

Evaluating the Long Term Impact of Adenotonsillectomy on the Standard of Living in the North Indian Children of 3-15 Year AgeRajeev Kumar Nishad¹, Reetu Verma², Mohd Amir³, Priyanka Das^{4*}¹Associate Professor, Department of ENT, Autonomous State Medical College, Firozabad, Uttar Pradesh²Professor, Department of Anaesthesiology Autonomous State Medical College Firozabad, Uttar Pradesh³Junior Resident, Department of ENT, F H Medical College and Hospital, Etmadpur, Agra, Uttar Pradesh⁴Junior Resident, Department of ENT, FH Medical College and Hospital, Etmadpur, Agra, Uttar Pradesh

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Abstract**Background:** Children with tonsillar hypertrophy and recurrent tonsillitis undergo surgical operations to improve their quality of life and enable them to continue growing normally on the physical and mental levels.**Aim:** The goal of the current clinical experiment was to evaluate and compare the clinical symptoms that pediatric patients presented with following tonsillectomy, adenoidectomy, or adenotonsillectomy. The influence of these surgical treatments on the afflicted children's quality of life was another goal of the study.**Methods:** A thorough examination of the head and neck area was conducted on 110 participants, ranging in age from 3 to 15 years. Parents of the participants were asked to complete a questionnaire that assessed the subjects' feelings of wellbeing, frequency of sleep apnea, frequency of medical visits, frequency of tonsillitis episodes, frequency of absences from work or school, and frequency of sleep apnea three months before to and following the surgical operations. To formulate the results, the gathered data were statistically evaluated.**Results:** Out of 110 research participants, 16.36% (n=18) had adenoidectomy as a form of treatment. Tonsillectomy was performed in 47.27% (n=52) of the children, whereas adenotonsillectomy (a combination of tonsillectomy and adenoidectomy) was performed in 36.36% (n=40) of the subjects. The research individuals' sleep apnea considerably decreased, going from 3.01±0.98 to 0.01±0.96 (p ~^0.001). Between three months prior to surgery and three months following surgery, there was a substantial decrease in the frequency of throat discomfort and absences from school (p <0.001). Moreover, there was a decline in doctor visits from 5.08±2.12 to 0.30±2.14, with a p-value of <0.001. Also, there was a noticeable improvement in the sense of wellbeing.**Conclusion:** Within the constraints of the study, the results indicate that tonsillectomy, adenoidectomy, or adenotonsillectomy done to treat recurrent tonsillitis or tonsillar hypertrophy considerably enhance the quality of life for the affected individuals.**Keywords:** Adenoidectomy, Pediatric Patients, Quality Of Life, Recurrent Tonsillitis, Tonsillectomy.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Children and teenagers frequently get adenotonsillectomy, tonsillectomy, and adenoidectomy as elective surgical treatments. Researchers disagree on the need of these operations' advantages. The candidates who need these procedures benefit from them, but the researchers continue to disagree over their indications [1].

Children often have adenotonsillectomy, tonsillectomy, or adenoidectomy due to sleep apnea, mouth breathing, and/or recurrent tonsillitis. These signs are frequently observed in pediatric individuals, associated with palatine tonsillar hypertrophy and recurrent tonsillitis [2]. Children with palatine tonsils/adenoids that are hypertrophied

typically experience respiratory problems as a result of upper respiratory tract blockage. One of the most frequent etiologic variables linked to childhood OSAS (obstructive sleep apnea syndrome) is adenotonsillar hypertrophy. Their quality of life is also negatively impacted by recurrent tonsillar infections, which cause sore throats [3].

