

Relationship between Vocal Hygiene Awareness and Voice Function among Teachers in Selected Public Primary Schools in Migori County, Kenya

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Abstract: The purpose of this study was to assess relationship between vocal hygiene awareness and voice function among public primary school teachers in Awendo Sub-County, Migori County, Kenya. The objectives of this study sought to investigate the level of vocal hygiene awareness among teachers in Awendo Sub-County, and to assess the possible influence of teachers' awareness of vocal hygiene practices on their voice function. The study was guided by Bronfenbrenner's Social Ecological Model. The study adopted correlation research design which employed a mixed research methodology. The target population was teachers in all public primary schools in Awendo Sub-County, Migori County, Kenya. Two sampling procedures were used to select the respondents in the study: Simple random sampling for teachers and purposive sampling for the head teachers. The sample size consisted of 82 teachers and 8 Head teachers. Data was collected using self-scoring questionnaire and interview schedules. Descriptive statistics was used to describe and summarize quantitative data in terms of graphs, frequency tables, pie charts and percentages with the aid of SPSS computer program, while qualitative data was analyzed and presented thematically. The results show that majority of teachers had vocal hygiene awareness. Also, there was a significant negative association between voice hygiene awareness among the sampled teachers and their voice function. That is; with increase in the level of vocal hygiene awareness, there was a decrease in vocal function problems thus higher levels of vocal hygiene awareness translated to better vocal function. In conclusion, vocal hygiene awareness should form an integral part of the teacher training curriculum. The study recommends further research on the prevalence of voice disorders among teachers in Kenya to enable assess the actual burden of voice disorders on teachers.

Keywords: Teachers' Awareness, Vocal Hygiene Awareness, Voice Function, Voice Disorders

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I. INTRODUCTION

1.1 Background of the study

Vocal hygiene awareness education is a productive method of disseminating knowledge, reducing vocal misuse, and preventing acquisition and progression of voice disorders among teachers; nevertheless, voice disorders among teachers, do occur and persist due to limited vocal hygiene awareness and practices (Boominathan, Chandrasekhar, Ravi & Marugesan, 2009). The results of many studies on voice disorders have consistently emphasized on the critical role of voice hygiene awareness in the prevention of voice disorders among teachers thereby leading to improved voice function. Even though there is extensive literature all over the world supporting the important role of vocal hygiene awareness in reducing voice disorder and improving the vocal function among teachers, no such documented study has been carried out in Kenya.

Mahajan and Greeta (2016) define vocal hygiene as a preventive and therapeutic approach that centers on behavior change to protect the voice from abusive and hyper functional behaviors during speech. Further, they explain that lessening or even elimination of the risk factors for acquisition of functional voice disorders, call for individual knowledge on the voice mechanism, modification and (or) even avoidance of vocally abusive behaviors such as excessive talking, abnormal pitch, reflux control and inadequate laryngeal hydration (Mahajan & Greeta, 2016).

Voice disorder/ dysphonia can be characterized as any deviation in the vocal quality, pitch, loudness, and vocal effort that affect communication or produce a negative impact on the voice related quality of life (Schwartz et al., 2009). Voice disorders can be classified into two broad categories: Organic and functional/behavioral dysphonia. Organic dysphonia are the consequences of aspects non related to the use of voice such as gastroesophageal reflux, vocal fold paralysis and systematic diseases whereas functional

dysphonia are as a result of abusive behaviors or voice misuse, poor vocal technique and/or muscle imbalance, with or without psycho-emotional involvement (Behlau & Pontes, 1995).

Sebastian, Suresh, Simon and Ballraj (2012) study of the risk factors for voice disorders among teachers in India report that, hyper functional voice disorders are more common in occupational voice users especially teachers. Similarly, Bhavsar (2009) on an essay on the evidence base of vocal hygiene, describes vocal fatigue; characterized by labored phonation and a self-perceived weak voice that tends to be related to vocally abusive behaviors, as the most reported voice problem among voice professionals. Vocal misuse and abuse among teachers are often facilitated by physical environmental factors within the school such as presence of background noise and lack of speech amplification devices which force teachers to project their voices higher to get learners attention. Other factors include chalk dust within the classrooms, undisciplined learners, and stress.

