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Nutrition and the Spoken and Sung Voice Emission of Early Education Teachers

KEYWORDS

nutrition, teachers, spoken and sung voice emission, voice hygiene, voice rehabilitation

ABSTRACT

The present theoretical article tackles the issue of the influence of eating habits of early education teachers on their voice emission. The author tries to justify the thesis that teachers' eating habits determine the way in which their vocal tract works. For preschool and early education teachers, a vocal tract is an essential tool not only to communicate verbally with others, but also to perform vocal phonation, which can generate additional vocal complications. The author starts with the determination of terminology and review of proper literature, after which she cites the results of the research carried out within this area. The author shows that a wrong diet and substance abuse can result in temporary disability of voice, including larynx irritation and mucus obstruction, and it can also lead to gastroesophageal reflux disease and obesity. The consequences of such unhealthy habits can include cancer formation in the vocal apparatus area. The author also tries to demonstrate that health-oriented activities, such as rational nutrition, are also mentioned in the guidelines for vocal health and rehabilitation. The author also emphasizes the educational challenge that consist in providing future teachers with proper knowledge regarding eating habits and their influence on voice, its health and rehabilitation.

Introduction

At the moment, representatives of many professional groups understand the need for constant improvement of voice emission. Actors, singers and other people connected with the media increasingly search for specialist support in this area. Their voice is their basic tool of work, because in institutions such as radio, TV, theatre, and opera, any changes in its sound may result in losing their job or changing their media image. Thus, the following question appears: what is the difference between a teacher's job and the job of above-mentioned people? Why do teachers who work at school fail to treat their voice in a similar manner? The speaking load of teachers is huge, so we can definitely compare it to the voice effort of radio/TV speakers, actors or opera singers, as well as other kinds of performers. For most people from these professional groups, maintaining their voice in the proper condition and readiness determines their pro-health behaviours. However, in the case of teachers, firm actions aimed at improving their voice emission are only taken when their vocal problems appear. This is perhaps related to the fact that health problems are not treated seriously in the first phase in this professional group, and changes in the sound of voice do not result in the impossibility to conduct classes.

However, the voice is the basic tool of verbal communication for teachers and early education teachers also use it for singing. "In everyday professional life, a teacher functions through dialogue, and school becomes the place of work in which the ability to use one's voice is the basis for the teacher's communication with students, their parents and colleagues" (Kisiel 2012: 9). In many aspects, a teacher's job is similar to artistic professions. Just like actors, teachers perform in front of a group of people. The only difference is that members of the audience are not always willing to listen to him/her (Majzner 2013: 93). The factors that contribute to teachers' chronic diseases of vocal organs include excessive voice effort and incorrect phonation. There are also other risk factors that lead to the occurrence of vocal disorders among teachers. Such disorders have been categorized in different scientific works (Krauze, Kustroń 2011; Kisiel 2012).

In the voice emission of early education teachers who use their voice for both speaking and singing, the following issues are particularly important: synchronized cooperation of the muscles of the neck, trunk, stomach, shoulder girdle, and pelvic, because this influences proper breathing (*appoggio*). The work of breath in phonation is based on building the proper breathing habits through the stimulation of specific muscles. Therefore, regular physical exercises that reinforce muscles, as well as rest and good nutrition habits are important for improving the quality of voice (Domeracka-Kołodziej, Sielska-Badurek 2009: 109).

While analysing the books on this subject, the author of this article will try to answer the following question: does nutrition (proper diet) influence the phonation of early education teachers? Also, this article shows that pro-health behaviours, including a good diet, are included in the guidelines related to voice hygiene and rehabilitation.

Terminology

Before analysing the above-mentioned issue, we have to determine the way in which the author understands healthy and pro-health behaviour. In the books concerning the subject, we can find many definitions of healthy actions, i.e. pro-health activities undertaken by an individual to protect, maintain and develop his/her health (Harris, Guten 1979). A more developed definition of such behaviours also includes a person's beliefs, expectations and other cognitive elements, as well as emotional states and habits related to maintaining, recovering and improving health (Gochman 1988).

Healthy behaviours may be advantageous or disadvantageous for an individual's psychophysical wellbeing. Thus, the division into the following classes of pro-health behaviours can be made (Sygit-Kowalkowska 2014: 204):

- pro-health;
- anti-health behaviours.