Tonsillectomy is an important treatment for children with recurrent tonsillar infections and tonsillitis because it reduces throat discomfort and improves quality of life. The diagnosis of chronic tonsillitis is based on the presence of sore throat and persistent inflammation of the palatine tonsils for a minimum of three months. Children older than three have tonsillectomy, adenoidectomy, and/or

adenotonsillectomy as surgical treatments to treat these disorders. [4]

Children with recurrent tonsillitis and tonsillar hypertrophy undergo surgical operations to improve their quality of life and enable them to continue growing normally on the physical and mental levels. Nonetheless, the literature provides a thorough description of the indications, benefits, and related problems of various surgical treatments. There is currently a dearth of appropriate statistics on their impact on the standard of living of Indians. [5]. In order to compare and evaluate the symptoms that were clinically manifested following tonsillectomy, adenoidectomy, or adenotonsillectomy in pediatric participants, the current clinical investigation was carried out. The influence of these surgical treatments on the afflicted children's quality of life was another goal of the study.

Materials and Methods

This prospective study of 3 years duration (from November 2020 to October 2023) was conducted at and included the subjects visiting the Department of ENT in FH Medical College and Hospital, Etmadpur, Agra, Uttar Pradesh. Institutional Ethics committee approval was taken and informed consent was obtained from the patient's parents or legally acceptable relatives. The study had 110 volunteers, both male and female, with a mean age of 7.4 years, ranging in age from 3 to 15 years. The pediatrics department referred the individuals who were included because they may have had airway obstruction due to adenotonsillar hypertrophy.

Subjects with adenotonsillar hypertrophy or recurrent tonsillitis who received an adenoidectomy, tonsillectomy, or adenotonsillectomy were included in the research, regardless of their age or gender. Subjects with Grade II, III, or IV tonsils and throat discomfort in addition to recurrent tonsillitis—defined as three to four episodes of tonsillitis in a year—and obstructive sleep apnea—which was identified if the tonsillar size was +3 or more with apnea—were eligible for participation. For upper airway obstruction, +3 tonsil size (filling 50% of

oropharynx) with loud snoring history was considered. Based on choanae blockage, the adenoid size was rated on a scale of 0–4, with 0 denoting no adenoids, 2 non-obstructive adenoids, 3 partly blocked, and 4 denoting total obstruction. Subjects who had tonsillectomy for reasons other than upper airway obstruction or obstructive sleep apnea, bleeding problems, immunodeficiency, craniofacial abnormalities, and/or suspected tonsillar malignancy were excluded from the study. A history of recurrent pharyngitis, tonsillar tumors, congenital hearing loss, abnormal psychomotor and neurological development, and any syndrome were also grounds for exclusion from the study.

One skilled examiner conducted a thorough assessment of the head and neck area following final inclusion. Obesity, asthma, dysphagia, laryngomalacia, and reactive airway disorders were among the related comorbidities that were noted.

A questionnaire evaluation was conducted with the parents of the participants who were included (n = 110). The questionnaire asked about the frequency of their bouts of tonsillitis, visits to the doctor, how often they slept, how often they missed work or school, how well they felt, and whether they had sleep apnea. The study participants completed the questionnaires three months before and after the tonsillectomy, adenotonsillectomy, or adenoidectomy treatment. Using the coblation method, a single operator performed all of the surgical operations.

The statistical analysis of the gathered data was conducted using the ANOVA and t-test functions of SPSS software, version 21.0, 2012, Armonk, NY. The formulation of the results was done with a p~0.05 threshold of significance.

Results

110 participants, both male and female, with a mean age of 7.4 years, ranging in age from 3 to 15 years, participated in the current observational retrospective study.

Table 1: Demographic characteristics of the study subjects

S. No	Demographic Characteristics	Percentage (%)	Number (n)
1.	Mean age (years)	7.4	
2.	Age Range (years)	3-15	
3.	Gender		
a)	Male	55.45	61
b)	Female	45.54	49
4.	Socioeconomic status		
a)	Low	7.27	8
b)	Middle	74.45	83
c)	High	17.27	19
5.	Tonsillar Grades		
a)	Grade I	0	0
b)	Grade II	47.27	52
c)	Grade III	31.81	35
d)	Grade IV	20.90	23

Table 1 describes the included respondents' demographic research characteristics. In the current study, there were found to be 45.54% (n=49) female participants and 55.45% (n=61) male participants. In the current study, the majority of individuals were from the intermediate socioeconomic background, with 7.27% (n = 8) from the low socioeconomic group, 74.45% (n = 83) from the middle socioeconomic background, and 17.27% (n = 19) from the high socioeconomic group.