Teachers greatly depend on their voices as the main tool for imparting knowledge to learners; therefore, any voice problem experienced by the teacher may lead reduced voice function which will impact negatively on the quality of knowledge imparted to learners, general work performance and the teacher's quality of life. A number of studies focused on voice disorders among the teaching population have shown that the prevalence of vocal dysfunction was significantly higher among teachers (ranging from 11% to 81.0%) compared with non-teachers (ranging from 1.0% to 36.1%). This high prevalence was attributed to intense and prolonged occupational voice use, speaking in a noisy environment, and inefficient phonation technique (Van Houtte, Claeys, Wuyts, & Van Lierde, 2010). Other causes of increased voice problems among teachers include poor dietary habits, certain ailments, stress, anxiety and psychological factors (Yui, 2002). "Deviant voice qualities, inability to sustain phonation, vocal fatigue, pain during phonation and throat irritation are some of the reported voice problems resulting from these causes" (Boominathan, Chandrasekhar et al., 2009).

Studies by Smith, Gray, & Dove, 1997; Mattiske, Oates, & Greenwood 1988 and Roy et al., 2004 (as cited in Martins et al., 2014) estimates of the prevalence of voice disorders among the general population are 6-15%. However, when teachers are considered, these values increase to 20-50 %, reaching up to 80%. Other studies that have focused on the teaching population have shown that the prevalence of vocal dysfunction was significantly higher in teachers as compared to non-teachers. Van Houtte and colleagues (2011) reported that 51.2% of teachers in Belgium had suffered from vocal complaint during their career as compared to 27.6 percent in non-teaching population. Similarly Roy, Merrill, Thibeault, Gray, and Smith (2004) in a study carried out in the United States on the prevalence of voice disorders in teachers and the general population report that, the prevalence of having at least one occurrence of dysphonia was as high as 57.7% among teachers as compared to 28.8% for non-teachers.

A study by Trinite (2017) on Epidemiology of voice disorders among teachers in Latvia reported that, 66% of teachers admitted having experienced voice problems. The prevalence of reporting a current voice disorder among Brazilians is 11.6% for teachers and 7.5% for those who are not teachers, with 63% of teachers and 35 % of non-teachers reporting to have suffered a voice problem at some point during their lifetime (Belhau, Madazio, & Oliviera, 2012). Belhau and colleagues (2012) further reported that, teachers attributed these voice symptoms to their occupation.

In India, a survey study on vocal abuse and vocal hygiene practices among different level professional voice users conducted by Boominathan, Rajendran, Nagarajan, Seethapathy, and Gnanasekar (2008) found that 49% of Indian school teachers were experiencing voice problems, this was a lower percentage as compared to singers, vendors and politicians whose percentages ranged from 59-84. Boominathan et al. (2008) attributed this low percentage to prior sensitization of teachers regarding voice use, and voice projection through traditional methods emphasizing posture and breathe management. This statistic may be true for teachers in India. In Kenya so far, there is neither a documented study on the prevalence of voice disorders among professional voice users nor evidence of sensitization and awareness programs for teachers on proper voice use.

A similar study by Johnson, Akinola and Okonkwo (2017) revealed that the prevalence of reported voice disorders among secondary school teachers in Western Nigeria was at 62.2%. Evidently these estimates are higher compared to other countries with exception of Latvia. Johnson and others further attribute this high prevalence to the poorer working conditions in Nigerian Schools as compared to other communities where previous studies were carried out.

A study conducted in Pakistan by Tariq, Mumtaz and Noveen, (2015) on the impact of vocal hygiene on self-related vocal health of teachers showed that; teachers who employed vocal hygiene protocol in their routine complained less of voice problems than those who did not follow the protocol. Similarly, a study in India by Mahajan and Gore (2016) found out that Voice hygiene program had a positive effect on quality of life of teachers both from psycho-emotional aspect as well as physical aspect of voice.