A person's behaviours exert a significant influence on his/her health. According to the concept of so-called health fields, the following aspects contribute to our health: medical care (10%), inheritance (16%), physical environment (21%) and lifestyle (53%) (Lalonde 1974). Pro-health behaviours include reactive, habitual and/or purposeful forms of a person's activity which, based on objective knowledge of health and subjective beliefs, are significantly and mutually connected with health (Sęk 2000: 539). Such behaviours may include:

- physical activity;
- rational nutrition;
- cleanness of one's body and environment;
- maintaining good relationships with other people;
- coping with stress.

Thus, we can conclude that pro-health behaviours refer to physical, psychological and social health, i.e. they include interconnected aspects of human life (Lipowski, Szczepańska-Klunder 2012). All of the above-mentioned pro-health behaviours exert a good influence on a person's organism and maintaining a proper diet is certainly a factor that cannot be neglected. Eating various kinds of food, i.e. providing our organism with the proper amount of vitamins and microelements is one of the basic

functions of life. The way we eat influences the functioning or our body, including the speech apparatus (Syta 2017: 272).

A correct, harmonious and clean voice is one of the competences of an early education teacher. It helps the teacher to transmit knowledge, but also to present songs, sing them with children and create games related to music. Emission of a person's voice is the effect of cooperation of many anatomic-functional structures, with the most important role of the central nervous system (Cichecka-Wilk, Studzińska 2018: 176). The Latin word *emitto* means "I sent/let off"; *emissio* – "I send/let out"; therefore, voice emission includes a coordinated set of activities that include breathing, phonation, articulation and resonance (Sobierajska 1972). In the books on this subject, we can distinguish the emission of voice while speaking and singing, but it is emphasized that speech and singing, despite being different, are two kinds of the same physical activity of a person, carried out through speech apparatus (Radwańska 2014: 79). Colloquially speaking, singing is the extension of speech through the extension of a vowel phonation. Zygmunt Pawłowski differentiates between the singing and speaking voice in the following manner:

> Voice emission is a set of phonation, articulation and breathing activities connected with the resonance function of resonant parts of the facial fragment of the skull, throat and chest. We can distinguish the emission of spoken and sung voice, and the differences between them refer to quantity and not quality. In the emission of spoken voice, the foreground is occupied by the problem of accents (melodic, dynamic and rhythmical accent). Speech is related to the regular changeability of accents, while in singing accents are subject to a given piece of music (Pawłowski 2009: 8).

Marta Radwańska presents another approach to the issue, describing quality as well as quantity differences:

> Differences in voice emission during speaking and singing are of quantitative and qualitative nature. Quantitative properties refer to particular features of sound related to the acoustics of voice, i. e. height, intensity, time of duration and sound. During singing, a more extensive scale of voice is used, so its intensity, durability and length of breath is larger. Also, it is important to use resonance which gives the voice specific clarity and carrying capacity. During speaking, in turn, acoustic elements are marked in the form of melodic accents (intonation), as well as dynamic, rhythmic and word accents. In spoken words, the main means of expression is articulation, i. e. pronunciation. During signing, the most important factor is sound and its sounding values. The text, however, although it is independent, remains in the background (Radwańska 2014: 79).

There is no doubt that while singing our breathing becomes intensified (*appogio*), our throat is open wider (lowering of the larynx and lifting the soft palate), and the

voice occupies a higher position, as a result of which we can make use of a broad scale of voice, intensification, control and change of sound, as well as the length of the phrase we sing.

The proper emission of voice, both spoken and written, is influenced by many factors. They include those related to the proper functioning of voice and hearing organs, psychophysical condition, as well as the cooperation among the breathing, phonation, articulation and resonant systems (Majzner 2016: 229-230). The correct voice, called euphonic, is resonating, sonorous, clean and void of the humming component. The proper emission of the voice should be free, without the excessive tension in larynx and neck muscles, and with a soft orientation towards sound (Obrębowski 2014).

A teacher's voice is a tool of verbal communication and it should maintain the features of euphonic voice. Developing the skills that facilitate proper interpersonal communication, a teacher cannot forget about its tool which is necessary for the proper teaching process. Preschool and early school education requires teachers to use their voice as an instrument that should have a proper sound during phonation and maintain good intonation, which is strictly connected with the work of breath and the high position of sound. Proper voice projection in the process of teaching a song is what determines the proper singing of the song by children. In the didactics of music, on the level of elementary education, we can distinguish two basic methods of introducing songs. The most popular one is learning by hearing, i. e. listening, imitating and memorizing both the rhythm and melody of a given song. The method of learning form notes is less popular among teachers. It consists in reading notes on an instrument and practicing in order to be able to sing it fluently. In this method, a teacher has to teach sound sequences and melody patterns which should be learnt both through hearing and solmization (Sacher 1997: 36). In both methods, an early education teacher has to present the whole song, as well as its solmization and fragments, using his/her voice.

