatigue closely resemble other descriptions of voice disorder which include hoarseness, change in voice quality after short use, difficulty projecting voice, discomfort, and increased speech effort (Roy et al., 2004). At the first signs of vocal fatigue, speakers could take measures to minimize voice use (if possible), amplify their voice electronically, or change the speaking environment to reduce the demands for loudness. As such, recognition of vocal fatigue could help to avoid later voice problems, increasing success and productivity among heavy occupational voice users.

## 2.4 Voice Disorders in Teachers

The prevalence of voice disorders has often been examined among individuals who rely on their voice for their profession. In particular, teachers have been the focus of many studies (Kosztyla-Hojna et al., 2004; Roy et al., 2004; Roy et al., 2003; Verdolini & Ramig, 2001). The prevalence of voice disorders is significantly higher among teachers than non-teacher professionals. Verdolini & Ramig (2001) estimated that 40% of U.S. teachers experience hoarseness, and the same study reported that teaching adversely affects the voices of teachers (Verdolini & Ramig, 2001). Other studies range from a prevalence of voice disorders in teachers of 20% to 50% (McCabe & Titze, 2002). In the largest study of its kind, Roy et al. (2004) randomly surveyed by telephone 1,243 teachers and 1,279 non teachers in Utah and Iowa. One of the research questions from the study was whether voice disorders were more prevalent among teachers than other professionals in non-teaching professions. Symptoms of these voice disorders included hoarseness, change in voice quality after short use, trouble speaking or singing softly, difficulty projecting voice, discomfort, loss of singing range, monotone voice, speech requiring effort, and bitter or acid taste. It was found that 11 % of teachers claimed to have a voice disorder during the survey, compared to 6.2% of non-teachers, which was shown to be statistically significant with a Chi-Square analysis. It was also found that teachers had a significantly higher prevalence of voice disorders over their lifetime compared to non-teachers (57.7% and 28.8%, respectively). There was no significant difference between the Utah and Iowa sample in voice disorder prevalence.

Roy et al. also compared the two groups, by questionnaire, according to a variety of previously suspected risk factors (such as gender, age, alcohol use, or tobacco use),

and also according to history of voice disorder. It was found that women have a higher prevalence of voice disorders over their lifetime, when compared to men, and a higher prevalence of chronic (lasting greater than four weeks) voice disorders. Voice disorders were also reported more around middle-age (age 40 to 59) and were associated with a number of health-related issues including colds, asthma, allergies, sinus and infection.

Vocal disorder has an impact on a teacher's ability to teach. In a study by Smith et al. (1997), over 20% of teachers had missed one or more days of work in the previous year because of voice-related issues. In contrast, almost no voice-related absences were reported by nonteachers (Roy et al., 2004; Verdolini & Ramig, 2001). Smith et al. also found that greater than one-third of the teachers surveyed indicated that their voices did not work as they would like it to more than five days a year. Additionally, 39% of teachers surveyed stated that they reduced the number of activities because of their voice-related difficulties (Roy et al., 2004).

One issue teachers are forced to endure in the workplace is increased vocal intensity in the presence of background noise in the classroom. The recommended upper limit of ambient noise in an unoccupied classroom is 30-40 dB (Jonsdottir, 2002). The American Speech-Language-Hearing Association (ASHA) recommends that background noise not exceed 35 dB in order for speech to be intelligible. However, most classrooms have an ambient noise level of 50 dB (Jonsdottir, 2002).). An acoustic analysis of U.K. classrooms found an average noise level of 77.3 dB when the children were working (Jonsdottir, 2002). Such high levels of background noise, in combination with speakers increasing their intensity in loud environments could have an effect on the prevalence of vocal disorder in the teaching population. Because teachers reportedly speak for over six



hours per school day (Anderson, 2003), in less than optimal conditions, it is no surprise that they are at high risk for vocal disorders.

It is possible that other factors may have influenced the high prevalence of voice disorders in teachers in past studies. Past studies have suggested that women are at a higher risk for voice disorders than men. Earlier studies of vocal problems in teachers have included more women than men, presumably reflecting demographics of teachers in the population (Kostyla-Hojna et al., 2004; Roy et al., 2004; Yiu, 2002). This demographic difference could partially account for the high incidence of voice disorders in teachers.

Several medical conditions are also associated with voice disorders, as noted above. These include common illnesses such as infections, colds, and influenza, which are common in schools. These illnesses can lead to inflammation and irritation of the vocal folds and surrounding structures of the larynx (Colton et al., 2011). As such, common illnesses in schools might also play a role in creating a high risk environment for teachers.

The negative impact of poor vocal quality on teachers can also be measured in monetary value. Based on estimates reported by Smith et al. (1997), and on the average number of people with voice problems that seek treatment (Verdolini and Ramig (2001) estimated that over one billion dollars are spent each year on treatment. The cost of hiring substitute teachers to replace teachers with voice disorders is difficult to estimate, but is undoubtedly substantial.

## 2.5 Vocal Loading

Most of the communication in classrooms is verbal, and teaching involves sustained and extensive use of the voice, usually referred to as vocal loading. In studies involving control group teachers have reported more vocal symptoms and voice problems than persons in other occupations, indicating that the vocal loading is an increased risk factor for developing voice disorders (Roy et al., 2004). Teachers' use a higher fundamental frequency during lessons than during breaks and their fundamental frequency increases toward the end of the working day, which might be an effect of vocal loading (Rantala et al., 2002). Teachers report that they have had more vocal symptoms since they began teaching than they had previously. These symptoms have been found to appear more often in the afternoon and at the end of the week (Rantala et al., 2002), and voice quality appears to improve during the school holidays. These reports indicate that there is a strong connection between vocal symptoms and teaching.

As to laryngeal pathologies associated with occupations, vocal nodules has been found to be the most common pathology of teachers, and teachers have been reported to have a higher incidence of vocal nodules than persons in other occupations (Coyle et al., 2001). From a clinical perspective, vocal fold nodules are associated with vocal abuse and misuse. According to Vilkman (2000), the use of such terms as vocal abuse can conceal the fact that teaching involves prolonged voice use, which is a risk factor for voice disorders. For example, a study by Sala et al. (2005) showed that daycare centre teachers had significantly more findings of vocal nodules and laryngitis compared to hospital nurses. The daycare centre teachers were found to have used their voices for significantly longer periods than the nurses. Additionally, they used significantly higher

voice levels, indicating a strong relationship between the prevalence of voice disorders and long speaking times with high voice levels associated with their occupation (Sala et al., 2005).

Methods have been developed in order to measure vocal loading in field conditions among persons who work in vocally demanding occupations. Voice use can be documented by voice accumulators (Rantala et al., 2002). In order to have voice disorders acknowledged as occupational disorders for those who work in vocally demanding occupations, measuring vocal loading during work is of great importance. Since individual factors should be distinguished from work-related factors, it is also important to assess voice use during leisure time (Rantala et al., 2002).

