

Impact on Quality of Life After Adenotonsilleomy in Pediatric Patients

Silu M¹, Deepchand^{2*}, Samor V³, Gupta G³

¹PG Resident (Illrd Year), ^{2*}Senior Professor & HOD, ³Associate Professor,
Department of ENT, Sardar Patel Medical College, Bikaner, Rajasthan, India.

ABSTRACT

Objectives: To assess the impact of adenotonsillectomy on quality of life in pediatric patients.

Methods: The study comprises of 50 patients who have underwent adenotonsillectomy, at S. P. M.C. Impact on adenotonsil health status and quality of life after surgery was assessed with questionnaire from Tonsil and Adenoid Health Status Instrument (TAHSI), and the Glasgow Children's Benefit Inventory (GCBI) preoperatively, at the end 1 month, and 6 month after surgery.

Results: All patients reported decreased number of visit to the doctor, absence from school, need for antibiotic prescription, better sleep pattern and improved overall quality of life of children.

Conclusion: Tonsillectomy definitely leads to an improvement in the Quality of life in children and all parents were extremely satisfied with the surgical outcome. Almost all the parents reported decrease in visits to the doctor and in antibiotic

prescription but there were no significant changes observed in the emotional aspects and personality of the children.

Keywords: Adenotonsillectomy; GCBI; Quality of life; TAHSI.

*Correspondence to:

Dr. Deepchand,
Senior Professor & HOD,
Department of ENT,
Sardar Patel Medical College, Bikaner, Rajasthan, India.

Article History:

Received: 25-01-2018, **Revised:** 21-02-2018, **Accepted:** 22-03-2018

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2018.4.2.039	

INTRODUCTION

The hypertrophy, recurrent and chronic infections of the palatine tonsils and adenoids, is one of the most common problems in the otolaryngology clinic. It is responsible for several alterations on children's development and behavior, which worries parents, and tonsillectomy or adenotonsillectomy remains a commonly performed surgical procedure although many times its indication is controversial.¹ Although there have been many reports on the effectiveness of adenotonsillectomy in children with recurrent tonsillitis, most authors have examined only changes in a few objective measures of health status such as the number of episodes of tonsillitis but have not measured additional patient based outcomes.²⁻⁴ In the past, the most frequent indication for surgery was recurrent tonsillitis. There has been a rise in obstructive sleep apnea (OSA) as a significant indication from 0% in 1978 to 19% in 1986. The indications for adenotonsillectomy remain poorly defined and controversial.^{5,6} Indications are still variable and differ from centre to centre. This controversy persists because the actual benefits of adenotonsillectomy are unclear when compared against observation and medical treatment of infections. This study was done to assess the impact of adenotonsillectomy on quality of life in children.

AIMS AND OBJECTIVES

To assess the impact of adenotonsillectomy on physical health, school performance, behavior, sleep, overall quality of life.

METHODOLOGY

Source of Data: All the patients with clinical picture suggestive of adenotonsillitis who attend ENT OPD at Sardar Patel Medical College and Hospital, Bikaner.

Study Period: November 2016 to September 2017

Sample size: 50 cases

Method of Collection of Data: The study is a prospective, observational study done on 50 patients with clinical features suggestive of adenotonsillitis in ENT Department at Sardar Patel Medical College and Hospital, Bikaner.

Inclusion Criteria: Patients with adenotonsillitis clinically, of age group of 3 to 14years, both sexes.

Exclusion Criteria: Age above 14 years, children with other medical and surgical ailments and Patients who refused consent for adenotonsillectomy

Data Analysis: Detailed evaluation of the patient was done including detailed history and complete ENT examination with neck examination, relevant investigations and imaging- X-ray soft tissue neck lateral view. Adenoidectomy was done using microdebrider under endoscopic guidance and tonsillectomy was done by dissection and snare method under general anesthesia. Impact on adenotonsil health status and quality of life after surgery was assessed with questionnaire from tonsil and adenoid health status instrument (TAHSI), the Glasgow Children's Benefit Inventory (GCBI). English version of the TAHSI and GCBI was

translated into Hindi by two independently qualified users of the English language, and independently back-translated into English to ensure accuracy. Questionnaire was used preoperatively, at the end 1 month, and 6 month after surgery. Data was collected in the pretested proforma.

