VOCAL SYMPTOMS AND PSYCHOLOGICAL STRESS AMONG SCHOOL TEACHERS IN MYSURU: CONSEQUENCES OF SHIFTING FROM OFFLINE TO ONLINE MODE

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August, 2021

CERTIFICATE

This is to certify that this dissertation entitled- **"Vocal Symptoms and Psychological Stress Among School Teachers in Mysuru: Consequences of Shifting from Offline to Online Mode"** is the bonafide work submitted as a part of fulfilment for the degree of Master of Science (Speech-Language Pathology) of the student (Register No: 20SLP002). This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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CERTIFICATE

This is to certify that this dissertation entitled- **"Vocal Symptoms and Psychological Stress Among School Teachers in Mysuru: Consequences of Shifting from Offline to Online Mode"** has been prepared under my supervision and guidance. It is also being certified that this dissertation has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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DECLARATION

This is to Certify that this dissertation entitled- **"Vocal Symptoms and Psychological Stress Among School Teachers in Mysuru: Consequences of Shifting from Offline to Online Mode"** is the result of my own study under the guidance of Dr. T. Jayakumar, Associate Prof. in Speech Science, Department of Speech-Language Science, All India Institute of Speech and Hearing, Mysuru and has not been submitted to any other university for the award of any diploma and degree.

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Dedicating my dissertation to RAMALINGAIAH THATA, CHIKKANNA DODDAPPA and PUTTALEELAMMA DODDAMMA!!!

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CHAPTER 1

INTRODUCTION

COVID-19 virus spread all across the globe from 2019 to 2020 (Guo et al., 2020). World Health Organization (WHO) broadcasted the name novel corona virus disease (COVID-19) on February 11, 2020. WHO announced the COVID-19 is a pandemic on March 11, 2020. “On September 26, 2020, there were 32,110,656 active cases with a death count of 980,031 in world” (Worldometer, 2020 as cited in Lakshman Naik et al., 2021). So, the outbreak of COVID-19 Pandemic across the world had profoundly altered almost all aspects of life, including education, and India has not been an exception to these changes.

The higher education system in India was in state of transition because of COVID-19 during the time of the lockdown. A point at which significant adjustments had been made and more conceptual and procedural changes were sought. The academic higher education institutions around the world were required by COVID-19 to abandon the traditional chalk-and-talk (in-person instruction) method and switch to online teaching and learning (Bao, 2020; Wang & Zhao, 2020; Wu, 2021). The task of adapting to new information and opportunities that technology presents was where change originated.

1.1 Primary and secondary school teachers

Schools for general education in the Indian states shall be sub- divided into two grades:

(i) Primary; and

(ii) Secondary

The first seven standards/grades i.e: Std. I, Std. II, Std. III, Std. IV, Std. V, Std. VI and Std. VII shall be collectively known as the Primary Grade and sub-divided into two sections.

(a) Lower Primary from Standards I to IV, and

(b) Upper primary from Standards V to VII

(c) Standards VIII, IX and X shall be collectively known as the Secondary Grade (Classification of schools, 2019).

Munier and Kinsella (2008) conducted a study on primary school teachers and found greater prevalence rate of 80% in primary school teachers where vocal fatigue and dryness in throat were the frequent symptoms.

Relekar et al. (2017) conducted a study on secondary school teachers using a questionnaire and found the most frequent vocal symptoms were pain and soreness in the throat, dryness in the throat, tightness in the throat, urge for coughing, pitch range affected, loudness range affected, hoarseness, harshness, and pitch breaks.

Abbaszadeh et al. (2019) studied the cross- sectional study in Iran among 508 primary and secondary school teachers and found that, no difference was found between primary and secondary school teachers except primary school teachers experienced greater contact dermatitis. The exposure to chalk dyes was a possible cause of contact dermatitis. This association could be explained by the continuing use of chalkboards in some of the primary schools.

Ohlsson et al. (2012) reported a prevalence rate of 17% in secondary school teachers after conducting questionnaire research on 1636 teacher students with a mean age of 23 years.

On comparing the vocal loading in elementary classroom teachers (who taught Mathematics, social science and science) to music teachers, music teachers were 4 times more prone to develop voice problems (Morrow & Connor, 2011)

1.2 Online synchronous teaching

According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2020), COVID-19 resulted in 144 country-wide closures that had an impact on 1,186,127,211 students worldwide and caused countries to reorganise their educational systems. Due to modifications in learning methods, schools were required to offer massive open online courses (MOOCs), e-learning, correspondence education, external studies, and remote learning (Rasmitadila et al., 2020).

Between medium to high degree of stress was experienced by teachers in a study (Federkeil et al., 2020), which was mostly attributed to the move of education to the virtual world. With education taking place from the convenience of one's own home, distance learning represented a change in the educational environment. This could involve adjustments to the instructional schedule, acoustics, and background noise. Hence, they summarized that, distance instruction is very different from classroom vocal performance because the teacher is secluded in a home office and only interacted with students online.

Online mode of teaching is divided into asynchronous and synchronous modules (Regmi & Jones, 2020).

Students when located remotely and connected via videoconferencing, audio conferencing, or both where there could be dyadic interaction between the teachers and students, this mode of teaching is referred to as synchronous online teaching. Synchronous online education is "more like classroom instruction" (Murphy et al.,

2011). It mostly depends on teacher-centered methods rather than student-centered ones, which is likely to exacerbate faculty psychological stress.

During asynchronous online teaching, the student and the teacher do not need to connect in real time while. Here, the interactive learning is not restricted by time, location, or geography. The asynchronous teaching approach gives the student the opportunity to learn "anytime and anyplace" (Shahabadi & Uplane, 2015).

Private schools and Government schools used different modes of online teaching (Synchronous and asynchronous online teaching) during pandemic.

Private schools requested the parent's WhatsApp accounts. Using these WhatsApp accounts, the school administration organised the respective topic teachers into a respective subject group. These teachers shared a new or permanent link each day, where students must join the connection in order to participate in their topic teacher's daily lectures, and questions were also answered in the same virtual space where lessons are being held encouraging the dyadic interaction.

On the other hand, the students at government schools did not have the financial means to purchase an android or other pieces of equipment for their online classes. Therefore, in order to address this issue with online education, the government decided to launch a new project on its national DD channel. This ensured that students continue their study uninterrupted. During the lockdown, students could access instructional material through virtual classrooms broadcasted by Doordarshan and All India Radio as well as other materials through their regional channels around the nation on TV, radio, and the YouTube (Shukla, 2021).

From the above, it can be observed that, private schools followed synchronous online teaching method and government schools followed asynchronous online teaching method. Since, teachers in the asynchronous learning approach were recording

lessons and sending, the dyadic interaction between the teachers and students was not present, along with background noises generated because of interactions between students and teachers.

Some studies found that there was statistically significant difference with respect to job related stress among private school and government school teachers (Bhattacharjee et al., 2021; Bodiwala & Chaithani, 2020). The results showed that teachers who taught in private school were more stressed compared to government school teachers. Hence, the vocal usage of government school teachers was lesser than that of private school teachers who were having synchronous teaching approach.

1.3 Teachers and vocal usage

In today's service-oriented society, communication skills are at most important for everyone and the prominent interest was always gained by vocal performance (Timmermans et al., 2002). A person is known as a professional voice user when his/her means for procuring the necessities of living is met through voice usage (Wingate, 2007). Based on the voice usage, professional voice users are classified into IV levels by (Koufman & Isaacson, 1991), they are as follows:

Elite vocal performers (Level 1): Mainly includes singers and actors, where a minor variation in the voice has a serious impact on their profession.

Professional voice users (Level II): This group mainly includes teachers, lecturers, politicians, clergyman, telephone operators and individuals involved in public speaking. Here, a moderate difficulty would affect their appropriate job performances.

Nonvocal professionals (Level III): This group mainly includes business man, lawyers, physicians where severe vocal problem would hamper their appropriate. job performances.

Nonvocal non-professional (Level IV): This group mainly includes homemaker, labourers and clerks, where their vocal difficulty would not hamper their job performances.

Among the professional group, voice problems are more prevalent in teachers ranging from 38% to 80%, whereas incidence rate for other professionals are; 68% in telemarketers, 44% in aerobics instructors (Long et al., 1998) and nearly 4% in salesperson (Coyle et al., 2001).

Several studies found that the prevalence of voice dysfunction was much higher in teachers (ranging from 11 percent to 81.0 percent) than non-teachers (ranging from 1.0 % to 36.1 %) (de Jong et al., 2006). Vocal fatigue, dysphonia, increased phonation effort, dry throat, tightness, sore throat, and other vocal symptoms were reported by 11 to 89 percent of teachers in a study conducted in Taiwan (Chen et al., 2010). Hoarseness, difficulty with pitch, voice fatigue, weakness, and effortful output are symptoms reported by one-third to half of the teachers (Sapir, 1993). Because of intensive and prolonged occupational voice use, speaking in a noisy setting, and poor phonation skills, there is a significant prevalence of voice problems.

Morrison and Rammage (1993) has reported four internal factors that contribute to the voice problems in teachers; behaviours that effect voice (such as smoking and shrieking), unevenness in the muscle usage, inappropriate body posture, and disturbances in the emotions. Existence of one or more than one of these conditions can cause voice problems. In the occupational setup, lengthy working time, extended and unrestricted use of voice are some factors that results in voice problem (Vilkman, 2000).

1.4 Teachers and psychological stress

One of the jobs that people find to be the most stressful is teaching. One particular type of occupational stress is teacher stress. An educator may experience

unpleasant emotions as a result of some aspects of their work as teachers, such as tension, rage, frustration, and depression. In terms of growth, privatisation, marketization, curriculum reforms, and pedagogical advances, the Indian educational system had seen tremendous changes. Teachers are becoming more and more anxious as a result of the growing demands of the modern educational system. Numerous physiological alterations, including circulatory modifications, autonomic responses, and psycho-neuro-immunologic modifications, can be brought on by psychological stress. Being a teacher can be challenging, which can lead to negative emotions including fury, anxiety, tension, frustration, and despair (Jakubowski & Sitko-Dominik, 2021). Stress has a negative effect on teachers' personal and professional lives, which can lower job devotion and satisfaction and lower life satisfaction (Holmqvist et al., 2013). Stress has an impact on vocal quality and acoustic voice characteristics. It can also have a negative effect on student achievement.

