UNIVERSITI PUTRA MALAYSIA

PREVALENCE OF VOICE DISORDER AMONG PRIMARY SCHOOL TEACHERS IN BINTULU, SARAWAK

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PREVALENCE OF VOICE DISORDER AMONG PRIMARY SCHOOL TEACHERS IN BINTULU, SARAWAK

BY

ROSCELLA INJA ANAK UNANG

Thesis submitted in fulfillment of the requirement for the degree of Bachelor Science (Environmental and Occupational Health) from the Faculty of Medicines and Health Sciences, Universiti Putra Malaysia

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God Bless everyone!

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ABSTRACT

PREVALENCE OF VOICE DISORDER AMONG PRIMARY SCHOOL TEACHERS IN BINTULU, SARAWAK

ROSCELLA INJA ANAK UNANG

Introduction : 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 disorder than the general population. In this study, voice disorder was considered as "any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication". The consequences of voice disorder may have impacts on teacher's social and professional life as well as their mental, physical and emotional state and their ability to communicate. **Objectives :** To determine the prevalence of voice disorder and the relationship between voice disorder with associated the risk factors among primary school teachers in Bintulu, Sarawak. **Methodology :** A cross sectional study was conducted based on random sampling technique of 4 primary schools in Bintulu, Sarawak between January to March 2014. A total of 100 full-time primary school teachers were invited to participate in the study. Data were collected through a self-administered questionnaire addressing the prevalence of voice disorder and the potential risk factors. Descriptive analysis and chi-square test was used to measure the relationship between voice disorder and associated risk factors. **Results :** The response rate for this study was 78% (78/100). The study found that the prevalence of voice disorder among primary school teachers in Bintulu, Sarawak was 13%. Chi-square test results revealed that factors significantly associated with voice disorder was consuming alcohol beverages (p=.012, PR=1.081, 95% CI=.267-4.372) for lifestyle factors while teaching extra classes/tuition (p=.049, PR=1.111, 95% CI=.435-2.837) for teaching activities. **Conclusion**: A low prevalence of voice disorder exists among primary school teachers in Bintulu, Sarawak. Consuming alcohol beverages and teaching session has proven to be significantly associated with voice disorder among them.

Keywords : Voice disorder, primary school teachers, teaching activities, lifestyle factors

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ABSTRAK

PREVALENS GANGGUAN SUARA DALAM KALANGAN GURU-GURU SEKOLAH RENDAH DI BINTULU, SARAWAK

ROSCELLA INJA ANAK UNANG

Pendahuluan : Guru merupakan salah satu pekerjaan yang kerap melibatkan penggunaan suara berbanding pekerjaan yang lain. Oleh itu, mereka mempunyai risiko tinggi untuk mendapat gangguan suara. Dalam kajian ini, gangguan suara dianggap sebagai "penggunaan suara yang tidak dapat berfungsi pada bila-bila masa, mengeluarkan bunyi yang tidak normal serta boleh mengganggu suasana semasa berkomunikasi dengan orang lain". Gangguan suara berkemungkinan memberi kesan ke atas kehidupan sosial dan professionalisme seorang guru, berupaya mengganggu mental, fizikal dan emosi serta keupayaan mereka untuk berkomunikasi. **Objektif :** Untuk menentukan prevalens gangguan suara dan hubungan antara gangguan suara dengan faktor yang berkaitan kalangan guru-guru sekolah rendah di Bintulu, Sarawak. **Metodologi:** Satu kajian keratan rentas telah dijalankan di 4 buah sekolah rendah di Bintulu, Sarawak antara Januari hingga Mac 2014. Seramai 100 orang guru sepenuh masa sekolah rendah telah dipilih menggunakan teknik persampelan rawak untuk mengambil bahagian dalam kajian ini. Borang soal selidik telah diedarkan kepada responden untuk menentukan kelaziman gangguan suara dan faktor yang berpotensi menyebabkan gangguan suara. Analisis deskriptif dan ujian khi-kuasa dua telah digunakan untuk mengkaji hubungan antara gangguan suara dan faktor yang berkaitan. **Keputusan:** Kadar respon kajian ini ialah 78% (78/100). Kajian telah membuktikan prevalens gangguan suara kalangan guru sekolah rendah di Bintulu, Sarawak iaitu sebanyak 13%. Keputusan ujian khi-kuasa dua membuktikan faktor yang paling ketara dikaitkan dengan gangguan suara adalah pengambilan minuman beralkohol (p=.012, PR=1.081, 95% CI=.267-4.372) dan mengajar kelas tambahan atau tusyen (p=.049, PR=1.111, 95% CI=.435-2.837). **Kesimpulan :** Prevalens gangguan suara yang wujud kalangan guru-guru sekolah rendah di Bintulu, Sarawak adalah amat rendah berbanding pravelens gangguan suara dalam kajian yang lain.Pengambilan minuman beralkohol dan mengajar kelas tambahan atau tusyen telah terbukti ketara menyebabkan gangguan suara kalangan mereka.

Kata kunci : Gangguan suara, guru sekolah rendah, aktiviti mengajar, gaya hidup

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LIST OF ACRONYMS AND ABBREVIATIONS

<	Less than
>	More than
%	Percentage
χ^2	Chi-square
VD	Voice Disorder
MOE	Ministry of Education
IPTA	Institut Pengajian Tinggi Awam
IPTS	Institut Pengajian Tinggi Swasta

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Teachers comprise of a large and growing segment of the workforce in many countries. For example, Malaysia has a total of 4.17 thousand teachers (Ministry of Education Malaysia, 2013). According to Oxford Dictionary (2014), a teacher is a person who teaches especially in a school.

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Teachers have multiple tasks. The main tasks of the teachers are first, the need to convey knowledge of their subject matter to students. Second, teachers need to have common sense. Third, teachers have the responsibility to be a good role model in and out of the classroom. Finally, teachers must be organized (Kelly, 2014).

Teachers mainly use their voice to complete their major tasks. Therefore, some 7.5 million people, including many teachers, have diseases or disorders of the voice. Teachers are among those professionals who make great use of their voices as their job needs them to talk all day long in the classroom. They also have to project loud enough so that all their students can hear them clearly. Unfortunately, the stress on the voice can lead to health problems.

As researches had proven, teachers face one of the highest demands of any professional group to use their voices at work (Vilkman, 2000). They majorly use their voice to teach, guide, instruct and encourage the students in schools. Thus, they are at a higher risk of developing voice disorder (VD) than people from other professions. The consequences of a VD in a teacher can be far more serious than merely an acoustic disturbance. It may also have impact on the teacher's social and professional life as well as their mental, physical and emotional state and their ability to communicate as well. VD also leads to lesser quality teaching, an increased absenteeism and finally become a

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major financial burden. Teachers would feel limited in their current job performances and also in their future job or career options because of their voice problems (Smith *et al.*, 1997).

One of the difficulties in determining the extent of a problem within the population is the way in which the problem is defined. In the area of voice, it is recognized that VD cannot be defined unequivocally. Some studies have attempted to define a VD in terms of symptomology but clear operational definitions were not provided (Callas *et al.*, 1989; Lejska, 1967). In this study, as defined by Aronson (1985), VD is the condition "any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication". He also mentioned that VD arises when the quality, pitch, loudness or flexibility of one's voice differs from that of others of similar age, sex and culture. This shows that there is no absolute criterion for formal or disordered voice.

de Medeiros *et al.* (2008) mentioned that the etiology of VD is multidimensional. This means there are many risk factors that clearly play an important role in the development of VD among teachers. As reported by some previous studies, the risk factors included are teaching a large number of students, teaching special subjects, overwork, stressful environment and lack of teaching materials and equipment (de Medeiros, 2008 ; Vilkman, 2004 ; Simberg *et al.*,2005). Other risks include demographic

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factors such as gender and socioeconomic status (Yiu, 2002 ; Smith *et al*.,1998). For an extent, certain lifestyle factors such as smoking have also been reported to be associated with VD (Sala *et al*., 2001).

Several studies on VD in teachers have been conducted in Asian countries (Lee *et al*.,2010 ; Charn and Mok, 2012), but the relevant data for teachers in Malaysia are limited. Thus, by conducting this study, the data information obtained would able to define the prevalence of VD among primary school teachers in Malaysia and reveal the risk factors that contribute to VD and their impact on teachers.

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1.2 PROBLEM STATEMENT

Evidence shows that, VD has been identified as increased risk among the primary school teachers because of the demands put on their voices professionally. Numerous studies regarding VD among teachers have examined the prevalence, nature, risk factors and cause of VD among teachers and its impact on work (de Medeiros, 2008 ; Vilkman, 2004 ; Simberg *et al.*,2005 ; Lee *et al.*,2010 ; Charn and Mok, 2012 ; Yiu, 2002 ; Smith *et al.*,1998 ; Sala *et al.*, 2001). Some researchers believed that several risk factors such as teaching activities would contribute to VD and give an impact to the teachers. The consequences of VD in a teacher can be far more serious than merely an acoustic disturbance. It may have an impact on the teacher's social and professional life as well as their mental, physical and emotional state and their ability to communicate.

Despite a relatively high frequency of previous studies, the effects of VD on work-related activities, job performance, attendance and career choices have been explored in only a handful of studies. The VD impacts had been reported to be as great as that of life threatening illnesses whereby it can affect all aspects of an individual's life (Smith *et al,* 1996). Besides, voice problem in teachers have resulted in job restrictions, missing work days, and an increased likelihood of leaving the

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profession (Roy *et al,* 2004). Bohme (1974) and Ohlsson *et al.* (1987) also stated that VD can also spell an end to an individual's teaching career. Highly competent teachers with extensive training and experience may be forced to leave the classroom.

Serious personal, emotional and economic consequences may also occur which in turn contributes to the reducing of professional effectiveness of the teachers (Wilner and Sataloff, 1987). VD may not only have a negative impact on the quality of life of teachers, but they may also burden the society with additional health care expenses. Estimates suggest that, about $2.5 billion has been spent annually for the cost of sick leave and treatment of voice problems among teachers in U.S (Verdolini and Ramig, 2001). In summary, VD can have a negative impact on a teacher's job performance and quality of life, and would also increase the economic burden in the society.

Due to lack of relevant data in Malaysia, this study had been conducted to assess the prevalence of voice disorder among the primary school teachers in Bintulu, Sarawak.

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1.3 RESEARCH JUSTIFICATION

VD are thought to be one of the major occupational hazards of school teaching (Mattiske *et al*, 1998). The teacher's voice has been of special interest in several studies conducted in different parts of the world and it has been proven that teachers are the most likely to develop voice problems compared to any other professional group (Fritzell, 1996 ; Titze and Montequin, 1997). Teacher's voice is the most valuable asset in learning. The one thing teachers do most often is talk (rightly or wrongly). They talk for long periods each day, for many years and they rely on their voices to a great extent, and with it they transmit not only information, but also mood, atmosphere and emotions. Moreover, how they speak and what the voice sounds like have a crucial impact on classes. Therefore, they make up the population of those who frequently suffered from VD. Thus, by conducting this study, the researcher was able to determine the occurrence of VD among primary school teachers in Bintulu, Sarawak.

The results of a similar study confirmed that teachers frequently suffer from VD (Roy and Merrill *et al.,* 2004). Eleven to 89% of teachers have been reported to have experienced a variety of vocal symptoms such as vocal fatigue, dysphonia, increased phonation effort, dry throat, tightness and sore throat (Sliwinska-Kowalska *et al.,* 2006 ; Roy *et al*., 2004 ; Sala *et al*., 2002, Yiu, 2002 ; Russel *et al.*, 1998 ; Smith *et al.,* 1997).

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This is due to the fact that teachers often spend long periods of time talking loudly in noisy environments and in stressful situations (Roy *et al*., 2004 ; Russell *et al*,, 1998 ; Smith *et al*., 1997). Therefore, the outcome from this study will help the respective organization to develop and establish a specific guideline to prevent VD from becoming more prevalent among teachers.

VD has been suggested to be conceptualized as occupational diseases rather than problems of a particular individual (Vilkman, 2004). As reported by some previous studies, occupational risk factors include teaching a large number of students, teaching special subjects, overwork, stressful environment and lack of teaching materials and equipment (de Medeiros, 2008 ; Vilkman, 2004 ; Simberg *et al*.,2005). Other risks include demographic factors such as gender and socioeconomic status (Yiu, 2002 ; Smith *et al*.,1998). Certain lifestyle factors such as smoking have also been reported to be associated with VD (Sala *et al*., 2001). For this study, the researchers was focusing in lifestyle factors and teaching activities. Thus, by obtaining the result, this research will help in the development of a guideline to prevent VD.

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Besides, there is a lack of research that has been conducted on the teacher's population in Malaysia. Only few studies have been conducted in Asian countries such Hong Kong and Singapore (Lee *et al.*,2010 ; Charn and Mok, 2012). Therefore, it is significant to do this research especially in Malaysia where the data on VD among teachers are limited.

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1.4 CONCEPTUAL FRAMEWORK

A conceptual framework was prepared to give the overall view regarding the study conducted which is shown in **Figure 1**. Ministry of Education Malaysia (MOE) have a systematic level of education system which consist of kindergarten/pre-schools, primary school, followed by secondary school and finally the IPTA/IPTS. For this study, a primary school was choosen. In the school's organizational structure, there are teachers, students and general workers. The main focus of the study was the teachers. There are many kinds of occupational hazards experienced by the teachers such as dust exposure, ergonomics, psychosocial stress and voice usage. For this study, voice usage was the main focused.

The different characteristic of voice usage may contribute to VD. It can be categorized into lifestyle factors (smoking, alcohol consumption, caffeinated beverages), teaching activities (years of working, duration of teaching (per day), number of students taught (per class), number of classes taught (per day), subjects taught, teaching sessions, standard level taught, students grade level, extra classes or tuitions), voice care and environmental factors. For this study, the focused will be on lifestyle factors, teaching activities and voice care. Meanwhile, age, gender, marital status and hobbies could be the confounding factors.