## **2.6 Environmental factors associated with vocal loading**

Prolonged voice use is not the only risk factor for voice disorders in vocally demanding occupations, for environmental factors, such as background noise, acoustic conditions and air quality, also contribute to voice disorders. In some studies, classrooms have been found to provide poor acoustic conditions (Knecht, Nelson, Whitelaw, & Feth, 2002). The acoustics of the rooms in daycare centres and preschools have also been found to be unsatisfactory (Sala et al., 2005). There are several sources of background noise in the classroom. Noise from the activity of the pupils and from ventilation and air conditioning can be disturbing. In addition, external background noise, such as noise from traffic or from the schoolyard, can be disturbing (Knecht et al., 2002). Background noise affects the pupils' ability to perceive speech. Accordingly, teachers have to raise their voice to ensure that their voices are heard in noisy and reverberant classrooms

(Nelson & Soli, 2000). Studies have shown that teachers frequently report that they have to speak over background noise (Nelson & Soli, 2000), and teachers have even reported that they commonly feel that they have to shout in order to be heard at work (Nelson & Soli, 2000). Two studies on vocal loading of persons working in daycare centres and preschools have shown that the background noise levels were high for speech communication and that the persons working in that environment used their voice for long times at high levels (Sala et al., 2005). The study by Sala et al. (2005) showed that the persons working in daycare centres used their voice more and used higher voice levels than nurses in a control group. This probably explains why teachers in daycare centres reported significantly more vocal symptoms than the nurses in the control group (Sala et al., 2005).

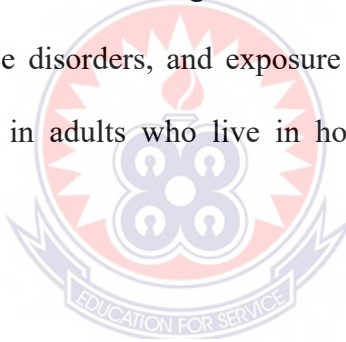
Low air humidity also has a negative impact on voice production (Vilkman, 2000). There do not seem to be recommendations as to the relative humidity levels (Vilkman, 2000) but dry air has been associated with strenuous voice production and vocal symptoms during vocal loading tests in laboratory conditions (Vilkman, 2000).

## **2.7 Health-related factors**

Infections of the upper airways caused by common colds constitute a general cause of temporary voice problems (Sala et al., 2005). One factor implicated as cause of voice problems among teachers is that they are frequently exposed to viruses associated with upper respiratory tract infections (Sala et al., 2005). The results of a study by Roy et al. (2004) showed that teachers reported significantly more colds annually compared to non-teachers. In a similar vein, Sala et al. (2005) showed that daycare centre teachers

reported a higher prevalence of rhinitis symptoms of long duration and sinusitis compared to a control group of hospital nurses. Teachers have also been found to have laryngitis significantly more often than nonteachers (Roy et al., 2004; Sala et al., 2005). Laryngitis can be acute, due to viral or bacterial infection, or it can be a chronic disorder.

Reflux laryngitis is one form of chronic laryngitis that has an impact on the voice (Coyle, 2001). The work of teachers with young children includes bending and lifting, which might provoke reflux, and the vocal loading itself might be a factor contributing to laryngitis (Sala et al., 2005). Allergies also seem to be a risk factor contributing to voice disorders (Roy et al., 2004), and special attention should be paid to the treatment of allergies in professional voice users. Allergic reactions to mold have also been mentioned as one risk factor for voice disorders, and exposure to mold has been associated with respiratory tract problems in adults who live in houses with mold problems (Coyle, 2001).



## **2.8 Stress-related Factors**

Several authors have mentioned psychological stress as a factor contributing to voice problems among teachers (Knecht et al., 2002; Coyle, 2001). The numerous stress factors that have been linked to teachers work include disrespectful behaviour of pupils and noise in classrooms caused by misbehaving pupils (Coyle, 2001). Poor classroom acoustics might also have a negative effect on disciplinary issues, as it might have an impact on the pupils' concentration and thus raise noise levels (Knecht et al., 2002). The attitudes of an undergraduate student population towards teachers with moderate voice disorders have been found to be more negative than attitudes towards teachers without

voice disorders (Lallh & Rochet, 2000). This could have a negative effect on the pupils' behaviour in the classroom, which, in turn, might increase stress in teachers. Teachers who experience stress may deal with a vicious cycle: stress contributes to voice problems and voice problems contribute to stress. In educational settings communication is based on speech. The results of several studies show that teachers report that their voice problems have a negative effect on their performance at work (Roy et al., 2004). The occurrence of vocal symptoms and voice disorders in professions where the voice is an essential tool may cause stress and anxiety ((Lallh & Rochet, 2000).

## **2.8 Risk Factors for the Development of Voice Problems in Teachers**

Dysphonia risk factors for teachers include extensive working hours, frequently longer than 40 hours a week, excessive number of students per classroom, environmental noise, inappropriate classroom facilities, and chalk powder (Thibeault, Merrill, Roy, Gray, Smith, 2014).

Thibeault et al., (2014) conducted a survey with 1243 teachers, of whom 58% reported voice disorder at a certain point of their career; age and time worked in the profession are parameters that may contribute to voice problem. Other authors,( Ohlsson, Andersson, & Barregard, 2012) however, believe that voice symptoms and laryngeal lesions may be present in teachers at the beginning of their carrier or even when they are still students; in addition, the age of patients and the emergence period are highly variable.

Analyzing the responses of 1250 teacher students to questionnaires, Ohlsson et al., (2012) found that 208 (17%) participants had at least two symptoms of voice

problems in a week, and a large number of them could relate those symptoms to voice disorders manifested during their childhood or recurrent infections of the upper airways, respiratory allergies, smoking, auditory problems, and vocal abuse.

Crowded classrooms and excessive noise are undoubtedly risk factors that contribute to the development of voice problem in teachers (Servilha, Leal, & Hidaka, 2010). The work environment causes teachers to increase their voice intensity to keep the students' attention (Servilha et al., 2010). This is the essence of phono trauma, which may result in the development of future laryngeal lesions.

The measurements of the vocal intensity of a teacher in an excessively noisy classroom may vary from 58 to 90.5 dB. These values are close to those recorded during a yell and indicate intense vocal effort (Servilha et al., 2010). Excessive environmental noise in the classrooms has led some teachers to use voice amplification to decrease phonatory overload (Servilha et al., 2010). Larsen & Blair, (2008) noted an improvement of 13 dB in the voice intensity of teachers who use amplifiers. They considered voice amplification a highly advantageous and important measure to prevent voice problem.

The teaching level may also influence the degree of vocal demand. Kindergarten and elementary education teachers have more voice symptoms than high school teachers.

Kindergarten teachers have greater vocal demands because their students are still in alphabetization.

On account of their daily rush, a large number of teachers generally substitute conventional meals for snacks and fast foods, favoring gastrointestinal disorders, especially gastroesophageal reflux, which is an important cause of acid laryngitis (Hawkshaw, Pebdani, & Sataloff, 2012). Neurological or endocrine diseases, smoking or

alcohol habits, and recurrent upper respiratory disease can also compromise vocal qualities (Hawkshaw et al., 2012).

Perez & Lopez (2003) interviewed 240 teachers (120 diagnosed with vocal nodules and 120 without laryngeal lesions) and identified some potential predisposing factors for voice disorders such as classrooms with poor and noisy conditions, previous laryngeal or nasal surgeries, and gastroesophageal reflux symptoms. These were the most relevant factors among teachers with vocal nodules.

## **2.9 Effects of Voice Problem in Teachers and Preventive Measures**

The voice is the main tool for teachers. The consequences of persistent dysphonia can be devastating for their professional performance, sometimes resulting in sick leave and/or reassignment to administrative tasks, for which they are not always prepared or interested. Financial, emotional, and social sectors are also compromised (Williams, 2003). Statistical data show that, in the United States, 2.5 billion dollars are spent annually on sick leave and treatment of voice disorders of teachers (Williams, 2003).