Statistical Analysis: PHI test is used for comparison among the different timings. ANOVA (Fischer test) is used for comparing three or more means for statistical significance. Students paired t test used for comparison of 1 month to 6 months of the total converted score test. A statistical package SPSS version 17.0 was used to do the analysis. Level of significance $\alpha = 0.05$. If $P < 0.05$ then there is a significant association between groups, if $P > 0.05$ then there is no significant association.

OBSERVATIONS AND RESULTS

In our study, we included a total of 50 patients with adenotonsillitis. All patients underwent powered adenoidectomy and tonsillectomy under general anesthesia. Physical health and quality of life at 1st and 6th month of follow-up was compared with the preoperative status.

Age Distribution

Patients between the age group of 3 to 15 years of age were included in our study. The youngest patient included in the study is 4 years old and the eldest patient is 12 years old. The mean age of the patients in our study is 6.94 yrs.

Gender Distribution

In our study, out of 50 cases, 12 patients were females forming 24% of the total sample and 38 patients were males forming 76% of the total sample.

Tonsil and Adenoid Health Status Instrument

Impact on adenotonsil health status and quality of life after surgery was assessed with questionnaire from Tonsil and Adenoid Health Status Instrument (TAHSI), which comprises of 9 subscales. Questionnaire was used preoperatively, at the end 1 month, and 6 month after surgery.

Recurrent Throat Infection

Among 50 patients, preoperatively 22 patients responded that they had fairly bad problem and 19 patients responded that they had severe problem. During postoperative follow up at the end of first month 25 (50%) patients responded that they had very mild problem, 21 (42%) had moderate problem while 4 (8%) said they had no problem at all. During postoperative follow up at the end of six month 26 (52%) patients responded that they had very mild problem, while 24 (48%) said they had no problem at all.

On application of PHI test for the above data, Phi coefficient is 1.198, with a p -value of < 0.001 which is very highly significant suggesting drastic improvement in recurrent sore throat after surgery.

Halitosis

In this study on preoperative assessment 24 patients responded that they had moderate problem of halitosis and 16 patients responded that they had very mild problem. During post-operative follow up at the end of first month 24 (48%) patients responded that they had very mild problem, 21 (42%) had moderate problem while 5 (10%) said they had no problem at all. During postoperative follow up at the end of six month 24 (48%) patients responded that they had very mild problem, while 25 (50%) said they had no problem at all with halitosis. On application of PHI test for the above data, Phi coefficient is, 0.718 with a p -value of

< 0.001 which is very highly significant suggesting improvement in halitosis after surgery.

Chronic Throat Infection

Among 50 patients, preoperatively 22 patients responded that they had fairly bad problem of chronic throat infection and 20 patients responded that they had moderate problem. During postoperative follow up at the end of first month 26 (52%) patients responded that they had very mild problem, 14 (28%) had moderate problem while 10 (20%) said they had no problem at all. During postoperative follow up at the end of six month 26 (52%) patients responded that they had very mild problem, while 24 (48%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 0.813, with a p -value of < 0.001 which is very highly significant.

Swallowing Problem

In our study, preoperatively 18 patients responded that they had fairly bad problem with food intake and 19 patients responded that they had moderate problem. During postoperative follow up at the end of first month 25 (50%) patients responded that they had very mild problem, 9 (18%) had moderate problem while 16 (32%) said they had no problem at all. During postoperative follow up at the end of six month 33 (66%) patients responded that they had very mild problem, while 17 (34%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 0.732, with a p -value of < 0.001 which is very highly significant showing a improvement in food intake after surgery.