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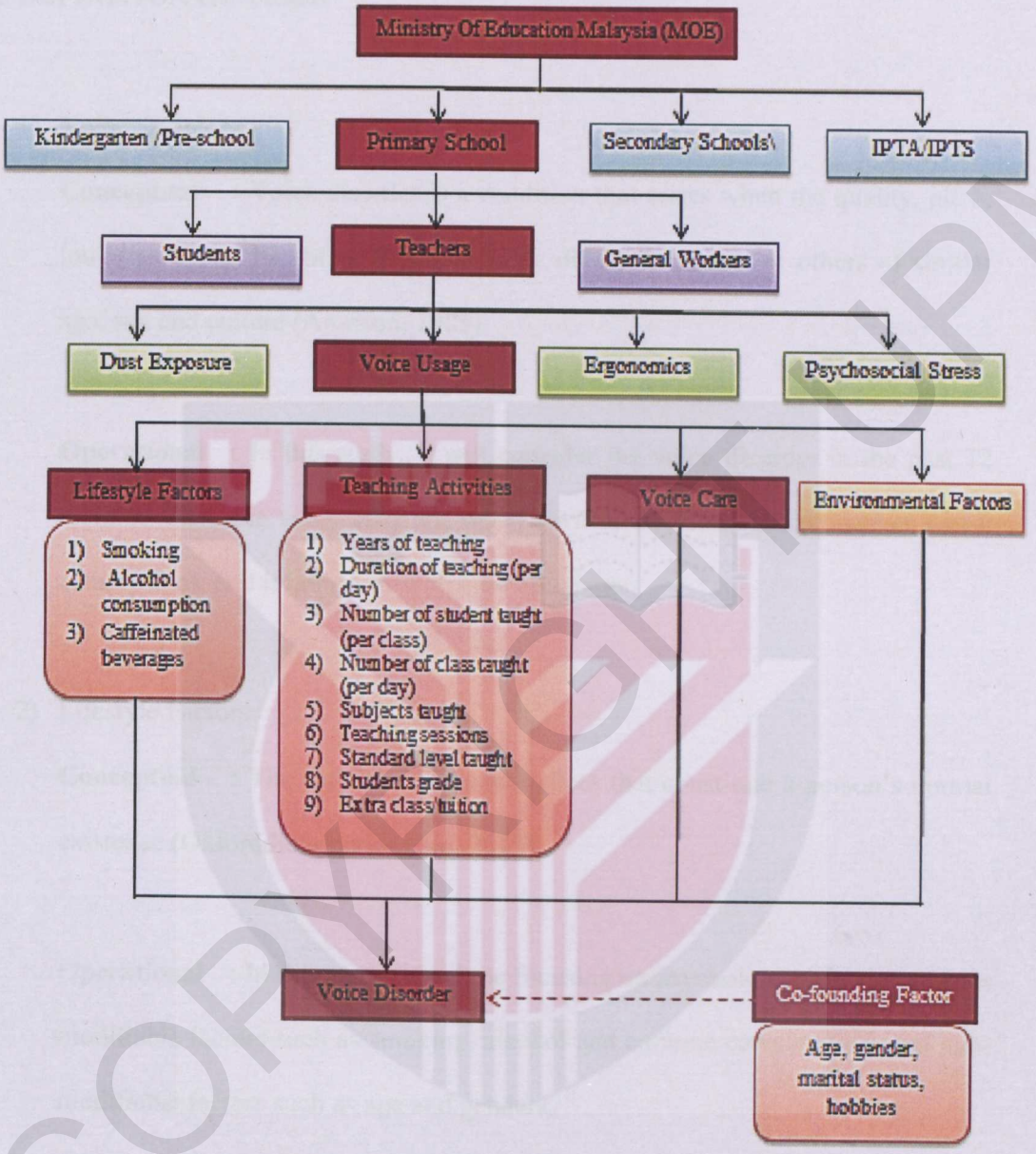

Figure 1.1 Conceptual Framework for Prevalence of Voice Disorder among Primary School Teachers in Bintulu, Sarawak

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1.5 DEFINITION OF TERM

1) Voice disorder (VD)

Conceptual : Voice disorder is a condition that arises when the quality, pitch, loudness or the flexibility of one's voice differs from that of others of similar age, sex and culture (Aronson, 1985).

Operational : In this study, it will consider the voice disorder in the past 12 months where the voice does not work, perform or sound as the teacher feel it usually does, and it interferes with communication.

2) Lifestyle Factors

Conceptual : The activities and experiences that constitute a person's normal existence (Oxforddictionaries.com, 2013).

Operational : In this study, it will be focusing on psychological factors such as modifiable factors such as smoking, alcohol and caffeine consumption, and non-modifiable factors such as age and genders.

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3) Teaching Activities

Conceptual : An event which the teachers engage with the students in terms of teaching, instructing, guiding, providing and make them understanding.

Operational : In this study, the respondents need to give information on how long have been in the teaching line, the duration of teaching per day, how many students per class, the subjects taught, when are the teaching sessions, the level of students taught and students grade that was taught.

4) Voice Care

Conceptual : It is a learning to pay attention to the signals that the voice shown so that the user will take the necessary steps to avoid getting injured in the first place. It also requires the user to think ahead, learning to change certain behaviour which might lead to an injured voice (Yorku.ca, 2013).

Operational : In this study, the voice care will be assessed from questionnaire on how they handle themselves when suffering from voice disorders such as seeking treatment from the specialist, extra training or collection of information at own initiative.

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5) School Teachers

Conceptual : School teacher is a person who provides education for pupils (children) and students (adults). The role of teacher is often formal and ongoing, carried out at a school or other place of formal education.

Operational : In this study, all primary school teachers will be the respondents. The questionnaire will be distributed among them.

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1.6 RESEARCH OBJECTIVES

1.6.1 GENERAL OBJECTIVES

i. To study the relationship between VD and the associated risk factors among primary school teachers in Bintulu, Sarawak.

1.6.2 SPECIFIC OBJECTIVES

i. To determine the prevalence of VD among primary school teachers in Bintulu, Sarawak.

ii. To determine the relationship between VD and lifestyle factors (smoking, alcohol consumptions, caffeinated beverages) among primary school teachers in Bintulu, Sarawak.

iii. To evaluate the relationship between VD and teaching activities (years of working, duration of teaching per day, number of students taught per class, number of class taught per day, subjects taught, standard level taught, student grade level taught, teaching sessions and teaching tuition/extra classes) among primary school teachers in Bintulu, Sarawak.

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1.7 STUDY HYPOTHESIS

i. There is a significant relationship between VD and teaching activities such as years of working, duration of teaching per day, number of students taught per class, number of class taught per day, subjects taught, standard level taught, student grade level taught, teaching sessions and teaching tuition/extra classes among primary school teachers in Bintulu, Sarawak.

ii. There is a significant relationship between VD and lifestyle factors such as smoking, alcohol consumption and caffeinated beverages among primary school teachers in Bintulu, Sarawak.

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CHAPTER 2

LITERATURE REVIEW

2.1 Overview of Voice Functioning

The voice consists of sound made by a human being using the vocal folds for talking, singing, laughing, crying, and screaming. The human voice is specifically a part of human sound production in which the vocal folds (vocal cords) are the primary sound source. Therefore, in order to comprehend the effects of a disordered voice, one must

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first have an adequate understanding of how the voice functions under normal circumstances, and the ways in which voice disorder manifest itself.

According to Stemple *et al.*,(2000), speech requires four main systems : (a) respiration ; (b) phonation (voice) ; (c) resonation and (d) articulation. Voice or phonation is the major source of sound in speech. It does not refer to aspects of speech controlled by the 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 *et al.*, 2000).

Stemple *et al.*, (2002) further describe that the voice is produced by the movement of the vocal folds in the larynx. In this movement, the air pressure from the lungs build 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 the vibratory cycles, the higher the pitch (Stemple, *et al.*, 2000).

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However, overuse and misuse of the vocal mechanism can lead to physiological changes in the folds. These physiological changes can include fatigued muscles, pathology such as nodules or polyps and/or muscle tension. These physiological changes can correlate 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 past researches, there has been remarkable inconsistencies in defining what constitutes a VD (Aronson, 1985 ; Stemple, 1995 ; Roy *et al*., 2004). The three key sources of inconsistency appear to be are : (a) the severity that the condition needs to reach before a VD is diagnosed ; (b) anatomical and physiological evidence of laryngeal dysfunction and (c) the relative importance of clients, clinicians, and society in their perceptions of a deviation from typical or appropriate vocal sound.

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VD have traditionally has been defined in terms of deviant quality, pitch, and loudness (Aronson, 1985) and by deviant structure and/or function of the laryngeal mechanism (Stemple, 1995). A broad definition of self-reported VD used in a recent study by Roy *et al.*(2004) was " any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication". The definition of VD in an occupational context depends on the demands set upon the voice, and voice endurance is an essential criterion (Vilkman, 2004).

In the study by Verdolini and Ramig (2001), VD 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". Other studies diagnosed subjects through the use of video-endoscopy and video-laryngostroboscopy (Kosztyla-Hoina *et al.,* 2004). Stemple (2004) provides 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 VD 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 VD may be present when there are problems with the structure, the function or both of the laryngeal mechanism.

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In their review of published research on voice problems among teachers, Mattiske *et al.* (1998) point out that such data are limited and that studies often lack an operational definition of what could be considered a voice problem or a VD. It is likely that researchers differ in their definitions of VD partly because the demands of their individual studies vary (Mattiske *et al.,* 1998). Portney and Watkins (1993) suggested that the concept of an operational definition is important in approaching these differences across studies. 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 a large number of people.

Although the differences across studies in prevalence of VD might first appear to be in disagreement over how many individuals are identified with a conceptual definition, it is likely that differences in operational definitions explain the majority of variation.

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2.3 Early sign of Voice Disorder

While vocal overuse may lead to severe disorders such as aphonia, subtle problems may result as well. One subtle form of VD is referred to as "vocal fatigue" (Welham and Maclagan, 2003). Vocal fatigue has been defined as a "negative vocal adaptation that occur as a consequence of prolonged voice use" (Welham and Maclagan, 2003). These negative adaptations 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 (Welham and Maclagan, 2003). Unfortunately, the value of these studies in understanding vocal fatigue is questionable. Welham and Maclagan (2003) suggested that lack of success could be attributed to the studies' "artificiality" .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. These researchers have begun to focus on the question of vocal fatigue through subjects that experience vocal fatigue symptoms, and by, "conducting

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experiment under realistic occupational demands". Vocal fatigue may be considered a precursor to, or a mild form of VD.

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 (Roy *et al.*, 2004).

2.4 Voice Disorder among Teachers

Teachers comprised of a large and growing segment of the workforce in many countries and they face one of the highest demands of any professional group to use their voices at work (Vilkman, 2000). They had also concluded that teachers talked longer

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than the other professional do (Rantala *et al.,* 1995). The prevalence of VD has often been examined among individuals who rely on their voice for their profession. In particular, VD in teachers have been the subject of several studies due to their high prevalence (Smith *et al*., 1998 ; Kosztyla-Hojna *et al.,* 2004; Roy *et al.,* 2004; Roy *et al.,* 2003; Verdolini and Ramig, 2001).

The prevalence of VD is significantly higher among teachers than non-teacher professionals (Roy *et al*., 2004). Smith *et al.,* (1997) estimated that 40% of U.S. teachers experience hoarseness, and the same amount reported that teaching adversely affects their voices (as cited in Verdolini and Ramig, 2001). Studies carried out by various authors to reveal the prevalence of self-reported voice alterations showed wide variation between 20% to 75% among teachers (Smith *et al.,* 1997 ; Smith *et al.,* 1998a ; Smith *et al.,* 1998b).

The factors behind this wide variation are multiple. This may be due to a variety of methodology used and the total size of population used to conduct the study. The discrepancies in the results reported in different studies have been suggested to be at

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least partly due to the differences in sample sizes (Roy *et al.,* 2004). As reported by Vilkman , (2004), 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. In studies where the data was collected through questionnaires similar to the one used in this study, the prevalence ranged from 12%-26% (Smith *et al.,* 1997 ; Sapir *et al.,* 1993 ; Pekkarinen *et al.,* 1992).

2.5 Voice Disorder and Lifestyle Factors

Some factors that may contribute to VD among teachers are related to lifestyle factors. Urrutikoetxea *et al.* (1995) concluded that smoking was associated with the presence of VD in teachers. As the number of cigarettes smoked by teachers increased, so did the occurrence of vocal pathology (Urrutikoetxea *et al.,* 1995). Other than that, acid reflux, tobacco smoking and alcohol use have also been reported to increase the risk of getting VD (Coltom and Casper, 1990). However, the study conducted by Sheng *et al.,(*2010) showed that smoking, alcohol and caffeine were not found to have any apparent relationship with the frequency of VD. This result was consistent with a study done by Roy *et al.,(*2004) about school teachers at Iowa and Utah. It may be because

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teachers were less likely to have used tobacco products and drink alcohol than the general population (Roy *et al.,* 2004).

2.6 Voice Disorder and Teaching Activities

Years of service as a teacher, hours of teaching and grade level taught have been often regarded as contributing factors to VD (Safarti, 1989). Based on her surveys, Marks (1985) reported that more experienced teachers were more likely to have a history of VD. On the other hand, although Sapir *et al.* (1993) did not specifically investigated the causes of vocal symptoms in teachers, they found that years of teaching and hours of teaching did not correlate with the symptoms described. Safarti (1989) and Unger and Bastian (1981) suggested that teachers working with specific grade levels or subjects areas can be particularly susceptible to VD.

Labastida (1961) reported that voice problems occur more frequently in teachers of languages, physical education and teachers whose work involved singing. Safarti (1996) considered that junior primary teachers are at risk because of the excessive

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demands placed on the voice due to the dependence on oral rather than written communication when teaching young children. Safarti (1996) had also believed that teachers of languages are at risk because of their increased effort need to be used spoken language in terms of pronounciation. Physical education teachers, music teachers and drama teachers may also be susceptible to VD because they use their voice over high levels of background noise or over long distances. Meanwhile, Urrutikoetxea *et al.*, (1995) concluded that there was no relationship between VD and the grade level at which the teacher was working.

2.7 Voice Disorder and other risk factors

Demographical factors are also thought to be associated with the vocal difficulties of teachers. While Sapir *et al.* (1993) found that age did not correlate with vocal symptoms, Smith *et al.* (1997) concluded that the number of vocal symptoms reported increased with age. Vocal symptoms were also found to be more common in females than males in the studies conducted by Pekkarinen *et al.* (1992) and Smith *et al.* (1997). Gender differences in the prevalence of VD had also been studied by few researchers and majority of the studies revealed that females were more likely to report

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VD than male (Smith *et al.*, 1998a ; Marks, 1985 ; Roy, 2003 ; Vilkman, 2000). Marks (1985) determined that female teachers were more likely to report a history of VD.

The higher frequency of VD among women can be explained by the smaller size of their larynx, lower vocal power and more vocal vibrations (Jardim *et al.*, 2007 ; Vilkman, 2000). This has been consistently reported in the previous studies and has mainly been described as physiological reasons (Smith *et al.,* 1998a ; Roy *et al.,* 2004; Roy *et al.,* 2003; Verdolini and Ramig, 2001). Women have shorter vocal folds and produce voice at higher fundamental frequency. Consequently, there is less tissue mass to dampen a larger amount of vibrations. At the molecular level, women have less hyaluronic acid in the superficial layer of the lamina propria. Hyaluronic acid plays an important role in wound repair. Lower amounts of hyaluronic acid indicate that there is less protective tissue dampening and therefore, reduce wound-healing response (Roy, 2003).

Older teachers also reported a history of VD more often than younger teachers but this history was not related to the frequency with which the VD recurred (Marks,

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1985). His findings has been supported by the result found by Roy *et al.,* (2004) and Villanueva-Reyes (2011), VD has been thought to occur more often in older individuals, making increased age a possible risk factor.

Meanwhile, the marital status would also contributed in the study especially the role of household and family extension of voice use (de Medeiros and Barreto *et al.,* 2008). Under noisy and stressful environment, the teachers tend to speak loudly and this may also contribute to VD (Roy *et al.,* 2004). Supported by Koojiman *et al*., (2006), stressful environment such as too much noise may cause VD. They mentioned that a large group of students that may create noise will lead the teachers to talk with a strong vocal intensity ranging between 58 dB to 78 dB.

2.8 Impact of Voice Disorder

The impact of VD among teachers involved several aspects of their life. VD among them generates negative personal, emotional and economical effects (Yiu, 2002 ; Melnyk *et al*., 2003 ; Vilkman, 2004). Smith and colleagues had concluded that teaching is a high-risk occupation for VD and this occupation-related health problem contributes

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to significant job-related and economic consequences such as a great financial cost use for vocal rehabilitation such as speech pathology management, surgical intervention and extensive periods of sick leaves.

In the later study, Smith and Kirchner *et al.,* (1998b) reported that over 38% of the teachers studied complained that teaching have had adverse effect on their voice and 39% of them had to reduce the teaching activities. Besides, VD may lead to stress and many researches has proven this statement (Melnyk *et al*., 2003). Other than that, VD may cause the teachers to be less effective and hence, not able to develop a relationship with the students in the class (Gundermann, 1963).

It is proven that VD may lead to extensive periods of sick leave (Bistrisky and Frank, 1981). They are unable to perform their work and seek for medical leave due to their voice problem (Smith *et al*., 1997). Similarly, Russell *et al*., (1998) reported that almost 22% of teachers surveyed experienced regular VD that interfered with their ability to use their voices as they wish and 38.7% reported missing at least 1 day of work in the past year as a result of their VD.