In Kenya, a study on the impact Free Primary Education (FPE) by Muyanga, Wambugu, and Olwande (2010) document that, the re-introduction of FPE brought about a number of challenges including congestion in the classrooms, overburdened teachers and shortage of teaching learning materials and resources. Also, the pupil

teacher ratio increased from 35:1 in 2000 to 43:1 in 2004 (republic of Kenya, 2006). This rise in enrollment of learners into public primary schools has resulted in congestion on the available infrastructure, increased work load per teacher and extended working hours. The classes were also stuffy and dusty due to overcrowding, poor ventilation and use of dusty chalks to write on the boards, which does not make the situation any better. These environmental conditions in primary schools coupled with prolonged voice use due to many lessons, high voice output level as a result of the presence of background noise, inadequate and/or inferior teaching learning resources and stress make the teachers more susceptible to developing voice disorders (Voice Care for Teachers Program –Melbourne, 2009).

Angadi (2016) in a study aimed at investigating the efficacy of vocal function exercises in improving voice function, observes that, when the voice quality of an individual degenerates especially overtime, it could lead to notable everyday communication challenges and even result in loss of profession. Other similar studies have also established that teachers with voice problems feel more restricted in their daily activities, are often absent from school as compared to those without voice problems, feel voice discomfort more often, and experience reduction in social, psychological, emotional, physical, and communicative functioning(Aaron et al., 2010; Belhau et al., 2012; Trinite, 2012; Merril, Roy, & Lowe, 2013). This study therefore seeks to establish how vocal hygiene awareness influences the voice function of teachers in Awendo Sub-County, Migori County, Kenya.

1.2 Statement of the problem

Voice disorders are common among teachers due to lack of awareness about vocal hygiene, voice overloading, unfavorable working environment, and work-related stress (Tariq, Mumtaz, & Noveen, 2015). Teachers mostly depend on their voices to impart knowledge to learners. Therefore, any voice problem experienced by teachers will automatically affect their content delivery in class and in turn negatively impact on the overall performance of the learners. Despite the paramount importance of voice use in teaching profession, vocal hygiene awareness training is neither part of the teacher training curriculum in Kenya nor is it offered in-service. This lack of knowledge on vocal hygiene practices has seen teachers engage in vocally abusive behaviors that eventually lead to development of voice disorders (Tariq & Mumtaz, 2015). The situation is made worse by the poor environmental factors within the schools that often facilitate development of voice disorders among teachers.

Different studies on vocal hygiene awareness among teachers have established that teachers' awareness of voice hygiene was limited (Van Houtte et al., 2010; Tariq et al., 2015), and that many teachers were lacking this knowledge all together (Trinite, 2012). Studies on the impact of Free Primary Education (FPE) in Kenya have documented massive enrollment, overcrowding in the available infrastructure, increased pupil teacher ratio, heavy workload for teachers, poor working conditions, and lack of teaching learning resources due to inadequate funding as some of the challenges that have been brought about by FPE (Muyanga et al., 2010; Otiike & kiruki, 2011). Such challenges are risk factors for development of voice disorders among teachers in these schools. Many public primary schools in Migori County, Kenya experience similar challenges, therefore, this area warrants a similar study to establish the extent of vocal hygiene awareness among public primary school teachers, and how this awareness has influenced their voice function.

1.3 Purpose of the study

The aim of this study was to assess the relationship between vocal hygiene awareness and voice function among public primary school teachers in Awendo Sub-county, Migori County, Kenya.

1.4 Research objectives

- i. To establish the level of vocal hygiene awareness among public primary school teachers in Awendo sub-county, Migori County.
- ii. To assess the influence of teachers' vocal hygiene awareness on their voice function

1.5 Theoretical framework

This study was guided by social ecological theory model (SEM) that was introduced by Urie Bronfenbrenner (1979). According to the SEM model, health is affected by the interactions between individual characteristics, community and the environment. This study adopted this model to provide an understanding of the interactive effects of both individual and environmental factors in relation to voice function; how these factors influence vocal health awareness among teachers and how they can be modified to facilitate prevention of voice disorders among teachers hence improve their voice function.

According to SEM, prevention of voice disorders among teachers requires understanding of the factors, both internal (behavioral) and external that facilitate the development of voice disorders and modification of these factors to improve voice function. Therefore, prevention of voice disorders among teachers call for change

of individual's non vocal and vocally abusive behaviors, modification of the school environment and introduction of policies and programs to facilitate vocal hygiene awareness and practices. This approach is more likely to sustain prevention efforts as compared to any single intervention strategy thereby improving voice function among teachers.