1.5 Vocal symptoms and psychological stress during online teaching

The findings of a study by (Patjas et al., 2021) showed that during distance teaching, teachers reported fewer voice symptoms and a lower VHI-10 score than they did during regular school hours. Besser et al. (2020) revealed no statistically significant differences between perceptions of vocal symptoms across past teaching sessions and those throughout the transition to online synchronous teaching.

Few studies found that psychological stress experienced in online learning environments was higher than psychological stress experienced in traditional instruction (Besser et al., 2020; Sode & Bhardwaj, 2021). The challenges of online synchronous instruction were mostly brought on by a lack of distance education expertise and skills (Zhou et al., 2020). These findings support the notion that the

COVID-19 pandemic is a global health emergency characterised by significant disruptions in daily life and high levels of psychological stress.

1.6 Need for the Study

Many studies have identified vocal symptoms and psychological stress experienced during the course of traditional teaching (Chen et al., 2010; Holmqvist et al., 2013). Also, there are studies emphasizing the vocal symptom changes from offline to online shift (de Sousa et al., 2019; Patjas et al., 2021). But limited studies reflect the change in levels of perceived psychological stress and vocal symptoms in the Indian Scenario. Hence, the present study shall shed light on identifying the differences in vocal symptoms and psychological/job related stress from offline to online classes in Mysuru School teachers.

1.7 Aim

To understand vocal symptoms and psychological/job related stress in upper primary (5^{th} to 7^{th}) and secondary school teachers (8^{th} to $10^{th)}$ who shifted from traditional to synchronous online classes.

1.8 Objectives of the study

- Adapting the questionnaire to evaluate the changes in vocal symptoms and psychological/job related stress from traditional to synchronous online classes for school teachers.
- To identify and measure the vocal symptoms and psychological/job related stress for the synchronous online classes for school teachers.
- To evaluate the association between the vocal symptoms and psychological/job related stress during synchronous online classes.

- To identify and measure the vocal symptoms and psychological/job related stress for the synchronous online classes for upper primary and secondary school teachers.

CHAPTER 2

LITERATURE REVIEW

The larynx produces sound utilizing vocal folds for speaking, singing, laughing, sobbing, and other activities. It not only displays unique identity owing to the natural and distinctive tone of a person's speech, but it also serves as a significant job tool.

Our voice is a highly sensitive sign of our physical and mental well-being (Alva et al., 2017). One-third of the workforce is anticipated to operate in occupations where the voice is the primary and most significant tool (Vilkman, 2000). Actors, singers, instructors, attorneys, call-centre operators, broadcasters, preachers, guides, and business executives are among these professions.

Teachers are one group of people for whom the voice is extremely important, shaping their interactions with pupils and colleagues. Teachers use their voices a lot, and they get vocal difficulties more often than other people in their profession.

Voice disorders include differences in voice quality, pitch, loudness, or flexibility when compared to the voices of people of same age, sex, or cultural groups (Sathyanarayan et al., 2019). Several studies have shown that teachers talk for longer periods of time than other professionals, and that school teachers in particular are at risk for voice disorders such vocal fatigue and nodules (Rantala et al., 2002). Teacher’s dysphonia can be caused by a variety of causes, including continuous voice use, lengthy teaching hours, dust and noise pollution, a lack of acoustic amplification, a stressful workplace, or excessive consumption of spicy food, coffee, nicotine, and fizzy drinks (Lee et al., 2010; Preciado et al., 2009).

According to research done on teachers in the Mysuru district, 17.4% of them (188 out of 1082) reported having voice issues (Devadas et al., 2017). In their study on the incidence of vocal disorders, (de Sousa et al., 2019) found that 71.42% of school

teachers reported having voice difficulties. In a study involving 105 school teachers of Mangalore, 80% percent of the teachers reported having voice problems (Alva et al., 2017).

2.1 Teachers and Voice disorders

Many nations, including Finland, Germany, New Zealand, America, and Korea, conducted studies on the prevalence of voice disorders among teachers, resulting in reliable and complete national data. These findings revealed that more than half of instructors had experienced vocal difficulty at some point in their careers (Nazari et al., 2021; Nusseck et al., 2018; Vertanen-Greis et al., 2020).

Lee et al. (2010) obtained 498 completed questionnaires from primary school teachers in Hong Kong, of which 348 had developed vocal issues in the previous 12 months, reflecting a prevalence of 69.9%. Female teachers were more likely than male teachers to acquire voice disorders. Hoarseness was the most common voice symptom among the teachers, followed by throat pain and dry throat. Asthma, nasal drip, colds, sinusitis, laryngitis, and the number of classes per day were all strongly linked to voice issues.

Houette et al. (2011) investigated Belgian teacher's awareness of vocal care, treatment-seeking behaviour, and abstinence due to voice-related problems. Age range of participants were from 21 to 65, with a mean of 36.5 years. There were 290 controllers and 994 teachers combined. The questionnaire was developed using data from earlier studies (Roy et al., 2004) that concentrated on four main areas: (1) ENT, vocal, and physical complaints; (2) treatment-seeking behaviour; (3) voice-related absenteeism; and (4) vocal care knowledge. Results revealed that, at some time in their careers, more than half of the instructors (51.2 percent, 509/994) experienced voice issues. Of those, 50% of the instructors who were impacted sought medical attention.

According to this study, there is a direct correlation between voice anomalies and the frequency of sick days, which was much greater in the experimental group than in the general population.

Research in Malaysia found that 53.8% of elementary school teachers had voice disorders in the previous 12 months (Roscellainja & Abdul, 2016). Another study in the same region found that 10.4% of secondary school teachers had voice disorders (Moy et al., 2015). Speaking for long periods of time in a poor acoustic environment, speaking loudly across a high level of classroom noise, excessive throat clearing and dry coughing, and speaking with a higher pitch for kindergarten and primary school teachers were all significant factors that contributed to an increased risk of voice disorder (Devadas et al., 2017; Remacle et al., 2014).

A systematic review and meta-analysis on the risk factors for voice disorders in teachers was undertaken by (Byeon, 2019) using sixteen target publications from Korea's 2004 –2008. To identify vocal issues, self-reporting surveys (n = 16), auditory analysis (n = 1), acoustic analysis (n = 1), and ENT Tests (laryngeal stroboscopy; n = 2) were employed. According to the findings, instructors between the age of 40 and 49 had vocal issues 1.2 times more frequently than teachers in other age groups. Teachers who worked more than 20 hours per week had a 1.6-fold increased risk than those who worked lesser than 20 hours Additionally, teachers with upper respiratory tract infections like laryngitis, colds, and laryngopharyngitis, gastritis, thyroid disease, and acid reflux had a higher incidence of voice abnormalities and teachers who drank less than four glasses of water per day were also more likely to experience vocal symptoms.

How and Ang (2021) surveyed 40 Malaysian teachers on their vocal health, they found that 78% of them suffer vocal discomfort at least once a year, with vocal dryness, stiffness, and pain after a long day of teaching being the most prevalent symptoms.

Additionally, they discovered that teachers often speak too loudly during class compared to casual conversation after a long day of teaching and develop voice fatigue and sore throats. Seven respondents took medication after feeling unwell for 4-6 days, while two took medication after feeling unwell for 7-9 days. 14 respondents decided not to seek medical assistance despite suffering, whereas 40% of respondents did so after enduring discomfort for 1-3 days.

Devdas et al. (2017) investigated the prevalence and risk factors for voice disorders in elementary school teachers in India. A total of 1082 teachers from 80 government schools and 24 private schools were randomly recruited for the study. Teachers of physical education, music, and mathematics were not included in the study. A self-reporting questionnaire containing questions to evaluate the prevalence of Voice Problems (VPs) and Non-Voice Problems (NVPs) in primary school teachers were considered. The findings revealed that 188 of the 1082 teachers who took part in the survey had VPs, with a prevalence rate of 17.4%, while the others were classified as having no vocal difficulties. The prevalence of vocal symptoms such as tired voice after lengthy hours of talking (52%) was higher in the VPs group than in the NVPs group of teachers. Background noise was found to have a substantial impact on the teachers who reported the voice problems.

Sathyanarayan et al. (2019) conducted a study in Chennai, India to provide socioculturally relevant information on Vocal Health (VH) practises and the nature of voice disorders in teachers. 384 responses were obtained from the Vocal Health (VH) survey, which was distributed to 15 schools in Chennai. Of those responses, 367 (95.6%) were provided by female teachers in the age range of 22 to 70, while 17 (4.4%) were provided by male teachers. 127 teachers worked with high school learners, while 166 teachers taught children at elementary schools. A few teachers were in charge of

multiple grades. The teachers' vocal and non-vocal behaviours were divided into VH-productive and VH-counterproductive activities. The protective behaviors included drinking enough water and inhaling steam. Contrarily, the counterproductive behaviors included smoking, drinking alcohol, using throat lozenges, consuming aerated drinks, drinking caffeinated beverages, eating hot and fatty foods, and eating close to bedtime. According to the findings, voice issues were reported by instructors between the ages of 31 and 40 and beyond 50. The incidence of voice issues among teachers ranged from 15% to 80%. Screaming or shouting, as well as speaking at an uncomfortable volume, were among the voice abuse or misuse behaviours that teachers regularly reported.

Menon et al. (2021) aimed at documenting the prevalence of subjective dysphonia among school teachers in Kerala and to compare the prevalence and severity of dysphonia between primary and secondary school teachers in their study. The majority of the responses (651 out of 702) were from women (92.7%). There were 165 primary school teachers (Class IV) and 242 secondary school teachers (Class VI- XII). 279 teachers (39.74%) were required to teach both parts. The questionnaire has 12 questions about voice difficulties. The results revealed that, there were 319 teachers who had dysphonia at the time of the survey, yielding a prevalence of 45.4%. The sensation of tickling or choking was the most common symptom (88.3%), followed by throat pain (72.9%), dryness (70.5%), and the need for regular clearing (70.5%). Also, secondary school teachers were found to have a higher prevalence of voice abnormalities than elementary school teachers. For both groups of teachers, age and daily teaching hours were not risk factors.

2.2 Teachers and psychological stress

The results of a self-report study (Smith et al., 1997) revealed a number of vocal symptoms related with stress, including tension that interferes with communication;

unstable, trembling, or cracking voice; voice that is too loud or quiet; and speaking that is difficult or too rapid.

According to the National Union of Teachers (NUT), “Stress is one of the most serious issues facing teachers, and it is the primary health and safety concern in four out of five Nigerian schools evaluated” (NUT, 1999 as cited in Nwimo & Onwunaka, 2015).