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2.9 Voice Care

Some teachers may not be aware of VD as one of their occupational hazards and thus, not being able to properly care for themselves (Russell *et al.,* 1998). Limited knowledge of the principles of voice care and a lack of training in the effective use of the speaking voice and voice projection are thought to contribute to VD (Bohme, 1974 ; Calas *et al.,* 1989 ; Cooper, 1963). Researchers have also found that there are low significance of teachers that have had received any kind of information regarding on VD (Van Houtte and Claeys *et al.,* 2011). Teachers tend to consider dysphonia as an inevitable occupational hazard and probably have little awareness that it may be prevented or at least relieved (Scalco, 1996 ; Russel *et al.,* 1998).With regards to seeking treatments, there is a low number of teachers who sought for professional help (Roy *et al.,* 2004). It was believed that teachers fear that doctors will prescribe them to use lowered voice at work, take leave from teaching work or a change of profession as reported by Smith *et al.,* (1998a) and Roy *et al.*,(2004).

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2.10 Voice Disorder Prevention

Several authors have addressed the importance of the prevention of VD among those who work in vocally demanding occupations, such as teachers (Buekers *et al.,* 1995; Cooper, 1973; De Bodt *et al.,* 1998; Fritzell, 1996; Morton and Watson 2001; Ohlsson, 1989; Roy, Merrill Thibeault, Gray *et al.,* 2004; Russel *et al.,* 1998; Sapir *et al.,* 1993; Smith *et al.,* 1997; Verdolini and Ramig 2001; Yui 2002). Ohlsson (1989) has suggested that speech therapists should be included on the health care teams of the occupational health care units in order to facilitate preventative voice care for employees.

Marge (1991) has identified two types of prevention. Primary prevention refers to elimination of something that might cause a VD, for example to stop smoking so as to prevent future VD, while secondary prevention involves early detection and treatment of VD. A good primary prevention should be based on 3 aspects: a) amelioration of classroom acoustics, b) voice care programs for future professional voice users, including teachers and c) classroom or portable amplification systems (Bovo *et al.,* 2013).

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As one component of secondary prevention, Marge (1991) mentions screening for VD. One massive form of voice screening for prospective students in vocally demanding occupations such as teaching, acting and singing took place in the former German Democratic Republic over several decades (Seidner and Wendler, 2001). All candidates were required to undergo voice and speech examination before accepted to educational programmes and were assessed as "fit" and unfit".

According to Yui (2002), teachers would like to learn more about voice care and voice production and they think that vocal hygiene strategies would help them to prevent voice problems. As content for a vocal hygiene program, teachers suggested voice care strategies, breathing exercises and proper voice production methods. As for the most common strategies to avoid voice problems, they mentioned speaking softly, hydration (to drink water), speaking less and the use of amplifiers (Yui, 2002). Education in vocal hygiene might be effective as a preventative measure, but the results of two studies (Holmberg *et al.,* 2001; Roy *et al*., 2001) indicate that, if not combined with more direct treatment approaches, vocal hygiene education does not seem to be an effective method of treatment for those who have already suffered from VD.

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CHAPTER 3

METHODOLOGY

3.1 STUDY DESIGN

A cross-sectional study design was used in this research. A cross-sectional study is a descriptive study in which the disease and exposure status were measured simultaneously in a given population in a specific time. For this study, it was conducted between January 2014 until March 2014.

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3.2 STUDY LOCATION

The location of the study was at Bintulu, Sarawak. Bintulu is located in Sarawak, East Malaysia. The 4 selected schools are Sekolah Kebangsaan Kidurong, Bintulu, Sekolah Kebangsaan Kidurong 2, Bintulu, Sekolah Kebangsaan Bintulu, Bintulu and Sekolah Kebangsaan St. Anthony, Bintulu. The 4 schools were selected based on upon approval from the school principals to conduct the study. Another reasons was because the teacher's population in the schools were equal, the school facilities are currently upgrading, near to the town and accessible by using public transportation.

3.3 SAMPLING

3.3.1 SAMPLING POPULATION

The sampling population was among all primary school teachers in 4 selected primary schools in Bintulu, Sarawak. Primary school teachers were chosen because in a previous study revealed that the prevalence of VD was higher among primary school teachers than those of middle or secondary school teachers (Kamel *et al*., 2008).

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3.3.2 SAMPLING FRAME

The full list of primary schools in Bintulu, Sarawak was obtained from the official website of the Ministry of Education. Upon random selection, 4 primary schools were selected. Upon approval from the principals, the teachers name list was obtained from the school principal. For each school, 25 teachers were selected based on grouped into number of schools. 25% is selected from 100 respondents for each school. Sample size of 100 is obtained from Kirkwood and Stern (2009) formula as calculated in 3.3.6.

$$\frac{25}{100} \text{ x } 100 \text{ samples} = 25 \text{ samples for each school}$$

3.3.3 SAMPLE

The sample was among all primary school teachers who have suffered and who have not suffered VD in the past 12 months.

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3.3.4 SAMPLING UNIT

The sampling unit for this study was all primary school teachers who are male and female, fulltime teachers, have suffered and have not suffered from VD in the last 12 months. There were no inclusion and exclusion criteria included in the study.

3.3.5 SAMPLE METHOD

Simple random sampling method was conducted where the respondents were selected randomly.

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3.3.6 SAMPLE SIZE

With prevalence of exposed group set at 70% from studies by Lee *et al.* (2010), the power of study (1 - p) is set at 90% with confidence interval of 95%, a minimum of 84 samples should be taken which calculated based on Kirkwood and Stern (2009) formula shown :

$$N = \frac{p(1-p)}{e^2}$$

Where : N = estimated sample size

p = prevalence of previous study

e = margin error at 5% (the standard value of 0.05)

$$N = \frac{0.70(1-0.70)}{0.05^2}$$

= 84 samples

However, after taking into consideration, an additional 20% respondents will be added for the rejected samples, the estimated sample size taken will be 100 respondents among primary school teachers.

$$\frac{20}{100} \times 84 \text{ samples} = 100 \text{ samples}$$

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3.4 STUDY INSTRUMENTATION

3.4.1 QUESTIONNAIRE

A set of self-adapted questionnaire was used for the research. Two versions of questionnaire were prepared which is English version and the Bahasa Melayu version. The teachers have the opportunity to answer in English or Bahasa Melayu. The questionnaire consisted of 6 sections.

Section A focused on the socioeconomic status such as age, gender and marital status. Section B asked about VD condition suffered by the respondents in the past 12 months and followed by questions on voice symptoms. Lifestyle factors such as smoking habits, alcohol consumption and caffeinated beverages consumption were asked in Section C.

Teaching activities were also assessed in Section D to determine the association of risk factors with VD. Some related questions were years of teaching, duration of teachings, number of taught students, number of classes taught per day, student's grade

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being taught, standard level being taught, teaching sessions, subjects being taught by the respondents and teaching extra classes or tuition. Methods on handling VD were asked in Section E to know how respondents managed with VD. Lastly, Section F was asked about education on voice care which will help to see the awareness of voice disorder in teaching profession.

3.5 VARIABLES

3.5.1 DEPENDENT VARIABLES

The dependent variables are the associated risk factors which are teaching activities and lifestyle factors.

3.5.2 INDEPENDENT VARIABLES

The independent variables are the VD that the teachers have been suffered in the last 12 months.

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3.6 DATA COLLECTION PROCEDURE

For data collection procedure, first, a formal application letter was obtained from the Department of Environmental and Occupational Health, Faculty Medicines and Health Sciences UPM to be submitted to Ministry of Education Malaysia (MOE) through its official portal http://eras.moe.gov.my/eras/index.aspx . Upon approval from MOE, another formal letter was submitted to the Department of Education Sarawak. Once approved, the approval from school principals of the 4 selected primary schools was obtained. The list of names of teachers were obtained from the principals from each school. The selected teachers were chosen randomly by the principals due to the ability of principals to assess their working performances.

The arrangement of date, time and venue was made with the principals to ensure the data collection process flowed smoothly. On the actual day, the selected teachers were gathered and a short briefing was given to enlightened them about the study such as in terms of purpose, objectives, methods and results of the study. First, the teachers have the opportunity to choose the version of questionnaire that they want to answer. Before the questionnaires were distributed, a consent form was given to inform them that the data obtained was confidential and only used for the study.

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Next, the questionnaire was distributed and approximately 20 minutes was given for them to complete the questionnaires. Upon completion, the questionnaire was collected personally by the researcher and token of appreciation was given to them. The questionnaire was kept inside prepared envelope and sealed. Finally, the data was brought back to be analyzed. The flow process of data collection procedure is shown in Figure 2.

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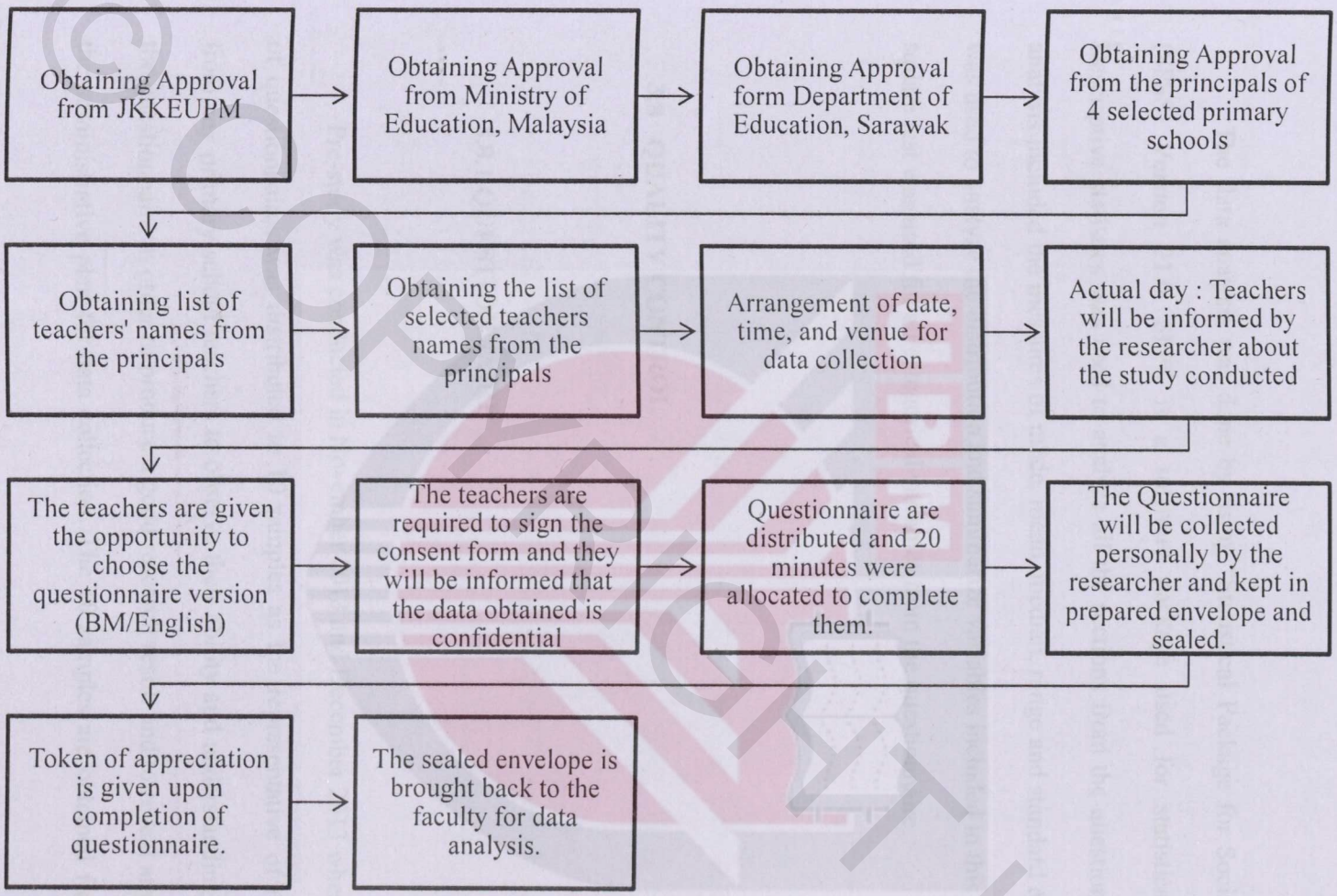

Figure 2 : Flow Procedure for Data Collection

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3.7 DATA ANALYSIS

The data analysis was done by using "Statistical Package for Social Sciences (SPSS) Version 21.0. SPPS is a software package used for statistical analysis. Descriptive statistics was used to analyze all the sections from the questionnaire. This analysis included the measures of mode, mean, median, range and standard deviation. It was used to analyze the distribution and summarize variables included in this study. Chi-square test was used for all categorical variables from the questionnaire.

3.8 QUALITY CONTROL

3.8.1 QUESTIONNAIRE

Pre-study was conducted in November 2013 and December 2013 where a sample of questionnaires was distributed to 10 samples as the representative of respondents from any primary school teachers to observe their ability and understanding answering the questionnaire in order to produce a good research result and to reveal any defects in the administrative plan for data collection. The 10 samples are obtained from 10% of

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100 respondents taken from the sample size for the study. The pre-study had been analyzed by using reliability test to yield the value of Cronbach's alpha which measure the internal consistency on how closely related a set of items are as a group in the questionnaires. Overall, the internal consistency had been achieved with value 0.839 which showing that the items have relatively high internal consistency.

3.9 STUDY LIMITATION

1. Information bias had occurred due to the determinant of association between variables which are based on questionnaires and depends on the respondents answers such as recall bias.
2. Some selected teachers were not able to attend the data collection sessions due to class or other school activities and this may cause the response rate will not achieved 100% rate.

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3.10 ETHICAL CONSIDERATION

During the proposal preparation, a formal letter from the Department of Environmental and Occupational Health, Faculty of Medicine and Health Science UPM was obtained for the application process to the Ministry of Education through the official portal of the Ministry of Education. Next, after the approval of the Ministry of Education, the same approval letter was forwarded to the Department of Education Sarawak. This research was conducted on voluntary basis where all respondents were being informed about the research, and before the questionnaires were distributed, they were required to sign the agreement or consent form. Upon agreement, the questionnaire were distributed and answered. The completed questionnaires were kept in a sealed envelope and brought back to the faculty to be analysed.

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CHAPTER 4

RESULT

4.1 Response Rate

In order to complete the study, 100 samples of questionnaires, consent forms and information sheets had been distributed. The questionnaires were distributed randomly to the primary schools teachers from in 4 different schools. Out of 100 samples, only 78 (78% response rate) samples of questionnaires were completed and signed consent forms been returned to the researcher.

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4.2 Socio Demographic Distribution

This study involved 78 primary schools teachers who had agreed to participate in this study. Form the total, 19 (24.1%) primary schools teachers were aged between 20-29 years old, 25 (32.1%) primary schools teachers were aged between 30-39 years olds and 34 (43.6%) primary schools teachers were aged between 40 years old and above. Most of the respondents were females which was 66 (84.6%) of them and followed by 12 males (15.4%). Among 78 of them, 22 (28.2%) were single, 55 (70.5%) of them were married, and 1 (1.3%) of them divorced. Table 4.1 summarizes the respondent socio-demographic distribution.

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Table 4.1 : Distribution of socio-demographic among respondents (N=78)

Socio-Demographic Characteristics		Frequency (n)	Percentage (%)
Age	20-29 years old	19	24.10
	30-39 years old	25	32.10
	40 years old and above	34	43.60
Gender	Male	12	15.40
	Female	66	84.60
Marital status	Single	22	28.20
	Married	55	70.50
	Divorced	1	1.30

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4.3 Prevalence of Voice Disorder

For the purpose of the study, the researcher considered VD to be any time the voice does not work, perform, or sound as it normally should, so that it interferes with communication in the past 12 months. From the total respondents, 42 (53.8%) of them had suffered from VD in the past 12 months as shown in Figure 3. In additional, 17 (21.8%) of them suffered from VD for once only in the past 12 months while 26 (33.3%) of them suffered from VD for more than once in the past 12 months. This shows that relationship of VD with primary school teachers was significant which is 53% in this study. Table 4.2 summarizes the distribution of respondents VD.