Individual factors that may lead to voice disorders include drug and substance use, extra vocal load, frequent clearing of the throat, poor hydration, yelling, pitch misuse, acid reflux, stress, excessive intake of coffee and carbonated drinks and neglecting personal health (Trinite, 2016; Boominathan et al., 2008). Prevention strategies at this level according to SEM will focus on promoting attitudes, beliefs, and modification of behaviors to prevent the occurrence of reduced voice function. Specific approach may include sensitization on vocal hygiene practices.

Environmental factors that may lead to voice disorders include; overcrowding in the classroom, presence of background noise in the classes, inadequate teaching learning resources, presence of dust and chemical fumes in the class, laboratories and school environment, lack of/ insufficient clean drinking water for teachers, high work load per teacher, poor ventilation in the classrooms, long working hours, lack of policies to reduce noise in the school environment, voice rest periods and location of the school next to noisy neighborhood. Prevention at this level calls for modification of the school environment and introduction of policies that promote voice care practices.

Societal factors that may lead to voice disorders include: Lack of programs to sensitize teachers on vocal health practices, inadequate financing of infrastructure and teaching learning resources in schools and shortage of employed teachers to adequately handle the lessons.

II. METHODOLOGY

2.1 Research design

This study adopted a correlational research design which employed a mixed research methodology. This design was appropriate for this study as it enabled the researcher to measure two or more variables and assess the relationship between or among the variables in their natural environment, without manipulating any of the variables (Stangor, 2011). Further, this design was relevant for this study because the researcher's purpose was to assess the relationship between vocal hygiene awareness and the voice function of teachers.

2.2 Target population

This study targeted all the 739 teachers from all the 74 public primary school in Awendo Sub County. This is because; public primary schools tend to have higher student-teacher ratio, overcrowding, poor infrastructure and inadequate teaching learning resources (Otike & Kirui, 2011). The researcher therefore assumes that teachers in these institutions are more pre disposed to factors that may contribute to reduced voice function.

2.3 Sampling Techniques and Sample Size

This study employed 2 types of sampling procedures: simple random sampling of the 8 schools in which the study took place and purposive sampling for the Head teachers because they were better placed to respond to the items on the interview schedule. In every school, simple random sampling was also used to select the teachers who would be the respondents of the items in the questionnaires. However, due to the exclusion criteria put in place. The researcher realized that the number of teachers in the eight schools would not be adequate; therefore all the teachers in the eight schools who met the inclusion criteria took part in the study.

The sample size in this study consisted of 82 teachers and 8 Head teachers. The total sample comprised of 90 respondents which translated to 12.17% of the target population.. The inclusion criteria were all public primary school teachers in Awendo sub-county while the exclusion criteria were teachers who had a pre-diagnosed case of voice disorders.

Table 2.1: Target population and study sample

Sample size category	Target population	Sample size	Percentage
Teachers	665	82	12.33%
Head teachers	74	8	10.81%
TOTAL	739	90	12.17%

III. DATA FINDINGS AND DISCUSSION

3.1 Level of Vocal Hygiene Awareness

The first study objective sought to establish the level of vocal hygiene awareness among teachers. This objective was addressed through 3 items in the questionnaire for teachers. In the first item, teachers were asked to indicate whether they had attended any vocal hygiene awareness training. The result as presented in figure 3.1

below revealed that majority of teachers translating to 90% had never attended any vocal hygiene awareness training; whereas, only 10% had attended vocal hygiene training