Prevention of voice disorders in teachers should be the primary goal. Prevention is considered ideal and requires the implementation of preventive measures before the problem arises. Unfortunately, this does not occur in a large number of schools. Munier & Kinsella found (2008) found that 93% of the 305 teachers who responded to a questionnaire about vocal quality had never received any guidance or professional training to prevent voice disorders.

Aimed at demonstrating the effectiveness of vocal education programs for teachers, Bovo et al., (2007) studied a group of 21 teachers who received effective



treatment and vocal guidance for 3 months and a control group of teachers, without intervention. The inclusion criteria were female gender, full time employment as school teachers, and motivation to collaborate. The exclusion criteria were previously treated dysphonia, smoking, alcohol habits, neurological or endocrine disease, psychiatric disturbances, acid reflux, multiple medical complaints, vocal fold lesion or severe dysphonia, allergies, and recurrent upper respiratory disease. Participants underwent video laryngoscopic examination, acoustic and auditory perceptual vocal analysis and responded to a questionnaire of vocal self-perception. The treated group had an evident improvement in voice symptoms, a decrease in jitter and shimmer values, and an improvement in values of maximum phonation time and Voice

Sometimes, the vocal disorders of teachers require medical or speech therapy treatment and follow-ups (Bovo et al.,2007) So, teacher can absent from work and school directors have to convene substitute teachers, which is not always easy; in addition, students do not accept it very well, impairing the continuity of the pedagogical program. Thus, teachers are exposed to physical and emotional stress and generally prefer to delay the treatment, which never starts.

Schools have been trying to prevent or minimize the voice symptoms of teachers by substituting blackboards and chalk for whiteboards and pens, providing amplifiers and microphones, decreasing the number of students per classroom, adapting the classroom infrastructure and acoustic conditions, and implementing vocal education programs by means of lectures and distribution of booklets and illustrative materials confectioned by vocal health professionals (Hunter, 2012; Timmermansi, Coveliers, Wuyts & Van Looy, 2012). Another important action directed to this professional class would certainly be

easier access to diagnosis and multidisciplinary treatment with physicians, speech therapists, and psychologists.



## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

This section provides information on participants, including sampling techniques, procedures (including evidence of ethical considerations), and tools used in both data collection, and analysis. It also dealt with the research design, description and distribution of instruments.

#### 3.1 Research Design

The research design was a cross-sectional study done among teachers in Bekwai Municipality. Creswell (2012) defines quantitative research as, a research strategy the essentially focuses on quantification in both the collection and analysis of data. In other words, quantitative research method places emphasis on measuring a phenomenon in the social world. Nonetheless, findings in a quantitative research paradigm are likely to be generalized to a whole population or a sub-population.

#### 3.2 Study Area

Bekwai Municipal is located in the southern part of Ashanti Region. The boundaries of the Municipality are shared to the North with Bosomtwe District, to the South with Adansi North District, to the East with Bosome-Freho District and to the West with Amansie Central District and Amansie West District. The Bekwai Municipality lies within latitude 6° 00'N and 6° 30'N and Longitudes 1°00' W and 1° 35' W. The Municipality covers a total land area of 535.2 square kilometres representing 2.2 percent

of the total land area of the region (Ashanti). Therefore, the Bekwai Municipality has a population density of 220.5 people per square kilometre. This implies that there are approximately 221 persons inhabiting every square kilometre in the Municipality given the population of 118,024 (PHC, 2010).

The Bekwai Municipality continues to show homogenous socio-cultural identity with Akans dominating (89%). Other tribes in the Municipality are Ewes, Guans, Mande, Gurma, Grusi and Mole Dagbani. The Municipality therefore consists of various ethnic groups who are living together peacefully and harmoniously.

The percentage of the general population considered Christians in the Municipality is high (85%). Other religious groups are the Muslims and the Traditionalist. There exist very high religious tolerance in the Municipality and this can be harnessed to promote development in the Municipality. The Bekwai Municipality can boast of rich cultural diversity. The Municipality covers seven paramountcies, which are Bekwai, Essumeja, Kokofu, Denyase, Amoafu, Adankranja and Asamang (PHC, 2010).

The Bekwai Municipality currently has 152 basic schools, 2 vocational institutions, and 6 senior high schools. The total number of teachers in the municipality is 2649, which is made up of 1201 female teachers and 1448 male teachers (GES Report, 2020).

### **3.3 Study Population**

The study population included all professional teachers in Bekwai Municipality employed by Ghana Education Service (GES). Teaching staff at all levels were included, except pre-school teachers at pre-schools and day-care-centres and teachers at

specialized, vocational high schools, due to the large variety of teaching premises and also their inaccessibility due to closing down of school in line with COVID-19 protocols. In all One Hundred teachers were selected for the study.

### **3.4 Sampling Techniques**

For this study, a convenience sampling technique, which is a non-probability sample technique, was used to select Bekwai Municipality as the case study among all the districts in the country. The justification for the use of convenience sampling technique in this study is that elements are easily accessible by the researchers and so, collecting members for the sample becomes easy (Creswell, 2012). Moreover, the municipal capital, Bekwai, is where the research resides, favoring proximity and ability to gain access to the study subjects. Purposive sampling technique; which is also a non-probability sampling technique, was employed in selecting One Hundred (100) teachers in the municipality from Junior High Schools (JHS) and Senior High Schools (SHS).

Purposive sampling technique was used because according to Creswell (2012), purposive sampling enables researchers to squeeze a lot of information out of the data that have been collected. This allows researchers to describe the major impact the findings have on the population.

### **3.5 Data Collection Procedure**

A structured questionnaire was administered by the researcher to the participants after obtaining informed consent from Bekwai Municipality Directorate of Ghana Education Service to collect data for this study. Data was collected from 28<sup>th</sup> October,

2020 to 6<sup>th</sup> November, 2020. The questionnaires were delivered to the teachers personally by the researcher. The study was conducted in schools where teachers worked and anonymity of institutions and respondents was assured. The questionnaires were coded and placed into sealed envelopes with instructions for questionnaire completion and a consent form enclosed.

A pilot test was conducted among 15 teachers in Adansi North District who share similar characteristics with that of the sample units. Robson (2002) opines that Pretesting helps to unearth some of the inevitable problems related to converting of designed data collection instrument into reality. It also ensures clarity of the questionnaire, to check face validity, reliability and test-retest reliability. Pilot testing is necessary to determine the average length of time needed to complete the survey, as well as how to manage and analyze the data collected.

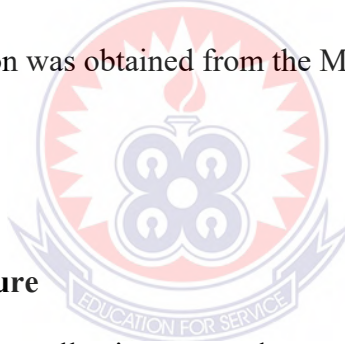
### **3.6 Data Collection Instrument**

In an attempt to address research questions and to find out facts or opinions or both for that matter, the data collection instrument employed for this study was a questionnaire. An initial draft of the questionnaire was developed based on research objectives and literature review, as well as expert opinion. The questionnaire was developed to assess teachers' ratings of their working environment and also to estimate the prevalence of voice problems in teachers. It consisted of questions to identify voice problems among teachers and the effects of the voice problems on teacher's delivery and services. The questionnaire instrument covered fifty-two items in nine (9) main parts; which included socio-demographic characteristics and professional background (part I),

job characteristics (part II), occurrence of voice problems (part III), level of knowledge and awareness of voice care (part IV), vocal symptoms (part V), working environment characteristics (part VI), lifestyle of teachers (part VII), methods of handling voice problems and adverse effects of voice problems (part VIII).

