Ibrahim *et al.*
The Egyptian Journal of Otolaryngology (2022) 38:136
https://doi.org/10.1186/s43163-022-00324-9

The Egyptian Journal of Otolaryngology

ORIGINAL ARTICLE Open Access

Behavioral characteristics and parenting styles in chronic habitual hyperfunctional childhood dysphonia

Alaa Saleh Mohamed Saleh Ibrahim[1*], Ayman Mohamed Amer[2], Salwa Salah Tobar[3] and Hemmat Mostafa Baz[2]

Abstract

Background: This study aimed to understand the association of child behavior and parenting practices with chronic habitual hyperfunctional childhood dysphonia (CHCD) for a better understanding of the nature of the psychological background of the problem. The study involved 52 Egyptian children aged 4 to 14 years old of both genders; the case group included 26 children diagnosed with (CHCD) based on auditory perceptual assessment using the modified GRBAS scale and laryngeal examination using an indirect laryngoscope, and the control group included 26 healthy children of the same age and gender. All of the children in the study had their histories were taken (demographic data, child vocal behavior history, and family vocal behavior history), the social class determined, SDQ for child behavior, and APQ for parenting practices.

Results: The findings revealed that children with CHCD were more likely to engage in unhealthy vocal behavior and engage in street/sports activities. At the SDQ, children with CHCD had significantly higher emotional, conduct, and total difficulty scores. The degree of dysphonia was associated with prosocial behavior and emotional symptoms. The two groups' parenting practices did not significantly differ from one another.

Conclusion: According to our research, CHCD is associated with several behavior problems, such as emotional symptom and conduct issues, but not with parenting practices.

Keywords: Dysphonia, Behavioral problems, Parenting

Background

Hyperfunctional dysphonia is caused by voice abuse and misuse, as well as improper breathing during phonation and excessive tonus of the neck muscles [1]. Voice abuse refer to any action or circumstance that stresses or harms the vocal folds. This could involve loud speech, cleaning the throat frequently, coughing, breathing irritants, smoking, yelling, or screaming [2]. Voice misuse refer to inappropriate voice use, such as speaking too loudly or with abnormally high or low pitch [3]. Persistent hyperfunctional dysphonia can result in edematous lesions and soft nodules on the vocal folds, which can eventually lead to fibrosis and become hard vocal fold nodules [1].

The development of VFNs has been linked to "phonotraumatic" activities such as yelling, screaming, and speaking loudly for long periods of time, all of which have been linked to histological changes edema, hyalinization, and fibrosis [4]. These behaviors are the result of a mix of anatomical, physiological, social, emotional, or environmental factors, and they can be seen as forms of interaction, aggression, impulsivity, leadership, or a desire to fit in with a group [5]. VFNs, for example, have been linked to a slew of social, emotional, and behavioral issues [6].

Children, unlike adults, are often oblivious of the qualities of their vocal actions and are less capable of

*Correspondence: alaa.saleh.m@gmail.com

[1] ORL Department, Phoniatric Unit, Om El Masryeen Hospital, Giza 12552, Egypt
Full list of author information is available at the end of the article

determining whether or not those behaviors are suitable [7]. As a result, parents play an important role in monitoring and addressing their children's vocal misbehaviors and abusive actions. Parenting is characterized as a complicated activity that includes a number of distinct behaviors that interact to influence child outcomes both individually and collectively [8]. Several studies have discovered a statistically significant link between parenting and developmental outcomes such as performance, accomplishment methods, self-regulated learning, achievement objectives, self-efficacy, and children's well-being [9–13]. This raises the issue of the involvement of parents in the development and maintenance of childhood hyper functional dysphonia. So, the goal of this study was to better understand the relationship between child behavior and parenting practices and chronic habitual hyper function childhood dysphonia in order to have a deeper understanding of the nature of the problem's psychological basis.

Methods

The current research was a case–control study with an analytical component. From May 2019 to May 2020, the study was conducted on 52 Egyptian children aged (4–14) of both genders. The case group included 26 children diagnosed with (CHCD) according to auditory perceptual assessment (APA) and laryngeal examination by indirect laryngoscope, and the control group included 26 children with healthy voices according to APA, matched for age and gender; they were chosen among the siblings of children who had visited the phoniatric outpatient clinic. Regarding exclusion criteria, children with known hearing problems or evident intellectual disability, chronic upper or lower respiratory tract diseases, known neurological or psychiatric disorders, and other organic voice disorders were excluded from both groups. Documentation of auditory perceptual assessment (APA) for both groups included the following variables according to the modified GRBAS scale: grade and character (quality), pitch, register, register break, loudness, glottal attack, and associated laryngeal functions [14]. The case group was subjected to laryngeal examination by indirect laryngoscope: a 70° rigid laryngoscope (Karl Storz) was used in conjunction with a camera (LEMKE MC 204) to do a thorough evaluation of the supraglottic, glottis, and infraglottic areas.

After ensuring confidentiality, each participant's parent gave informed consent to participate in the study. Patients had the right to withdraw from the study at any moment during the study without incurring any penalties. The study protocol was approved by the institutional research board (IRB): MS.19.05.642.