Table 4.2 : Distribution of voice disorder among respondents (N=78)

Voice disorder		Frequency (n)	Percentage (%)
Suffered (past 12 months)	Yes	42	53.80
	No	36	46.20
Frequency	Once	17	21.80
	More than once	26	33.30

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By calculating the prevalence, the total size of population for 4 primary schools was 320 and from the questionnaire analysis, it was found that 42 (53.8%) of the respondents had suffered from VD in the past 12 months. Hence, the prevalence of VD among primary school teachers in Bintulu, Sarawak is 13%.

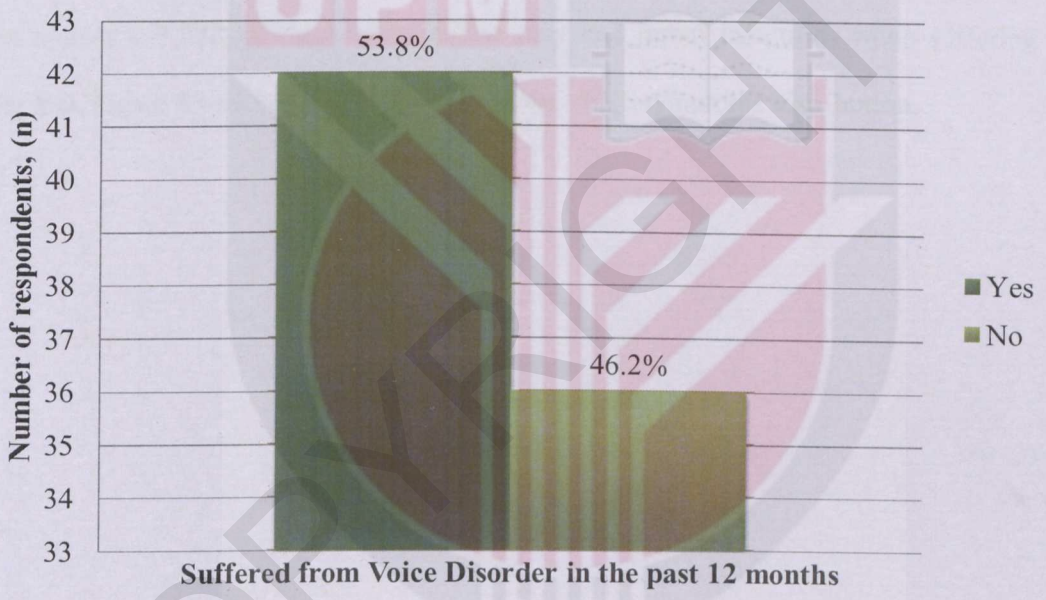

Figure 3 Graph for Distribution of suffered from VD in the past 12 months

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4.4 Voice Disorder Symptoms Distribution

Some VD symptoms had been asked in the questionnaire. Out of 78 respondents, 72 (92.3%) of them reported to have sore throat, 69 (88.5%) of them also reported having coughing while 41 (52.6%) of them claimed that they have had swollen gland when suffering from VD. Moreover, 50 (64.1%) of the respondents also complained of having a lot of phlegm while 62 (79.5%) of them stated that they were having blocked nose and 45 (57.7%) of them claimed that they had throat infections when suffering from VD. Figure 4 and Table 4.3 summarized the voice symptoms distribution.

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Table 4.3 : Distribution of voice symptoms (N=78)

Voice symptoms		Frequency (n)	Percentage (%)
Sore throat	Yes	72	92.30
	No	6	7.70
Coughing	Yes	69	88.50
	No	9	11.50
Swollen gland	Yes	41	52.60
	No	37	47.40
Lot of phlegm	Yes	50	64.10
	No	28	34.60
Blocked nose	Yes	62	79.50
	No	16	20.50
Throat infections	Yes	45	57.70
	No	33	42.30

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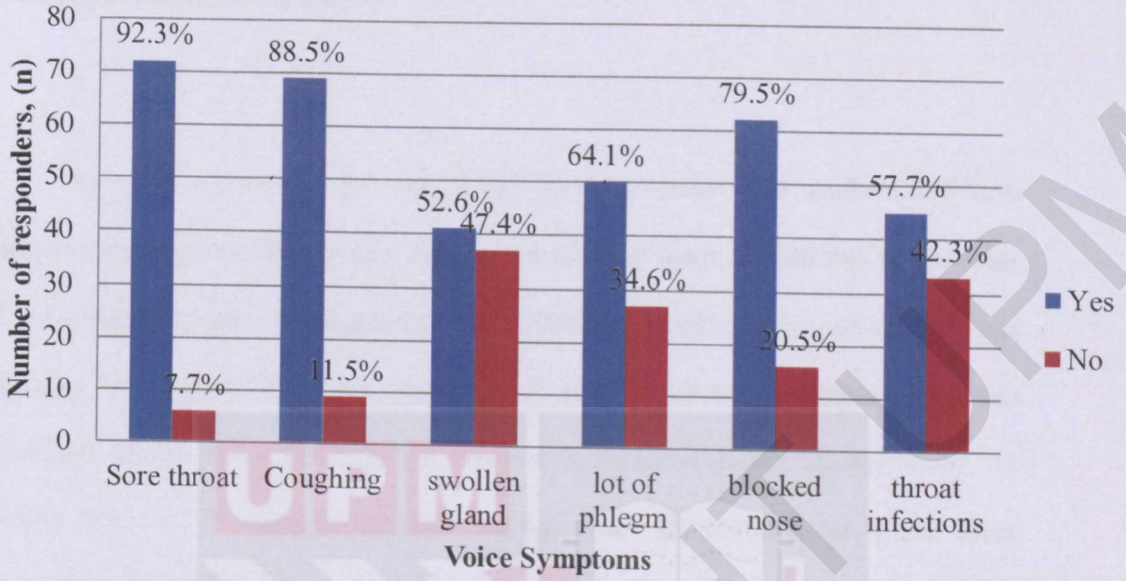

Figure 4 Bar Chart for Distribution of Voice Symptoms

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4.5 Lifestyle Factors Distribution

Out of 78 of respondents, only 2 (2.6%) respondents were smokers and have been smoking for more than 1 year. Hence, out of 78 of them, 69 (88.5%) respondents did not consume alcohol beverages and 8 (10.3%) respondents have consumed alcohol beverages for the past 12 months. Moreover, 52 (66.7%) of the respondents consumed caffeinated drinks while others do not consume caffeinated drinks. As for hobby, 74 (94.9%) out of 78 respondents had hobby. The 10 (12.8%) of them loves singing/karaoke, 15 (19.2%) of them loves to exercise, while 16 (20.5%) of them loves watching movies. Figure 5 and Table 4.4 summarized the respondent lifestyle factors distribution.

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Table 4.4 : Distribution of lifestyle factors among respondents (N=78)

Lifestyle Factors		Frequency (n)	Percentage (%)
Smoking status	Yes	2	2.60
	No	76	97.40
Years of smoking	1 year	-	-
	More than 1 year	2	2.60
Alcohol beverages	Yes	9	11.50
	No	69	88.50
Alcohol beverages	Yes	8	10.30
(past 12 months)	No	70	89.70
Caffeinated drinks	Yes	52	66.70
	No	26	33.30
Hobby	Yes	74	94.90
	No	4	5.10
Activities	None	37	47.40
	Singing/Karaoke	10	12.80
	Exercise	16	20.50
	Watching movies	15	19.20

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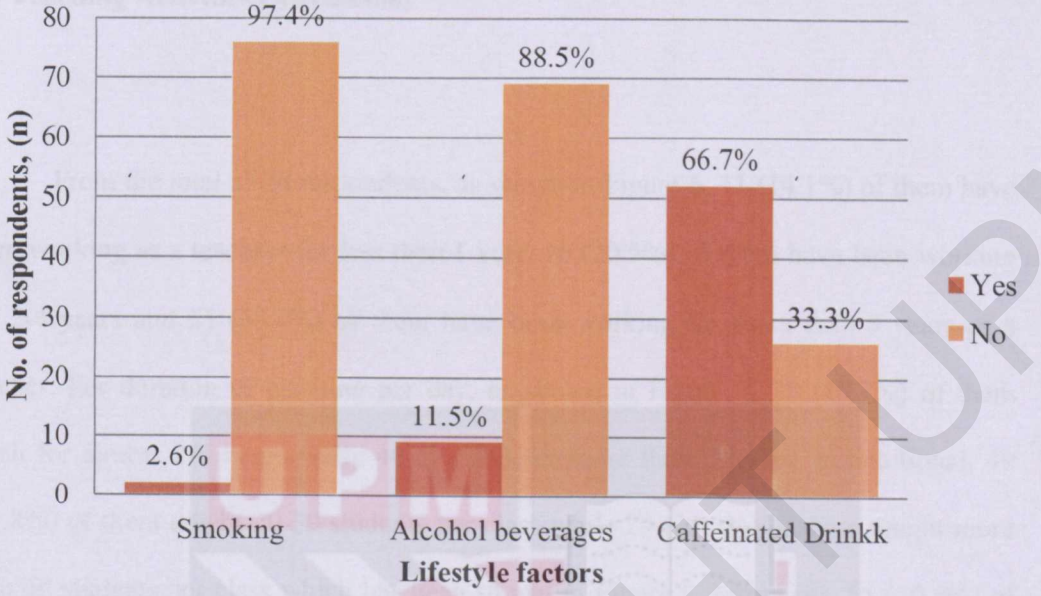

Figure 5 Bar Chart for Distribution of Lifestyle Factors

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4.6 Teaching Activities Distribution

From the total of 78 respondents, as shown in Figure 6, 11 (14.1%) of them have been working as a teachers for less than 1 year, 16 (20.5%) of them have been working for 2-4 years and 51 (65.4%) of them have been working for more than 5 years as a teacher. For duration of teaching per day, as shown in Figure 7, 38 (48.7%) of them teach for almost 2-4 hours while 40 (51.3%) for more than 5 hours. In additional, 49 (62.8%) of them taught 20-30 students per class while 29 (37.2%) of them taught more than 40 students per class which has been shown in Figure 8. Moreover, 55 (70.5%) of the respondents taught 2-3 classes per day while 23 (29.5%) of them taught more than 4 classes per day which also had been summarized in Figure 9.

As a summary, 41 (52.6%) of them taught language subject (Bahasa Melayu/English/Bahasa Iban), 26 (33.3%) of them taught social subject (Mathematics/Moral Study/Islam Study), 2 (2.6%) of them taught physical subject (Pendidikan Jasmani/Pendidikan Muzik) while 9 (11.5%) of them taught other subject such as Kemahiran Hidup and Civic studies as shown in Figure 10. The 47 (60.3%) of the respondents taught lower primary (Primary 1/Primary 2/Primary 3) while 31 (39.7%)

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of them taught upper primary (Primary 4/Primary 5/Primary 6) as summarized in Figure 11.

For students grades, as shown in Figure 12, 21 (26.9%) of them taught good grades students, 48 (61.5%) of them taught average grade students and 9 (11.5%) of them taught poor grades students. In additional, 27 (34.6%) of the respondents teaching tuition or extra classes while 51 (65.4%) do not teach tuition/extra class as shown in Figure 13. For teaching sessions, as summarized in Figure 14, 88 (48.7%) of them taught in the morning session which was from 7.00 am to 12.30 pm while 40 (51.3%) of them taught in the evening session which was from 1.00 pm to 6.15 pm. Table 4.5 (a) and Table 4.5 (b) summarized the respondents teaching activities distribution.

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Table 4.5 (a) : Distribution of teaching activities among respondents (N=78)

Teaching Activities		Frequency (n)	Percentage (%)
Years of working	Less than 1 year	11	14.10
	2-4 years	16	20.50
	More than 5 years	51	65.40
Duration of teaching (per day)	2-4 hours	38	48.70
	More than 5 hours	40	51.30
No. students taught (per class)	20-30 students	49	62.80
	More than 40 students	29	37.20
No. class taught (per day)	2-3 classes	55	70.50
	More than 4 classes	23	29.50
Subjects taught	Language studies	41	52.60
	Social studies	26	33.30
	Physical studies	2	2.60
	Others	9	11.50
Standard level	Lower Primary	47	60.30
	Upper Primary	31	39.70

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Table 4.5 (b) : Distribution of teaching activities among respondents (N=78)

Teaching Activities		Frequency (n)	Percentage (%)
Students grade level	Good	21	26.90
	Average	48	61.50
	Poor	9	11.50
Tuition/extra class	Yes	27	34.60
	No	51	65.40
Teaching sessions	Morning	38	48.70
	Evening	40	51.30

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Figure 6 Graph for Distribution of years of working

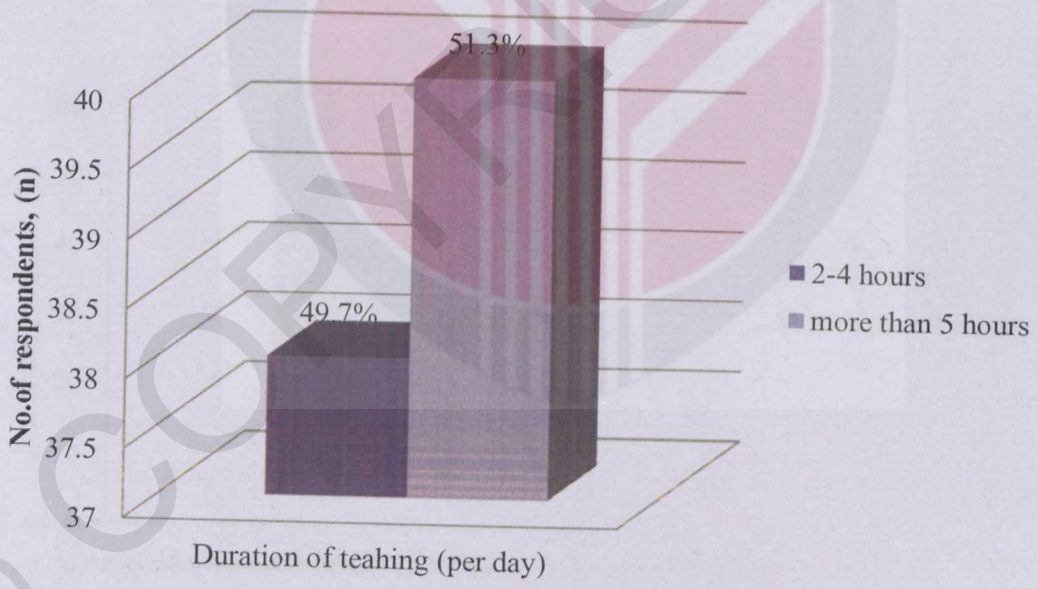

Figure 7 Graph for Distribution of duration teaching (per day)