### **3.7 Ethical Consideration**

Ethical consideration was given the necessary attention so as to avoid personal questions which could be embarrassing to the respondents. This also ensured that the rights of the respondents were taken care of. As a result, respondents were not forced to answer any question against their will. Permission was also sought to gain access to these respondents. The permission was obtained from the Municipal Director, Ghana Education Service (GES).



### **3.8 Data Analysis Procedure**

When the entire data collections were done, a master list of the key responses of the open-ended items was prepared and the responses were coded. Before the coding, the data was cleaned, coded, and entered into the computer using EPI-INFO version 6.04 statistical packages a software used by health researches and Statistical Package for Social Sciences (SPSS) version 10 software. After the data entry, the software was used for the analysis of the data and simple percentages and frequencies table were used.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

This section of the study presents the findings from the questionnaire administered to teachers in Bekwai Municipality. The information obtained is summarised in the forms of tables and figures in this section. A discussion of the findings is presented alongside the data obtained.

#### 4.1 Socio-Demographic Characteristics of Respondents

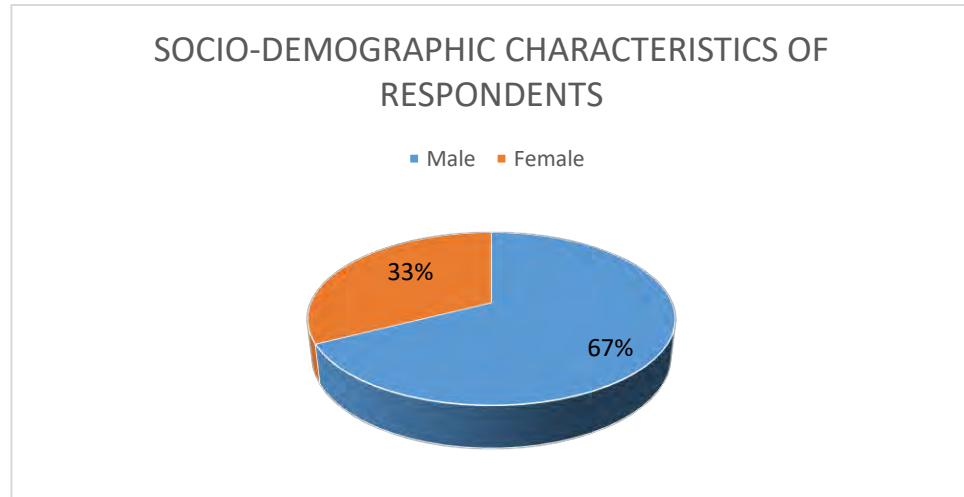
**Table 4.1: Gender of the Respondents**

Gender	Frequency	Percentage (%)	Cumulative Frequency
Male	54	67.5	67.5
Female	26	32.5	100
Total	80	100	

Source: fieldwork data, 2020

It is observed from table 4.1 that, 54 (67.5%) or majority of teachers were male and 26 (32.5%) were female. This agrees with GES report that there are more male teachers in JHS and SHS than female teachers. Gender differences in the prevalence of voice problem had been studied by few researchers and majority of the studies revealed that females were more likely to report voice problem than male (Vilkman, 2000; Roy & Weinrich, 2003).





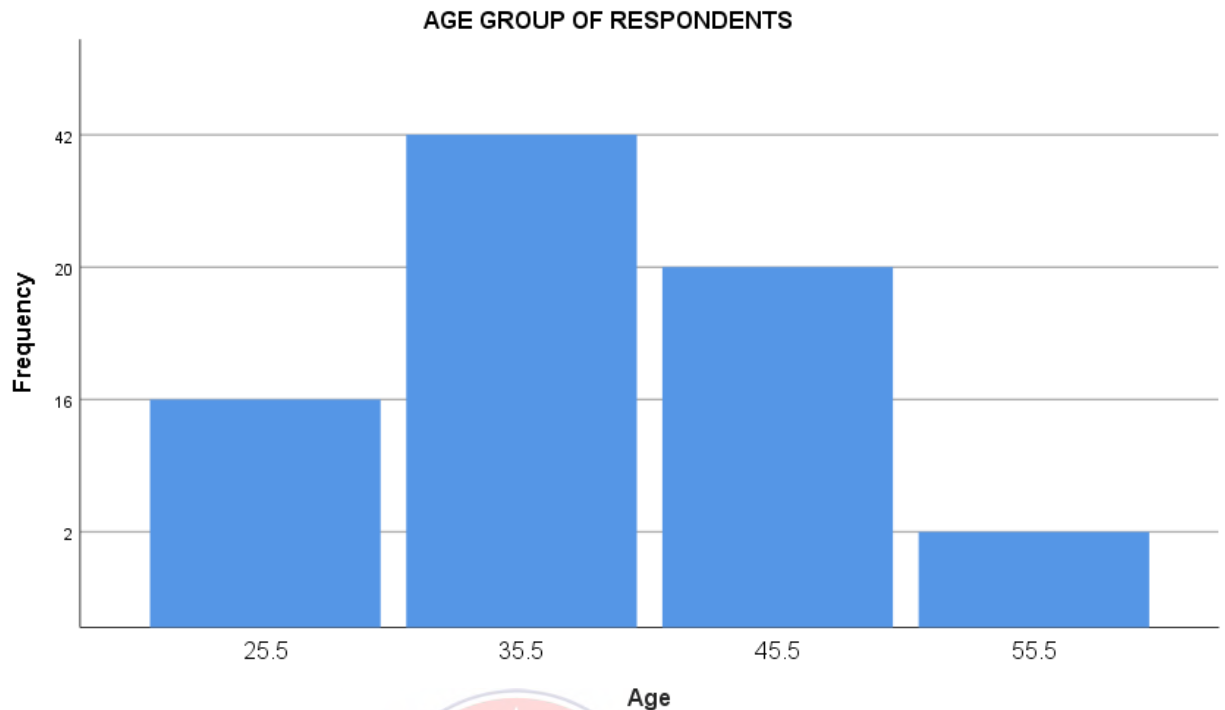
#### 4.2 Age Group of Respondents

**Table 4.2: Age Group of Respondents**

Age Group	Frequency	Percentage (%)	Cumulative Frequency
21 --- 30	16	20	20
31 --- 40	42	52.5	72.5
41 --- 50	20	25	97.5
51 --- 60	2	2.5	100
Total	80	100	

Source: fieldwork, 2020

In the age distribution of respondents from the table directly above, 16 (20%) belonged to the 20—29 age groups, 42 (52.5%) were 30—39 years old, 20 (25%) were under the 40—49 age group and 2 (2.5%) belonged to the 50—60 age group. For age in this study, it was found out not to be significantly associated with voice problem which is the same as reported by Sapir et al. (1993).