Statistical analysis

The Statistical Package for Social Science (SPSS) Version was used to gather, tabulate, and statistically analyze data on an IBM-compatible personal computer [24]. The qualitative data was presented as number (No) and percent (%), while quantitative data was given as mean and standard error.

Chi-square test was used to test association between categorical variables. It was replaced by Fisher exact test if the expected cell count was less than 5 in four-cell tables, while it was replaced by Monte Carlo test if the expected cell count was less than 5 in more than four-cell tables. The independent sample *t*-test was used to compare two normally distributed continuous variables in 2 independent groups, while the Mann–Whitney *U* test (*z*) was used to compare two non-normally distributed continuous variables in two independent groups. The one-way analysis of variance (ANOVA) is used to determine if the means of two or more independent (unrelated) groups differ statistically. To compare non-normally distributed continuous variables in more than two groups, the Kruskal–Wallis *H* test was utilized. *P*-values more than 0.05 were judged non-significant, whereas *P*-values less than 0.05 were considered significant.

Results

The results of the current study were classified into the following.

Descriptive comparative statistics between the studied groups

1. Demographic data and socioeconomic status:

Table 1 demonstrated that there was no significant difference in age or gender between the two groups. However, the socioeconomic status of the case group was noticeably less than that of the control group.

2. Comparison of vocal behavior and history items between studied groups:

Table 2 demonstrated that there were significant differences between the two groups as regards child vocal behavior and playing in street/sports, while other parameters showed no significant differences.

3. Comparison of behavioral problems scores between studied groups:

Table 3 showed that there was a significant increase in emotional symptom score and conduct problems score in the case group compared to the control group. There was no significant differences in other parameters.

4. Parenting practices score

Table 1 Comparison of Demographic data and socioeconomic status between studied groups ($N=52$)

Parameters	Case group $n=26$	Control group $n=26$	Test of significance	*P* value
Age *(per years)* median (min–max)	7 (4–13)	8 (4–14)	$Z=1.1$	$P=0.26$
Gender				
Male	20 (76.9%)	19 (73.1%)	$\chi^2=0.11$	$P=0.75$
Female	6 (23.1%)	7 (26.9%)		
Socioeconomic status of the family				
Low	19 (73.1%)	10 (38.5%)	$\chi^2=6.3$	$P=$**0.01***
Middle	7 (26.9%)	16 (61.5%)		

Data expressed as number (%) or median (minimum–maximum)

* Significant $P \leq 0.05$. χ^2, chi-square test. *Z*, of Mann–Whitney test

Table 2 Comparison of vocal behavior and historical items between studied groups

Parameters	Case group $n=26$	Control group $n=26$	Test of significance	*P* value
Child vocal behavior				
Healthy	0	17 (56.4%)	FET	$P \leq 0.001$*
Abuse/misuse	26 (100%)	9 (34.8%)		
Family vocal behavior				
Healthy	10 (38.5%)	16 (61.5%)	$\chi^2=2.8$	$P=0.09$
Abuse/misuse	16 (61.5%)	10 (38.5%)		
Went to nursery				
No	1 (3.8%)	3 (11.5%)	FET	$P=0.61$
Yes	25 (96.2%)	23 (88.5%)		
Went to Quran lesson				
No	9 (34.6%)	7 (26.9%)	$\chi^2=0.36$	$P=0.54$
Yes	17 (65.4%)	19 (73.1%)		
Playing in street/sports				
No	3 (11.5%)	9 (34.6%)	$\chi^2=3.9$	$P=0.05$*
Yes	23 (88.5%)	17 (65.4%)		
Exposure to negative smoking				
No	12 (46.2%)	17 (65.4%)	$\chi^2=1.9$	$P=0.16$
Yes	14 (53.8%)	9 (34.6%)		

Data expressed as number (%), mean ± SD or median (minimum–maximum)

χ^2 chi-square, *FET* Fisher's exact test

Independent samples *t* test

Z, of Mann–Whitney test

* Significant $P \leq 0.05$

Table 4 showed that there were no significant differences as regards all parameters of positive and negative parenting.

Descriptive statistics of the case groups

1. Duration of dysphonia and results of indirect laryngoscope:

Table 5 showed that the duration of dysphonia was a median of 18 months; 100% of the children had bilateral broad nodules.

2. Auditory perceptual assessment (APA) of patient's voice of the case group:

Table 6 showed that all of the children had dysphonia with strained and leaky characters with low pitch and reduced loudness.