Lee et al. (2010) conducted a cross-sectional study on primary school teachers in Hong Kong. Because of their vocal issues, 262 instructors (75.3%) felt unhappy and 276 (77.3%) experienced stress out of 328 teachers. 215 teachers (61.8 percent) had sought professional help for their vocal problems at least once.

Holmqvist et al. (2013) investigated the relationship between positive stress markers and voice complaints. The study included 1728 Finnish teachers, with 555 males and 1173 females. The survey consisted of 69 questions covering a wide range of background information as well as features of speech, language, and voice (Nybacka et al., 2012). The questionnaire asked about the presence of six vocal symptoms in the last 12 months, as well as six questions about the level of stress. The study found that throat clearing or coughing while talking was the most common vocal symptom, and the two stress symptoms "Feeling nervous or tense in situations when required to talk" and "Feeling strained or exhausted" had a significant relationship with all six vocal symptoms, and women reported more frequently occurring vocal symptoms than men.

Nwimo and Onwunaka (2015) aimed at examining the level of stress of secondary school teachers in Ebonyi State. A cross-sectional survey was conducted among 660 teachers (male 259, female 401) who were randomly selected from 33 secondary schools in Ebonyi State. Data was gathered using the Teacher Stress Questionnaire. High levels of stress were defined as a criterion mean of 2.50 or above.

Physical Stress (PHS), Mental Stress (MTS), Emotional Stress (EMS), and Social Stress (SOS) were all measured, with mean scores of 3.30, 2.92, 3.55, and 3.14. The findings revealed that secondary school teachers in Ebonyi State were more stressed than primary school instructors. The data revealed that instructors reported high levels of stress in all aspects (range of mean = 2.92-3.55) and overall stress (Mean = 3.22, SD = 0.32), with male teachers reporting higher stress scores in all dimensions (male x = 3.21, female x = 3.13) than female teachers. Overall, the findings revealed that there is a positive link between the various components of stress, with an increase in one leading to an increase in another.

Bhattacharjee et al. (2021) aimed at investigating the magnitude of stress among different school teachers in West Bengal, India. The study comprised of 338 school teachers which included 110 rural, 121 suburban's and 107 urban teachers. The work-related stress was administered using self-reported questionnaire called Work tension scale (WTS). The results reflected that mean job-related stress score of the teachers was 3.12 with a standard deviation of 0.81. Elder teachers were the most stressful among all. Also, private school teachers experienced greater stress compared to government school teachers.

2.3 Vocal symptoms and psychological stress during online teaching in teachers

Besser et al. (2020) evaluated whether psychological stress is linked to voice symptoms among university teachers in Israel during the COVID-19 pandemic-related shift to online synchronous instruction. The questionnaires were completed by 313 professors (157 women and 156 men). On a 7-point semantic Likert scale, a questionnaire with eight vocal symptoms and a single item measure of stress was utilised to assess the level of psychological stress. The results indicated professors reported greater stress scores during online mode (M = 3.42, SD = 1.78) than offline

mode, but no differences in vocal symptoms as a result of shift from online (M = 2.83, SD = 1.46) to offline mode (M = 2.83, SD = 1.46) was observed. No statistical difference across genders in terms of vocal symptoms and psychological stress were also observed. The most common vocal symptom following the transition was vocal fatigue (43.5 percent). Also, the study's findings demonstrated that psychological stress associated with the shift to online synchronous instruction was linked to increased levels of voice symptoms, particularly among those who had previously reported higher levels of psychological stress.

Federkeil et al. (2020) investigated the level of stress experienced by teachers during the German school lockout and their coping mechanisms. A cross-sectional study included 380 teachers. 293 (77%) of the participants were female, whereas 86 (23%) were male. The participants completed an online survey about their stress levels and obstacles they faced while teaching online. The study found that teachers were under medium-to-high stress during the lockdown, as indicated by a mean score of 3.64 (SD = 0.98) on a five-point Likert scale. Also, more than half of teachers who spent more than four hours/ day on remote teaching were substantially more stressed than teachers who taught for shorter periods of time. Teachers frequently agreed that a lack of suitable hardware was a hindrance to effective instruction. Female teachers (M = 3.71, SD = 1.10) had higher stress levels than male teachers (M = 3.41, SD = 0.94).

Sode and Bhardwaj (2021) examined the level of anxiety and perceived stress among primary school teachers in rural area engaged in online teaching during Covid-19 Pandemic in Maharastra, India. The total sample of 30 primary school teachers (15 male teachers and 15 female teachers) from the rural areas of Nashik district were considered. The age group of the sample was 40 to 50 years. They incorporated Hamilton Anxiety Rating Scale (HAM-A) and Perceived Stress Scale. The results

indicated a higher level of anxiety and perceived stress among primary school teachers engaged in online teaching during Covid-19 Pandemic. No gender difference in terms of level of anxiety and perceived stress among primary school teachers were observed. The reason for the findings were that teachers were not familiar with the teaching mode and was fearful to the technological tools. Also, primary classes students were very small to control them, grasp their attention and make them attentive. Which in turn had caused the higher level of anxiety and perceived stress.

Patjas et al. (2021) investigated voice complaints and their environmental risk variables, as well as work ability and remote teaching in Finland. With the exception of teachers of basic grades 1–3 and special education instructors, 121 teachers took part in the study. The Voice Handicap Index - 10 (VHI - 10), the frequency of voice issues, stress levels at work and at home, health, work capacity, and environmental factors like noise, indoor air quality, and audio-visual approaches were all employed. Stress was measured using a single item on a 5-point likert scale. Teachers reported less voice symptoms, with a mean VHI-10 value of 4.58 during remote teaching, down from 7.88 in school teaching. There was no significant difference in vocal symptoms between men and women. Teachers in the 30-39-year age bracket had greater vocal issues than others between the ages of 18 and 69. There was no statistically significant difference in subjective stress levels between the two instruction modes. During school and distance teaching, background noise was discovered as a significant factor affecting voice-related issues. In school classrooms, however, background noise generated more subjective voice issues and a higher VHI-10 score than in distant teaching.

AlArfaj et al. (2022) conducted an investigation to look at how Saudi Arabian school teachers' vocal health was impacted by online education. The voice abnormalities of the instructors were evaluated using the Voice Handicap Index-10

(VHI-10) questionnaire. 335 teachers in total participated in this study. In comparison to the average VHI-10 score previous to the pandemic period, the pandemic period's average score (14.4) was significantly lower (16.3). The most common linked chronic ailment was allergic rhinitis (15.5%), which was followed by ear issues (11.9%) and reflux disease (9.3%).

Due to the COVID-19 epidemic, (Catherine, 2022) wanted to investigate if there was a link between working circumstances, vocal symptoms, and voice-related quality of life among Colombian school and college teachers during online classes. Thirty-two Colombian instructors from basic, secondary, and university teaching levels participated in the study. During online classes, participants completed an online survey about working conditions (including room acoustics) and voice issues. Teachers answered 60 questions about sociodemographic factors (n=3), working conditions (background noise, reverberation time, hours of online classes) (n=18), voice functioning (n=10), Voice-Related Quality of Life (VRQOL) (n=10) (Hogikyan & Sethuraman, 1999), and the Spanish version of the Vocal Fatigue Index – VFI (n=19) (Elo et al., 2003). Participants were asked to answer the following question for stress assessment with question “Do you have this kind of tension right now?" This item was graded on a five-point Likert scale. The results indicated that, long reverberation time, a high level of teaching, stress, and years of expertise were all statistically linked to lower VRQOL scores. Also, stress was linked to vocal fatigue, voice avoidance, and physical discomfort.

Sharp and Cook (2022) sought to ascertain the relationship between vocal symptoms and general well-being among English teachers employed by state, independent, mainstream, and special schools. Finding other risk factors linked to voice symptoms was the secondary goal. A total of 1205 instructors from 648 schools

participated in the study. According on studies in the literature on voice issues and wellbeing, the questionnaire was created. The Voice Outcome Scale (VoiSS), the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS), and the GerdQ questionnaire were used to assess voice symptoms, wellbeing, and gastroesophageal reflux, respectively. Results showed a statistically significant relationship between voice symptoms and happiness. The subjects in the study had VoiSS scores ranging from 0-96, with a median score of 20 and a mean score of 23. The participant's mean WEMWBS score was 43. Voice symptoms lessened as wellbeing rose. This research implies that voice issues are related to favourable psychological states like wellbeing. Also, age, sex, class size, vocal effort, and respiratory infections were independent variables that affected VoiSS scores; no correlation was found between voice symptoms and voice training, subject taught, asthma, smoking status, hours taught per week, or deprivation of school.