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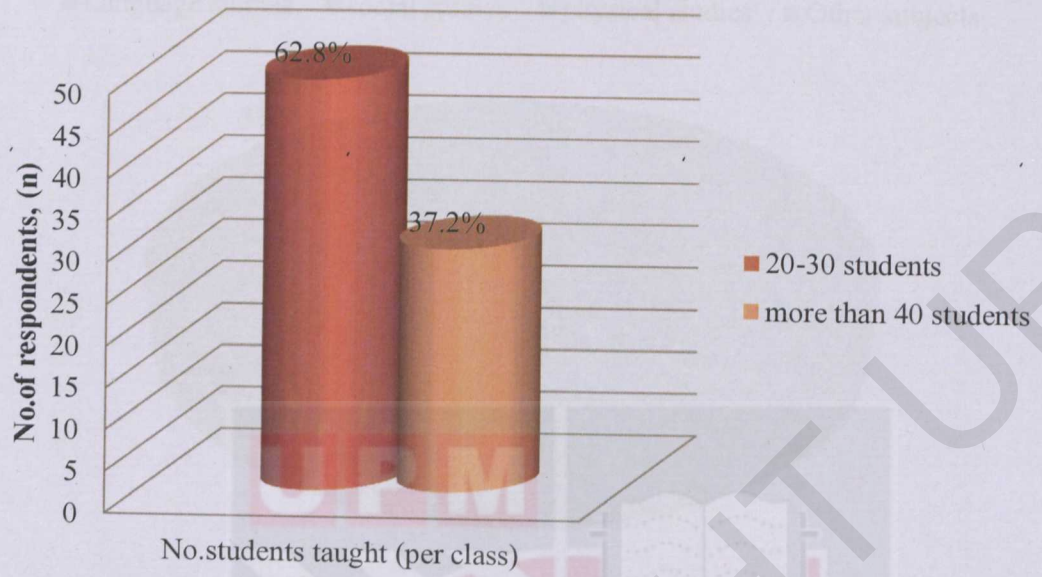

Figure 8 Graph for Distribution No.students taught (per class)

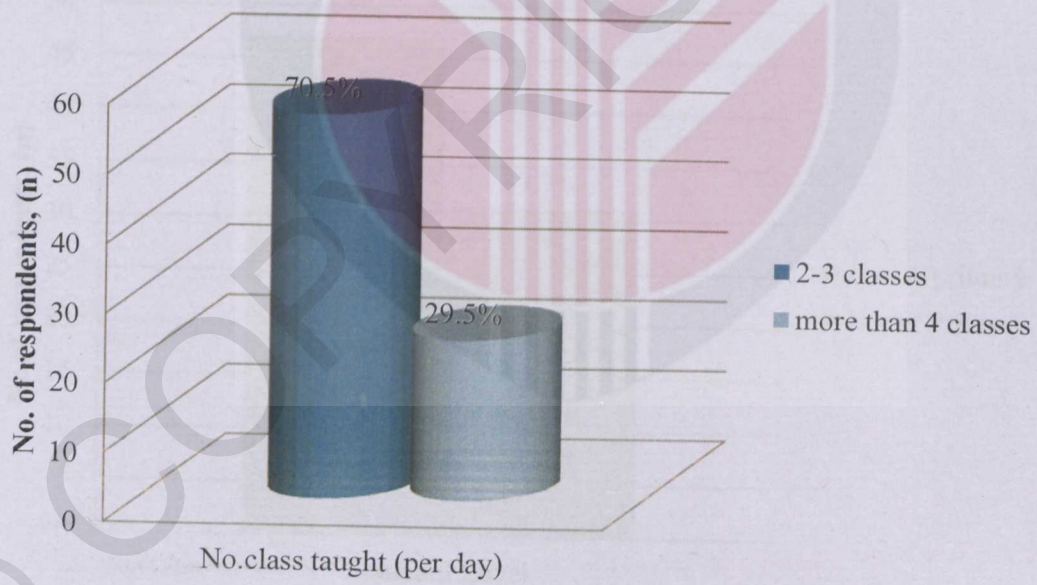

Figure 9 Graph for Distribution of No.class taught (per day)

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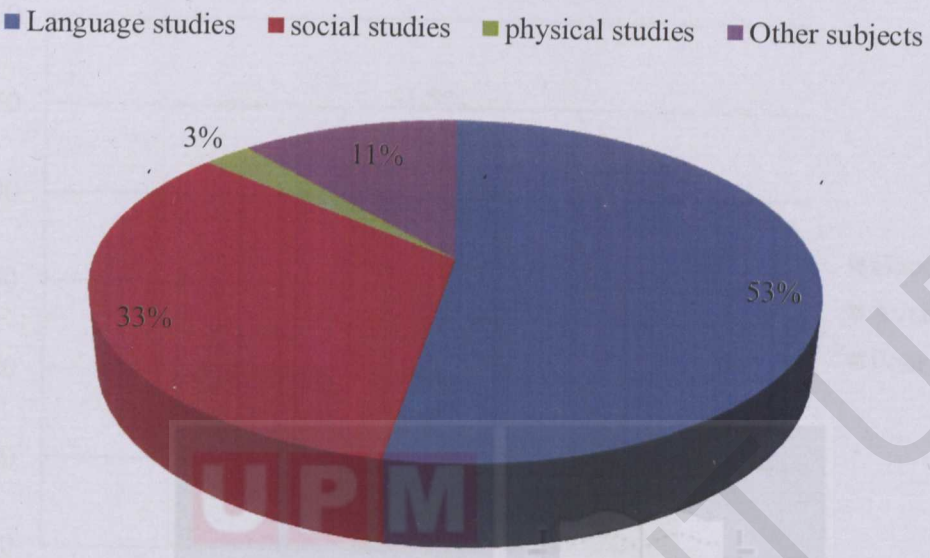

Figure 10 Pie chart for Distribution of subjects taught

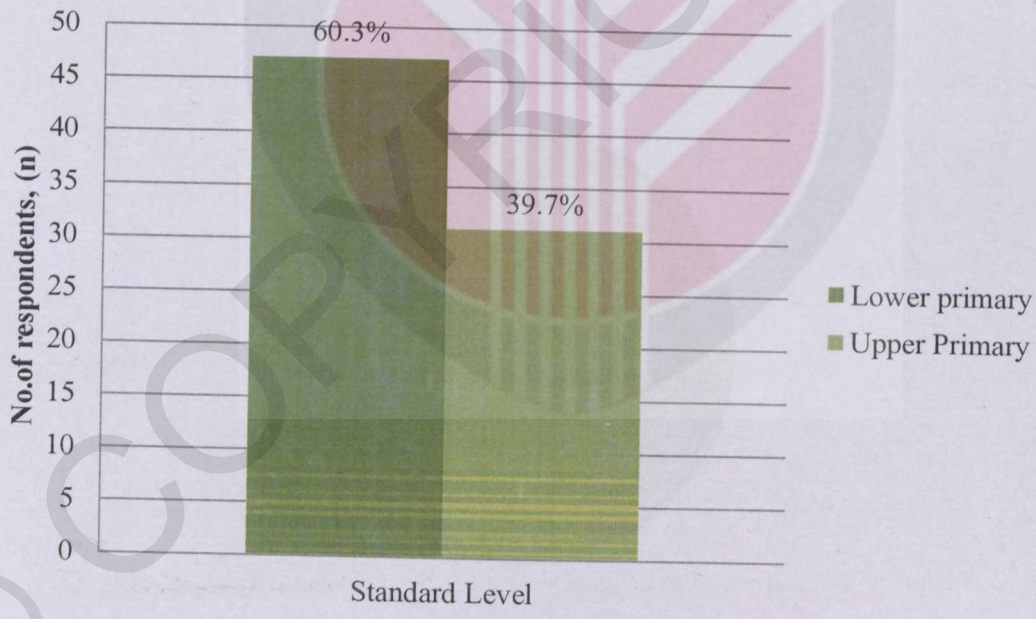

Figure 11 Graph for Distribution of Standard level taught

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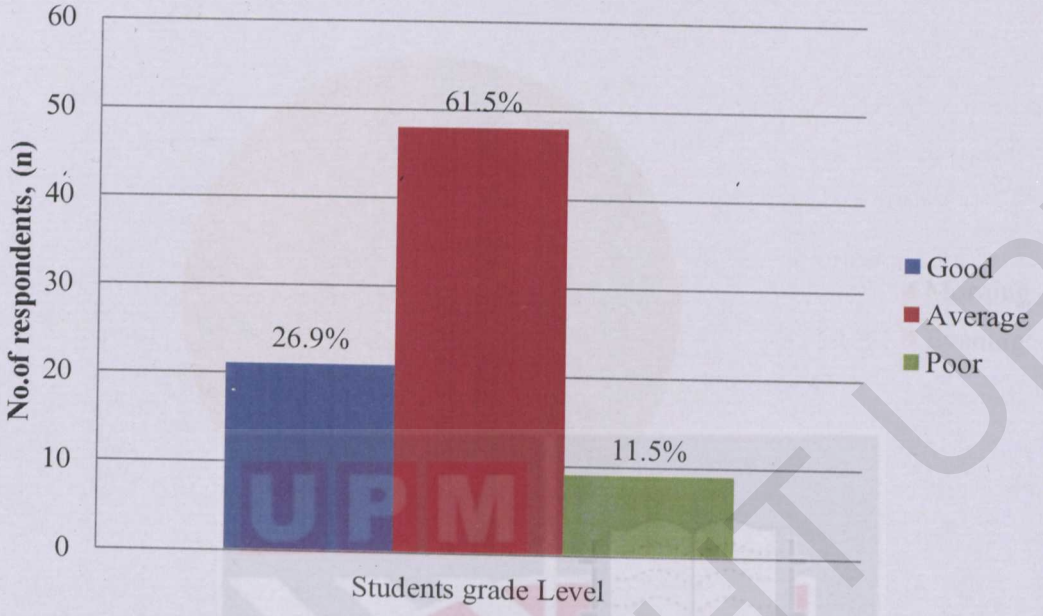

Figure 12 Graph for Distribution of students grade level

Figure 13 Pie chart for Distribution of teaching tuition/extra class

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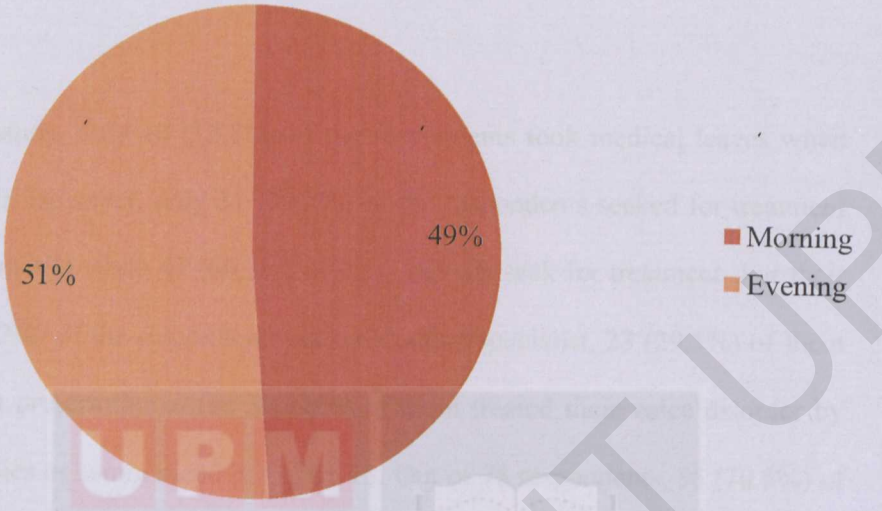

Figure 14 Pie chart for Distribution of teaching sessions

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4.7 Methods of Handling VD Distribution

From the study, only 10 (12.8%) of the respondents took medical leaves when suffering from VD. However, only 31 (39.7%) of the respondents seeked for treatment when suffered from VD while 47 (60.3%) of them did not seek for treatment. For their treatment, 15 (19.2%) of the respondents seeked doctors/specialist, 23 (29.5%) of them seeked pharmacist prescription while 3 (3.8%) of them treated their voice disorder by using home remedies as summarized in Figure 15. Out of 78 respondents, 55 (70.5%) of them chose to take more fluid in terms of their self-treatment while 2 (2.6%) of them preferred to shout less during teaching as reported in Figure 16. Table 4.6 summarized the respondents handling VD distribution.

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Table 4.6 : Distribution methods of handling VD among respondents (N=78)

Handling Voice disorder		Frequency (n)	Percentage (%)
Medical leaves	Yes	10	12.80
	No	68	87.20
Seek for treatment	Yes	31	39.70
	No	47	60.30
Type of treatment	None	37	47.40
	Doctors/specialist	15	19.20
	Pharmacist prescription	23	29.50
	Home remedies	3	3.80
Self-treatment	None	21	26.90
	More fluid intake	55	70.50
	Shout less	2	2.60

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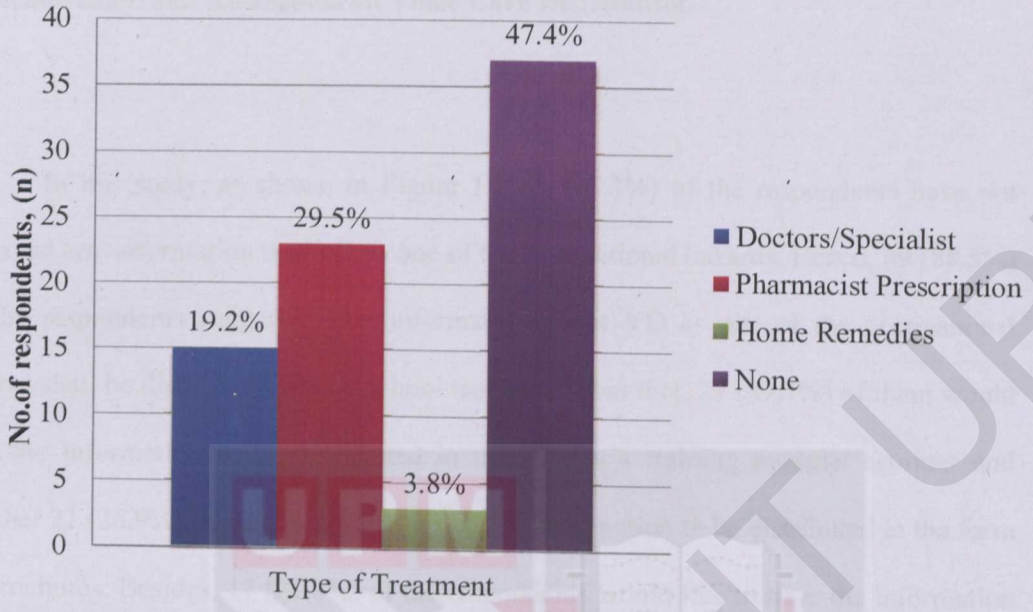

Figure 15 Graph for Distribution of type of treatment taken for VD

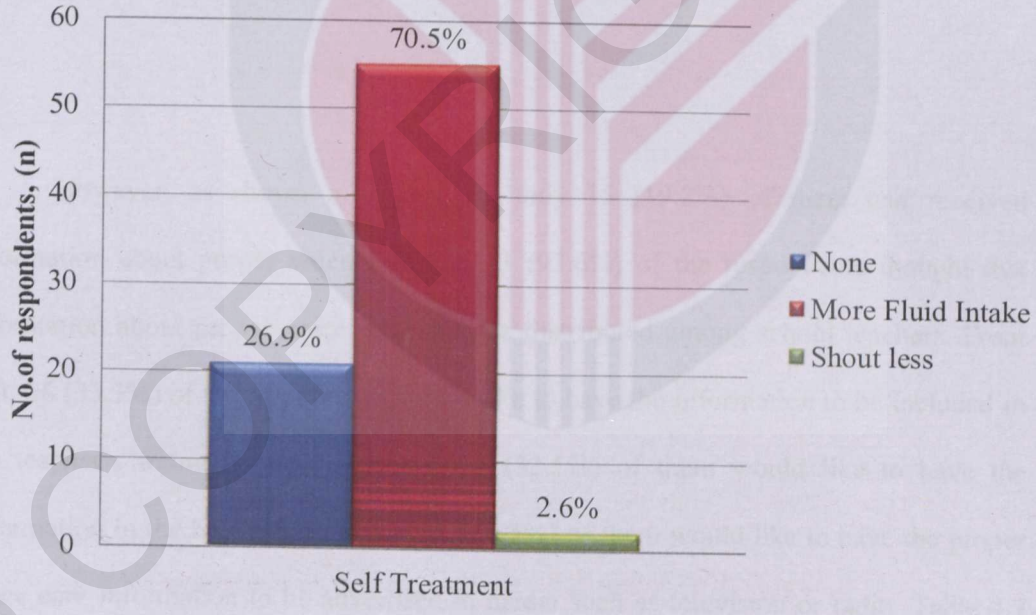

Figure 16 Graph for Distribution of self-treatment taken on VD

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4.8 Knowledge and Awareness on Voice Care Distribution

In this study, as shown in Figure 17, 65 (83.3%) of the respondents have not received any information that VD as one of the occupational hazards. Hence, 69 (88.5%) of the respondents suggested that information about VD as one of the occupational hazard shall be distributed among school teachers. From that, 31 (39.7%) of them would like the information to be distributed in the teacher's training module/ seminar and another 21 (26.9%) of them would preferred the information to be distributed in the form of brochures. Besides, 17 (21.8%) of the respondents would like to have the information in terms of media such as television or radio advertisement.