Table 3 A comparison of the children's behavioral problems scores in the two groups ($N=52$)

Parameters	Case group $n=26$	Control group $n=26$	Test of significance	*P* value
Emotional Symptoms Score				
Normal (0–3)	8 (30.8%)	14 (53.8%)	MC = 4.9	$P=0.09$
Borderline (4)	2 (7.7%)	4 (15.4%)		
Abnormal (5–10)	16 (61.5%)	8 (30.8%)		
Median (min–max)	6 (0–9)	3 (0–7)	$Z=2.5$	$P=0.01$*
Conduct Problems Score				
Normal (0–2)	6 (23.1%)	13 (50%)	MC = 4.5	$P=0.12$
Borderline (3)	5 (19.2%)	2 (7.7%)		
Abnormal (4–10)	15 (57.7%)	11 (42.3%)		
Median (min–max)	4 (1–8)	2 (0–6)	$Z=2.0$	$P=0.04$*
Hyperactive Score				
Normal (0–5)	13 (50%)	14 (53.8%)	$\chi^2=0.41$	$P=0.81$
Borderline (6)	5 (19.2%)	6 (23.1%)		
Abnormal (7–10)	8 (30.8%)	6 (23.1%)		
Median (min–max)	6 (0–10)	5 (0–10)	$Z=0.55$	$P=0.58$
Peer Problems Score				
Normal (0–2)	15 (57.7%)	19 (73.1%)	MC = 1.4	$P=0.57$
Borderline (3)	3 (11.5%)	2 (7.7%)		
Abnormal (4–10)	8 (30.8%)	5 (19.2%)		
Median (min–max)	2 (0–5)	2 (0–4)	$Z=0.74$	$P=0.46$
Prosocial Behavior Score				
Normal (6–10)	21 (80.8%)	23 (88.5%)	MC = 0.62	$P=0.75$
Borderline (5)	2 (7.7%)	1 (3.8%)		
Abnormal (0–4)	3 (11.5%)	2 (7.7%)		
Median (min–max)	8 (1–10)	9 (1–10)	$Z=1.8$	$P=0.08$
Total Difficulties Score				
Normal (0–13)	9 (34.6%)	14 (53.8%)	MC = 1.9	$P=0.41$
Borderline (14–16)	4 (15.4%)	3 (11.5%)		
Abnormal (17–40)	13 (50%)	9 (34.6%)		
Mean ± SD (min–max)	17.2 ± 5.4 (7–29)	13.5 ± 3.8 (3–23)	$t=2.2$	$P=0.03$*

Data expressed as number (%), median (minimum–maximum)

χ^2, chi-square test; *MC*, Monte Carlo test; *t*, independent samples *t* test; *Z*, of Mann–Whitney test

* Significant $P \leq 0.05$

Table 4 Comparison of Parenting Practices Score between studied groups

Parameters	Case group $n=26$	Control group $n=26$	Test of significance	*P* value
Positive parenting				
Parenting involvement	10.9 ± 2.8 (4–15)	11.5 ± 2.5 (4–15)	$t=0.78$	$P=0.44$
Positive parenting	12.7 ± 2.6 (7–15)	12.9 ± 3.1 (5–15)	$t=0.25$	$P=0.81$
Negative parenting				
Inconsistent discipline	10.6 ± 3.1 (5–15)	9.9 ± 3.2 (3–14)	$t=0.78$	$P=0.44$
Corporal punishment	9 (3–15)	7.5 (3–15)	$Z=1.2$	$P=0.23$
Poor supervision	3 (3–11)	4 (3–12)	$Z=0.24$	$P=0.81$

Data expressed as mean ± SD). Not significant: $P>0.05$. *t*, independent samples *t* test; *Z*, of Mann–Whitney test

Table 5 Duration of dysphonia and results of indirect laryngoscope in the case group ($N=26$)

Parameters	Items	Case group ($n=26$)
Duration of dysphonia complaint (per months)	Median (minimum–maximum)	18 (5–60)
Indirect laryngoscope	Nodules	26 (100%)

Table 6 Auditory perceptual assessment (APA) of the patient's voice of the case group ($N=26$)

Parameters	Items	*N* (%)
Grade and character (quality) of phonation		
Grade of dysphonia (G)	• Grade I	7 (26.9%)
	• Grade II	13 (50%)
	• Grade III	6 (23.1)
Strained (S)	• Grade I	7 (26.9%)
	• Grade II	13 (50%)
	• Grade III	6 (23.1)
Leaky (L)	• Grade I	7 (26.9%)
	• Grade II	13 (50%)
	• Grade III	6 (23.1)
Breathy (B)	• Normal	26 (100%)
Irregular "rough: (I)	• Normal	26 (100%)
Other characteristics of phonation		
Pitch	• Decrease	26 (100%)
Registration	• Habitual	26 (100%)
Register break	• Absent	26 (100%)
Loudness	• Increased	26 (100%)
Glottal attack	• Normal	26 (100%)
Associated laryngeal functions	• Affected	26 (100%)

Association statistics

1. Association between grade of dysphonia and behavioral characteristics in the case group:

Table 7 summarized the associations between dysphonia grade and other parameters in the case group. The grade of dysphonia had a significant association with the Emotional Symptoms Score and the Prosocial Behavior Score.

2. Association between grade of dysphonia and parenting practices in the case group:

Table 8 summarized the associations between dysphonia grade and parenting practices. There was no significant association as regards all parameters of positive and negative parenting.