CHAPTER 3

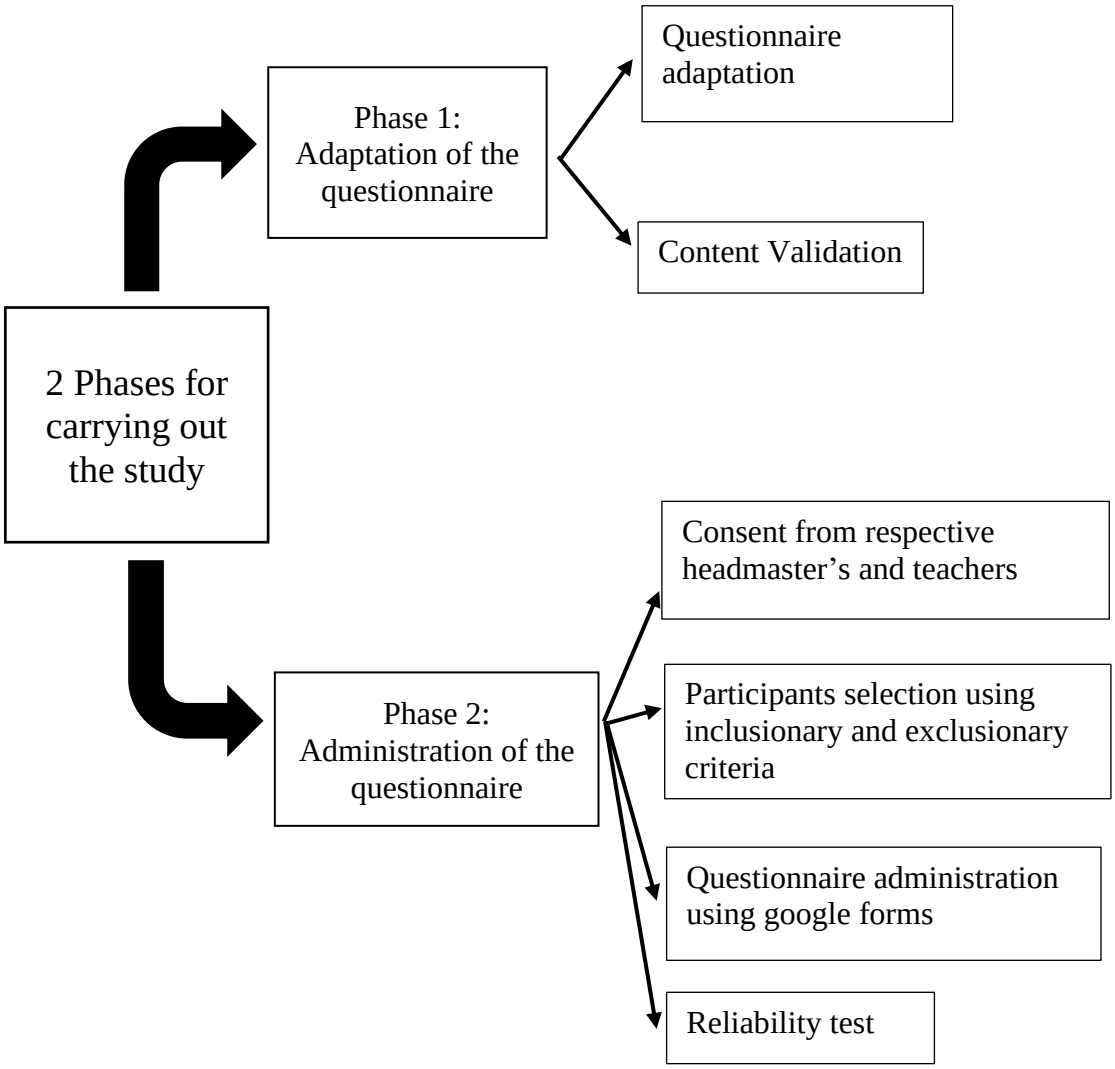
METHOD

3.1 Research design

The current study used a survey-based research design. The cost-effectiveness, shorter response time and greater response rates were the main reason for selecting the e-survey mode (Lazar & Preece, 1999).

This study was carried out in two phases. Phase 1 was adaptation of the questionnaire and phase 2 was the administration of the questionnaire.

Figure 3.1: *Flowchart depicting the phases for carrying out the study*



Phase 1: Adaptation of the questionnaire

The questionnaire used for the current study was adapted from the questionnaire developed by (Besser et al., 2020). An adequate description about the questionnaire concerning vocal symptoms and psychological stress was provided by (Besser et al., 2020).

The questionnaire highlighted the vocal symptoms and psychological stress changes from face-to-face to online teaching in University Professors in Isreal. The questionnaire addressed "Eight vocal symptoms" and "One single item measure of psychological stress". The vocal symptoms included in this questionnaire had been used in several previous studies (Simberg et al., 2006; van Houtte et al., 2011).

The use of the single-item stress measure was made easier and less taxing for participants, and it was also considered to be a more sensitive indicator of wellbeing in work organisational research than that are illness-based health measures (Elo et al., 2003).

In a single questionnaire addressing both vocal symptoms and psychological stress, same set of questions were used twice to elicit information regarding:

- Vocal symptoms and psychological stress experienced during offline (face to face) teaching
- Vocal symptoms and psychological stress experienced during online (online synchronous) teaching

To elicit information regarding vocal symptoms and psychological stress during online teaching scenario, following description were provided:

- "Please indicate the extent to which you have experienced each of the following vocal symptoms since shifting to online synchronous teaching").

- "Please indicate the extent to which you have experienced psychological stress since shifting to online synchronous teaching").

To elicit information regarding vocal symptoms and psychological stress during traditional teaching scenario, the following description were provided:

- "Please indicate the extent to which you have experienced each of the following vocal symptoms during traditional face - to face teaching").
- "Please indicate the extent to which you have experienced psychological stress during traditional face -to face teaching").

A 7-point Semantic Likert scale (1 indicates "Not at all", 2 indicates "Very rarely", 3 indicates "Rarely", 4 indicates "Sometimes", 5 indicates "Frequent", 6 indicates "Very Frequent" and 7 indicates "Always") was used to elicit information about both vocal symptoms and psychological stress.

Since the questionnaire was developed in Israel context, the adaptation of the questionnaire to Indian context was carried out by adapting the words from (Bhattacharjee et al., 2021; Devadas et al., 2019) studies carried out in Indian context for better clarity and ease of understanding.

The content validation was done by three Speech Language Pathologists (SLP's) with minimum of two-year experience. A content validation questionnaire was used from already established and published research (Goswami et al., 2012). The content was checked for 6 parameters namely: Simplicity, familiarity, complexity, framing of items, applicability and cultural appropriateness, which were to be rated on a 5-point likert scale ranging from 1 (very poor) to 5 (excellent). The SLPs were asked to judge each question and suggest modifications if required.

The only suggestion provided was to frame Q_1 in a better way. The suggestions were incorporated by framing Q_1 properly.

Table 3.1: *Adaptation of vocal symptoms and psychological stress questionnaire*

Sl No.	Original vocal symptoms and psychological stress	Adaptation of questionnaire along with original vocal symptoms and psychological stress for better understanding
Q_1	Voice quality change	Change in voice quality (Hoarseness or huskiness)
Q_2	Vocal fatigue	Vocal fatigue (Tiredness of voice)
Q_3	More effort in producing the voice	More vocal effort in producing the voice
Q_4.	Pain or soreness in throat	Pain or soreness in throat
Q_5	Weakening of voice	Weakening of voice (low loudness)
Q_6	Irritation or dryness of larynx	Irritation or dryness in throat
Q_7	Frequent cough or throat clearing	Frequent cough or throat clearing
Q_8	Frequent need to sip water	Frequent need to sip water
Q_9	Extent of psychological stress	Extent of psychological/job related stress

Phase II: Administration of the questionnaire

3.2 Procedure

Once the adaptation of questionnaire was done, the consent from Head master/ mistress of respective schools either through telephone or email. Once the approval was done, the participant email ids were collected and questionnaire prepared were sent using google forms. The consent was also taken from the participants through google form. They were informed beforehand about the purpose of the study, the nature of questions and the amount of time required for the interview.

3.2.1 Participants

A total of 115 teachers participated in the study. Participants were grouped as upper primary (V, VI & VII) and secondary school teachers (VIII, IX & X) based on the grades/classes they majorly teach at school. 210 questionnaires were sent to 12 private schools in Mysuru with State and Central syllabus. Out of those, 118 responses were obtained with response rate of 56.19%. 3 of them were incomplete and hence were not considered. Out of 115 completed questionnaires, 95 participants were females and 20

were males with 53 primary teachers and 62 secondary school teachers. All the participants were in the age range from 24 - 58 years. The data collection was started from February (2022) and completed on May (2022).

3.2.2 Participant's inclusionary criteria

- The teachers should be upper primary (V to VII std) and secondary school (VIII to X std) teachers.
- The teachers should have minimum of 3 year's experience in offline (face to face) teaching.
- The teachers should have compulsorily taken synchronous online classes for atleast for three months.
- The teachers should be from or around the Mysuru region.
- The teachers must be familiar with English Language.

3.2.3 Participant's exclusionary criteria

- The preschool and lower primary (I to IV) teachers were excluded.
- Teachers handling mathematics, extracurricular subjects (physical education, music, computer and drawing) were excluded from the study.

  (The strategies used for teaching mathematics is different from that of the strategies used for teaching language. Mathematics involves more of visual illustration on the blackboard whereas teaching language involve narration for an extended period of time using modulations in voice (often), dictating the answers, reciting poems and explaining stories and so on. Teachers handling extracurricular subjects were excluded as their role during online teaching was minimal).

3.2.4 Sample Selection

The participants were selected using convenient sampling.

Reliability

The test-retest reliability of the questionnaire was carried out by administering the questionnaire once again (with an interval of 15- 30 days between the initial questionnaire administrations) on 10% of the participants. Thus, out of 115 teachers included in the study, 12 teachers were again asked to complete the questionnaire.

Statistical Analysis

The obtained parameters were tabulated and subjected to statistical analysis in Statistical Package for the Social Sciences (SPSS) software package (Version 25.0). Chi-Square test was done to obtain information's about the teaching groups (upper primary and secondary teacher's) classified based on different teaching mode (offline and online teaching) and frequency counts of questionnaire based on responses by teaching groups for both vocal symptoms and psychological/job related stress. Descriptive statistics (mean, median, standard deviation and inter quartile range) and Mann-Whitney U test was done across teaching groups. Descriptive statistics (mean, median and standard deviation) and Mann- Whitney U test was calculated across different age groups. Wilcoxon Signed rank test was done to compare within teaching group (across different teaching mode) and Spearman's Rho correlation test was carried out to find out the correlation between vocal symptoms and psychological/job related stress during offline and online teaching mode. Finally, Cronbach's alpha coefficient test was carried out to check for test- retest reliability.

CHAPTER 4

RESULTS

The present study aimed at investigating vocal symptoms and psychological/job related stress in school teachers when shifted from offline to synchronous online classes.

Study included two groups namely upper primary (5^{th} to 7^{th}) and Secondary (8^{th} to 10^{th}) school teachers along with two modes of teaching namely offline (face to face) and online (online synchronous). Since the data was interval measurement and not following the normal distribution, non-parametric statistics was carried out.

The following statistical analyses were carried out:

1. Teaching duration across teaching groups (Upper primary and secondary school teachers)
2. Frequency counts of questionnaire data
3. Descriptive statistics (Mean, median, standard deviation and interquartile range) of the teaching group
4. Comparison of vocal symptoms and psychological/job related stress across teaching groups
5. Descriptive statistics (Mean, median and standard deviation) across different age groups
6. Comparison within teaching groups (Offline and online teaching mode)
7. Correlation between vocal symptoms and psychological stress
8. Test- retest reliability.