When the disease's symptoms were evaluated, 84.54% of the patients (n=93) had mouth breathing,

snoring, disturbed sleep, apnea, rhinitis, and gasping. 80.90% (n=89), 58.18% (n=64), 17.27% (n=19), 40.90% (n=45), and 59.09% (n=65) subjects respectively. In terms of tonsillar hypertrophy, Grades 1, 2, 3, and 4 were seen in 9.09% (n = 10), 20% (n = 22), 28.18% (n = 31), and 24.54% (n = 27) of the patients, respectively. In contrast, Grades 2, 3, and 4 of adenoid hypertrophy were observed in 5.45% (n = 6), 23.63% (n = 26), and 22.72% (n = 25) of the research subjects. None of the research participants had Grade 0 tonsillar hypertrophy or Grade 0 or 1 adenoid hypertrophy (Table 2).

Table 2: Symptoms and Disease assessment in the study subjects

S. No	Disease Characteristics	Percentage (%)	Number (n)
6.	Presenting Symptoms		
e)	Mouth Breathing	84.54	93
f)	Snoring	80.90	89
g)	Disordered Sleep	58.18	64
h)	Apnea	17.27	19
i)	Rhinitis	40.90	45
j)	Gasping	59.09	65
2.	Tonsillar Hypertrophy		
a)	0	0	0
b)	1	9.09	10
c)	2	20	22
d)	3	28.18	31
e)	4	24.54	27
3.	Adenoid Hypertrophy		
a)	0	0	0
b)	1	0	0
c)	2	5.45	6
d)	3	23.63	26
e)	4	22.72	25

The study involved three surgical procedures: tonsillectomy, adenotonsillectomy, and adenoidectomy. Out of the 110 trial participants, adenoidectomy was used to treat 16.36% (n= 18).

Table 3: Surgical Procedures Performed in the study subjects

S. No	Surgical procedure performed	Percentage (%)	Number (n)
1.	Adenoidectomy	16.36	18
2.	Tonsillectomy	47.27	52
3.	Adenotonsillectomy (Adenoidectomy+ Tonsillectomy)	36.36	40

As indicated in Table 3, tonsillectomy was performed in 47.27% (n=52) of the research patients, and adenotonsillectomy (a combination of tonsillectomy and adenoidectomy) in 36.36% (n=40) of the individuals. None of the research participants had any problems following surgery.

Nevertheless, three infants were cleared for pulmonary illness, for which they were cleared. Based on the responses supplied by the parents of the research subjects to the questionnaire, the current investigation additionally evaluated the shift in the study subjects' quality of life (Table 4).

Table 4: Change in Quality of life in the study subjects after surgical procedures

Parameter	3 months pre-surgery	3 months post-surgery	p-value
Sleep Apnea	3.01±0.98	0.01±0.96	<0.001
Throat Pain Frequency	7.43±1.24	1.33±1.26	<0.001
Feeling of well-being	0.49±0.28	8.06±3.14	<0.001
Absence from school	8.48±1.42	0.56±1.44	<0.001
Visit to Doctors	5.08±2.12	0.30±2.14	<0.001

The study individuals' sleep apnea dramatically decreased from 3.01±0.98 to 0.01±0.96 (p ~0.001),

according to the data. Between three months prior to surgery and three months following surgery, there

was a substantial decrease in the frequency of throat discomfort and absences from school ($p < 0.001$). Moreover, there was a decline in doctor visits from 5.08 ± 2.12 to 0.30 ± 2.14 , with a p -value of < 0.001 . Additionally, as Table 4 illustrates, there was a notable rise in the sense of well-being following tonsillectomy, adenoidectomy, and adenotonsillectomy, indicating an enhanced quality of life.