Discussion

The comparison between the case group and the control group revealed that children's vocal behavior was significantly different between both. This is in line with the notion that repeated micro trauma caused by vocal abuse or misuse triggers an inflammatory response that results in VFNs [1]. These practices are harmful to the layers of the vocal folds, particularly the mucosa of the vocal folds, and prevent the vocal folds from functioning properly [25].

The validated Arabic version of the SDQ was used in this study to examine behavior indicators and social skills. The case group's SDQ parent report scored higher on the emotional, conduct, hyperactive/inattention, and peer problem subscales but scored lower on the prosocial behavior subscale than the control group's parent report.

Emotional symptoms include headaches, stomachaches, nausea, anxieties, feeling upset, feeling frustrated, and crying as detailed by Kollbrunner and Seifert [26] who mapped the relationship between voice and emotional symptoms and concluded that emotional conflicts in childhood can lead to functional vocal problems. Ribeiro et al. [27] noted that the increased scores for anxiety/depression and somatic complaints observed in the adolescent group with voice complaints can be attributed to the fact that the voice disorder potentiated the insecurities and emotional conflicts that are common during this developmental stage.

Conduct problems refer to aggressive behavior that can take many forms (e.g., physical, proactive, reactive, relational) (anger, temper tantrums, fights, cheating, and lying attitudes). This can be explained by the theory that people with voice problems have more externalizing problems considering that vocally aggressive behaviors like screaming and shouting are usually associated with the etiology of childhood dysphonia itself [28].

The results in the current study are consistent with the observations of Lima and Behlau [29] who found that children and adolescents with CHCD scored higher on emotional symptoms and conduct problems domains using the SDQ both self-report and parent-report versions, according to Mahmoud et al. [30] who used the child behavior checklist to find significant differences in withdrawal/depression, somatic complaints, social problems, rule-breaking, and aggressive behavior between children with dysphonia and children without dysphonia (CBCL).

These results are in some ways consistent with the findings of the following researchers: The Children's Behavior Questionnaire (CBQ) was employed in Egger et al. [31] investigation which indicated a strong significance in the scales of irritation/frustration, sadness, sensitivity, and discomfort. Angelillo et al. [32] relied on clinical

Table 7 Association between dysphonia grade and behavioral problem in the case group ($N=26$)

Grade of dysphonia				
Parameters	**Grade I**	**Grade II**	**Grade III**	**Test of significance**
	***n*=7**	***n*=13**	***n*=6**	
Emotional Symptoms Score				
☐ Normal *(0–3)*	1 (14.3%)	7 (53.8%)	0	MC=12.1
☐ Borderline (4)	2 (28.6%)	0	0	*P*=**0.009***
☐ Abnormal *(5–10)*	4 (57.1%)	6 (46.2%)	6 (100%)	
Median (min–max)	5 (0–9)	3 (0–8)	7 (5–9)	KW=3.2
				P=0.20
Conduct Problems Score				
☐ Normal *(0–2)*	2 (28.6%)	3 (23.1%)	1 (16.7%)	MC=3.1
☐ Borderline *(3)*	0	4 (30.8%)	1 (16.7%)	*P*=0.62
☐ Abnormal *(4–10)*	5 (71.4%)	6 (46.2%)	4 (66.7%)	
Median (min–max)	4 (2–8)	3 (1–8)	4 (2–6)	KW=0.29
				P=0.87
Hyperactive Score				
☐ Normal *(0–5)*	3 (42.9%)	7 (53.8%)	3 (50%)	MC=5.0
☐ Borderline *(6)*	0	4 (30.8%)	1 (16.7%)	*P*=0.33
☐ Abnormal *(7–10)*	4 (57.1%)	2 (15.4%)	2 (33.3%)	
Median (min–max)	7 (2–9)	5 (0–10)	5 (1–8)	KW=0.62
				P=0.73
Peer Problems Score				
☐ Normal *(0–2)*	4 (57.1%)	7 (53.8%)	4 (66.7%)	MC=3.6
☐ Borderline *(3)*	2 (28.6%)	1 (7.7%)	0	*P*=0.57
☐ Abnormal *(4–10)*	1 (14.3%)	5 (38.5%)	2 (33.3%)	
Median (min–max)	1 (0–5)	2 (0–5)	2 (1–5)	KW=0.97
				P=0.62
Prosocial Behavior Score				
☐ Normal *(6–10)*	4 (57.1%)	7 (53.8%)	4 (66.7%)	MC=3.6
☐ Borderline *(5)*	2 (28.6%)	1 (7.7%)	0	*P*=0.57
☐ Abnormal *(0–4)*	1 (14.3%)	5 (38.5%)	2 (33.3%)	
Median (min–max)	6 (1–8)	8 (5–10)	9 (6–10)	KW=5.8
				P=**0.05***
Total Difficulties Score				
☐ Normal *(0–13)*	3 (24.9%)	5 (38.5%)	1 (16.7%)	MC=3.1
☐ Borderline(14–*16*)	0	3 (23.1%)	1 (16.7%)	*P*=0.55
☐ Abnormal *(17–40)*	4 (57.1%)	5 (38.5%)	4 (66.7%)	
Mean ± SD (min–max)	17.6 ± 5.7	16.5 ± 5.8	18.5 ± 5.4	*F*=0.21
	(8–25)	(7–29)	(9–24)	*P*=0.81