1. Teaching duration across teaching groups (Upper primary and secondary school teachers)

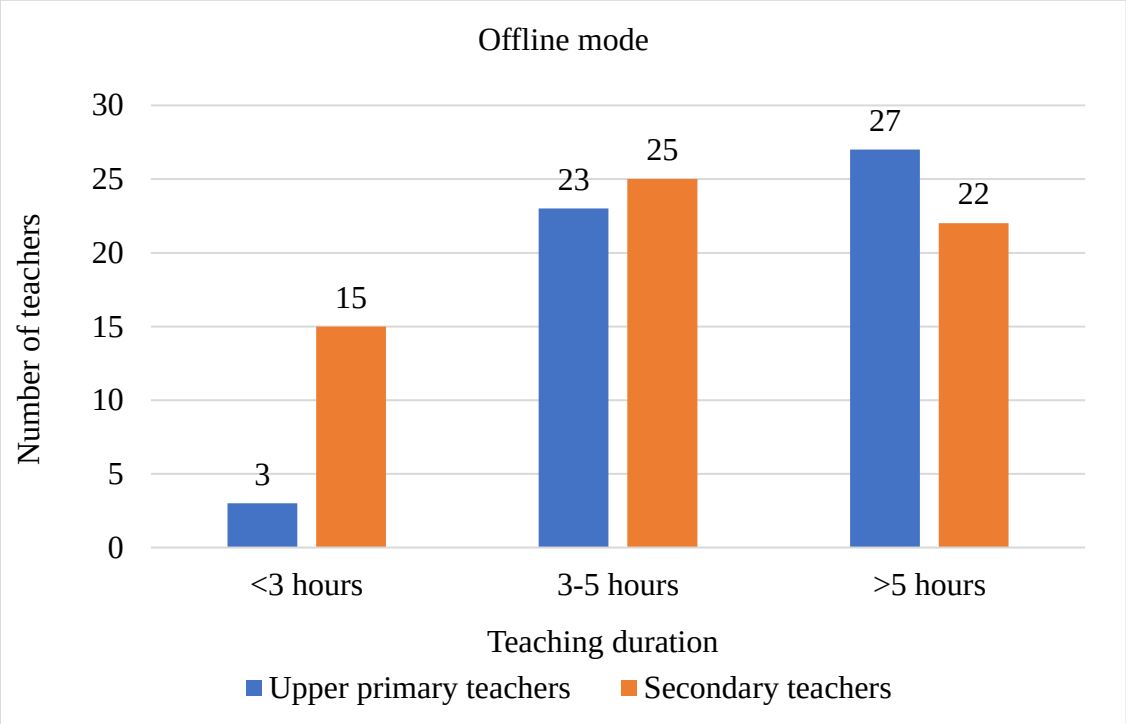
Table 4.1 represents offline and online teaching duration across teaching groups. The results represented that, the upper primary and secondary school teachers involved in greater offline teaching duration compared to online teaching duration.

Table 4.1: *Offline and online teaching duration of both the teaching groups*

Teaching duration				
	Offline		Online	
Teaching duration	Upper Primary teachers	Secondary teachers	Upper Primary teachers	Secondary teachers
< 3 hours	3	15	32	42
3- 5 hours	23	25	16	14
> 5 hours	27	22	5	6
Total	**53**	**62**	**53**	**62**

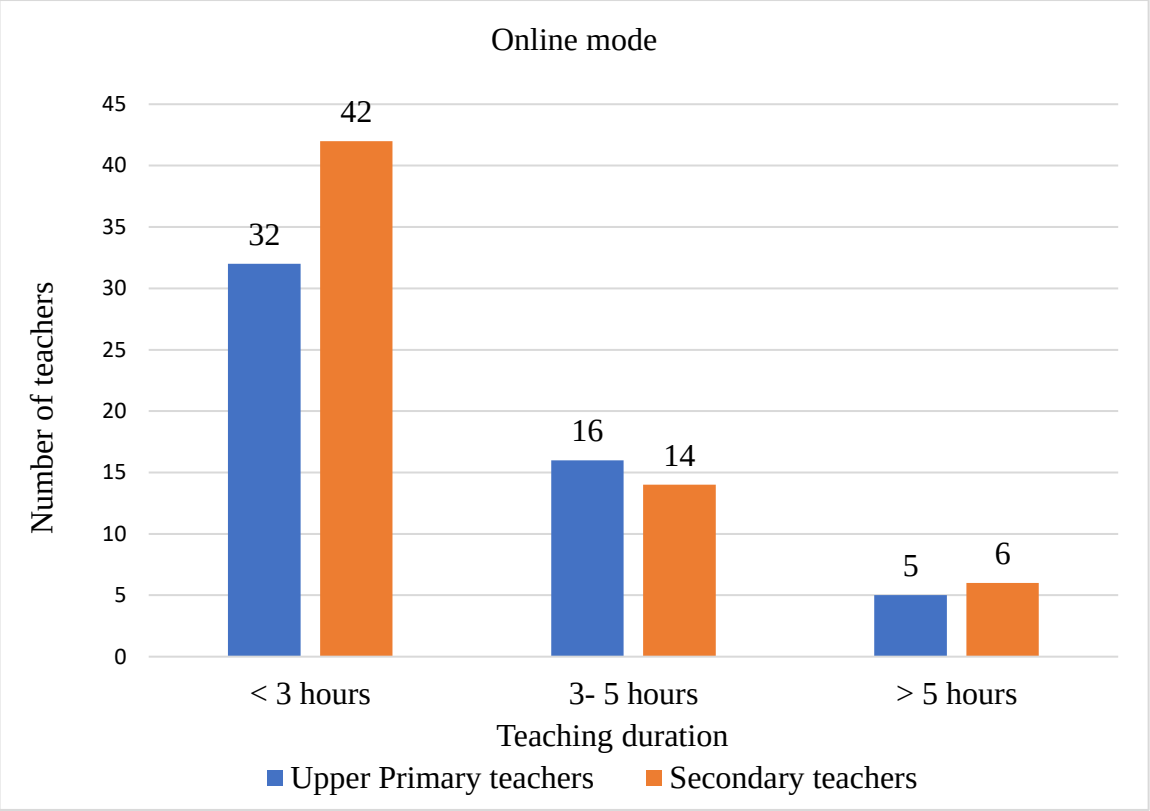
As seen in figure 4.1, for offline teaching, the upper primary teachers had majority of teachers teaching for >5 hours/ day followed by 3-5 hours/day. Whereas, for secondary group teachers, majority of teachers were teaching for about 4-5 hours/day followed by >5 hours/day.

Figure 4.1: *Offline teaching duration of both the teaching groups*



Similarly in figure 4.2, for online teaching, most of the upper primary and secondary group teachers were teaching for > 3 hours/ day followed by 3-5 hours/day.

Figure 4.2: *Online teaching duration of both the teaching groups*



2. Frequency counts of questionnaire data.

The frequency count was calculated based on answers to the questionnaire. Table 4.2 and 4.3 represents the rating done by upper primary and secondary group teachers for all the questions respectively.

For offline teaching questions, for Q_1, majority (75%) of upper primary teachers and (65.4%) of secondary teachers rated "*Sometimes"*. For Q_2, majority (65.4%) of upper primary and (78.8%) of secondary teachers rated "*Sometimes"*. For Q_3, majority (34.6%) of upper primary and (48.1%) of secondary teachers rated "*Sometimes"*. For Q_4, majority (50%) of upper primary and (55.8%) of secondary teachers rated "*Sometimes"*. For Q_5, majority (34.6%) of upper primary rated "*Not at all"* and

majority (48.1%) of secondary teachers rated "*Sometimes"*. For Q_6, majority (42.3%) of upper primary and (57.7%) of secondary teachers rated "*Sometimes"*. For Q_7, majority (40.4%) of upper primary rated "*Sometimes"* and majority (51.9%) of secondary teachers rated "*Not at all"*. For Q_8, majority (48.1%) of upper primary and (48.1%) of secondary teachers rated "*Sometimes"*. For Q_9, majority (44.2%) of upper primary and (61.5%) of secondary teachers rated "*Sometimes"*.

For online teaching questions, for Q_1, majority (38.5%) of upper primary teachers rated for both "*Not at all"* and "*Sometimes"* and majority (48.1%) of secondary teachers rated "*Not at all"*. For Q_2, majority (44.2%) of upper primary and (48.1%) of secondary teachers rated "*Sometimes"*. For Q_3, majority (42.3%) of upper primary rated "*Not at all"* and majority (50.0%) of secondary teachers rated Sometimes. For Q_4, majority (50.0%) of upper primary rated "*Not at all"* and majority (51.9%) of secondary teachers rated "*Sometimes"*. For Q_5, majority (46.2%) of upper primary and (51.9%) of secondary teachers rated Not at all. For Q_6, majority (34.6%) of upper primary rated "*Sometimes"* and majority (55.8%) of secondary teachers rated "*Not at all"*. For Q_7, majority (46.2%) of upper primary rated *"Sometimes"* and majority (61.5%) of secondary teachers rated "*Not at all"*. For Q_8, majority (48.1%) of upper primary and (55.8%) of secondary teachers rated "*Sometimes"*. For Q_9, majority (32.7%) of upper primary rated for both "*Not at all"* and "*Sometimes"* and majority (51.9%) of secondary teachers rated "*Sometimes"*.