### 4.3 Marital Status of Respondents

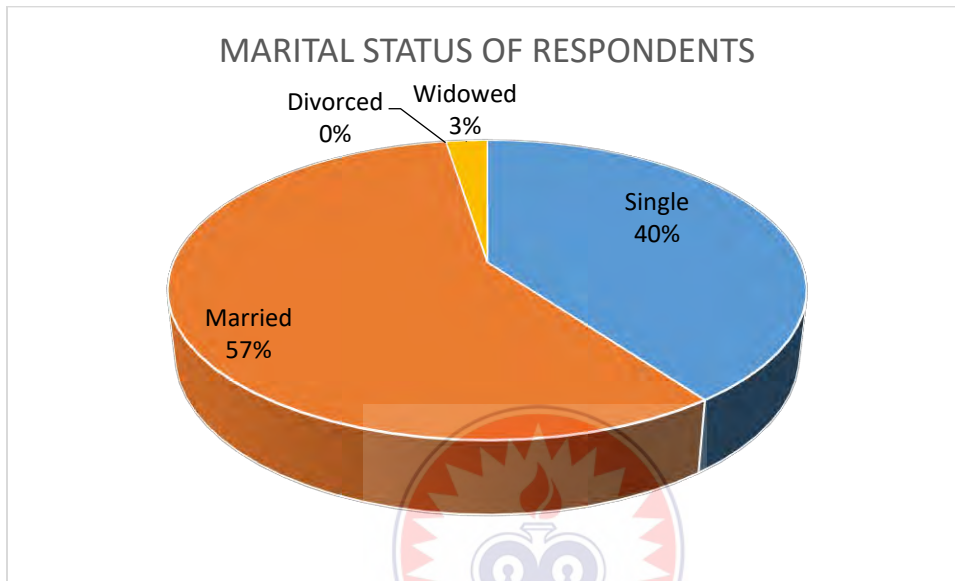
**Table 4.3: The Marital Status of Respondents**

Marital Status	Frequency	Percentage (%)	Cumulative Frequency
Single	32	40	40
Married	46	57.5	97.5
Divorced	0	0	97.5
Widowed	2	2.5	100
Total	80	100	

Source: fieldwork, 2020

Among 80 of the respondents in table 4.3 above, 32 (40%) were single, 46 (57.5%) of them were married, and 2 (2.5%) of them divorced. None of the respondents has divorced. As for marital status, it was found not to be significantly associated with

voice problem in this study, however, it has been found to be contributed to voice disorder especially the role of household and family extension of voice use (De Medeiros et al., 2008)



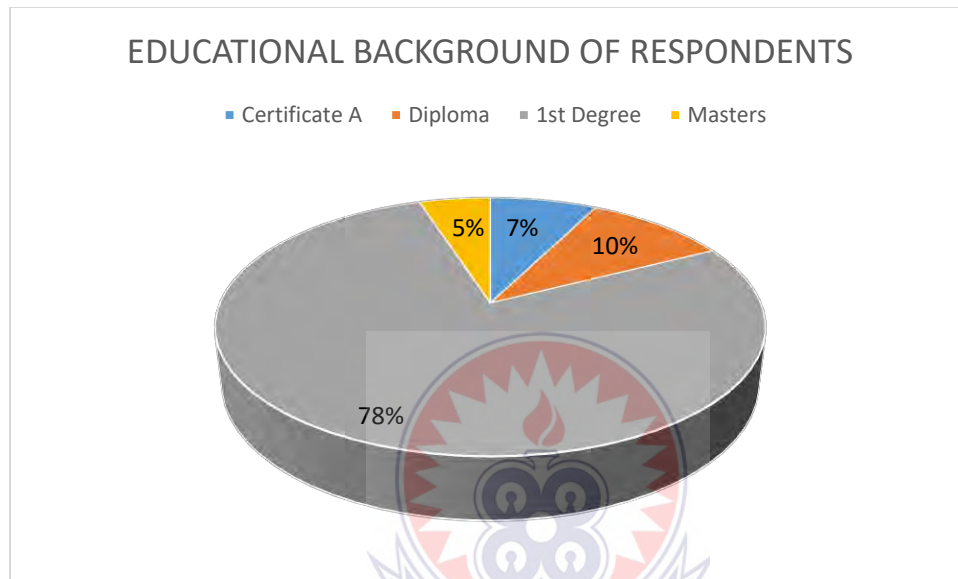
#### 4.4 Educational Background of Respondents

**Table 4.4: Educational Background of Respondents**

<b>Educational Level</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative Frequency</b>
Certificate "A"	6	7.5	7.5
Diploma	8	10	17.5
1 <sup>st</sup> Degree	62	77.5	95
Master's	4	5	100
<b>Total</b>	<b>80</b>	<b>100</b>	

Source: fieldwork, 2020

Table 4.4 depicts that 62 (77.5%) of the teachers have 1<sup>st</sup> degree, 4(5%) have master's, 8 (10%) have diploma and 6 (7.5%) have certificate A. more teachers at the basic level are now obtaining first degree because of a policy of GES to make first degree as requirement for teaching in the basic level. The study found out that there is no association between educational level and voice problems in teachers.



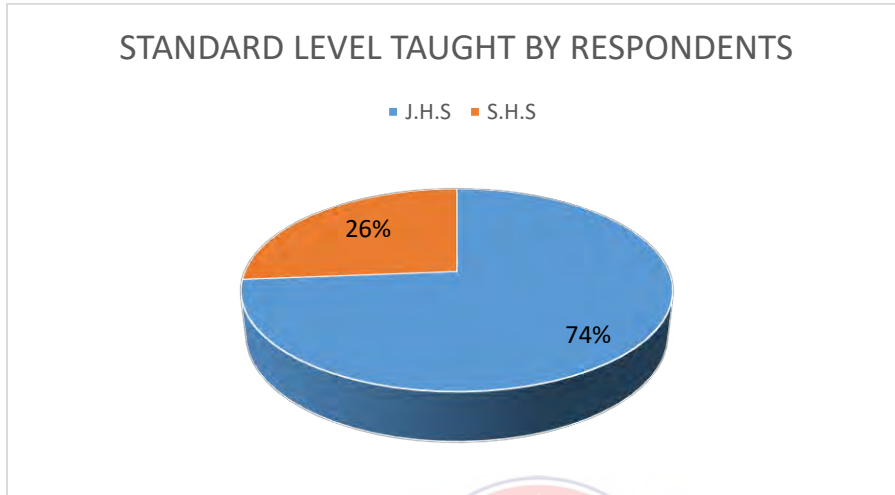
#### 4.5 Standard Level Taught by Respondents

**Table 4.5: Standard Level Taught by Respondents**

Standard Taught	Level	Frequency	Percentage (%)	Cumulative Frequency
J. H. S.		59	73.75	73.75
S. H. S.		21	26.25	100
Total		80	100	

Source: fieldwork, 2020

It is observed from table 4.5 that, among the standard level taught, 59 (73.75%) of the respondents taught in JHS while 21 (26.25) taught in SHS. It is clear in this study that there is no association between standard level taught and voice problem among teachers.



#### 4.6 Prevalence of Voice Problem among Teachers



**Table 4.6: Distribution of Voice Problem among Respondents**

<b>Voice Problem (N=80)</b>	<b>Frequen cy</b>	<b>Percentage (%)</b>	<b>Cumulative Frequency</b>
1. Are there times when your voice doesn't work, or sound as you feel it should?			
Yes	23	28.75	28.75
No	57	71.25	100
2. To the point where it affects how you communicate?			
Yes	20	25	25
No	60	75	100
3. How many times have you suffered from voice problem?			
Once	15	65.2	65.2
More than once	8	34.8	100
4. Do you have family history of voice problem?			
Yes	6	7.5	7.5
No	74	92.5	100

Source: fieldwork, 2020

For the purpose of the study, the researcher considered voice problem to be anytime the voice does not work, perform or sound as it usually does, so that it interferes

with communication (Aronson, 1985). From the total respondents, 23 (28.75%) of them had suffered from voice problems. In addition, 15 (65.2%) of them suffered from voice problems for once only while 8 (34.8%) of them suffered from voice problems for more than once. This shows that relationship of voice problems with teachers in Bekwai Municipality was low, which was 28.75% in this study as summarizes in Table 2. Hence, the prevalence of voice problems among teachers in Bekwai Municipality is 28.75%