Data expressed as number (%), mean ± SD, or median (minimum–maximum)

* Significant $P \leq 0.05$

MC, Monte Carlo test; *KW*, Kruskal–Wallis test; *F*, one-way ANOVA test

neuropsychiatric examination and found that 83% had aggression and hyperactivity attitudes. Green [33] used Walker Problem Behavior Identification Checklist (WPBIC) ratings to compare the behavior characteristics of children with CHCD and vocally normal school-age children and discovered that the children with CHCD had significantly higher ratings in aggression, distractibility, and disturbed peer relations. Wilson [34] noted that children with CHCD are more vocally aggressive, hypochondriacal, and prone to repressed physical aggressiveness. According to Nemec [35], children with CHCD were more aggressive and immature than their vocally

Table 8 Association between dysphonia grade and parenting practices in the case group ($N=26$)

Grade of dysphonia				
Parameters	**Grade I**	**Grade II**	**Grade III**	**Test of significance**
	***n*=7**	***n*=13**	***n*=6**	
Parenting involvement	10.7±3.1	10.5±3.2	12±1.5	$F=0.60$
				$P=0.56$
Positive parenting	11.6±3.4	12.8±2.0	13.8±2.4	$F=1.3$
				$P=0.29$
Inconsistent discipline	9±3.1	11.9±2.4	9.8±3.2	$F=2.4$
				$P=0.11$
Corporal punishment	5 (3–11)	9 (4–15)	11 (8–15)	KW=5.3
				$P=0.07$
Poor supervision	3 (3–10)	3 (3–11)	4 (3–11)	KW=0.16
				$P=0.92$
Duration of dysphonia complaint (per months)	20±6	13.6±4.2	24±7.2	$F=4.7$
				$P=0.09$

Data expressed as number (%), mean±SD, or median (minimum–maximum)

MC, Monte Carlo test; *KW*, Kruskal–Wallis test; *F*, one-way ANOVA test

* Significant $P \leq 0.05$

normal counterparts. They interacted with their social, educational, and familial environments aggressively.

Wilson and Lamb [36], who used the Rorschach test, and Roy et al. [4], who used the (CBCL), both failed to identify significant behavioral differences between children with CHCD and vocally normal children.

It is also important to highlight the association between CHCD severity and SDQ scores. The grade of dysphonia was found to have a significant association with the emotional problems score and prosocial behavior scores in this study. Prosocial behavior is related to social skills or competencies. Children who are socially competent exhibit adaptive behaviors toward their peers their age [37]. This coincides with Lima and Behlau [29] who suggested the highest occurrence of vocal symptoms does not reduce their prosocial behavior but can be a risk factor for the development of emotional/behavioral problems.

Regarding hyperactive/inattentive symptoms, it was not able to confirm reports assuming that there is a strong association between ADHD symptoms and CHCD in our study, which is consistent with Maia et al. [38.], who did not detect the positive link established by other authors.

Lima and Behlau [29] and Reis-Rego et al. [39], both of whom used the SDQ, found a strong correlation between the higher hyperactivity/inattention scores and the presence of CHCD. The difference between our results and those of the two studies could be explained by the large size sample and the male dominance, as Leache et al. [40] found that males were more than twice as likely to be diagnosed with ADHD as females.

Other studies examining the association between ADHD and CHCD used the same diagnostic method as the DSM-IV but used different sample selection criteria reducing the strength of the evidence obtained in the comparison between them [5]. For example, Erdur et al. [41] suggest associations between CHCD and hyperactivity and oppositional behavior in children using Conners' Parent Rating Scale-Revised: Short Form (CPRS-RS), which was used to compare the symptoms of ADHD in children with VFNs and normal children. D'Alatri et al. [42] also compared the symptoms of ADHD in children with CHCD with children without CHCD, concluding that ADHD is a possible risk factor for the development of CHCD. Hamden et al. [43] examined APA between children with ADHD and children without ADHD, finding that children with ADHD have more hoarseness, breathiness, strain, and loudness than children without ADHD.

It is important to notice that the assessment of the child's behavior in this study is based on the mother's own rating. The mother has extended time and better acquaintance with the child so she can give us an image of the child's behavior that not minded by his/her CHCD problem; however, the bias of the mother's opinion cannot be excluded. Generally, the disparities in findings may be due to differences in the methodologies and tools employed to assess them. According to Maia et al.'s systemic review study [5], there is no typical behavioral

profile in children with CHCD, the integrative review of the behavioral characteristics of dysphonic children does not establish a profile, and the cause-and-effect relationship has not been established.

This study assessed parenting using the Alabama Parenting Practice Questionnaire [17]. The APQ was developed to examine the five parenting dimensions that have been related to behavior problems among adolescents: involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, and corporal punishment [18].