Lymphadenopathy

9 patients responded that they had fairly bad problem and 22 patients responded that they had moderate problem. During postoperative follow up at the end of first month 19 (38%) patients responded that they had very mild problem, 29 (58%) had moderate problem while 19 (38%) said they had no problem at all. During postoperative follow up at the end of six month 25 (50%) patients responded that they had very mild problem, while 25 (50%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 0.309, with a p -value of 0.006 which is very highly significant. The above data suggests improvement in lymphadenopathy.

Health Care Utilization

18 patients responded that they had fairly bad problem and 30 patients responded that they had severe problem. During postoperative follow up at the end of first month 27 (54%) patients responded that they had very mild problem, 18 (36%) had moderate problem while 16 (32%) said they had no problem at all. During postoperative follow up at the end of six month 27 (54%) patients responded that they had very mild problem, while 5 (10%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 0.971, with a p -value of < 0.001 which is very highly significant suggesting a reduction in number of visits to the doctor.

Severe Throat Infection

In our study on 50 patients, preoperatively 19 patients responded that they had fairly bad throat infection and 31 patients responded that they had severe throat infection. During postoperative follow up at the end of first month 19 (38%) patients responded that they had very mild problem, 10 (20%) had moderate problem while 21 (42%) said they had no problem at all. During postoperative follow up at the end of six month 29 (58%) patients responded that they had very mild problem, while 12 (24%) said they had no problem

at all. On application of PHI test for the above data, Phi coefficient is 1.023, with a *p*-value of 0.000 which is very highly significant suggesting reduction in severity of throat infections in the postoperative follow-up.

Work Performance

In our study, preoperatively (44%) patients responded that they had fairly bad problem with school work and (36%) patients responded that they had severe problem. During postoperative follow up at the end of first month (28%) patients responded that they had very mild problem, (64%) had moderate problem. During postoperative follow up at the end of six month (68%) patients responded that they had very mild problem, while (28%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 0.900, with a *p*-value of 0.000 which is very highly significant suggesting an improvement in school performance.

Nocturnal Breathing

Preoperatively (34%) patients responded that they had fairly bad problem and (68%) patients responded that they had severe problem. During postoperative follow up at the end of first month

(50%) patients responded that they had very mild problem, (44%) had moderate problem. During postoperative follow up at the end of six month (42%) patients responded that they had very mild problem, while (58%) said they had no problem at all. On application of PHI test for the above data, Phi coefficient is 1.198, with a *p*-value of 0.000 which is very highly significant. The above results suggest that child slept much better after surgery.

Total TAHSI Score

Tonsil and Adenoid Health Status Instrument (TAHSI), which comprises of 9 subscales. The maximum attainable score for an individual is 36 and minimum is zero. In our study on preoperative assessment the maximum score attained was 31 and minimum was 21 with a mean score of 25.24. During postoperative follow up at the end of first month the maximum score attained was 15 and minimum score was 8 with a mean score of 11.48. During postoperative follow up at the end of sixth month the maximum attained score was 11 and minimum was 5 with a mean score of 7.58. On application of ANOVA (fishers test) for the above data there was very highly significant improvement in health status of the children after surgery as shown by the *p* value of <0.001.

Table 1: TAHSI Score

	N	Mean	Std. Deviation	Minimum	Maximum
Pre-op	50	25.2400	2.00571	21.00	31.00
1st	50	11.4800	1.79841	8.00	15.00
6th	50	7.5800	1.57907	5.00	11.00

F=1324.079 *p*<0.001

Table 2: Multiple Comparisons

(I) time	(J) time	Mean Difference (I-J)	Sig.
Preop	1st	13.76000	.000
	6 th	17.66000	.000
1st	6 th	3.90000	.000



Fig 1: Total TAHSI score

Glasgow Children’s Benefit Inventory (GCBI)