Also, for both the teaching group, the rating of > 4 (5- Frequent, 6- very frequent and 7- Always) for any offline or online questions were minima

Table 4.2: *Frequency count and rating of questionnaire from upper primary teachers*

Frequency count and rating of the questionnaire - Upper primary teachers (Offline Vs online)							
Questions	1-Not at all *n (%)*	2-Very rarely *n (%)*	3-Rarely *n (%)*	4-Sometimes *n (%)*	5-Frequent *n (%)*	6-Very frequent *n (%)*	7-Always *n (%)*
Q_1- Offline	07(13.5)	01(01.9)	00(00)	39(75)	03(05.8)	01(01.9)	02(03.8)
Q_1- Online	20(38.5)	04(07.7)	05(09.6)	20(38.5)	02(03.8)	01(01.9)	01(01.9)
Q_2- Offline	09(17.3)	01(01.9)	01(01.9)	34(65.4)	01(01.9)	04(07.7)	03(05.8)
Q_2- Online	18(34.6)	02(03.8)	05(09.6)	23(44.2)	02(03.8)	01(01.9)	02(03.8)
Q_3- Offline	11(21.2)	05(09.6)	03(05.8)	18(34.6)	02(03.8)	00(00)	14(26.9)
Q_3- Online	22(42.3)	03(05.8)	04(07.7)	18(34.6)	01(01.9)	02(03.8)	03(05.8)
Q_4- Offline	16(30.8)	03(05.8)	01(01.9)	26(50.0)	02(03.8)	03(05.8)	02(03.8)
Q_4- Online	26(50.0)	04(07.7)	05(09.6)	13(25.0)	01(01.9)	03(05.8)	01(01.9)
Q_5- Offline	18(34.6)	07(13.5)	01(01.9)	02(03.8)	02(03.8)	01(01.9)	02(03.8)
Q_5- Online	24(46.2)	05(07.7)	02(03.8)	16(30.8)	03(05.8)	01(01.9)	02(03.8)
Q_6- Offline	12(23.1)	05(07.7)	04(07.7)	22(42.3)	03(05.8)	03(05.8)	04(07.7)
Q_6- Online	17(32.7)	10(19.2)	03(05.8)	18(34.6)	02(03.8)	01(01.9)	02(03.8)
Q_7- Offline	17(32.7)	06(11.5)	04(07.7)	21(40.4)	03(05.8)	00(00)	02(03.8)
Q_7- Online	24(46.2)	03(05.8)	04(07.7)	19(36.5)	01(01.9)	01(01.9)	01(01.9)
Q_8- Offline	10(19.2)	03(05.8)	05(09.6)	25(48.1)	02(03.8)	01(01.9)	07(13.5)
Q_8- Online	15(28.8)	02(03.8)	05(09.6)	25(48.1)	04(07.7)	01(01.9)	01(01.9)
Q_9- Offline	16(30.8)	04(07.7)	05(09.6)	23(44.2)	02(03.8)	03(05.8)	00(00)
Q_9- Online	17(32.7)	06(11.5)	06(11.5)	17(32.7)	02(03.8)	02(03.8)	03(05.8)

Note: *n indicates the frequency of response; values within bracket indicates percentage*

Table 4.3: *Frequency count and rating of questionnaire from Secondary teachers*

Frequency count and rating of the questionnaire – Secondary teachers (Offline Vs online)							
Rating scale	1-Not at all *n (%)*	2-Very rarely *n (%)*	3-Rarely *n (%)*	4-Sometimes *n (%)*	5-Frequent *n (%)*	6-Very frequent *n (%)*	7-Always *n (%)*
Q_1- Offline	19(36.5)	03(05.8)	00(00)	34(65.4)	04(07.7)	00(00)	02(03.8)
Q_1- Online	25(48.1)	05(09.6)	03(05.8)	22(42.3)	02(03.8)	00(00)	05(09.6)
Q_2- Offline	14(26.9)	01(01.9)	00(00)	41(78.8)	02(03.8)	00(00)	04(07.7)
Q_2- Online	23(44.2)	05(09.6)	02(03.8)	25(48.1)	03(05.8)	00(00)	04(07.7)
Q_3- Offline	20(38.5)	02(03.8)	02(03.8)	25(48.1)	02(03.8)	03(05.8)	08(15.4)
Q_3- Online	24(46.2)	04(07.7)	01(01.9)	26(50.0)	02(03.8)	00(00)	05(09.6)
Q_4- Offline	18(34.6)	04(07.7)	04(07.7)	29(55.8)	04(07.7)	03(05.8)	00(00)
Q_4- Online	26(50.0)	03(05.8)	03(05.8)	27(51.9)	01(01.9)	00(00)	02(03.8)
Q_5- Offline	20(38.5)	07(13.5)	02(03.8)	25(48.1)	03(05.8)	04(07.7)	01(01.9)
Q_5- Online	27(51.9)	05(09.6)	04(07.7)	24(46.2)	00(00)	01(01.9)	01(01.9)
Q_6- Offline	18(34.6)	05(09.6)	01(01.9)	30(57.7)	05(09.6)	03(05.8)	00(00)
Q_6- Online	29(55.8)	04(07.7)	03(05.8)	20(38.5)	02(03.8)	01(01.9)	03(05.8)
Q_7- Offline	27(51.9)	02(03.8)	06(11.5)	23(44.2)	03(05.8)	01(01.9)	00(00)
Q_7- Online	32(61.5)	05(09.6)	0101.9)	22(42.3)	00(00)	01(01.9)	01(01.9)
Q_8- Offline	24(46.2)	01(01.9)	02(03.8)	25(48.1)	04(07.7)	04(07.7)	02(03.8)
Q_8- Online	21(40.4)	04(07.7)	03(05.8)	29(55.8)	01(01.9)	02(03.8)	02(03.8)
Q_9- Offline	18(34.6)	06(11.5)	03(05.8)	32(61.5)	02(03.8)	01(01.9)	00(00)
Q_9- Online	19(36.5)	02(03.8)	03(05.8)	27(51.9)	04(07.7)	02(03.8)	05(09.6)

Note: *n indicates the frequency of response; values within bracket indicates percentage*

3. Descriptive statistics (Mean, median, standard deviation and interquartile range) for both the teaching groups

Table 4.4 represents the descriptive statistics **(**mean, median, standard deviation and interquartile range) of the response to the questions from upper primary and secondary teachers. The results represented that, the mean scores for upper primary teachers were greater than secondary teachers for most of the questions except questions Q_3, Q_4 and Q_9 during online teaching. Also, for most of the questions the median was 4.

During offline teaching, the vocal symptoms majorly perceived by upper primary teachers were Q_3, followed by Q_1 and Q_2. During online teaching, the vocal symptoms majorly perceived were Q8, followed by Q_2 and Q_3.

Similarly, during offline teaching, the vocal symptoms majorly perceived by secondary teaches were Q_2, followed by Q_3 and Q_1. During online teaching, the vocal symptoms majorly perceived were Q_8 followed by Q_3 and Q_2.

Table 4.4: *Mean, Median, Standard deviation and Interquartile Range of rating for both the teaching groups*

	Teaching group							
	Upper primary teachers				Secondary teachers			
	Mean (S.D)	Median	Interquartile range (Percentiles)		Mean (S.D)	Median	Interquartile range (Percentiles)	
			25	75			25	75
Q_1 Offline	3.77 (1.31)	4.00	4.00	4.00	3.15 (1.62)	4.00	1.00	4.00
Q_1 Online	2.75 (1.60)	3.00	1.00	4.00	2.85 (1.87)	3.00	1.00	4.00
Q_2 Offline	3.77 (1.57)	4.00	4.00	4.00	3.52 (1.59)	4.00	3.50	4.00
Q_2 Online	3.00 (1.68)	4.00	1.00	4.00	2.94 (1.80)	4.00	1.00	4.00

Q_3 Offline	3.96 (2.19)	4.00	2.00	7.00	3.45 (2.05)	4.00	1.00	4.00
Q_3 Online	2.83 (1.85)	3.00	1.00	4.00	2.97 (1.87)	4.00	1.00	4.00
Q_4 Offline	3.23 (1.74)	4.00	1.00	4.00	3.10 (1.56)	4.00	1.00	4.00
Q_4 Online	2.47 (1.72)	2.00	1.00	4.00	2.71 (1.64)	3.00	1.00	4.00
Q_5 Offline	2.89 (1.70)	4.00	1.00	4.00	3.00 (1.70)	4.00	1.00	4.00
Q_5 Online	2.62 (1.77)	2.00	1.00	4.00	2.55 (1.57)	2.00	1.00	4.00
Q_6 Offline	3.45 (1.79)	4.00	2.00	4.00	3.13 (1.58)	4.00	1.00	4.00
Q_6 Online	2.79 (1.66)	2.00	1.00	4.00	2.63 (1.80)	2.00	1.00	4.00
Q_7 Offline	2.91 (1.63)	3.00	1.00	4.00	2.61 (1.54)	3.00	1.00	4.00
Q_7 Online	2.57 (1.62)	2.00	1.00	4.00	2.35 (1.59)	1.00	1.00	4.00
Q_8 Offline	3.70(1.81)	4.00	2.50	4.00	3.15 (1.62)	4.00	1.00	4.00
Q_8 Online	3.15(1.56)	4.00	1.00	4.00	2.85 (1.87)	3.00	1.00	4.00
Q_9 Offline	3.06(1.68)	4.00	1.00	4.00	3.52 (1.59)	4.00	1.00	4.00
Q_9 Online	2.98(1.78)	3.00	1.00	4.00	2.94 (1.80)	4.00	1.00	4.00

4. Comparison of vocal symptoms and psychological stress across teaching groups

The table 4.5 represents the results of Mann Whitney U test which was done to compare across teaching groups. The results represented that, there was no statistically significant difference seen between the teaching groups during offline and online teaching mode, except the question concerning *"Voice quality change (Hoarseness or huskiness)"* during offline mode.

Table 4.5: *Comparison of vocal symptoms and psychological/job related stress across the teaching group*

Upper primary Vs Secondary school teachers		
	Z Value	P value
Q_1 Offline	-2.105	0.035*
Q_1 Online	-0.101	0.919
Q_2 Offline	-0.833	0.405
Q_2 Online	-0.170	0.865
Q_3 Offline	-1.228	0.219
Q_3 Online	-0.494	0.622
Q_4 Offline	-0.347	0.729
Q_4 Online	-0.908	0.364
Q_5 Offline	-0.383	0.702
Q_5 Online	-0.168	0.866
Q_6 Offline	-0.705	0.481
Q_6 Online	-0.820	0.412
Q_7 Offline	-0.962	0.336
Q_7 Online	-0.659	0.510
Q_8 Offline	-1.551	0.121
Q_8 Online	-0.636	0.525
Q_9 Offline	-0.036	0.971
Q_9 Online	-1.131	0.258
a. Grouping Variable: Teaching Group		

5. Descriptive statistics (Mean, median and standard deviation) across different age groups

Since there was no difference between upper primary and secondary school teachers for all the questions except the question concerning *"Voice quality change (Hoarseness or huskiness)"* during offline mode, the two teaching groups were combined and analysed.

Table 4.6 represents the descriptive statistics (mean, median and standard deviation) across age groups. Also, for most of the questions the median was 4.

During offline teaching, for teachers in age range of 24-45 years, the vocal symptoms majorly perceived were Q_2, followed by Q_3 and Q_8. During online teaching, the vocal symptoms majorly perceived were Q8, followed by Q_2, followed by Q_3.

Similarly, during offline teaching, for teachers in age range of 46- 60 years, the vocal symptoms majorly perceived were Q_3, followed by Q_6 and Q_8. During online teaching, the vocal symptoms majorly perceived were Q_8 followed by Q_2 and Q_3.