However, as shown in Figure 18, only 15 (19.2%) of them had received information about proper voice care and 73 (93.6%) of the respondents thought that information about proper voice care shall be distributed among school teachers. From that, 26 (33.3%) of the respondents would like to have the information to be included in the teacher's training module/seminar, 25 (32.1%) of them would like to have the information in the brochure form and 16 (20.5%) of them would like to have the proper voice care information to be advertised in media such as television or radio. Table 4.7 summarizes the respondent knowledge and awareness on voice care distribution.

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Table 4.7: Distribution of Knowledge and Awareness on voice care (N=78)

Handling Voice disorder		Frequency (n)	Percentage (%)
Voice disorder			
Received information	Yes	13	16.70
	No	65	83.30
Shall be distributed	Yes	69	88.50
	No	9	11.50
Ways of knowledge	Teacher's training	31	39.70
distribution	Brochures	21	26.90
	Media (television/radio)	17	21.80
Proper voice care			
Received information	Yes	15	19.20
	No	63	80.80
Shall be distributed	Yes	73	93.60
	No	5	6.40
Ways of knowledge	Teacher's training	26	33.30
distribution	Brochures	25	32.10
	Media (television/radio)	16	20.50

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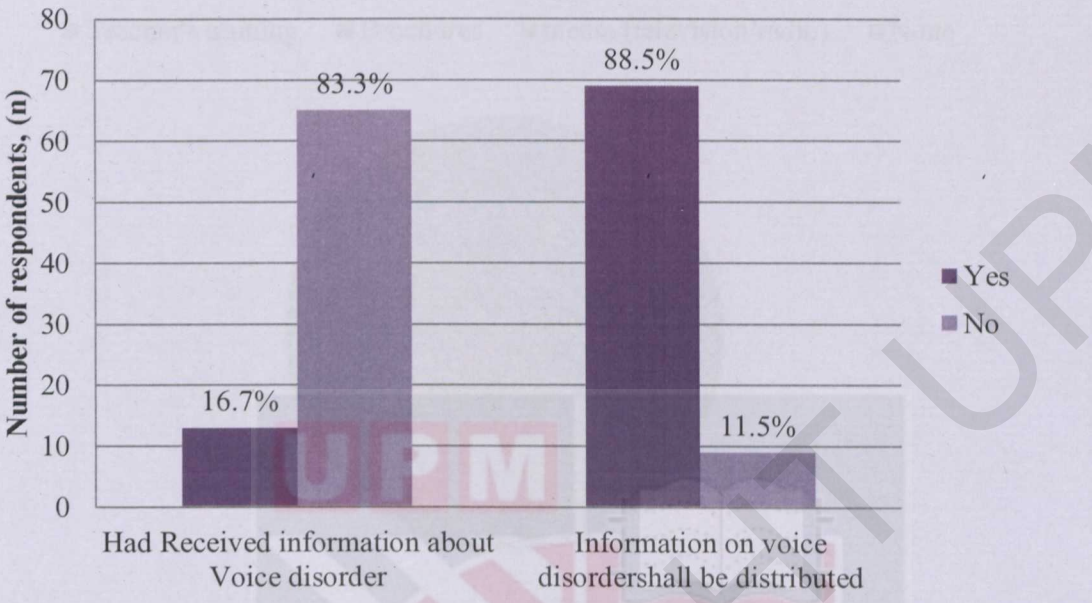

Figure 17 Graph for Distribution on knowledge and awareness on VD

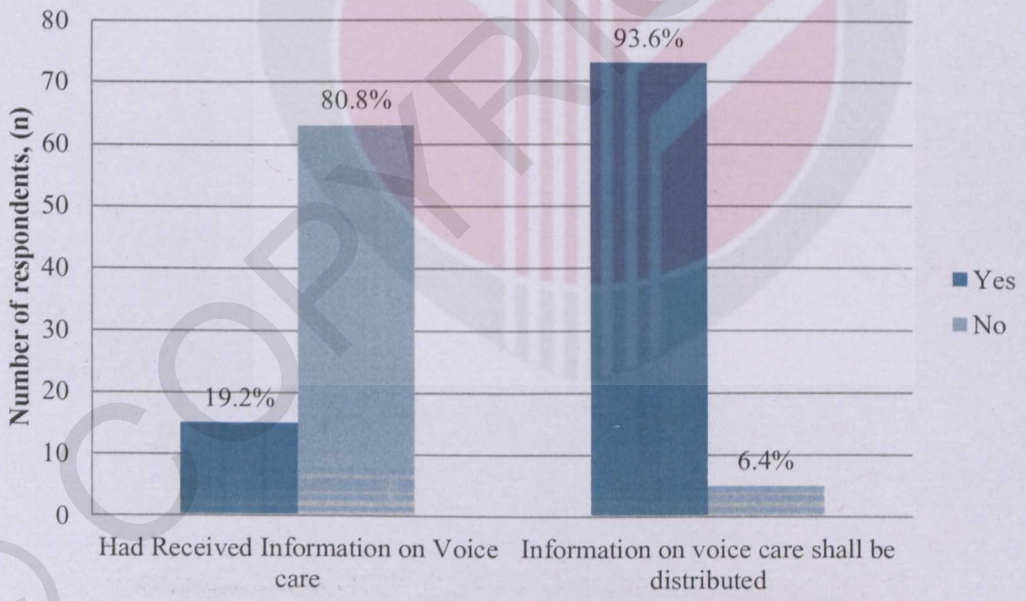

Figure 18 Graph for Distribution on knowledge and awareness on voice care

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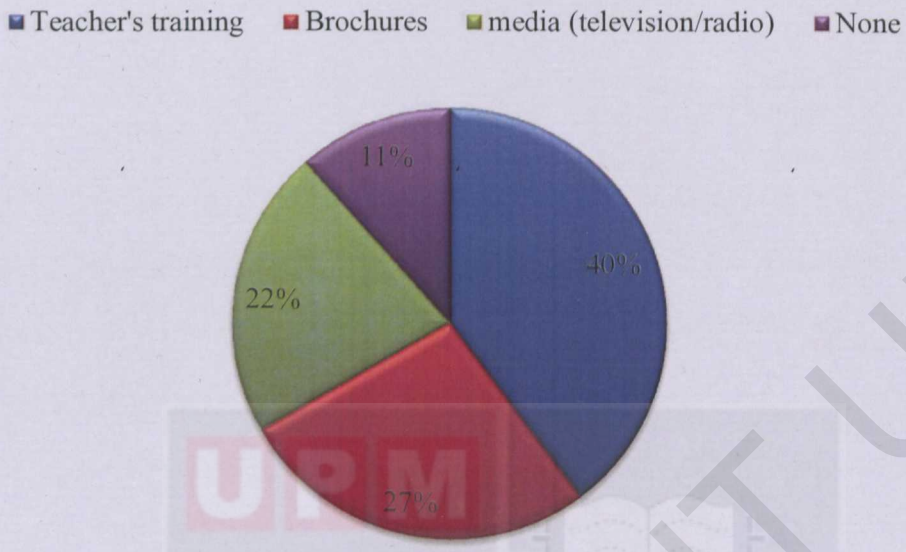

Figure 19 Pie chart for Preferred ways of knowledge and awareness distribution on VD

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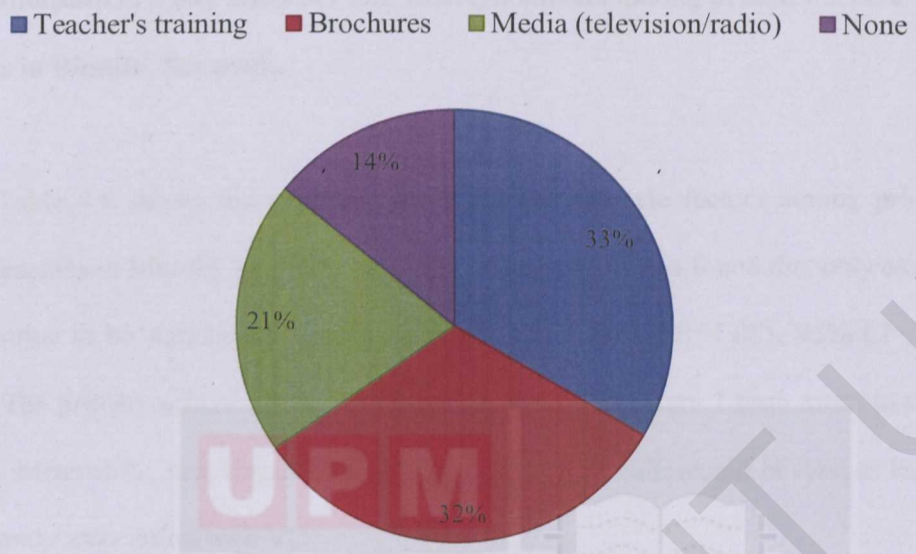

Figure 20 Pie chart for Preferred ways of knowledge and awareness distribution on voice care

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4.9 Relationship of Voice Disorder and Lifestyle factors among primary school teachers in Bintulu, Sarawak.

Table 4.8 shows the relationship of VD and lifestyle factors among primary school teachers in Bintulu, Sarawak. From the table given, it was found that only alcohol consumption to be statistically significant with VD (p=.012, PR=1.081, 95% CI=.267-4.372). The primary school teachers who consumed alcohol were 1 time more likely to get VD. Meanwhile, smoking habits and consumption of caffeinated beverages has no significantly association with VD.

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Table 4.8 Association between Lifestyle and Voice Disorder (N=78)

Variables (n = 78)	Voice Disorder Yes n(%)	No n(%)	χ^2	*p*-value	PR	95% CI
Smoking						
Yes	1 (2.40)	1 (2.80)	.912	.012*	.814	.051-
No	41 (97.60)	35 (97.20)				14.155
Alcohol						
Yes	5 (11.90)	4 (11.10)	.913	**.012***	**1.081**	**.267-**
No	37 (88.10)	32(88.90)				**4.372**
Caffeinated Beverages						
Yes	26 (61.90)	26 (72.20)	.335	.929	.625	.240-
No	16 (38.10)	10 (27.80)				1.631

*significant at p-value <0.05

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4.10 Relationship of Voice Disorder and Teaching Activities among primary school teachers in Bintulu, Sarawak.

Table 4.9 (a) and (b) shows the relationship of VD and teaching activities among primary school teachers in Bintulu, Sarawak. It was found that only teachers who teach extra classes or tuition is significantly associated with VD (p=.049, PR=1.111, 95% CI=.435-2.837). Primary school teachers who teach extra class or tuition were 1 time more likely to get VD.

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Table 4.9(a) Association between Teaching activities and Voice Disorder (N=78)

Variables (n = 78)	Voice Disorder Yes n(%)	No n(%)	χ^2	*p*-value	PR	95% CI
Years of working						
Less than 5 years	18(42.90)	9(25.0)	.098	2.731	2.250	.852-
More than 5 years	24(57.10)	27(75.0)				5.941
Duration of teaching (per day)						
2-4 hours	16(38.10)	22(61.10)	.043	4.110	.392	.157-
More than 5 hours	26(61.90)	14(38.90)				.978
No.student taught (per class)						
20-30 students	25(59.50)	24(66.70)	.515	.423	.735	.291-
More than 40 students	17(40.50)	12(33.30)				1.859
No. class taught (per day)						
2-3 classes	27(64.30)	28(77.80)	.193	1.697	.514	.188-
More than 4 classes	15(35.70)	8(22.20)				1.409
Subjects taught						
Indoor subjects	40(95.20)	36(100)	.185	1.759	1.900	1.535-
Outdoor subjects	2(4.8)	0(0)				2.352

* significant at p-value < 0.05

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Table 4.9 (b) Association between Teaching activities and Voice Disorder (N=78)

Variables (n = 78)	Voice Disorder Yes n(%)	No n(%)	χ^2	*p*-value	PR	95% CI
Standard Level						
Lower Primary	24(51.10)	23(63.90)	.544	.368	.754	.302-
Upper Primary	18(42.90)	13(36.10)				1.880
Student's grade level						
Average	38(90.50)	5(13.90)	.547	.362	.653	.161-
Not Average	4(9.50)	31(86.10)				2.641
Extra class/tuition						
Yes	15(35.70)	12(33.30)	.826	.049*	1.111	.435-
No	27(64.30)	24(66.70)				2.837
Teaching sessions						
Morning	23(54.80)	15(41.70)	.249	1.331	1.695	.690-
Evening	19(45.20)	21(58.30)				4.164

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4.11 Relationship of Voice Disorder and other risk factors among primary school teachers in Bintulu, Sarawak.

Table 4.10 shows the other risk factors which contribute to VD. It was found that there are no other risk factors which are significantly associated with VD.

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Table 4.10 Association of Other risk factors and Voice Disorder (N=78)

Variables (n = 78)	Voice Disorder Yes n(%)	No n(%)	χ^2	*p*-value	PR	95% CI
Age						
Less than 40 years old	14(33.30)	20(55.60)	.048	3.893	.400	.160-
40 years old and above	28(66.70)	16(44.40)				1.002
Gender						
Male	6(14.30)	6(16.70)	.771	.084	.833	.243-
Female	36(85.70)	30(83.30)				2.854
Marital Status						
Unmarried	17(40.50)	6(16.70)	.022	5.285	.294	.101-
Married	25(59.50)	30(83.30)				.859
Hobbies						
Yes	39(92.90)	35(97.20)	.384	.759	.371	.037-
No	3(7.10)	1(2.80)				3.737
Activities						
Indoor	4(9.50)	6(16.70)	.347	.885	.526	.136-
Outdoor	38(90.50)	30(83.30)				2.036

*significant at p value < 0.05

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CHAPTER 5

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Prevalence of Voice Disorder

According to Sliwinska *et al.*(2006), VD in teachers have been the subject of several studies due to their high prevalence. However, based on the findings, it was found that the prevalence of VD among primary school teachers in Bintulu, Sarawak was too low.

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This figure was relatively small when compared with those reported in the literature. Studies carried out by various authors to reveal the prevalence of self-reported voice alterations showed wide variation between 20% to 75% among teachers (Smith *et al.*, 1997; Smith *et al.,* 1998a ; Smith *et al.,* 1998b). The factors behind this wide variation are multiple. This may be due to the variety of methodology used and the total size of population used to conduct the study.

As reported by Vilkman, (2004), 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. In studies where the data was collected through questionnaires similar to the one used in this study, the prevalence ranged from 12%-26% (Smith *et al.*, 1997 ; Sapir *et al.*, 1993 ; Pekkarinen *et al.*, 1992). As part of the survey used by Russel *et al.* (1998), one teacher was asked to report his/her voice problem during his/her careers until the day of the survey and the response rate was 75%. In this study, approximately 53.8% of the respondents reported that they had suffered from VD in the past 12 months and 33.3% reported that they suffered from VD more than once in past 12 months.