Up to our knowledge, no studies investigated the relationship between parenting and CHCD, despite the fact that there have been plenty of studies looking into parenting and behavior problems of children.

Positive parenting scales, parental involvement, and poor supervision were all lower in the current study case group, whereas inconsistent discipline and incorporeal punishment were greater, with no statistically significant difference between the two groups. Also, dysphonic children scored higher on the emotional and conduct scale, although there was no definite correlation between behavior and parenting in this study. As a result, we may compare this conclusion to studies that examined at the association between parenting and behavioral problems.

This data is similar to that reported by Barry et al. [44], who found no significant correlation between parenting reports of poor or positive parenting practices and any indicators of conduct problems.

This finding is in line with the data reported by Fathima and Jaya [45] who compared two groups of children, the first of which included mothers of boys from the normal population and the second group included the mothers of boys who have been clinically diagnosed with ADHD and co-morbid disruptive behavioral problems (ODD/CD) by a psychologist/psychiatrist. Except for the use of corporal punishment by mothers of children with behavioral disorders, their data show no link between child behavioral problems and parenting practices.

In this study, neither Frick et al. [46], who assumed that both negative and positive parenting practices were most clearly associated with child conduct problems, nor Dallaire et al. [47], who reported that both positive and negative parenting practices were related to child internalizing problems, could be agreed upon.

The similarities in parenting practices observed between the two studied groups could be attributed to similarities in parenting practices between lower and middle socioeconomic classes, as Morelli et al. [48] stated that people with similar lifestyles, based on sociodemographic status, have similar views on parenting practices. Furthermore, because parents tend to reflect a good image of their parenting, this study depended on parent-report, which may not be reliable. In addition, relying on one parent (usually the mother) does not have a complete picture of the practices to which the child has been exposed.

Conclusion

Abuse and misuse of voice were found to be a predictor of CHCD in this study. Children with CHCD are more likely to abuse, misuse, and engage in activities that include phonotraumatic behavior, such as street/sports play. Children with CHCD had a higher score on the emotional symptoms scale, which included headaches, stomachaches, nausea, anxieties, upset, feeling downhearted, and crying. Furthermore, the conduct problems score refers to aggressive behavior. The degree of dysphonia is linked to emotional symptoms and prosocial behavior, both of which are related to social skills or social competency. There is no association between parenting practices and CHCD.

Recommendations

Behavioral problems and parenting practices among CHCD should be assessed using child-report rather than parent-report in future studies. Behavioral problems in CHCD should also be studied by age group (preschool age and school age) and gender.

Acknowledgements

Not applicable.

Authors' contributions

AI performed the experiments, collected the data, contributed the data and analysis tools, and is the major contributor in writing the manuscript. AA contributed to the clinical evaluation of ASD children and analyzed and interpreted the data. ST provided key/unique reagents and analyzed and interpreted the data. HB conceived, designed, and supervised the study and contributed to the data analysis and interpretation. All authors read and approved the final version of the manuscript, and they all contributed substantially in the research.

Funding

No funding.

Availability of data and materials

Available (the datasets used and/or analyzed during the current study are available from the corresponding author).

Declarations

Ethics approval and consent to participate

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the institutional research board of the Mansoura University (IRB) MS.19.05.642. Date: 12 June 2019. The parents of the children signed a written consent form.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Author details
[1]ORL Department, Phoniatric Unit, Om El Masryeen Hospital, Giza 12552, Egypt. [2]ORL Department, Faculty of Medicine, Phoniatric Unit, Mansoura University, Mansoura, Egypt. [3]Department of Psychiatry, Mansoura University School of Medicine, Mansoura, Egypt.

Received: 20 July 2022 Accepted: 2 October 2022
Published online: 22 October 2022