Nutrition and sound emission

Proper nutrition provides our body with the necessary nutrients, which includes the provision of energy and substrates needed to maintain health. Nutrients are necessary for feeding a person's organism. This particularly refers to protein, carbohydrates, fats, vitamins, and minerals. Some of them are not present in the organism, or they are not synthesized in sufficient amounts, while their presence is necessary for the proper functioning of human body. Therefore, they have to be provided to our body along with food. Nutrients can be divided based on, e. g., their basic functions, into:

- energetic ones – mainly carbohydrates, fats;
- building ones – protein, minerals, fatty acids;
- regulating ones – vitamins, minerals (Oblacińska et al. 2007: 13).

Scientific research does not indicate a direct influence of nutrition on the phonation of voice, but early education teachers' process of speaking and singing may be more effective if proper diet is applied (Cazden 2012). An early education teacher's instrument is the body which functions better if it is properly fed. Also, diet is an inseparable element of maintaining the proper weight. At present, scientists pay attention to the connections between voice and particular parts of the body, concluding that physical condition and strength are crucial for keeping the proper phonation, and changing the environment of life, especially the diet, is the main reason for the increased risk of falling ill with contemporary diseases (Wilczyńska 2012: 36).

Obesity is treated as a civilization disease, and it is directly related to improper nutrition. The increasing number of obese people made scientists analyse the phenomenon in terms of its influence on a person's everyday life, including voice, and especially singing, speaking and other aspects of phonation (Nancy et al. 2011). The scientists concluded that the body mass and fat volume seem to influence selected objective measures of the quality and aerodynamics of voice, and of the efficiency of the phonation scope (Barsties 2013). It was established that obese people's quality of voice is worse in terms of roughness, breathing, fatigability and deformation. Also, their maximum phonation time is shorter. Compared to people with the correct body weight, the scientists did not notice any change in the quality of voice assessed on the basis of acoustic analysis and the result of the voice disability index (Celebi et al. 2013).

In Polish texts concerning voice emission, the influence of a person's nutrition and obesity on the emission of sung and spoken voice has not been discussed yet. There is not any credible information based on research, and if any descriptions related to the diet appear with reference to voice emission, they mainly concern the opinion of a given expert or voice coach, which is usually unsupported by medical facts and scientific proofs. This problem has also been noticed by American researchers (Zarabi 2013: 143).

We can divide food into five groups which were included in the Pyramid of Healthy nutrition prepared by the Institute for Food and Nutrition in Poland. We can balance our diet properly only if we use many different products. In this context, it is worth mentioning several facts concerning the influence of particular products on the voice apparatus, because some of them may cause vocal problems, e. g. active or passive smoking, drinking strong coffee or tea, eating spicy food or products that result in hyperacidity or irritate the mucous membranes of the throat (Kaptur 2000: 25). Krystyna Duraj-Nowakowa claims that the stimulants that are most frequently

used by teachers include tea and coffee. Both drinks contain many good substances, but if they are overused, they may become the source of problems, especially for teachers who have to use their voice at work (Duraj-Nowakowa 2000: 25). It is difficult to definitely say that caffeine included in coffee results in the dehydration of the body. Some scientific analyses prove that caffeine does not influence eliminating liquids from human body (Armstrong et al. 2007), but, while analysing various books, we discover that research results concerning this issue are not exactly the same, so there are still different approaches to drinking coffee and we cannot definitely say whether it is harmful or healthy. Cigarettes and alcohol are definitely bad for people. Cigarette smoke irritates the mucous membranes of the mouth cavity, throat and stomach, it causes allergies, it poisons our lungs and other organs, and it leads to various mutations and cancerous changes in our cells (Zatoński 2000). Because of the bad influence of smoking, most smokers' voices change their sound and become lower. Also, the range of their voice changes, as a result of which it is more difficult for them to speak and sing, which, on the level of early education, makes it impossible for teachers to conduct effective classes or present songs to children.

Smoking (Nilsson et al. 2004) and drinking alcohol (Bujanda 2000) intensify the symptoms of reflux disease, which also negatively influences a person's voice. The backwash of stomach acid may result in redness or swelling of vocal folds, contact ulcers, vocal cord granulomas, arytenoid cartilage granulomas, narrowing of the back part of the glottis, inflammation of the arytenoid cartilage joint, or supraglottic/subglottic stenosis. Chronic inflammation may result in cancers (Skrzypczak, Kowalska 2011). Moreover, reflux episodes occur more frequently in smokers, and it takes more time for their oesophagus to clean itself of stomach acid (Nilsson et al. 2004).