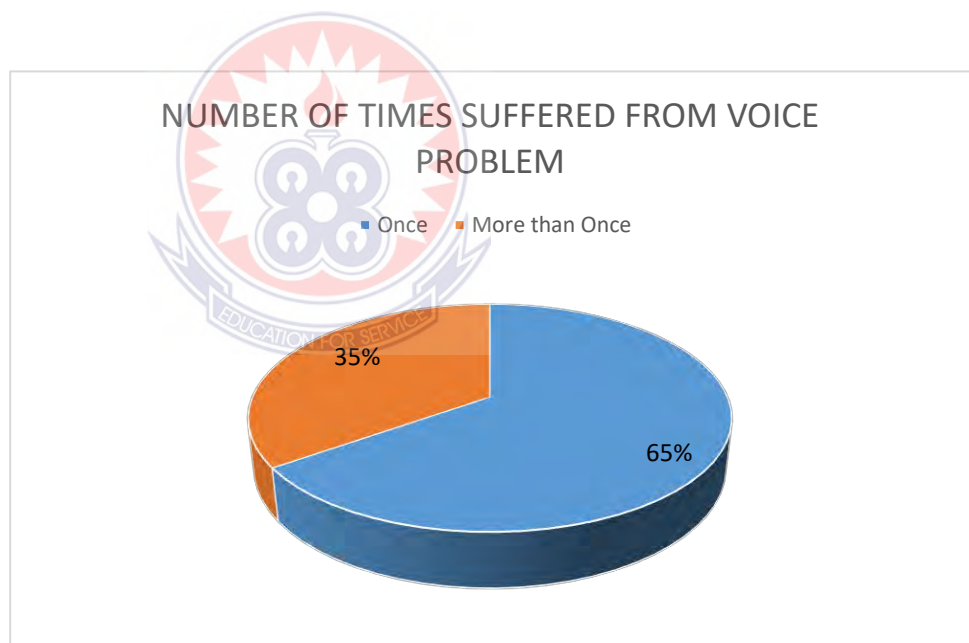
. However, based on the findings, it was found that the prevalence of voice problem among teachers in Bekwai Municipality was low. This figure was relatively small when compared with those reported in the literature. The factors behind this wide variation are multiple. This may due to variety of methodology used and the total size of population used to conduct the study. As reported by Vilkmán (2004) and Jardimet et al (2007), the type of population studied, the methodology of the study and the operational definition of voice health problem or disorder can explain this wide variation. The statistical methods used are presented below.

### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	NO	63.6667	3	9.07377	5.23874
	YES	16.3333	3	9.07377	5.23874

**Paired Samples Test**

Paired Differences							
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
			Lower	Upper			
Pair NO - 47.33333	18.14754	10.47749	2.25234	92.41433	4.518	2	.046
1 YES							



**4.7 Voice Problem Symptoms Distribution**



**Table 4.7: Voice Problem Symptoms Distribution**

<b>Voice</b>	<b>Symptoms</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Cumulative Frequency</b>
<b>(N=80)</b>				
1. Sore throat				
	Yes	68	85	85
	No	12	15	100
2. Coughing				
	Yes	72	90	90
	No	8	10	100
3. Swollen gland				
	Yes	64	80	80
	No	16	20	100
4. Lot of phlegm				
	Yes	50	62.5	62.5
	No	30	37.5	100
5. Blocked nose				
	Yes	60	75	75
	No	20	25	100
6. Throat infections				
	Yes	44	55	55
	No	36	45	100

Source: fieldwork, 2020

Out of 80 respondents, 68 (85%) of them reported to have sore throat, 72 (90%) of them also reported having coughing while 64 (80%) of them claimed that they will had swollen gland when suffered from voice problem. Moreover, 50 (62.5%) of the respondents also complained of having a lot of phlegm while 60 (75%) of them stated that they were having blocked nose and 44 (55%) of them claimed that they will also have throat infections when suffered from voice problem as summarizes in Table 3. Overall, majority of the respondents having coughing followed by sore throat, swollen gland, blocked nose, lot of phlegm, and throat infections when suffered from voice problem. Below is the statistical presentation.

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	NO	20.3333	6	10.76414	4.39444
	YES	59.6667	6	10.76414	4.39444

#### Paired Samples Test

		Paired Differences		95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	NO - -	21.52828	8.78888	-	-	-	5	.007
	YES 39.33333			61.92587	16.74079	4.475		

#### 4.8 Association between Lifestyle Factors and Voice Problem

**Table 4.8: Association between Lifestyle Factors and Voice Problem**

Variable (n=80)	Frequency	Percentage (%)	Cumulative Frequency
1. Smoking			
Yes	1	1.25	1.25
No	79	98.75	100
2. Alcohol			
Yes	5	6.25	6.25
No	75	93.75	100
3. Caffeinated beverages			
Yes	2	2.5	2.5
No	78	97.5	100

Source: fieldwork, 2020

From the Table 4, 79 (98.75%) of the teachers do not smoke, 75 (93.75%) of the teachers do not take in alcohol while 78 (97.5%) of the teachers do not drink caffeinated beverages. A study by Sheng et al. (2010) showed that smoking, alcohol and caffeine were not found to have any apparent relationship with the frequency of voice problem which supported this study that smoking, alcohol and taking caffeinated beverages have not significantly associated with voice problem. This result was also consistent with Roy et al. (2004) school teachers at Iowa and Utah. It may be because teachers were less

likely to have used tobacco products and drink alcohol than the general population (Roy et al., 2004). Statistical methods are presented below.

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	NO	77.3333	3	2.08167	1.20185
	YES	2.6667	3	2.08167	1.20185

**Paired Samples Test**

Paired Differences	Mean	Std. Deviation	95% Confidence Interval of the Std. Error Difference		t	df	Sig. (2-tailed)	
			Mean	Lower				Upper
Pair 1 NO - YES	74.66667	4.16333	2.40370	64.32438	85.00896	31.063	2	.001

#### 4.9 Association between Teaching Activities and Voice Disorder

**Table 4.9: Job Characteristics among Respondents**

Work related variables (n=80)	Frequency	Percentage (%)	Cumulative Frequency
<b>Years of teaching</b>			
1—5	18	22.5	22.5
6—10	43	53.75	76.25
11—15	19	23.75	100
<b>Duration of teaching (per hour per week)</b>			
1—10	48	60	80.5
11—20	14	17.5	100
≥ 21	8	10	10
<b>Number of classes</b>			
1—2	54	67.5	77.5
3—4	18	22.5	100
5—6	2	2.5	2.5
<b>Number of students (class size)</b>			
1—20	6	7.5	10
21---30	34	42.5	52.5
31---40	28	35	87.5
41---50	10	12.5	100
≥51	48	60	60
<b>Do you organize extra classes?</b>			
Yes	32	40	100
No			

Source: fieldwork data, 2020

From Table 5, 43 (53.75%) of the respondents have worked for 6—10 years in the teaching profession, 48 (60%) of the respondents teach 11—20 hours per week, 54

(67.5%) of the respondents teach 3—4 number of class per week, 34 (42.5%) number of students taught per class (class size), and 48 (60%) teachers organize extra classes. For teaching activities, years of service as a teacher, hours of teaching and grade level taught have been often regarded as contributing factors to voice problem (Safarti 1989). However, in this study, these factors were not showed to be significantly associated to voice problem. Based on her surveys, Sheng et al. (2010) reported that more experienced teachers were more likely to have a history of voice problem. The statistical method is presented below.