Vocal Hygiene Awareness Training

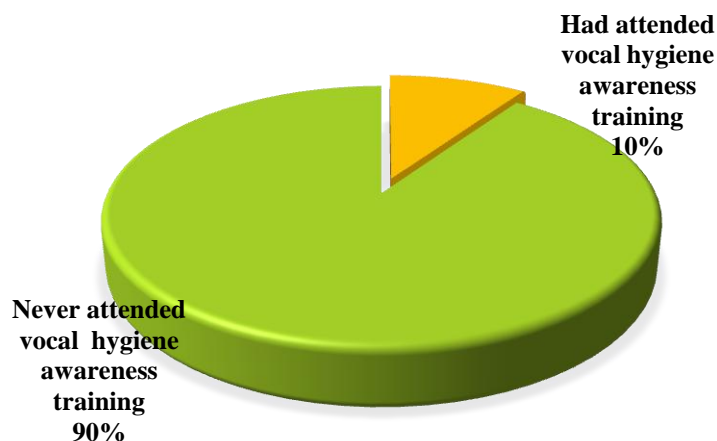


Figure 3.1: Vocal Hygiene Awareness training

Source: Author’s Computation

The second and third items presented a set of questions that were used to assess the level of teachers’ awareness of factors that cause voice problems and protection measures one should adhere to in order to prevent voice disorders. Table 3.1 and table 3.2 show a summary of the frequencies with which each of the presented factor was selected by the respondents.

Table 3.1: Causes of Voice Problems

Causes of Voice problems	True		False		Total	
	F	%	F	%	F	%
Emotional stress	59	(79.7)	15	(20.3)	74	(100)
Yelling and shouting	66	(89.2)	8	(10.8)	74	(100)
Clearing throat frequently	27	(36.5)	47	(63.5)	74	(100)
Dusty school and classrooms	62	(83.8)	12	(16.2)	74	(100)
Allergies	59	(79.7)	15	(20.3)	74	(100)
Using Chalk to write on the board	51	(68.9)	23	(31.1)	74	(100)
Total	324	(437.8)	120	(162.2)	444	(600)

Note:

1. The total percentage is more than 100% since this was designed as a multiple-choice question in the questionnaire. Respondents could choose multiple causes of voice problem.

Source: Author’s Computation

The data presented in table 3.1 shows that, among the factors listed, four factors appeared to be the leading causes of voice problems, each factor having a frequency of more than 70% of the cases. Of the four leading factors, yelling and shouting emerged as the leading cause of voice problem with a frequency 89.2 % followed by dusty school and classroom environment with a frequency of 83.8%. Allergies and emotional stress tied in the third position with 79.7%. Using chalks to write on the board came in fourth with 68.9%. From the results above it is evident that 72.9% of teachers who selected the correct answers demonstrated high level of awareness of particular causes of voice disorders.

Similarly, the third item presented a list of factors that are believed to protect an individual from developing voice disorders of which teachers were required to select true or false. The findings are summarized in table 3.2.

Table 3.2:Voice Protection Factors

Protection Factor	True		False		Total	
	F	%	F	%	F	%
Regularly resting the voice	48	(64.9)	26	(35.1)	74	(100)
Eliminating background noise before teaching	63	(85.1)	11	(14.9)	74	(100)
Speaking in an audible manner	51	(68.9)	23	(31.1)	74	(100)
Keeping head and neck relaxed	52	(70.2)	22	(29.8)	74	(100)
Consult ENT when voice changes	64	(86.5)	10	(13.5)	74	(100)
Total			92	(124.4)		370 (500)
	278	(375.6)				

Note:

1. The total percentage is more than 100% since this was designed as a multiple-choice question in the questionnaire. Respondents could choose multiple causes of voice problems.

Source: Author’s Computation

The data as presented in table 3.2 shows that Consulting ENT when voice changes emerged was the leading protection measure of voice problem with 86.5% of cases followed by elimination of background noise before teaching with 85.1%. Keeping head and neck relaxed came third as an effective way to avoid voice problems being selected by 70.2% of the respondents. Speaking in an audible manner and regularly resting the voice came third with 64.9% and 63.5% respectively. From the results above it is evident that 75.1% of teachers selected correct answers to factors that would prevent an individual from developing voice disorders thus demonstrating some level of awareness of these particular factors. In overall, 74% of the teachers selected correct answers to the two items while only 26% did not select the correct answers. Thus the majority of the teachers had some level of vocal hygiene awareness.

To establish the overall level of vocal hygiene awareness among the teachers, individual answers to voice hygiene concerns and voice protection factors were recorded and percentages assigned. For example; if a respondent selected true against all the items in table 3.2 the score translated to 100% the same applied to table 3.3. An average score was then calculated per individual. Those respondents who had an average of 49% and below were categorized as not aware, those with average percentage scores between 50-69 were categorized as slightly aware, those with average percentage scores between 70-89 were categorized as aware whereas those with average scores between 90-100 were categorized as extremely aware. Table 3.3 shows the level of teachers’ vocal hygiene awareness as per the average individual scores on factors that cause voice disorders and factors that can protect an individual from developing voice disorders.