Mann Whitney U test was done to compare age groups and results represented that, there was no statistically significant difference across age groups for all the questions except the question concerning *"Vocal fatigue (Tiredness of voice)"* in offline teaching mode (Z value = -2.436, P value = 0.015*).

Table 4.6: *Mean, Median, Standard deviation across different age groups for both the teaching groups*

Age group				
Teaching mode	24-45 years		46- 60 years	
	Mean (S.D)	Median	Mean (S.D)	Median
Q_1 Offline	3.54(1.44)	4.00	3.11(1.70)	4.00
Q_1 Online	2.87(1.78)	3.00	2.61(1.66)	2.00
Q_2 Offline	3.85(1.47)	4.00	2.96(1.73)	4.00
Q_2 Online	3.00(1.76)	4.00	2.86(1.69)	3.50
Q_3 Offline	3.72(2.06)	4.00	3.57(2.35)	4.00
Q_3 Online	2.93(1.87)	3.00	2.82(1.83)	3.00
Q_4 Offline	3.26(1.62)	4.00	2.82(1.66)	4.00
Q_4 Online	2.61(1.65)	3.00	2.57(1.77)	2.00
Q_5 Offline	3.01(1.55)	4.00	2.75(2.08)	1.50
Q_5 Online	2.63(1.66)	2.00	2.43(1.67)	1.50
Q_6 Offline	3.30(1.71)	4.00	3.21(1.62)	4.00
Q_6 Online	2.77(1.71)	2.00	2.50(1.77)	1.50
Q_7 Offline	2.72(1.55)	3.00	2.82(1.72)	4.00
Q_7 Online	2.53(1.58)	2.00	2.21(1.69)	1.00
Q_8 Offline	3.41(1.76)	4.00	3.18(2.13)	4.00
Q_8 Online	3.02(1.59)	4.00	3.18(1.72)	4.00
Q_9 Offline	3.08(1.50)	4.00	2.79(1.79)	3.00
Q_9 Online	3.08(1.80)	4.00	3.46(1.90)	4.00

6. Comparison within teaching groups (offline and online teaching mode)

The table 4.7 represents the comparison within teaching groups (upper primary teachers) carried out using Wilcoxon signed ranked test to find out the difference between two teaching modes. The results represented that, statistically significant difference was found in questions Q_1, Q_2, Q_3, Q_4, Q_6 and Q_7 when there was a shift from offline- online mode in upper primary group.

Table 4.7: *Comparison within upper primary teaching group for different teaching modes*

Upper primary teachers		
	Z-value	p-value
Q_1 Online Vs Q_1 Offline	-3.719	0.000**

Q_2 Online Vs Q_2 Offline	-2.824	0.005**
Q_3 Online Vs Q_3 Offline	-3.045	0.002**
Q_4 Online Vs Q_4 Offline	-2.418	0.016*
Q_5 Online Vs Q_5 Offline	-1.085	0.278
Q_6 Online Vs Q_6 Offline	-2.630	0.009**
Q_7 Online Vs Q_7 Offline	-1.944	0.052*
Q_8 Online Vs Q_8 Offline	-1.747	0.081
Q_9 Online Vs Q_9 Offline	-.0264	0.792

Similarly, the table 4.8 represents the comparison within teaching groups (secondary school teachers) carried out using Wilcoxon signed ranked test to find out the difference between two teaching modes. The results indicated that, statistically significant difference was found in questions Q_2, Q_4 and Q_6 when there a shift from offline- online mode in secondary group teachers.

Table 4.8: *Comparison within secondary teaching group for different teaching modes*

Secondary teachers		
	Z-value	p-value
Q_1 Online Vs Q_1 Offline	-1.276	0.202
Q_2 Online Vs Q_2 Offline	-2.423	0.015*
Q_3 Online Vs Q_3 Offline	-1.686	0.092
Q_4 Online Vs Q_4 Offline	-1.984	0.047*
Q_5 Online Vs Q_5 Offline	-1.630	0.103
Q_6 Online Vs Q_6 Offline	-2.230	0.026*
Q_7 Online Vs Q_7 Offline	-1.609	0.108
Q_8 Online Vs Q_8 Offline	-0.028	0.978
Q_9 Online Vs Q_9 Offline	-1.710	0.087

6. Correlation between vocal symptoms and psychological stress

Tables 4.9 and 4.10 represents the results of correlational analysis done using Spearman's rho correlation test. The results represented that, the correlation was found between vocal symptoms and psychological stress for both offline (0.524**) and online (0.666**) teaching mode.

Table 4.9: *Correlation between vocal symptoms and psychological stress in offline teaching mode*

Offline		
	Spearman's rho correlation coefficient	Sig. (2- tailed)
Vocal symptoms Vs Psychological stress	0.524**	0.000
**. Correlation is significant at the 0.01 level (2-tailed).		

Table 4.10: *Correlation between vocal symptoms and psychological stress in online teaching mode*

Online		
	Spearman's rho correlation coefficient	Sig. (2- tailed)
Vocal symptoms Vs Psychological stress	0.666**	0.000
**. Correlation is significant at the 0.01 level (2-tailed).		

7. Reliability

Table 4.12 represents the results of the test-retest reliability using Cronbach's alpha coefficient. The test was used to evaluate for internal consistency for all the questions. The results reported good reliability and internal consistency with the Cronbach's alpha coefficient above 0.70 (Nunnally, 1978).

Table 4.11: *Test-retest reliability using Cronbach's alpha coefficient*

Cronbach's alpha coefficient value		
	Offline test- retest	Online test- retest
Q_1	0.768	0.791
Q_2	0.726	0.872
Q_3	0.721	0.938
Q_4	0.805	0.799
Q_5	0.970	0.893
Q_6	0.873	0.748
Q_7	0.823	0.796
Q_8	0.927	0.846
Q_9	0.890	0.832

CHAPTER 5

DISCUSSION

The aim of this study was to measure the vocal symptoms and psychological stress among school teachers in Mysuru when there was a change in teaching mode (from offline to online synchronous teaching) due to pandemic. The comparison was made between the teaching groups (upper primary and secondary group teachers) across two teaching modes namely, offline and online teaching mode.

The synchronous online teaching mode was involved in greater vocal usage than asynchronous mode of teaching. Since, only private school teachers followed synchronous online teaching, teachers from this setting were considered. Reliability results reported good reliability and internal consistency with the Cronbach's alpha coefficient above 0.70 (Nunnally, 1978).

The results of the present study indicated several points of interest:

First, the teaching duration of upper primary and secondary school teachers were more during offline teaching than online teaching mode. This implies that, the vocal usage was greater during offline compared to online mode. The probable reasons could be lack of preparedness by teachers and parents for the pandemic. In addition to this, teachers had to switch from chalkboard teaching to preparing videos and PowerPoint lessons and hosting live teaching via Google Classroom, Zoom, Microsoft Teams, and others and they needed to develop lesson plans as well as adapted worksheets, assessment sheets, and other materials (Kundu, 2020). Lack of motivation from parents and teachers, lack of competent of using technology, internet connectivity barriers for the teaching, along with some teachers being concerned about their own housing conditions, their own level of organization (Federkeil et al., 2020b) were some

of the other reasons. The findings of current study are in support with previous studies done by (Federkeil et al., 2020; Sharp & Cook, 2022).

Also, when compared between teaching groups with respect to teaching duration, upper primary teachers had greater offline teaching duration compared to secondary teachers. This result is in support of study done by (Lee et al., 2018), and no difference was seen in teaching duration during online mode as mentioned earlier because of lack of preparedness for the pandemic.

Second, the vocal symptoms and psychological/job related stress experienced by both upper primary and secondary group teachers were comparatively more during offline teaching compared to online teaching mode. It might be due to the fact that the offline teaching duration was more among teaching groups than online teaching scenario. This study is in support of studies done by (AlArfaj et al., 2022; Nemr et al., 2021; Patjas et al., 2021) where the teachers perceived greater vocal symptoms during offline teaching. For psychological stress, the results of studies done by(Besser et al., 2020; Ozamiz-Etxebarria et al., 2021; Patjas et al., 2021; Sode & Bhardwaj, 2021) are in contrary of the results found in the current study. As observed, the above-mentioned studies concerning the psychological/job related stress were carried out soon after the occurrence of pandemic, where teachers were still coping up with the situation. As our data collection was carried out when the situation (post pandemic) was stable and teachers got accustomed with online teaching and with technology, hence, the improvement with perception of psychological/job related stress had been observed.

The vocal symptoms perceived the most during offline teaching were *"More vocal effort in producing the voice"* followed by *"Voice quality change (Hoarseness or huskiness)"* and *"Vocal fatigue (tiredness of voice)".* The probable reasons could be speaking against the background noise which comprised of two components:

ventilation noise like mechanical/acoustical power, source/receiver distance, the classroom's acoustical characteristics and student-activity noise (Hodgson et al., 1996; Lee et al., 2010a). In addition to the regular teaching schedules of a typical school day, many teachers are involved in handling extra classes and are involved in private coaching. These contribute to prolonged voice use that negatively impacts the vocal folds leading to vocal fatigue (Sathyanarayan et al., 2019). The seating arrangements in classrooms also was one of the reasons, as the Indian school classrooms would be generally bigger, and teachers would increase their loudness in order to be heard by students. This result is in parallel with the studies done by (AlArfaj et al., 2022; Nemr et al., 2021; Patjas et al., 2021; van Houtte et al., 2011; Lee et al., 2010b) who found the similar vocal symptoms during offline teaching. On the other hand, the vocal symptoms perceived the most during the online teaching was the *"Frequent need to sip water"*. The reason could be related to hydration, allergies, inadequate feeding, self-medication, and exposure to dust and cleaning products which could have caused the dry throat and in turn to have an urge to have frequent sip of water. (Nemr et al., 2021). The current study is in parallel with the study done by (Nemr et al., 2021).

The results also indicated that, even though the vocal symptoms perceived during offline teaching scenario was more, very few teachers of both upper primary and secondary group teachers rated > 4 i.e (5- Frequent, 6- very frequent and 7- Always) for all vocal symptoms and psychological/job related stress. This implies that, during offline teaching mode also, many teachers didn't experience vocal symptoms and psychological/job related stress to a greater extent.