	Years_of_teaching	Duration_of_teaching	Number_of_classes	Number_of_Students
N Valid	3	3	3	5
Missing	2	2	2	0
Mean	23.3333	26.6667	26.6667	16.0000
Std. Deviation	17.61628	18.58315	24.19366	14.14214

#### 4.10 Level of Knowledge and Awareness of Voice Problem

In this study, method on handling voice problem was also asked among the respondents. Majority of them does not take medical leaves (87.2%). Also, majority of them does not seek for treatment (60.3%). The most preferred type of treatment the teachers seek for was pharmacist prescription (29.5%) followed by doctor/specialist (19.2%) and home remedies (3.8%) while the rest do not seek for treatment. For self-

treatment, the teachers mostly preferred to consume more fluid (70.5%) followed by shout less (2.6%).

Teachers were also inquired about their knowledge and awareness on voice problem and voice care. It appeared only 16.7% of the teachers who had received information about voice problem are one of occupational hazard and only 19.2% of teachers had received information about proper voice care. This stated that there is low level of knowledge and awareness on voice problem and voice care among teachers. However, 88.5% of them believed that the information about voice problem shall be distributed among them and 93.6% of them also believed that the information about proper voice care shall be distributed. The most common method preferred by them to distribute the information was to include in their training (39.7%) followed by brochures (26.9%) and media (21.8%) such as television or radio for voice problem while same goes with information on proper voice care where the teachers preferred to be distributed in teachers training (33.3%), brochures (32.1%) and media (20.5%) which is television or radio.

Method on handling voice problem was also asked among the respondents. Majority of them does not take medical leaves (87.2%). Also, majority of them do not seek for treatment (60.3%). These findings can be supported with several authors that have reported that teachers do not readily seek treatment despite reporting voice problems (Sapir et al., 1993; Roscellalnja, 2016).

#### 4.11 Work Environment Characteristics

**Table 4.10: Work Environment Characteristics**

Variable	Frequency	Percentage (%)	Cumulative Frequency
1. Noise level in the classroom	19	23.75	23.75
Acceptable	55	68.75	92.5
High Unacceptable	6	7.5	100
2. Room acoustics	36	45	45
Poor	32	40	85
Fairly adequate Adequate	12	15	100
3. Dirt in the classroom	5	6.25	6.25
Never	28	35	41.25
Sometimes	37	46.25	87.5
Often	10	12.5	100
Always			
4. Chalk dust in the classroom	49	61.25	61.25
Never	13	16.25	77.5
Sometimes	10	12.5	90
Often	8	10	100
Always	67	83.75	83.75
5. Adequate room size	13	16.25	100
Yes			
No	62	77.5	77.5
6. Adequate lighting	18	22.5	100
Yes			
No			



Table 4.11 shows that majority (92.5%) of the respondents rated the noise level in the classroom and in the school area as high or unacceptable. Over 37 (46.25%) reported frequent or continuous exposure to dirt in the classroom, 36 (45%) rated the room acoustics to be very poor, 49 (61.25) recounted that there was never chalk dust in the classroom. This may be due to the advent of marker board in the various classrooms in the Municipality. 67 (83.75) of the respondents believe that there is adequate room size while 62 (77.5%) agreed that there is adequate lighting in the classrooms. The various statistical methods are presented below.

	Noise_ level	Room_Ac oustics	Dirt_in_the_c lassroom	Chalk_dust_in_th e_classroom	Adequate_r oomsize	Adequate_ lighting
N	3	3	4	4	2	2
Valid						
Missing	1	1	0	0	2	2
Mean	26.6667	26.6667	20.0000	20.0000	40.0000	40.0000
Std. Deviation	25.383	12.85820	15.03330	19.44222	38.18377	31.11270

#### 4.12 Adverse Effects of Voice Problems among Teachers

**Table 4.11: Effects of Voice Problems among Teachers**

Effects of voice problem	Frequency	Percentage	Cumulative Frequency
1. Voice limits the ability to do certain tasks	59	73.75	73.75
Yes	21	26.25	100
No			
2. Sought professional help to improve voice	1	1.25	1.25
Yes	79	98.75	100
No			
3. May change occupation because of voice problem	48	60	60
Yes	32	40	100
No			
4. Have you reduced activities because of voice problem?	44	55	55
Yes	36	45	100
No			
5. Have you ever missed work because of voice problem?	38	47.5	47.5
Yes	42	52.5	100
No			

Source: fieldwork data, 2020

It is also important to recognize that for many teachers; the adverse effects of voice problems were not just limited to missing work. From the literature, 43% of Brazilian teachers reported reduced activities or interactions because of their voice (Mara

Behlau et al., 2012). This is further compounded by voice related absenteeism, which inevitably creates discontinuities in the curriculum with additional unwanted effects on student learning. The study revealed that 59 (73.75%) of the respondent's voice limited their ability to do to certain tasks, 48 (60%) may change occupation because of voice problem, 44 (55%) have reduced activities because of voice problem and 38 (47.5%) have ever missed work. From these results, it is clear that the voice related costs associated with lost workdays, use of sick benefits, replacement costs for substitute teachers, medical diagnostic, and treatment services are likely enormous and place a substantial strain on the educational system and the students they serve. The statistical method is discussed below.

#### Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	NO	42.0000	5	22.05675	9.86408
	YES	38.0000	5	22.05675	9.86408

**Paired Samples Test**

		Paired Differences		95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair NO	- 4.00000	44.11349	19.72815	-	58.77413	.203	4	.849
1	YES			50.77413				



## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter itemizes the major research findings, and indicate how the research work has contributed to knowledge. This sub-section also includes recommendations and suggestions for future research work.

#### 5.1 Summary of Findings

The main purpose of the study was to assess the prevalence of voice problems among teachers in the Bekwai Municipality in Ashanti Region. The specific objectives of the study were to determine the risk factors for occupational voice problems among teachers in Bekwai Municipality; to verify early interventions used by teachers with voice problems in Bekwai Municipality; and to assess the negative effects of voice problems among teachers in Bekwai Municipality.

In the process of conducting the study, the mixed research method was adopted. For this purpose, the questionnaire instrument for gathering data was used. As a result, a questionnaire containing fifty-two (52) items was designed and administered by the researcher. The questionnaire was divided into five (9) parts namely: the socio-demographic characteristics and professional background, job characteristics among teachers, occurrence of voice problems among teachers, level of knowledge and awareness of voice care, symptoms of voice problems among teachers, work environment characteristics among teachers, lifestyle of teachers, methods of handling voice problems among teachers, and adverse effects of voice problems among teachers.

Based on the findings, it was found that the prevalence of voice problem among teachers in Bekwai Municipality was low. This figure was relatively small when compared with those reported in the literature. From the total respondents, 23 (28.75%) of them had suffered from voice problems. In addition, 15 (65.2%) of them suffered from voice problems for once only while 8 (34.8%) of them suffered from voice problems for more than once.

Moreover, potential environmental risk factors have been identified for a number of these vocally demanding professions including teachers. Some of the potential risks factors include extensive voice use without enough time for voice rest, to speak in high background noise, poor room acoustics, poor indoor air quality, poor speaking postures, and lack of appropriate technical aid such as voice amplifiers.

The study also revealed that Majority of teachers do not take medical leaves (87.2%).

Also, majority of them do not seek for treatment (60.3%). The most preferred type of treatment the teachers seek for was pharmacist prescription (29.5%) followed by doctor/specialist (19.2%) and home remedies (3.8%) while the rest do not seek for treatment. For self-treatment, the teachers mostly preferred to consume more fluid (70.5%) followed by shout less (2.6%).