Table 3.3: Level of vocal hygiene awareness

Level of Vocal hygiene awareness	Frequency	Percent
Not aware	11	14.9
Slightly aware	24	32.4
Aware	16	21.6
Extremely aware	23	31.1
Total	74	100.0

Source: Author’s Computation

The data presented in table 3.3 shows that, approximately 53% of the teachers were well conversant with vocal hygiene practices; 21.6% aware and 31.1% extremely aware. While 47% were not conversant or slightly conversant with the vocal hygiene practices; 14.9% not aware and 32.4% slightly aware. As per the results, we can conclude that majority of teachers, 85.1% are aware of vocal hygiene practices and only 14.9% are not aware of the practices. Thus many teachers demonstrated high level of vocal hygiene awareness. Contrary to findings by Trinite (2012) that many teachers were lacking vocal hygiene awareness knowledge; these findings are in support of those by Kiyani and Kiani (2015) that revealed that 64.2% of the teachers in Islamabad had vocal hygiene awareness.

Owing to the fact that only 10% of the respondents in this study had been exposed to vocal hygiene training we could speculate that they may have gotten this vocal hygiene awareness knowledge informally or through traditional ways. Therefore, more study is warranted on this area.

3.2 The influence of teacher’s vocal hygiene awareness on their voice function

The second objective sought to find out whether vocal hygiene awareness influenced voice function. A Spearman correlation was conducted to examine the relationship between teachers’ vocal hygiene awareness and voice function problems. That is, the level of vocal hygiene awareness was correlated to level of vocal function problems.

To determine the level of vocal hygiene awareness, 2 sets of items in the questionnaire were used; the first item presented a list of factors believed to cause voice disorders whereas the second item presented a list of factors that are believed to protect an individual from developing voice problems. Both items provided the respondents with a “true” or “false” choice. Factors presented in the first item included: emotional stress; yelling and shouting; clearing the throat frequently; dusty school and classroom environment; allergies; and the use of chalk to write on the board whereas factors presented in the second questionnaire included: regularly resting the voice; eliminating background noise before teaching; speaking in an audible manner; keeping head and neck relaxed; and consulting ENT when voice changes emerged.

In analyzing the data, each respondent was scored in terms of percentages according to their correct answers on the two items. Consequently, an average percentage score was calculated for the two items. An ordinal scale of “Not aware”, “Slightly aware”, “Aware”, and “Extremely aware” was used to present the different levels of awareness. Respondents with an average of 49% and below were categorized as “Not aware”, those with an average score of between 50% to 69% were categorized as “Slightly aware”, 70% to 89% “Aware” and 90% to 100% “Extremely aware”. The data presented in table 3.3 shows that, approximately 53% of the teachers were well conversant with vocal hygiene practices; 21.6% aware and 31.1% extremely aware. While 47% were slightly conversant or not conversant with the vocal hygiene practices; 32.4% slightly aware and 14.9% not aware.

To assess the voice function problem, adapted Voice Handicap index-10 instrument was used. This instrument contains a set of 10 statements that people have used to describe their voice and the effect of their voices on their lives (Rosen, Annie, Osborn, & Zullo, 2004). Examples of statements in the VHI-10 include;

1. My voice makes it difficult for people to hear me,
2. Pupils have difficulty understanding me in a noisy room ,
3. My voice difficulty restricts my personal and social life
4. I feel left out of the conversation because of my voice
5. My voice problem causes me to lose income, among others.

The respondents were supposed to choose the response that indicated how frequent they have similar experience as the ones presented in the statements. A scale was provided ranging from 0-4; where 0= never, 1=almost never, 2= sometimes, 3=almost always and 4=always. The scores range was between 0-40, with higher scores indicating greater voice-related handicap. For the sake of this study, the following scale was used to categorize individual scores. Total score between 0-10 was categorized as “Mild” voice problem, 11-20 “Moderate” voice problem, 21-30 “Severe” voice problem whereas 31-40 “profound” voice problem. Table 3.4 shows a summary of the levels of vocal function problems as reported by the respondents.