The Glasgow Children’s Benefit Inventory (GCBI), which has 24 questions on the consequences of a specified intervention on various aspects of the child’s day-to-day life, without reference to any specific symptoms was used to assess the quality of life after tonsillectomy. The inventory was used at the end of the first and six month after surgery. In our study on 50 patients who underwent adenotonsillectomy, parents documented no change in 7 subscales of GCBI: things they do, behavior, self-consciousness, embarrassment, self-esteem, confidence and self-care. Summary score for the GCBI was calculated by assigning

the individual question responses a numerical value from -2 to +2, then adding these up, dividing by the number of questions (24), and multiplying by 50 to produce a result on a scale from -100 (maximum harm) to + 100 (maximum benefit). Mean GCBI score at the end of the first month is 47.3328 and at the end of sixth month was 62.5004. The mean difference between first and sixth month is -15.1676. 95% confidence interval of this difference is from -16.4672 to -13.8680. On application of paired t test, p value is less than 0.0001. By conventional criteria, this is statistically very highly significant.

Table 3: Mean GCBI

Time	N	Mean	Std. Deviation
1 month	50	47.3328	4.7062
6 month	50	62.5004	5.3570

Table 4: Paired Samples Test

Paired Differences				
	Mean	Std. Deviation	t	p
1st month - 6th month	-15.1676	4.57211	23.4537	.0001

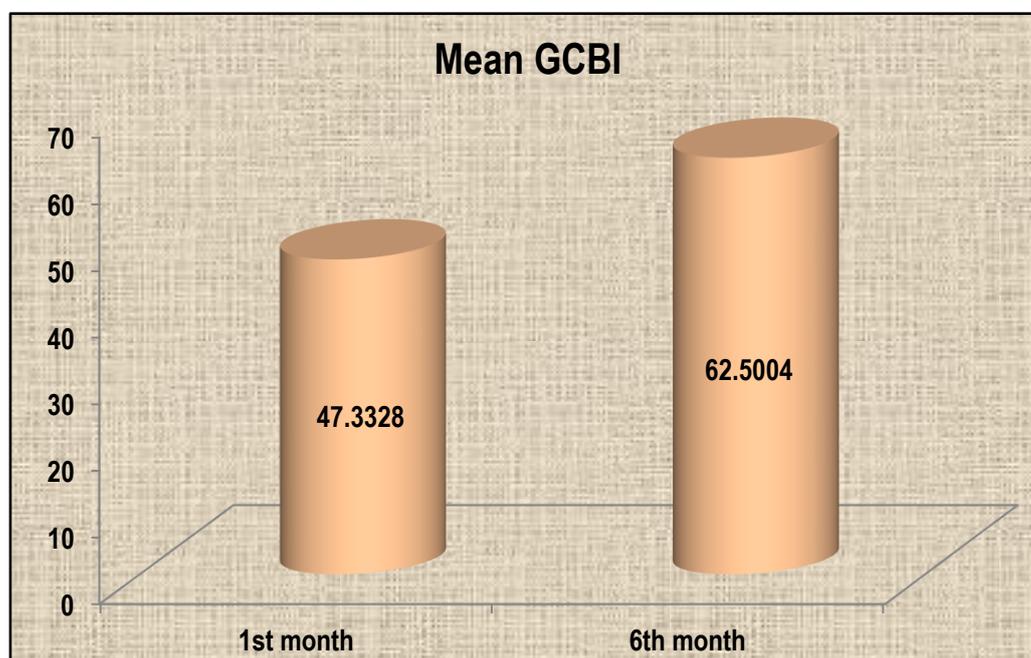


Fig 2: Mean GCBI

DISCUSSION

In our study on 50 patients, study population had lesser incidence of recurrent throat infection, chronic throat infection and severe throat infection. Patients had significantly lesser complaints of recurrent throat infection with 48 % responding that they had no problem at all at the end of 6 months after surgery while 52 % responding to be having mild problem. There was a statistically significant reduction in the incidence of recurrent and severe throat infection after adenotonsillectomy during our follow-up period. When asked regarding the severity of throat infection during postoperative follow up at the end of six month 58% patients responded that they had very mild sore throat, while 24% said they had no severe sore throat infection at all, which was