From the findings, it was found that smoking and consuming alcohol beverages in terms of lifestyle factors has significantly associated with voice problem and also only years of teaching in terms of teaching activities has significantly associated with voice problem.

Finally, the study found out the adverse effects of voice problems among teachers. The study revealed that 59 (73.75%) of the respondent's voice limited their ability to do

to certain tasks, 48 (60%) may change occupation because of voice problem, 44 (55%) have reduced activities because of voice problem and 38 (47.5%) have ever missed work.

## 5.2 Conclusions

Base on the findings of the study the following conclusions can be drawn.

1. The studies included in this review confirmed that teachers heavily depend on their voice use and there is prevalence of voice problems among teachers.
2. Awareness of the influence of the acoustic properties of the classroom is of great importance when designing teaching environments and in voice care for teachers. Field voice measurements should be included when exploring occupational voice problems since it stands clear that it is in the interplay between the individual and the work environment that the voice problems emerge
3. The classroom conditions, the excessive noise, and the individual health conditions, habits, and addictions are considered risk factors for the development of voice problem. To decrease the incidence of voice disorders among teachers, it is necessary to identify and eliminate the risk factors and adopt preventive measures for the vocal health. These measures involve multi-sectorial mobilization not only of teachers but also of health and education professionals.
4. The most common symptoms of voice problems among teachers include tiredness or effort when speaking, throat clearing or persistent coughing, sensation of tightness or weight in the throat, voice breaks, breathlessness, when speaking, aphonic, soreness or burning in the throat, hoarseness.

5. Teachers are generally unaware of the vocal hygiene strategies they can use to prevent voice problems throughout their career

### **5.3 Recommendations**

The following recommendations were derived based on the results, findings and conclusions of the study.

1. In order to draw teachers' attention towards voice disorder prevention, it is necessary to organize regular informative events, courses, workshops.
2. Each teacher should evaluate their working environment conditions, especially paying attention to the classroom acoustics and air quality. Influence of factors harmful to the voice must be prevented or reduced as much as possible.
3. In case of upper respiratory illnesses like sore throat, teachers would have to avoid using their voice in the class.
4. Individuals working as teachers have to attend speech therapist specialized in voice disorders or otorhinolaryngologist in order to evaluate their larynx and voice function.

### **5.4 Suggestions for Future Research Work**

There are a number of directions which this study can be extended. This study only focused on the prevalence of voice problems among teachers in the Bekwai Municipality in Ashanti Region. An extension could be to investigate the impact of local environmental factors on voice problems in teachers.



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## QUESTIONNAIRE

This is a survey being conducted by a master student reading Educational Leadership to assess the Prevalence of Voice Problems among teachers in Bekwai Municipality in Ashanti Region. Am very interested in how teaching might affect instructors' voices. It is hoped that you will provide factual, honest and reliable answers to help bridge gap between theory and practice. Your responses to the questions will be used purely for academic purposes. Tick (✓) your choice in the provided options.

### **A: The Socio-demographic characteristics and Professional Background**

1. Gender: Male ( ) Female ( )
2. Age: 20 --- 29 ( ) 30 --- 39 ( ) 40 ---49 ( ) 50 --- 59 ( )
3. Marital status: Married ( ) Divorced ( ) Single ( ) Widowed ( )
4. Educational level: Certificate A ( ) Diploma ( ) Degree ( ) Masters ( )
5. Standard level taught: JHS ( ) SHS ( )

### **B: Job Characteristics among Teachers**

6. Years of working as a teacher: 1—5 ( ) 6 — 10 ( ) 11—15 ( ) 16—20 ( ) 21—25 ( ) 26+ ( )
7. Number of class taught: Up to 2 ( ) 3- 5 ( ) 6+ ( )
8. Number of students per class: 20—30 ( ) 31—40 ( ) 41—50 ( ) 51+ ( )
9. Weekly work hours: 1—10 ( ) 11—20 ( ) 21—30 ( ) 31+ ( )
10. Subjects taught:

.....

11. Do you organize extra classes? Yes ( ) No ( )

**C. Occurrence of Voice Problems among Teachers**

12. Are there times when your voice doesn't work or sound as you feel it should?

Yes ( ) No ( )

13. To the point where it affects how you communicate? Yes ( ) No ( )

14. How many times have you suffered from voice disorder? Once ( ) More than once ( )

15. Duration of disorder: 4 or more weeks ( ) Less than 4 weeks ( )

16. Do you have Family history of voice disorder: Yes ( ) No ( )

**D. Level of Knowledge and Awareness of Voice Care**

17. Have you received any information about voice problems as one of the occupational hazards? Yes ( ) No ( )

18. Do you think that information about voice problems as one of the occupational hazards should be distributed among school teachers? Yes ( ) No ( )

19. Have you received any information about proper voice care? Yes ( ) No ( )

20. Do you think that information about proper voice care shall be distributed among school teachers? Yes ( ) No ( )

**E. Symptoms of Voice Problem among Teachers**

21. Hoarseness of voice: Yes ( ) No ( )

22. Frequent throat clearing: Yes ( ) No ( )

23. Throat infections: Yes ( ) No ( )

24. Coughing: Yes ( ) No ( )

25. Tired or weak voice: Yes ( ) No ( )
26. Effort or strain to speak: Yes ( ) No ( )
27. Out of breath when speaking: Yes ( ) No ( )
28. Voice varies: Yes ( ) No ( )
29. Lot of phlegm: Yes ( ) No ( )

**F. Work Environment Characteristics among Respondents**

30. Noise level in the classroom: Acceptable ( ) High ( ) Unacceptable ( )
31. Room acoustics: Poor ( ) Fairly adequate ( ) Adequate
32. Dirt in the classroom: Never ( ) Sometimes ( ) Often ( ) Always ( )
33. Chalk dust in the classroom: Never ( ) Sometimes ( ) Often ( ) Always ( )
34. Adequate room size: Yes ( ) No ( )
35. Adequate lighting: Yes ( ) No ( )
36. Rest breaks between classes: Often ( ) Sometimes ( ) No ( )
37. Good relationship with colleagues Sometimes: ( ) Often ( ) Always ( )

**G. Lifestyle of Teachers**

38. Do you smoke? Yes ( ) No ( )
39. If yes, for how long have you been smoking?
- Less than 1 year ( ) 1 year ( ) More than 1 year ( )
40. Do you consume alcohol beverages? Yes ( ) No ( )
41. Do you consume caffeinated beverages? Yes ( ) No ( )

**H. Methods of Handling Voice Problems among Teachers**

42. Do you take medical leaves when suffered from voice problem? Yes ( ) No ( )
43. Do you seek for treatment when suffered from voice problem? Yes ( ) No ( )

44. What type of treatment do you seek for when suffered from voice problem?

No treatment ( ) Doctors/pharmacist prescription ( ) home remedies ( )

45. What kind of self-treatment do you take when suffered from voice problem?

46. No treatment ( ) more fluid intake ( ) shout less ( ) using microphone ( )

**I. Adverse Effects of Voice Problems Among Teachers**

47. Voice limits ability to do certain tasks at current job Yes ( ) No ( )

48. Sought professional help to improve voice Yes ( ) No ( )

49. May Change occupation or job because of voice problem Yes ( ) No ( )

50. Number of days in past year reduced activities because of voice Yes ( ) No ( )

51. Number of days in past year missed work because of voice problem Yes ( ) No ( )

52. Number of days in past year voice caused work absenteeism all or most of the days Yes ( ) No ( )