Table 3.4: Level of Vocal Function Problem

Level of Vocal function problem	Frequency	Percent
Mild	47	63.5
Moderate	18	24.3
Severe	6	8.1
Profound	3	4.1
Total	74	100.0

Source: Author’s Computation

From the findings above, almost two thirds of the respondents (63.5%) reported mild vocal function problems whereas about a quarter of them (24.3%) reported moderate vocal function problems. The remaining few (12.2%) reported to having vocal function problems that ranged from severe to profound. These results on the level of vocal function problems were then correlated with the results of the level of vocal hygiene awareness so as to assess the relationship between them.

On the scatter graph below, x-axis depicts awareness level ; with 1 being “Not aware” 2 being “Slightly aware” 3 being “ Aware” and 4 being “Extremely aware” this is related to voice problem function on the y-axis where; 1 represented “Mild”, 2 represented “Moderate”, 3 represents “Severe”, and 4 represented “Profound”. Figure 3.2 shows a scatter graph of the relationship between teacher’s vocal hygiene awareness and voice function problems

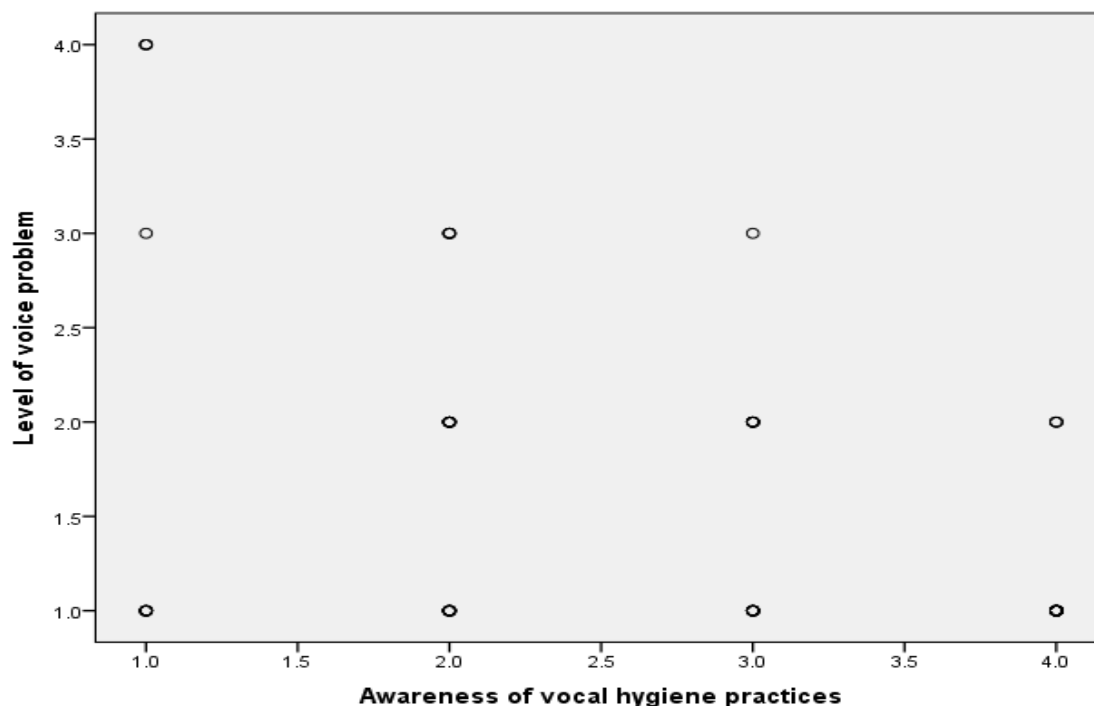


Figure 3.2: Relationship between vocal hygiene awareness and voice function

Results of the Spearman correlation as indicated in the figure above show that there was a significant negative association between vocal hygiene awareness among the sampled teachers and their voice function problems, $r_s = -0.314$, $n = 74$, $p = 0.06$. From the findings above, the respondents who fell in category 4 of vocal hygiene awareness (extremely aware) had moderate vocal function problems when compared to those who fell in categories 3 (aware) and 2 (slightly aware), whose vocal function problems were severe. Those who fell in category 1 (not aware) had profound vocal function problems. Thus teachers who had high level of vocal hygiene awareness experienced fewer problems with vocal function as compared to those who had low levels of vocal hygiene awareness. The above findings are similar to those of Tariq and colleagues (2015), who in their study on the impact of vocal hygiene awareness on vocal health among teachers of Pakistan, found out that; voice disorders were common among teachers due to lack of vocal hygiene awareness.