again statistically significant. This result is consistent as documented by Paradise et al, who studied the efficacy of tonsillectomy for recurrent throat infection in 187 children in randomized as well as nonrandomized trials. They found that tonsillectomy with or without adenoidectomy was unequivocally effective for two years and probably for one more year in reducing the frequency and severity of episodes of throat infection.⁷ When the parents of our study population were asked regarding the health care utilization after adenotonsillectomy there was a statistically significant decrease in the health care utilization after surgery during our follow-up period. In a similar study conducted by Nikakhlagh et al to evaluate the benefits, impact, and overall

efficacy of tonsillectomy or adenotonsillectomy on quality of life in patients, doctor visits decreased from 5.6 (± 5.7) to 0.4 (± 0.6) postoperatively which was statistically significant.⁸

When parents of our patients were asked regarding work performance in school and time off school, preoperatively 44% had fairly bad problem and 36% patients responded that they had severe problem. During postoperative follow up at the end of six month 68% of parents responded that their child had very mild problem, while 28% said they had no problem with school work at all, which was again statistically significant. This result is in accordance with the study by Nikakhlagh et al who documented that, following tonsillectomy and/or adenotonsillectomy amount of time taken off work or school due to sore throat reduced from a mean of 8.78 (± 6.75) to 0.61 (± 1.39) days postoperatively which was significant.⁸

In our study on 50 patients, when parents were asked regarding nocturnal breathing preoperatively 34% parents responded that their children had fairly bad problem 68% patients responded that they had severe problem. During postoperative follow up at the end of six month 42% parents responded that children had very mild problem, while 58% said they had no problem at all.

In our study, when parents were asked about swallowing and food intake during postoperative follow up at the end of six month, 66% patients responded that they had very mild problem, while 34% said they had no problem at all. Our results showed statistically significant improvement in swallowing problems. In a study conducted by Salman N et al they documented Preoperative IGF-1 (ng/mL) and ghrelin (pg/mL) levels were significantly higher in the adenotonsillitis patients than in the controls. The preoperative height and weight SDS values of the patients were lower than those of the controls. The patients' postoperative height and weight SDS values were significantly higher than their preoperative. The mean postoperative IGF-1 levels also were significantly higher than preoperative levels. Plasma IGF-1 levels are lower in malnourished children, and plasma ghrelin levels are decreased after acute oral food intake and are increased in cachexia and fasting. Therefore, increased serum IGF-1 levels, height and weight SDS values, and decreased ghrelin levels detected postoperatively showed adequate development of children and adequate oral intakes. This study like our study shows significant improvement in oral intake.⁹

Tonsil and Adenoid Health Status Instrument (TAHSI), comprises of 9 subscales. The maximum attainable score for an individual is 36 and minimum is zero. In our study on preoperative assessment the maximum score attained was 31 and minimum was 21 with a mean score of 25.24. During postoperative follow up at the end of first month the maximum score attained was 15 and minimum score was 8 with a mean score of 11.48. During postoperative follow up at the end of sixth month the maximum attained score was 11 and minimum was 5 with a mean score of 7.58. In our study there was a statistically significant decrease in scores during follow up period signifying improved health status. Goldstein et al, conducted a multicenter, prospective observational outcomes study to describe changes in disease-specific and global quality of life (QOL) for children with recurrent or chronic tonsillitis at 6 months and 1 year after tonsillectomy using two validated instruments, the Tonsil and Adenoid Health Status Instrument (TAHSI) and the Child Health Questionnaire-PF28 (CHQ-PF28). Ninety-two children, of mean age (SD) 10.6 (3.4) years, enrolled

with follow-up available for 58 children at 6 months and 38 children at 1 year. The children showed significant improvements in all subscales of the TAHSI including airway and breathing, infection, health care utilization, cost of care, eating and swallowing (all $P < 0.001$), and behavior ($P = 0.01$).¹⁰ Our result is consistent with the above results.