Scientific research has proved that the following products and improper diet may result in throat cancer:

- long-term action of smoke as a carcinogen;
- alcohol abuse;
- toxic chemical substances in the place of work;
- diet with a low content of vitamins A and C.

Also, the above factors may cause cancer of articulation organs responsible for producing speech, e.g. mouth cavity cancers, odontogenic tumours and epithelium cysts, as well as cancers of jaws and jawbones (Marciniak-Firadza 2018: 109).

Because of their job, early education teachers should reduce the amount of sugar they eat, because eating a lot of sugar may cause many diseases. Also, it may result in high phlegm production, which forces them to hawk frequently. Chocolate, especially eaten before vocal effort, may also influence the work of vocal folds by irritating them. Red meat and indigestible food are an unnecessary load for human body.

Opera singers do not eat them before singing, because the body's energy is spent on digesting them and not on the work of the muscles (Syta 2017: 272-273).

People who work with their voice are advised to eat light food, drink much mineral (especially non-carbonated) water or low-sugar fruit juices, and eat the last meal at least three hours before going to sleep, which warrants the good quality of sleeping and the effectiveness of nightly regeneration. Regular and healthy lifestyle exerts a great influence on the body's functioning, including on the quality of oral communication (Haniszewska, Kaźmierczak 2019: 95).

Healthy meals and the proper rhythm of eating them are a part of a person's hygiene. It is recommended to eat 3-5 meals a day, with particular emphasis on time repeatability. In terms of caloric value of particular meals, they should constitute the following part of the daily energy: breakfast 30%, lunch 10%, dinner 40%, supper 20%. Each meal should contain all nutrients that are necessary for life, i.e. proteins, fats and carbohydrates (Pruszewicz 1992).

One of the approaches to treating a large range of vocal disorders is providing the patients with the knowledge of the proper voice hygiene. Scientists emphasize the meaning of the proper care of vocal folds, suggesting that some vocal behaviours, patterns, lifestyle and dietary habits may be harmful or helpful in the phonation of voice. This approach requires the elimination of possible harmful behaviours by the patient, as well as his/her knowledge of:

- the intensity and kind of voice they use;
- voice adjustment;
- hydration problems;
- lifestyle and dietary factors that exert a good/bad influence on phonation.

Voice problems are common among teachers. According to the research, the application of the hygienic approach in treating teachers' vocal disorders is insufficient. Scientists confirm the clinical usefulness of emission exercises (Dobinson 1993; Wośkowiak 1996; Fritzell 1996; Śliwińska-Kowalska et al. 2000a and 2000b), as well as the necessity to reinforce voice (amplifier and loudspeakers) as an alternative for coping with voice problems among teachers (Nelson et al. 2002).

In order to make voice rehabilitation effective, it is worth taking into account all possible factors that may cause vocal disorders, e. g. stress, habits, diet, or broadly understood lifestyle (Cielecka et al. 2017: 27). According to Dejonckere, education concerning voice hygiene: the avoidance of smoking, proper diet, hydration, guidelines related to voice emission and reduction of voice load, are included in the basic models of voice rehabilitation (Niebudek-Bogusz 2014: 15). One of the elements of psychotherapy in the treatment of vocal disorders is proper nutrition according to

the modern food pyramid which is based on physical activity (Śliwińska-Kowalska, Niebudek-Bogusz 2009: 56).

Conclusion

While analysing the books on the subject, we can conclude that nutrition exerts a direct and indirect influence on early education teachers' phonation. Improper diet and abusing stimulants may result in temporary voice problems, such as irritated throat, phlegm, as well as the reflux disease, obesity, and even cancers in the organs of the voice apparatus.

An early education teacher is obliged to use their spoken and sung voice at work, which makes him/her different than teachers of other educational stages. Thus, the vocal effort of an early education teacher is greater. Making vocal sounds (singing melodies) may also cause frequent tightening of the larynx because of the lack of control over the sublarynx pressure, which is connected with incorrect *appoggio*. That is why, preschool and early education teachers should pay special attention to proper voice emission habits. Also, they should constantly develop their knowledge of the hygiene and rehabilitation of voice. The teachers who participated in voice emission training sessions during their studies fall ill with voice disorders less frequently than other teachers (Kostecka 2013). Such training is an educational challenge that includes providing candidates for teachers with the proper contents that should also refer to nutrition and its influence on voice, its emission and rehabilitation. It is worth emphasizing that a healthy lifestyle results in lower susceptibility to chronic diseases, including cancers, which make phonation more difficult or even impossible.

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