Discussion

In order to compare and evaluate symptoms that were clinically exhibited following tonsillectomy, adenoidectomy, or adenotonsillectomy in pediatric patients, this study involved 110 people. The influence of these surgical treatments on the afflicted children's quality of life was another goal of the study. With a mean age of 7.4 years, the research volunteers were both male and female and ranged in age from 3 to 15 years. In the current study, the demographic study features of the included individuals were 45.54% ($n=49$) females and 55.45% ($n=61$) men. In the current study, the majority of individuals were from the intermediate socioeconomic background, with 7.27% ($n = 8$) from the low socioeconomic group, 74.45% ($n = 83$) from the middle socioeconomic background, and 17.27% ($n = 19$) from the high socioeconomic group.

These characteristics were in agreement with the studies by Bellussi LM et al [6] in 2011 and Alho AP et al [7] in 2007 where comparable characteristics of the subjects were considered by the authors.

When the disease's symptoms were evaluated, 84.54% of the patients ($n=93$) had mouth breathing, snoring, disturbed sleep, apnea, rhinitis, and gasping. The individuals were 80.90% ($n = 89$), 58.18% ($n = 64$), 17.27% ($n = 19$), 40.90% ($n = 45$), and 59.09% ($n = 65$), in that order. In terms of tonsillar hypertrophy, Grades 1, 2, 3, and 4 were seen in 9.09% ($n = 10$), 20% ($n = 22$), 28.18% ($n = 31$), and 24.54% ($n = 27$) of the patients, respectively. In contrast, Grades 2, 3, and 4 of adenoid hypertrophy were observed in 5.45% ($n = 6$), 23.63% ($n = 26$), and 22.72% ($n = 25$) of the research subjects. None of the research subjects had Grade 0 tonsillar hypertrophy or Grade 0 or 1 adenoid enlargement. These symptoms have also been documented by Erosy B et al [8] in 2005 as typical presentations of adenoid hypertrophy and recurrent tonsillitis.

The study involved three surgical procedures: tonsillectomy, adenotonsillectomy, and adenoidectomy. Out of the 110 trial participants, adenoidectomy was used to treat 16.36% ($n= 18$). Tonsillectomy was performed in 47.27% ($n=52$) of the research individuals, whereas adenotons-

illectomy (a combination of tonsillectomy and adenoidectomy) was performed in 36.36% ($n=40$) of the subjects. None of the research participants had any problems following surgery. Nevertheless, three infants were cleared for pulmonary illness, for which they were cleared. These outcomes were comparable to those of studies published by Di Francesco RC et al [9] in 2004 and Ikeda FH et al [10] in 2012, the authors of which reported similar outcomes without any postoperative problems.

The present study also assessed the change in the quality of life in study subjects as answered by their parents based on the answers given to the questionnaire provided. The study individuals' sleep apnea dramatically decreased from 3.01 ± 0.98 to 0.01 ± 0.96 ($p \sim 0.001$), according to the data. Between three months prior to surgery and three months following surgery, there was a substantial decrease in the frequency of throat discomfort and absences from school ($p < 0.001$). Moreover, there was a decline in doctor visits from 5.08 ± 2.12 to 0.30 ± 2.14 , with a p -value of < 0.001 . Furthermore, there was a notable rise in the sense of well-being following tonsillectomy, adenoidectomy, and adenotonsillectomy, indicating a higher quality of life. These findings were consistent with research conducted in 2008 by Sans Capdevila O et al. and in 2007 by Aydogan M et al., who found that tonsillectomy treatments significantly improved the quality of life for patients with tonsillar hypertrophy and recurrent tonsillitis.

Conclusion

Within the bounds of its limitations, the current study suggests that tonsillectomy, adenoidectomy, or adenotonsillectomy done for the treatment of tonsillar hypertrophy or recurrent tonsillitis considerably improves the quality of life for afflicted individuals. Study participants experienced considerably fewer medical visits, sleep apnea, absences from school, feelings of well-being, and frequency of throat discomfort. Therefore, early treatments should be used to promote physical, mental, and social improvements in children who have obvious signs. A limited sample size, a brief monitoring period, biases related to certain geographic areas, and the observational aspect of the study were among the study's minor drawbacks. Therefore, in order to draw a firm conclusion, further longitudinal studies with longer observation periods and bigger sample numbers are required.

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