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5.2 Voice Disorder Symptoms

Out of 78 respondents, 72 (92.3%) of them reported to have sore throat, 69 (88.5%) of them also reported of having coughing while 41 (52.6%) of them claimed that they will had swollen gland when they suffered from VD. Moreover, 50 (64.1%) of the respondents also complained of having a lot of phlegm while 62 (79.5%) of them stated that they were having blocked nose and 45 (57.7%) of them claimed that they will also have throat infections when they suffered from VD. As reported from several authors, the most common symptoms include tiredness or extra effort needed when speaking, throat clearing or persistent coughing, sensation of tightness or weight in the throat, voice breaks, breathlessness, when speaking, aphonia, soreness or burning in the throat, hoarseness (Smith *et al.,* 1997 ; Yiu, 2002 ; Simberg *et al.,* 2004 ; Smith *et al.,* 1998a ; Smith *et al.,* 1998b).

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5.3 Relationship between lifestyle factors and voice disorder

In this study, consuming alcohol was found to be significantly associated with VD (p=.012, PR=1.081, 95% CI=.267-4.372). Primary school teachers who consumed alcohol were 1 time more likely to get VD. Alcohol consumption have also been reported to increase the risk of getting VD (Colton & Casper, 1990). Urrutikoetxea *et al.* (1995) concluded that smoking was associated with the presence of VD in teachers but in this study, it has been found not to be significantly associated with VD. However, in the study of Sheng *et al.,(*2010) showed that smoking, alcohol and caffeine were not found to not have any apparent relationship with the frequency of VD. This result was consistent with Roy *et al.*,(2004) regarding school teachers at Iowa and Utah. It may be because teachers were less likely to have used tobacco products and consume alcohol than the general population (Roy *et al.*, 2004).

Based on the findings, consumption caffeinated beverages was no significantly associated with VD (p>0.05). However, Ana *et al.*, (2009) reported that tea consumption was significantly associated with VD. Black tea and coffee have diuretic properties contributing to dehydration and causing dry mouth, throat clearing or cough (Guimaraes, 2004).

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5.4 Relationship between teaching activities and voice disorder

From the findings, it was found that only teaching extra classes or tuition was significantly associated with VD (p=.049, PR=1.111, 95% CI=.435-2.837) while others variables such as standard level taught, student grade level taught and teaching sessions was not significantly associated with VD (P>0.05). Years of service as a teacher, hours of teaching and grade level taught have been often regarded as contributing factors to VD (Safarti, 1989). However in this study, it was found not to be significantly associated to VD. Based on her surveys, Marks (1985) reported that the more experienced teachers were more likely to have a history of VD.

On the other hand, although Sapir *et al.*, (1993) did not specifically investigated the causes of vocal symptoms in teachers, they found that years of teaching and hours of teaching did not correlate with the symptoms described. Safarti (1989) and Unger and Bastian (1981) suggested that teachers working with specific grade levels or subjects areas can be particularly susceptible to VD. Supported by Thibeault *et al.,* (2004), he concluded that the subject taught could be an important contributing factor to VD with teachers of chemical sciences, music, singing and drama. However in this study, subjects taught was not significantly associated with VD.

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5.5 Relationship between other risk factors and voice disorder

For age, in this study, it was found to be not significantly associated with VD which is same as reported by Sapir *et al.,* (1993). While Sapir *et al.* (1993) found that age did not correlate with vocal symptoms, Smith *et al.* (1997) concluded that the number of vocal symptoms reported increased with age. Also, as reported by Russell *et al.*, (1998), there is no association between VD and age.

Next, VD is more commonly reported among women (Roy *et al.,* 2004 ; Sala *et al.*, 2001 ; Smith *et al.,* 1998a). In this study, female teachers were the most reported cases of having VD (54.5%) compare to male teachers (50%) and however, the findings was not significantly associated with VD. Gender differences in the prevalence of VD had also been studied by few researchers and majority of the studies revealed that females were more likely to report VD than male (Smith *et al.*, 1998 ; Marks, 1985 ; Roy, 2003 ; Vilkman, 2000). As reported by Roy et al., (2004), women have a higher lifetime prevalence compared with men (46.3% vs 36.9%) while Russell *et al.,* (1998) mentioned that female teachers are twice more likely compared with males to report voice problems.

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As for marital status, in this study it was found to be not significantly associated with VD however, it has been found to be contributed to VD especially the role of household and family extension of voice use (de Medeiros and Barreto *et al.*, 2008).

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5.6 Method on Handling Voice Disorder

Method on handling VD was also asked among the respondents. Majority of them do 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 ; Marks, 1997 ; Morton, 1995). Roy *et al*., (2004) assumed that teachers were reluctant to take time off from work for medical appointments, or they fear physician would advised them to reduce voice usage or change their occupation. This reluctance to seek professional help also suggest that teachers view on VD as an occupational hazard is minimal and may not be aware of the help that is available to reduce or eliminate these problems (Russell *et al*., 1998).

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. The findings can be supported with data from Sapir *et al.* (1993) and Marks (1997) suggested that less than 1% of teachers who report VD seek help from a voice specialist. For self-treatment, the teachers mostly preferred to consume more fluid (70.5%) followed by shouting less (2.6%).

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5.7 Knowledge and Awareness on Voice Care

Some teachers may not be aware of VD as one of their occupational hazards and not be able to have a proper care (Russell *et al.*, 1998). This has been proven in this study where there is a very low number of teachers who knows about VD as one of their occupational hazards (83.3%) and not able to have a proper care (80.8%). As proven by Bohme (1974), and Calas *et al.* (1989) limited knowledge of the principles of voice care and a lack of training in effective use of the speaking voice and voice projection are thought to contribute to VD.

Researchers have also found that there is low significance of teachers that have received any kind of information regarding on VD (Van Houtte and Claeys *et al.*, 2011). This may due to teachers considering dysphonia as an inevitable occupational hazard and probably have little awareness that it may be prevented or at least relieved (Scalco, 1996 ; Russel *et al.*, 1998).

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5.8 Study Strengths and Weaknesses

Several studies on VD in teachers have been conducted in Asian countries (Lee *et al.*,2010 ; Charn and Mok, 2012), but the relevant data for teachers in Malaysia are limited. Thus, by conducting this study, the data obtained would able to define the prevalence of VD among primary school teachers in Malaysia and reveal the risk factors that contribute to VD and their impact on teachers.

The weakness of the study was first, the sample size was small, inadequately selected populations, lack of clear criteria for the presence of VD, reliance on subjective and perceptive data (without the support of instrumental data) and minimal use of comparison groups have limited the extent to which conclusions can be reached from the previous prevalence studies. Second, since there is no standardized questionnaire presence, a self-constructed questionnaire used may not totally addressed the prevalence of VD and association of VD. Third, there is no standardized definition on VD, therefore this study has choose Aronson (1985) definition on VD due to the easier understanding and reliability of VD terms.

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5.9 Conclusion

This study was a new study in Malaysia which the data produced in the study is preliminary data. The prevalence of VD among primary school teachers in Bintulu, Sarawak is too low. From the findings, it was found that consuming alcohol beverages only in terms of lifestyle factors has significantly associated with VD except smoking habits and taking caffeinated beverages that has not significantly associated with VD, thus the first hypothesis was true. Next, it was found that only teaching extra classes or tuition in terms of teaching activities has significantly associated with VD while others were not significantly associated with VD, thus the second hypothesis was true.

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5.10 Recommendation

Future studies investigating the prevalence of voice disorder among teachers need to consider a larger sample of randomly selected subjects with an ppropriate operational definition of vocal dysfunction. In addition, inclusion of more instrumental measurements and use of comparison groups will provide a more convincing results to further strengthen the argument that vocal disorder are of concern among the teaching population. Other than that, it is recommended to have a standardized definition of terms for VD since there was a lot of VD definition worldwide.

From the findings, only 3 variables which shows significantly association with VD while others were not significantly associated, therefore this study suggested more research on different variables to be performed in future studies with a larger sample size. It is recommended to conduct same study in different level of education such as kindergarten, secondary schools and universities. Since it was conducted only in Bintulu region, it is suggested to be conducted at other region in Sarawak, Sabah and Peninsular Malaysia to get to the entire teachers population in Malaysia.

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APPENDIX 1:

ETHICAL COMMITTEE CONSENT LETTER

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Attachment 2

JKEUPM Ref No. : FPSK_November(13)61

a) Members of the JKEUPM who reviewed the documents:
   - Prof. Dr. Lekhraj Rampal

b) Date of approval: 5/5/2014

Endorsed at JKEUPM Meeting on **9/5/2014**, attended by:

NAME	DESIGNATION	GENDER	TICK IF PRESENT
Prof. Dr. Norlijah Othman	Paediatrics& Dean, Faculty of Medicine and Health Sciences	Female	
Prof. Dr Zamberi Sekawi	Medical Microbiologist & Deputy Dean of Research and Internationalization, Faculty of Medicine and Health Sciences	Male	√
Prof. Dato' Dr. Lye Munn Sann	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Tengku Aizan Abd Hamid	Gerontologist & Director, Institute of Gerontology	Female	√
Prof. Dr. Lekhraj Rampal	Medical Statistician, Dept of Community Health, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Elizabeth George	Pathologist, Dept of Pathology, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Lim Thiam Aun	Anesthesiologist, Dept of Surgery, Faculty of Medicine and Health Sciences	Male	√
Prof. Dr. Wan Omar Abdullah	Medical Parasitologist, Dept of Medical Microbiology and Parasitology, Faculty of Medicine and Health Sciences	Male	
Prof. Dr. Patimah Ismail	Professor of Biomedicine, Dept of Biomedical Sciences, Faculty of Medicine and Health Sciences	Female	√
Prof. Dr. Johnson Stanslas	Pharmacologist, Dept of Medicine, Faculty of Medicine and Health Sciences	Male	√
Assoc. Prof. Dr. Mansor Abu Talib	Assoc. Professor of Guidance and Counselling, Dept of Human Development and Family Studies, Faculty of Human Ecology	Male	
Assoc. Prof. Dr. Azmawani Abd. Rahman	Operations and Technology Management / Deputy Dean of Research and Graduate Studies	Female	
Assoc. Prof. Dr. Noritah Omar (Lay Person)	Assoc. Professor of English Language, Dept of English Language, Faculty of Communication and Modern Languages	Female	
Dr. Rojanah Kahar (Lay Person)	Senior Lecturer of Dept of Human Development and Family Studies, Faculty of Human Ecology	Female	
Tan Sri Dato' Napsiah Omar (Independent Member)	Chairman, National Population and Family Development Board	Female	

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APPENDIX 2:

APPROVAL LETTER FROM MINISTRY OF EDUCATION

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APPENDIX 3:

APPROVAL LETTER FROM JABATAN PENDIDIKAN NEGERI SARAWAK

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APPENDIX 4 :
INFORMATION SHEET

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JAWATANKUASA ETIKA UNIVERSITI UNTUK
PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

FORM B1: RESPONDENT'S INFORMATION SHEET AND CONSENT

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Prevalence of Voice Disorder among Primary Shool Teachers in Bintulu Sarawak.

2. INTRODUCTION:

Voice disorders are thought to be one of the major occupational hazards of school teaching (Mattiske *et al.*, 1998). The teaching voice has been of special interest in several studies conducted in different parts of the world but there is limited data information about the related studies in Malaysia. Thus, the purpose of this study is to determine the prevalence of voice disorders among primary school teachers in Bintulu, Sarawak.

3. WHAT WILL YOU HAVE TO DO?

The respondent is required to answer the questionnaire to obtain the data information regarding on the study. 20 minutes will be given to complete the questionnaire.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

Person who have been diagnosed by the professional of having voice disorder such as throat surgery and voice box surgery.

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

It will helps the respondents to be aware about prevalence of voice disorders among primary schools in Malaysia and taking several measures to prevent and control the risk of getting voice disorder which will give impacts to their daily life and job performances.

(b) TO THE INVESTIGATOR?

It will help the investigator to identify which associated risk factors would contribute the most on voice disorder and suggesting some measures which would help the teachers to prevent and control the risk of getting voice disorder.

6. WHAT ARE THE POSSIBLE RISKS?

There is no risks available in the study.

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

The information and identity used in this study will remain confidential.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

If you have any additional questions, you may contact to Profesor Madya Dr. Haliza Abdul Rahman, Supervisor of the research at 03-89472396 or Roscella Inja anak Unang, the researcher at 013-5665611.

*Please initial here if you have read and understood the contents of this page*_____

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9. CONSENT

I .....Identity Card No.....

address.....

.....hereby voluntarily agree to take part in the research stated above *(clinical /drug trial/video recording/ focus group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible adversed effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature ..... (Respondent)

Signature ..... (Witness)

Date :.....

Name :.....

I/C No. :.....

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date .....

Signature ..... (Researcher)

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JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG, SELANGOR, MALAYSIA

BORANG B1: PENERANGAN DAN PERSETUJUAN RESPONDEN

Sila baca maklumat berikut dengan teliti. Sekiranya anda mempunyai sebarang pertanyaan, sila kemukakan kepada penyelidik.

1. TAJUK KAJIAN

Prevalens Gangguan Suara dalam kalangan Guru-guru Sekolah Rendah di Bintulu, Sarawak.

2. PENGENALAN

Gangguan suara merupakan salah satu gangguan kepada kesihatan pekerjaan dalam aktiviti pengajaran di sekolah (Mattiske *et al.*,1998). Beberapa kajian telah dijalankan berkenaan dengan gangguan suara dalam kalangan guru-guru sekolah di negeri Asia tetapi terdapat maklumat data yang terhad tentang kajian yang berkaitan di Malaysia. Oleh itu, tujuan kajian ini adalah untuk menentukan prevalens gangguan suara di kalangan guru-guru sekolah rendah di Malaysia.

3. APAKAH YANG PERLU ANDA LAKUKAN?

Anda akan diberi 1 set borang soal selidik mengenai kajian ini dan diminta untuk menyiapkan borang soal selidik tersebut dalam masa 20 minit sahaja.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?

Responden yang pernah disahkan oleh pakar bahawa beliau memang mempunyai masalah gangguan suara dan pernah menjalani pembedahan tekak dan kotak suara.

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANDA SEBAGAI PESERTA?

Kajian ini akan membantu organisasi anda untuk mengetahui prevalens gangguan suara dalam kalangan guru-guru sekolah rendah di Malaysia dan mengambil tindakan lanjut bagi mencegah dan mengawal risiko anda untuk mendapat gangguan suara.

b) KEPADA PENYELIDIK?

Kajian ini akan menentukan apakah faktor yang boleh menyebabkan gangguan suara dan memberi cadangan bagi mencegah dan mengawal risiko anda untuk mendapat gangguan suara.

6. ADAKAH IA BERISIKO?

Kajian ini tidak melibatkan apa-apa risiko.

7. ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?

Segala maklumat dan identiti anda adalah kekal rahsia.

8. SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEMASA MENGIKUTI PENYELIDIKAN INI?

Sekiranya anda mempunyai persoalan semasa mengikuti penyelidikan ini, anda boleh menghubungi Profesor Madya Dr. Haliza Abdul Rahman, Penyelia kajian saya di talian 03-89472396 atau Roscella Inja anak Unang, selaku penyelidik dalam talian 013-5665611.

Sila tandatangan di sini sekiranya anda telah membaca dan memahami kandungan halaman ini _____

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9. PERSETUJUAN

Saya..... No Kad Pengenalan. .....
beralamat.....
.....dengan ini bersetuju untuk mengambil bahagian secara sukarela dalam penyelidikan yang tersebut di atas *(kajian klinikal/percubaan ubat-ubatan/rakaman video/kumpulan sasaran/temuduga/ soal selidik).