References

1. Martins RHG, Ribeiro CBH, De Mello BMZF, Branco A & Tavares ELM (2012) Dysphonia in children Journal of Voice 26 (5): 674e17-674e20 https://doi.org/10.1016/j.jvoice.2012.03.004
2. Khatoon R (2010) Prevalence of voice problems among school teachers. Pakistan Journal of Clinical Psychology 9(1). https://search.proquest.com/openview/2b83f1e549218b7a34c7ef103bd219bf/1?pq-origsite=gscholar&cbl=616522
3. Herranz J, Gavilán Bouzas J, Vázquez Barro C, & Martín Méndez L (2010) Mucosal disease of the glottis. In Otorhinolaryngology, Head and Neck Surgery (pp: 483–486). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-68940-9_52
4. Roy N, Holt KI, Redmond S, Muntz H (2007) Behavioral characteristics of children with vocal fold nodules. J Voice 21(2):157–168. https://doi.org/10.1016/j.jvoice.2005.11.004
5. Maia AA, Gama ACC, Kümmer AM (2014) Behavioral characteristics of dysphonic children: integrative literature review in CoDAS. Sociedade Brasileira de Fonoaudiologia 26(2):159–163. https://doi.org/10.1590/2317-1782/2014408IN
6. Connor NP, Cohen SB, Theis SM, Thibeault SL, Heatley DG, Bless DM (2008) Attitudes of children with dysphonia. J Voice 22(2):197–209. https://doi.org/10.1016/j.jvoice.2006.09.005
7. Ramig LO, Verdolini K (1998) Treatment efficacy: voice disorders. J Speech Lang Hear Res 41(1):S101–S116. https://doi.org/10.1044/jslhr.4101.s101
8. Baumrind D (1991) The influence of parenting style on adolescent competence and substance use. The J Early Adolesc 11(1):56–95. https://doi.org/10.1177/0272431691111004
9. Abdul Gafoor K, Kurukkan Abidha (2014) Construction and validation of scale of parenting style. GJBSS 2(4):315–323. https://doi.org/10.4236/psych.2021.126058
10. Janjua Fatima, Woll Bencie, Kyle Jim (2002) Effects of parental style of interaction on language development in very young severe and profound deaf children. IJOPRL 64(3):193–205. https://doi.org/10.1016/s0165-5876(02)00069-1
11. El Sayed S, Hemmat B (2010) Psychosocial factors affecting language development among mild mentally retarded childrens. Egyptian J Psychiatry 31(2):25–32https://www.researchgate.net/publication/255712278_Psychosocial_Factors_Affecting_Language_Development_Among_Mild_Mentally_Retarded_Children
12. Baz H, Elsayed H (2010) Psychosocial profile of preschool stuttering children with co-morbid psychiatric disorders. Mansoura University, Unit of Phoniatrics
13. JáureguiLobera I, Bolaños Ríos P, Garrido Casals O (2011) Parenting styles and eating disorders. J Psychiatr Ment Health Nurs 18(8):728–735. https://doi.org/10.1111/j.1365-2850.2011.01723.x
14. El-Gilany A, El-Wehady A, El-Wasify M (2012) Updating and validation of the socioeconomic status scale for health research in Egypt. https://doi.org/10.26719/2012.18.9.962
15. Goodman R (1997) The Strengths and Difficulties Questionnaire: a research note. J Child Psychol Psychiatry 38(5):581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x
16. Badahdah A, Le KT (2016) Parenting young Arab children: psychometric properties of an adapted Arabic brief version of the Alabama parenting questionnaire. Child Psychiatry Hum Dev 47(3):486–493https://doi.org/10.1007/s10578-015-0581-8
17. Scott S, Briskman J, Dadds MR (2011) Measuring parenting in community and public health research using brief child and parent reports. J Child Fam Stud 20(3):343–352. https://doi.org/10.1007/s10826-010-9398-z
18. Kotby MN (1986) voice disorders recent diagnostic advances. EJO 3(1):69–98
19. Durrant JE (2007) Positive discipline: what it is and how to do it. Bangkok: Save the Children Sweden. Southeast Asia and Pacific Region https://www.academia.edu/download/38991157/Manual_de_Disciplina_Positiva.pdf
20. Davidson TM, Cardemil EV (2009) Parent-child communication and parental involvement in Latino adolescents The. J Early Adolesc 29(1):99–121. https://doi.org/10.1177/0272431608324480
21. Straus MA (1997) Beating the devil out of them: corporal punishment in American families Adolescence 32(125):248. https://www.taylorfrancis.com/books/mono/https://doi.org/10.4324/9781351314688/beating-devil-murray-straus-denise-donnelly.
22. Melby JNCR, Conger RD, Book R, Rueter M, Lucy L, Repinski D & Scaramella L, (1998) The Iowa family interaction rating scales Unpublished document. Iowa State University, Institute for Social and Behavioral Research
23. Crosswhite JM, Kerpelman JL (2009) Coercion theory, self-control, and social information processing: understanding potential mediators for how parents influence deviant behaviors. Deviant Behav 30(7):611–646. https://doi.org/10.1080/01639620802589806
24. SPSS Inc (2018) IBM SPSS Statistics for Windows, version 26.0. IBM Corp, Armnok
25. Sapienza CM, Ruddy BH, Baker S (2004) Laryngeal structure and function in the pediatric larynx. Language, Speech, and Hearing Services in Schools. https://doi.org/10.1044/0161-1461(2004/029)
26. Kollbrunner J, Seifert E (2013) Functional hoarseness in children: short-term play therapy with family dynamic counseling as therapy of choice. J Voice 27(5):579–588. https://doi.org/10.1016/j.jvoice.2013.01.010
27. Ribeiro L, Paula KMPD, Behlau M (2014) Voice-related quality of life in the pediatric population: validation of the Brazilian version of the Pediatric Voice-Related Quality-of Life survey. CoDAS 26: 87–95. https://doi.org/10.1590/S2317-17822014000100013
28. Krohling L, de Paula KMP, Behlau MS (2016) Behavior, social competence, and voice disorders in childhood and adolescence. J Voice 30(6):677–683. https://doi.org/10.1016/j.jvoice.2015.08.005
29. Lima L, Behlau M (2021) Emotional/behavioral indicators in children and adolescents with and without vocal problems: self-evaluation and parental evaluation. J Voice 35(4):664-e1. https://doi.org/10.1016/j.jvoice.2019.12.025
30. Mahmoud N, Ezzat AA, Lotfy AMM, Mohammed HO (2021) Vocal folds nodules among Egyptian children and adolescents: Behavior aspects. EJANTAS 22(22):1–12 https://doi.org/10.21608/ejentas.2020.50574.1283
31. Eggers K, Luc F, Van den Bergh BR (2009) Factorial temperament structure in stuttering, voice-disordered, and typically developing children. https://doi.org/10.1044/1092-4388(2009/07-0065)
32. Angelillo N, Di Costanzo B, Angelillo M, Costa G, Barillari M R, Barillari U (2008) Epidemiological study on vocal disorders in pediatric age Journal of preventive medicine and hygiene 49 (1).PMID: 18792527
33. Green G (1989) Psycho-behavioral characteristics of children with vocal nodules: WPBIC ratings. J Speech Hear Disord 54(3):306–312. https://doi.org/10.1044/jshd.5403.306
34. Wilson FB (1971) Emotional stress may cause voice anomalies in kids. JAMA 216:2085
35. Nemec JIRI (1961) The motivation background of hyperkinetic dysphonia in children: a contribution to psychologic research in phoniatry. Logos 4:28–31
36. Wilson FB & Lamb MM (1974) Comparison of personality characteristics of children with and without vocal nodules based on Rorschach protocol interpretation. Acta Symbolica. https://psycnet.apa.org/record/1975-32154-001.
37. Luiz AMAG, Gorayeb R, Liberatore Júnior RDR (2010) Avaliação de depressão, problemas de comportamento e competência social em crianças obesas. Estudos de Psicologia (Campinas) 27:41–48. https://doi.org/10.1590/S0103-166X2010000100005
38. Maia AA & Michalick-Triginelli MF (2006) Relação entre transtorno do déficit de atenção/hiperabilidade, dinânica familiar, disfonia e nódulo vocal em crianças. Revista de Ciências Médicas 15(5). https://periodicos.puc-campinas.edu.br/cienciasmedicas/article/download/1089/1065