Third, when comparison was made between upper primary and secondary school teachers with respect to vocal symptoms and psychological/job related stress, no statistically significant difference was observed except the vocal symptom concerning

"Voice quality change (Hoarseness or huskiness)", during offline mode. The reason could be that, since both the teaching group didn't experience any of the vocal symptoms or psychological/job related stress to a greater extent during offline or online mode, there were no difference in any vocal symptoms or psychological/job related stress. Even though not significant, when compared the mean scores of vocal symptoms of both the teaching groups, upper primary teachers had perceived slightly greater vocal symptoms compared to secondary school teachers during offline mode of teaching. The lengthening of upper primary teacher's lessons and the lack of opportunities for vocal relaxation during the workday may be contributing factors. Continuous instruction is the hallmark of their day, with just brief breaks in the morning and a 30-minute lunch break. As opposed to primary school instructors, secondary school teachers have more possibilities for voice relaxation because their day is made up of 45-minute teaching periods that are occasionally followed by a break before the following teaching period starts (Munier & Kinsella, 2008). Regarding the online teaching mode, there was no difference observed.

Fourth, the vocal symptoms and psychological/job related stress across age groups revealed no statistically significant difference expect the vocal symptoms concerning *"Vocal fatigue (Tiredness of voice)".* Even though no significant difference were seen across the age groups, the teachers within age range of 24- 45 years experienced greater vocal symptoms and psychological stress during offline mode compared to teachers within the age range of 46- 60 years during offline mode. The probable reasons could be that the older, more experienced teachers may have gained knowledge about vocal hygiene and the benefit of professional help when compared with their younger, less-experienced counterparts which could have led to reduced perception of vocal symptoms (da Costa et al., 2012). Also, the teachers among the

elderly considered and accepted vocal dysfunction as a natural part of aging (Golub et al., 2006) which could have led to reduced perception of psychological/job related stress. These results are in parallel with the studies done by (da Costa et al., 2012; Patjas et al., 2021).

The same results were obtained in terms of perception of vocal symptoms during online mode. But, in terms of psychological/job related stress, the older teachers with age range of 46-60 years experienced slightly greater psychological/job related stress than younger teachers. The probable reasons could be that, older teachers might have considered teaching using technology as a burden and reduced competency in troubleshooting internet connection issues etc which could have led to an increase in perception of psychological/job related stress.

Fifth, the results of comparison within the teaching groups with respect to teaching mode (offline and online mode) revealed that upper primary teachers perceived greater changes in vocal symptoms due to shift in teaching mode compared to secondary teachers. Upper primary teachers revealed statistically significant difference across teaching mode with respect to vocal symptoms. Offline mode of teaching had more vocal symptoms mainly concerning *"Voice quality change (Hoarseness or huskiness)", "Vocal fatigue (Tiredness of voice)", "More vocal effort in producing the voice", "Pain or soreness in throat", "Irritation or dryness in throat" and "Frequent need to sip water".* Similarly, secondary teachers revealed statistically significant difference across teaching mode with symptoms concerning *"Vocal fatigue (Tiredness of voice)", "Pain or soreness in throat" and "Irritation or dryness in throat".* As observed, both primary and secondary school teachers experienced statistically significant difference in vocal symptoms. Offline mode of teaching had more vocal symptoms mainly concerning *""Vocal fatigue (Tiredness of voice)", "Pain*

or soreness in throat" and "Irritation or dryness in throat". The reasons could be that, teachers during offline classes had to force their voice over background noise in order to be heard, poor indoor air quality at school (Hodgson et al., 1996; Patjas et al., 2021) and they were asked to use of blackboard and chalk while teaching which had caused symptoms such as recurrent attacks of sneezing, running nose, itching in the nose, watering of the eyes suggesting chalk allergy contributing to soreness in throat and irritation or dryness in throat (de Sousa et al., 2019) and more duration of teaching during offline mode. Conversely, during online teaching, the duration of teaching was less, teachers got more recovery time and vocal rest, which resulted in better voice quality. Also, secondary school teachers had undergone greater psychological/job related stress in online mode compared to upper primary teaches. The reason could be that secondary school teachers were more likely to arrange practical or experimental courses and to use synchronous interactive activities. But primary school teachers were more likely to use homemade videos and share their screens for teaching and were arranging for teaching interactions (Wu, 2021).

Sixth, the positive correlation occurred between vocal symptoms and psychological/job related stress during both offline and online mode of teaching. This indicated that teachers who perceived greater vocal symptoms showed greater psychological/job related stress and vice versa. This may be due to the fact that a variety of vocal symptoms associated with stress, such as tension in vocal folds that interferes with the ability to communicate which in turn causes reduction in job satisfaction (Smith & Seidel, 1982). It is also the fact that due to the effects the stress reaction has on the body, the reaction would influence all the domains of the voice. Additionally, voice problems could become a source of stress, setting off a vicious cycle that might have an ongoing negative impact on stress levels and mental health. Results from

studies have shown a decrease in the quality of life in persons with vocal symptoms/voice disorders. Also, the severity of vocal symptoms correlates with increased negative effect on quality of life (Lundberg & Frankenhaeuser, 1999). Also, teachers had perceived lesser of vocal symptoms and positive attitude towards online teaching as the adaption of them for online teaching had been already established. The results found is in parallel with studies done by (AlArfaj et al., 2022; Besser et al., 2020; Patjas et al., 2021).

CHAPTER 6

SUMMARY AND CONCLUSION

COVID-19 pandemic urged the teachers to shift from offline to online teaching scenario in India. Understanding the changes in vocal symptoms and psychological/job related stress among school teachers (upper primary and secondary school teachers) following the shift in teaching mode (from offline to online mode) was investigated. As private school teachers were using synchronous online teaching as a mode of instruction, only private teachers were considered for the study. The questionnaire was adapted from the study done by (Besser et al., 2020), which included eight vocal symptoms and single item measure of stress. The adaptation and content validation of questionnaire was done, and as per the suggestions, the changes were incorporated.

A questionnaire survey through online were employed for collecting data. Consent from both the participant and Head master/mistress were obtained from schools. A total of 115 teachers including both upper primary and secondary school teachers participated in the study. After a period of 15-30 days, 10% of the participants were asked to fill the questionnaire to check for test-retest reliability.

The study's findings revealed that teachers in upper primary and secondary schools had shorter teaching duration during online mode as compared to offline mode. In comparison to secondary school teachers, upper primary teachers had longer offline teaching duration. However, during the online mode, there was no significant difference in the length of teaching between the teaching groups. The perception of voice symptoms and psychological/job related stress did not significantly differ between teaching groups or age groups. With the exception of the voice symptoms related to "*Voice quality change (Hoarseness or Huskiness)"* in offline mode across teaching groups. And, vocal symptoms related to *"Vocal fatigue (Tiredness of voice)"* during

offline mode, were compared across age groups. Upper primary teachers demonstrated a statistically significant difference for greater vocal symptoms as compared to secondary school teachers across different teaching modes. However, there was no statistically significant difference in the way teachers perceived psychological/job related stress. Finally, for both offline and online teaching modes, a positive association between voice symptoms and psychological/job related stress were obtained. This implies that, greater perception of vocal symptoms led to greater perception of psychological/job related stress among upper primary and secondary school teachers and vice versa.

Implications of the study

The outcome of the study has following implication:

1. The study results highlight the vocal symptoms and psychological/job related stress and across teaching modes (offline to online mode).
2. The study results show the relation exist between vocal symptoms and psychological/job related stress.
3. The present study can help design preventive/intervention strategies for teachers with voice disorders in a holistic manner.

Limitations of the study

1. Present study used questionnaire survey; hence the objective measurement of voice was not carried out which would have given a better interpretation of results.
2. Since the data collection was carried out post the resuming of offline teaching, the teachers recalling of perception of vocal symptoms and psychological/job related stress during online teaching might be reduced.

3. The different teaching strategies used by teachers during online mode of teaching were not controlled.

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APPENDIX I

Vocal symptoms and psychological stress - Questionnaire for teacher

Section 1 of 3

1. Email:

2. Name:

3. Age:

4. Gender:

5. Phone number:

6. Please indicate the class groups you teach majorly for:

I. Upper primary (5th, 6th & 7th Standard) or

II. Secondary (8th, 9th & 10th Standard)

7. Please indicate the average number of hours in a day during OFFLINE (traditional face to face) teaching:

I. <3 hours

II. 3-5 hours

III. >5 hours

8. Please indicate the average number of hours in a day during ONLINE teaching:

I. <3 hours

II. 3-5 hours

III. >5 hours

Section 2 of 3

For the below questions, please indicate the extent to which you have experienced particular vocal symptoms and psychological stress during OFFLINE teaching (traditional face to face teaching)

1. Did you experience change in voice quality (Hoarseness or Huskiness) during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

2. Did you experience Vocal fatigue (Tiredness of voice) during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

3. Did you feel that you should put more vocal effort to teach during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

4. Did you experience pain or soreness in throat during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

5. Did you experience Weakening of voice (low loudness) during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

6. Did you experience Irritation or dryness in throat during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

7. Did you experience frequent cough or throat clearing during OFFLINE teaching?

Rating: 1-Not at all

2-Quite rarely

3-Rarely

4-Sometimes

5-Frequent

6-Quite Frequent

7-Always

8. Did you feel that you frequently need to sip water during OFFLINE teaching?

Rating: 1-Not at all

2-Quite rarely

3-Rarely

4-Sometimes

5-Frequent

6-Quite Frequent

7-Always

9. Indicate the extent of psychological/ job related stress you have experienced due to OFFLINE teaching.

Rating: 1-Not at all

2-Quite rarely

3-Rarely

4-Sometimes

5-Frequent

6-Quite Frequent

7-Always

Section 3 of 3

For the below questions, please indicate the extent to which you have experienced particular vocal symptoms and psychological stress during ONLINE teaching

1. Did you experience change in voice quality (Hoarseness or Huskiness) during ONLINE teaching?

Rating: 1-Not at all

2-Very Rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

2. Did you experience Vocal fatigue (Tiredness of voice) during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

3. Did you feel that you should put more vocal effort to teach during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

4. Did you experience pain or soreness in throat during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

5. Did you experience Weakening of voice (low loudness) during OFFLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very frequent

7-Always

6. Did you experience Irritation or dryness in throat during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very frequent

7-Always

7. Did you experience frequent cough or throat clearing during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always

8. Did you feel that you frequently need to sip water during ONLINE teaching?

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very frequent

7-Always

9. Indicate the extent of psychological/ Job related stress you have experienced due to ONLINE class.

Rating: 1-Not at all

2-Very rarely

3-Rarely

4-Sometimes

5-Frequent

6-Very Frequent

7-Always