Saya telah diberi penjelasan secara menyeluruh mengenai penyelidikan ini dari segi metodologi, risiko dan komplikasi (seperti tertulis pada Helaian Penerangan Responden). Saya memahami bahawa saya berhak menarik diri dari penyelidikan ini pada bila-bila masa tanpa memberi sebarang alasan.Saya juga memahami bahawa sebarang maklumat yang berkaitan identiti saya akan dirahsiakan.

Saya* berminat / tidak berminat untuk mengetahui keputusan kajian yang melibatkan saya.

I setuju/tidak bersetuju untuk imei/gambar/rakaman video/ rakaman suara digunakan dalam apa jua bentuk penerbitan atau pembentangan. (sekiranya berkaitan).

*potong yang tidak berkenaan

Tandatangan .....
(*Responden*)

Tandatangan .....
(*Saksi*)

Tarikh :.....

Nama :.....

No. K/P: .....

Saya mengesahkan bahawa saya telah menerangkan kepada responden ini sifat dan tujuan penyelidikan yang tersebut di atas.

Tarikh .....

Tandatangan .....
(*Penyelidik*)

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APPENDIX 5 :

SELF-CONSTRUCTED QUESTIONAIRE

(BAHASA MELAYU VERSION)

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FAKULTI PERUBATAN DAN SAINS KESIHATAN
BACELOR SAINS (KESIHATAN PERSEKITARAN DAN PEKERJAAN)

BORANG SOAL SELIDIK PREVALENS GANGGUAN SUARA DALAM KALANGAN GURU-GURU SEKOLAH RENDAH DI BINTULU, SARAWAK

Segala maklumat yang diperolehi daripada borang soal selidik ini adalah **SULIT** dan hanya digunakan bagi tujuan projek ilmiah tahun akhir penyelidik sahaja. Sila jawab semua soalan. Kerjasama daripada pihak tuan amat dihargai. Terima kasih.

Bahagian A : Maklumat peribadi

1) Umur (tahun) : ☐ 20-29 ☐ 30-39 ☐ 40 dan ke atas

2) Jantina : ☐ Lelaki ☐ Perempuan

3) Status Perkahwinan :

☐ Bujang ☐ Berkahwin ☐ Bercerai ☐ Berpisah ☐ Janda/Duda

Bahagian B : Gangguan Suara

Bagi tujuan kajian ini, gangguan suara bermaksud **suara anda tidak dapat berfungsi pada bila-bila masa, mengeluarkan bunyi yang anda rasa ia tidak normal, serta boleh mengganggu suasana semasa berkomunikasi dengan orang lain.**

4) Pernahkah anda mengalami gangguan suara sepanjang 12 bulan yang lepas?

☐ Ya ☐ Tidak

5) Berapa kali anda mengalami gangguan suara sepanjang 12 bulan yang lepas?

☐ Tiada ☐ Sekali ☐ Lebih daripada sekali

6) Berapa lama kebiasaannya anda mengalami gangguan suara?

☐ Tiada ☐ 1 hari ☐ 2-3 hari ☐ Lebih daripada 3 hari

Simptom Gangguan Suara

Kenyataan	TIDAK	YA
Sakit tekak?		
Batuk dan melegakan tekak?		
Berasa sesuatu yang tersekat pada tekak?		
Mengalami bengkak pada kelenjar?		
Mengeluarkan banyak kahak pada tekak?		
Hidung tersumbat?		
Mengalami jangkitan kuman pada tekak?		

Bahagian C : Faktor Cara Kehidupan

7) Adakah anda merokok?

☐ Ya ☐ Tidak

8) Berapa lama anda telah merokok?

☐ Tiada ☐ 1 tahun ☐ Lebih daripada 1 tahun

9) Berapa batang rokok anda ambil dalam sehari?

☐ Tiada ☐ 1 batang ☐ 2 batang ☐ Lebih daripada 2 batang

10) Adakah anda mengambil minuman beralkohol?

☐ Ya ☐ Tidak

11) Pernahkah anda mengambil minuman beralkohol sepanjang 12 bulan yang lepas?

☐ Ya ☐ Tidak

12) Berapa kali anda mengambil minuman beralkohol sepanjang 12 bulan yang lepas?

☐ Tiada ☐ Sekali ☐ 2 kali ☐ Lebih daripada 2 kali

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13) Adakah anda mengambil minuman yang berkafein (cth : kopi)?

☐ Ya ☐ Tidak

14) Berapa kali anda mengambil minuman berkafein dalam sehari?

☐ Tiada ☐ Sekali ☐ 2 kali ☐ Lebih daripada 2 kali

15) Adakah anda mempunyai hobi?

☐ Ya ☐ Tidak

16) Apakah hobi anda?(Anda boleh menanda jawapan lebih daripada1)

a.		Tiada aktiviti
b.		Menyanyi/Karaoke
c.		Bersenam
d.		Kelas Drama/Teater/Muzik
e.		Menonton Filem

17) Berapa kerap anda melakukan hobi anda dalam sehari?

☐ Sekali ☐ 2 kali Lebih daripada 2 kali

Bahagian D : Aktiviti Mengajar

18) Berapa tahunkah anda telah berkhidmat?

☐ kurang 1 tahun ☐ 2-4 tahun ☐ lebih daripada 5 tahun

19) Berapa lama anda mengajar dalam sehari?

☐ Kurang sejam ☐ 2-4 jam ☐ lebih daripada 5 jam

20) Berapakah jumlah pelajar yang diajar untuk 1 kelas?

☐ Kurang 10 pelajar ☐ 20-30 pelajar ☐ lebih daripada 40 pelajar

21) Berapakah jumlah kelas yang anda ajar dalam sehari?

☐ 1 kelas sahaja ☐ 2-3 kelas ☐ lebih daripada 4 kelas

22) Subjek yang diajar?

a.		Subjek Bahasa (English, Bahasa Melayu, Bahasa Iban)
b.		Subjek Sosial (Matematik, Pendidikan Moral, Pendidikan Islam)
c.		Subjek Fizikal (Pendidikan Muzik, Pendidikan Jasmani)
d.		Lain-lain

23) Kelas darjah yang diajar?

a.		Darjah 1
b.		Darjah 2
c.		Darjah 3
d.		Darjah 4
e.		Darjah 5
f.		Darjah 6

24) Tahap kelas darjah yang diajar?

☐ Baik ☐ Sederhana ☐ Kurang

25) Sesi mengajar?

☐ Pagi (7.00am-12.30pm) ☐ Petang (1.00pm-6.15pm)

26) Adakah anda mengajar kelas tambahan/kelas tuisyen?

☐ Ya ☐ Tidak

27) Pada waktu bilakah kelas tambahan/kelas tuisyen tersebut?

☐ Tiada ☐ Pagi ☐ Petang ☐ Malam

28) Jumlah masa mengajar kelas tambahan/kelas tuisyen dalam sehari?

☐ Tiada ☐ 1 Jam ☐ 2 Jam ☐ Lebih daripada 2 Jam

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29) Berapa kali anda mengajar kelas tambahan/kelas tuisyen dalam seminggu?

☐ Tiada ☐ Sekali ☐ 2 kali ☐ Lebih daripada 2 kali

Bahagian E : Pengendalian Gangguan Suara

30) Adakah anda mengambil cuti sakit semasa mengalami gangguan suara?

☐ Ya ☐ Tidak

31) Berapa hari kebiasaannya anda mengambil cuti sakit?

☐ Tiada ☐ 1 hari ☐ 2-3 hari ☐ Lebih daripada 3 hari

32) Adakah anda menjalani rawatan?

☐ Ya ☐ Tidak

33) Apakah jenis rawatan yang anda terima?

☐ Tiada ☐ Rawatan Ubat Farmasi

☐ Doktor ☐ Petua Kampung

34) Apakah jenis rawatan sendiri yang anda lakukan?

☐ Tiada ☐ Banyakkan pengambilan air minuman

☐ Kurangkan bercakap ☐ menggunakan mikrofon

Bahagian F : Pengetahuan mengenai penjagaan suara

35) Pernahkah anda menerima informasi mengenai **Gangguan suara merupakan bahaya dalam pekerjaan**?

☐ Ya ☐ Tidak

36) Bagaimana anda mendapat informasi mengenai Gangguan Suara merupakan bahaya dalam pekerjaan?

☐ Tiada ☐ Rakan seperjuangan ☐ Latihan Tambahan/Seminar

☐ Majalah/Surat khabar/Artikel

37) Pada pandangan anda, patutkah informasi mengenai Gangguan Suara merupakan bahaya dalam pekerjaan diberitahu kepada semua guru sekolah?

☐ Ya ☐ Tidak

38) Dalam bentuk apakah yang sesuai untuk memberitahu kepada semua guru sekolah tentang Gangguan Suara merupakan bahaya dalam pekerjaan?

a.		Tiada
b.		Modul latihan guru/ Seminar
c.		risalah
d.		Media (televisyen dan radio)

39) Pernahkah anda mendapat informasi mengenai **Penjagaan Suara**?

☐ Ya ☐ Tidak

40) Bagaimana anda mendapat informasi mengenai Penjagaan Suara?

☐ Tiada ☐ Rakan seperjuangan ☐ Latihan tambahan/seminar

☐ Majalah/surat khabar/artikel

41) Pada pandangan anda, patutkah informasi mengenai Penjagaan Suara diberitahu kepada semua guru sekolah?

☐ Ya ☐ Tidak

42) Dalam bentuk apakah yang sesuai untuk memberitahu kepada semua guru sekolah tentang Penjagaan Suara?

a.		Tiada
b.		Modul latihan guru/Seminar
c.		Risalah
d.		Media (television, radio)

Terima Kasih atas kerjasama anda!

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APPENDIX 6 :

SELF-CONSTRUCTED QUESTIONAIRE

(ENGLISH VERSION)

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No. ID : | | | | |

FACULTY OF MEDICINES AND HEALTH SCIENCES
BACHELOR OF SCIENCE (ENVIRONMENTAL & OCCUPATIONAL HEALTH) .

QUESTIONNAIRE ON THE PREVALENCE OF VOICE DISORDER AMONG PRIMARY SCHOOL TEACHERS IN BINTULU, SARAWAK

All the information obtained from this questionnaire is **CONFIDENTIAL** and only used for my Final Year Project Research. Please answer all questions. Your cooperation is appreciated. Thank you.

Section A : Demographic status

1) Age(years old): ☐ 20-29 ☐ 30-39 ☐ 40 and above

2) Gender : ☐ Male ☐ Female

3) Marital status : ☐ Single ☐ Married ☐ Divorced ☐ Separated ☐ Widowed

Section B : Voice Diorder

For the purpose of this study, we consider a **Voice disorder to be anytime your voice does not work, perform or sound as you feel it usually does, so that it infers with communication in the past 12 months.**

4) Have you suffered from voice disorder in the past 12 months?

☐ Yes ☐ No

5) How many times you have suffered from voice disorder in the past 12 months?

☐ None ☐ Once ☐ More than one

6) How long do you usually suffered from voice disorder?

☐ None ☐ 1 day ☐ 2-3 days ☐ More than 3 days

Voice Symptoms

Descriptions	NO	YES
Is your throat sore?		
Do you cough or clear your throat?		
Does it feel as if there is something stuck in your throat?		
Do you have swollen glands?		
Do you have a lot of phlegm in your throat?		
Do you have blocked nose?		
Do you get throat infections?		

Section C : Lifestyle Factors

7) Do you smoking?

☐ Yes ☐ No

8) How long you have been smoking?

☐ None ☐ 1 year ☐ More than 1 years

9) How many cigarettes do you take per day?

☐ None ☐ 1 cigarette ☐ 2 cigarettes ☐ More than 2 cigarettes

10) Do you consume alcohol beverages?

☐ Yes ☐ No

11) Have you consume alcohol beverages in the past 12 months?

☐ Yes ☐ No

12) How many times do you consume alcohol beverages in the past 12 months?

☐ None ☐ once ☐ twice ☐ more than 3 times

13) Do you consume caffeinated drinks (eg : coffee)?

☐ Yes ☐ No

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14) How many times do you usually consume caffeinated drinks per day?

☐ None ☐ once ☐ twice ☐ more than 2 times

15) Do you have hobby(s)?

☐ Yes ☐ No

16) What is you hobby(s) ?

a.		No Activities
b.		Singing/Karaoke
c.		Exercise
d.		Theatre/Drama/Musical Class
e.		Watching Movies

17) How often do you enjoy your hobby(s) per week?

☐ None ☐ Once ☐ Twice ☐ More than twice

Section D : Teaching Activities

18) Years of working as a teacher?

☐ less than 1 year ☐ 2-4 years ☐ more than 5 years

19) Duration of teaching per day?

☐ 1 hour or less ☐ 2-4 hours ☐ more than 5 hours

20) Number of students taught per class?

☐ less than 10 students ☐ 20-30 students ☐ more than 40 students

21) Number of taught class per day?

☐ 1 class only ☐ 2-3 classes ☐ more than 4 classes

22) Subject(s) taught?

a.		Language Studies (Bahasa Melayu, English, Bahasa Iban)
b.		Social Studies (Mathematic, Pendidikan Moral, Pendidikan Islam)
c.		Physical Studies (Pendidikan Muzik, Pendidikan Jasmani)
d.		Others

23) Standard level taught?

a.		Primary 1
b.		Primary 2
c.		Primary 3
d.		Primary 4
e.		Primary 5
f.		Primary 6

24) Students grade level taught?

☐ High/Good ☐ Average/Intermediate ☐ Low/Poor

25) School teaching sessions?

☐ Morning (7.00am-12.30pm) ☐ Evening (1.00pm-6.15pm)

26) Do you teach tuition/extra class?

☐ Yes ☐ No

27) When is tuition/extra class sessions?

☐ None ☐ Morning ☐ Evening ☐ Night

28) The duration of tuition/extra class per day?

☐ None ☐ 1 hour ☐ 2 hours ☐ More than 2 hours

29) How often do you teach tuition/extra class per week?

☐ None ☐ Once ☐ Twice ☐ More than twice

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Section E : Handling Voice Disorder

30) Do you take medical leaves when suffered from voice disorder?

☐ Yes ☐ No

31) How many days do you take for medical leaves?

☐ None ☐ 1 day ☐ 2 days ☐ more than 3 days

32) Do you seek for treatment when suffered from voice disorder?

☐ Yes ☐ No

33) What type of treatment do you seek for when suffered from voice disorder?

☐ No Treatment ☐ Doctors/Specialist ☐ Pharmacist prescription
☐ Home remedies

34) What kind of self-treatment do you to take when suffered from voice disorder?

☐ No treatment ☐ More fluid intake ☐ Shout less
☐ Using microphone

Section F : Education on Voice Care

35) Have you received **any information about voice disorder is one of occupational hazard**?

☐ Yes ☐ No

36) How do you receive information about voice disorder is one of occupational hazard?

☐ None ☐ Extra training/seminars
☐ Fellow friends ☐ Magazines/Newspapers/articles

37) Do you think that information about voice disorder is one of occupational hazard shall be distributed among school teachers?

☐ Yes ☐ No

38) In what way do you want the information about voice disorder is one of the occupational hazard shall be disributed?

a.		None
b.		Teacher's training module/seminar
c.		Brochures
d.		Media (television, radio)

39) Have you received **any information about proper voice care?**

☐ Yes ☐ No

40) How do you receive information about proper voice care?

☐ None ☐ Extra training/ Seminars
☐ Fellow friends ☐ Magazines/newspapers/articles

41) Do you think that the information about proper voice care shall be distributed among school teachers?

☐ Yes ☐ No

42) In what way do you want the information about proper voice care shall be distributed among school teachers?

a.		None
b.		Teacher's training module/seminar
c.		Brochures
d.		Media (television, radio)

THANK YOU & GOD BLESS!

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