39. Reis-Rego Â, Santos PH, Santos G, Santos PC, Dias D, Freitas SV, Almeida C (2019) Behavioral profile of children with vocal fold nodules—a case-control study. J Voice 33(4):584-e1. https://doi.org/10.1016/j.jvoice.2018.02.009
40. Leache L, Arrizibita O, Gutiérrez-Valencia M, Carlos Saiz L, Erviti J, Librero J (2021) Inidence of attention deficit hyperactivity disorder (ADHD) diagnoses in Navarre (Spain) from 2003 to 2019. Int J Environ Res Public Health 18(17):9208. https://doi.org/10.3390/ijerph18179208
41. Erdur O, Herguner A, Ozturk K, Kibar E, Elsurer C, Bozkurt MK, Herguner S (2016) Attention deficit hyperactivity disorder symptoms in children with vocal fold nodules. Int J Pediatr Otorhinolaryngol 85:5–7. https://doi.org/10.1016/j.ijporl.2016.03.017
42. D'Alatri L, Petrelli L, Calò L, Picciotti PM, Marchese MR, Bussu F (2015) Vocal fold nodules in school age children: attention deficit hyperactivity disorder as a potential risk factor. J Voice 29(3):287–291. https://doi.org/10.1016/j.jvoice.2014.07.019
43. Hamden AL, Deeb R, Sibai A, Rameh C, Rifai H, Fayyad J (2009) Vocal characteristics in children with attention deficit hyperactivity disorder. J Voice 23(2):190–194. https://doi.org/10.1016/j.jvoice.2007.09.004
44. Barry CT, Frick PJ, Grafeman SJ (2008) Child versus parent reports of parenting practices: implications for the conceptualization of child behavioral and emotional problems. Assessment 15(3):294–303. https://doi.org/10.1177/1073191107312212
45. Fathima MA, Jaya AT (2015) Maternal parenting practices and child behavioral problems: a comparative study. ZIJMR 5(4):28–39 https://indianjournals.com/ijor.aspx?target=ijor:zijmr&volume=5&issue=4&article=005
46. Frick PJ, Christian RE, Wootton JM (1999) Age trends in the association between parenting practices and conduct problems. Behav Modif 23(1):106–128. https://doi.org/10.1177/0145445599231005
47. Dallaire DH, Pineda AQ, Cole DA, Ciesla JA, Jacquez F, LaGrange B, Bruce AE (2006) Relation of positive and negative parenting to children's depressive symptoms. J Clin Child Adolesc Psychol 35(2):313–322. https://doi.org/10.1207/s15374424jccp3502_15
48. Morelli G, Quinn N, Chaudhary N, Vicedo M, Rosabal-Coto MK, Takada A (2018) Ethical challenges of parenting interventions in low-to middle-income countries. J Cross Cult Psychol 49(1):5–24. https://doi.org/10.1177/0022022117746241

Publisher's Note