Similarly, given that the VHI 10 – index that was used to gauge problems with vocal function had statements about how the voice function problems negatively impacted on the teachers' quality of life, we could conclude that most of these respondents experienced reduced quality of life. These findings are similar to those of Belhau et al. (2012); Trinite, (2012); & Aaron et al. (2010); who in different studies established that teachers with voice problems felt more restricted in their daily activities, were often absent from school as compared to those without voice problems, felt voice discomfort often, and experienced reduction in their social, psychological, emotional, physical, and communicative functioning.

From the findings, it is can be seen that the respondents, who had extreme vocal hygiene awareness, still recorded moderate problems with vocal function. This is an eye opener that vocal hygiene awareness alone doesn't guarantee a healthy voice rather incorporating this awareness into daily routine in form of vocal hygiene practices will go a long way in improving voice function. A similar view is held by Boominathan et al. (2008) who reported that it was imperative for teachers to possess certain qualities in their voice and lifestyle that would ensure success in their profession and prolonged usage of their voices. To attain this, it was essential for them to be aware of vocal hygiene and its influence on maintaining healthy voice.

IV. CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The first objective sought to assess the level of vocal hygiene awareness among public primary school teachers. The findings indicated that majority of the teachers had vocal hygiene awareness, with their levels of awareness ranging from extremely aware to not aware. Over half of the respondents were well aware of vocal hygiene, whereas the remaining respondents either were slightly aware or not aware of vocal hygiene.

The second objective sought to assess the influence of teachers' vocal hygiene awareness on their voice function. To address this, the researcher first established different categories denoting levels of vocal hygiene awareness which were then correlated to different categories of voice function problems. This was done by use

Spearman's rank correlation. Results of the Spearman correlation showed that there was a significant negative association between voice hygiene awareness among the sampled teachers and their voice function problems. That is, the higher the level of vocal hygiene awareness of an individual, the lower the voice function problem. From the finding of the study, teachers who had extreme awareness of vocal hygiene reported moderate vocal function problems. On the other hand, those who were aware and those who were slightly of vocal hygiene reported severe vocal function problems while those teachers who fell in the category of not aware, reported profound vocal function problems. Thus teachers who had high level of vocal hygiene awareness experienced fewer problems with vocal function as compared to those who had low levels of vocal hygiene awareness.

The study resulted in the following conclusions, first, it was evident that majority of the teachers had vocal hygiene awareness. Second, as the level of vocal hygiene awareness increased problems with vocal function reduced. However, it's worth noting that even those who possessed extreme vocal hygiene awareness still recorded some problems with vocal function. This brings us to a third conclusion that; vocal hygiene awareness alone is not effective in preventing voice problems.

4.2 Recommendations

By investigating the relationship between vocal hygiene awareness and voice function among public primary school teachers in Migori County, there is need to emphasize on the teachers sensitization on the important role of vocal hygiene practices in improving their voice function; for effective and efficient content delivery to the learners. Assessing the level of vocal hygiene awareness among teachers highlighted the importance of vocal hygiene awareness as first step in improving the voice function of teachers.

By assessing the influence of vocal hygiene awareness on the voice function of public primary school teachers, the study seeks to focus teachers' attention on the crucial role of vocal hygiene awareness in improving their voice function. Also it seeks to enlighten teachers about individual and environmental factors and that may impair their vocal function, hence the need for modification of these factors so as to prevent development of voice disorders. The researcher, guided by the findings and conclusion made the following recommendations related to policy and further research:

- i. There is need for sensitization of teachers on the crucial role of vocal hygiene practices in improving their voice function, consequently evading impending impairment and/or disability of the voice.
- ii. Need for the ministry of Education, curriculum developers and the ministry of Health to work closely in formulating and implementing policies and programs/trainings aimed at promoting vocal health among teachers.

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