In our study The Glasgow Children's Benefit Inventory (GCBI), which has 24 questions on the consequences of a specified intervention on various aspects of the child's day-to-day life, without reference to any specific symptoms was used to assess the quality of life after adenotonsillectomy. The inventory was used at the end of the first and six month after surgery. Parents documented improvement in majority of the GCBI subscales. No change was documented in 7 subscales: things they do, behavior, self-consciousness, embarrassment, self-esteem, confidence and self-care. Mean GCBI score at the end of the first month is 47.3328 and at the end of sixth month is 62.5004. The mean difference between first and sixth month is -15.1676. p value for above data is less than 0.0001 which is statistically very highly significant.

In a similar study conducted by Schwentner to assess the impact of adenotonsillectomy on children's quality of life in total of 447 children who underwent adenotonsillectomy for the indication of chronic tonsillitis mean GCBI-total score was 21 +/- 19 (-8 to 77), showing an improvement in all GCBI subscales. They concluded that tonsillectomy has a positive impact on children's Health related quality of life.¹¹

SUMMARY

In our study, a total of 50 patients with adenotonsillitis underwent powered adenoidectomy and tonsillectomy under general anesthesia. Physical health and quality of life at 1st and 6th month of follow-up was compared with the preoperative status. All patients documented a significant improvement in physical health as documented by statistically significant decrease in TAHSI score and improvement in 4 subscales of GCBI, food, cold, visit to doctor and need for medication during the postoperative follow-up period.

All patients also reported a statistically significant improvement in school performance as documented by decrease in score for work performance subscale of TAHSI and improvement in 5 subscales of GCBI, fun with friends, learning, and absence from school, concentration, and leisure during the postoperative follow-up period. Our patients also reported a statistically significant improvement in sleep patterns as documented by decreased score for nocturnal breathing subscale of TAHSI and improvement in 2 subscales of GCBI, sleep and irritability during the postoperative follow-up period. We conclude that adenotonsillectomy improves overall quality of life in children with adenotonsillitis as documented by decrease in total score of TAHSI and increase in summated GCBI score.

CONCLUSION

Tonsillectomy definitely leads to an improvement in the Quality of life in children and all parents were extremely satisfied with the surgical outcome. Almost all the parents reported decrease in visits to the doctor and in antibiotic prescription but there were no significant changes observed in the emotional aspects and personality of the children.

REFERENCES

1. Florencia Escarrá, M.D Santiago M. Vidaurreta Assessment of quality of life before and after an adenotonsillectomy among children with hypertrophic tonsils and/or adenoids Arch Argent Pediatr 2015;113(1):21-27 / 21.
2. Derkay CS, Darrow DH, LeFebvre SM. Pediatric tonsillectomy and adenoidectomy procedures. Aorn J 1995;62:887-904; quiz 906-810.
3. Younis RT, Lazar RH. History and current practice of tonsillectomy. Laryngoscope 2002;112:3-5.
4. Koempel JA, Solares CA, Koltai PJ. The evolution of tonsil surgery and rethinking the surgical approach to obstructive sleep-disordered breathing in children. J LaryngolOtol 2006; 120:993-1000.
5. De Serres LM, Derkay C, Sie K, Biavati M, Jones J, Tunkel D, et al. Impact of adenotonsillectomy on quality of life in children with obstructive sleep disorders. Arch Otolaryngol Head Neck Surg. 2002 May;128(5):489-96.
6. Bhattacharjee R, Kheirandish-Gozal L, Spruyt K, Mitchell RB, Promchiarak J, Simakajornboon N, et al. Adenotonsillectomy outcomes in treatment of obstructive sleep apnea in children: a multicenter retrospective study. Am J Respir Crit Care Med. 2010 Sep; 182(5):676-83
7. Paradise JL, Bluestone CD, Bachman RZ, Colborn DK, Bernard BS, Taylor FH et al. Efficacy of tonsillectomy for recurrent throat infection in severely affected children. New England Journal of Medicine. 1984; 310: 674-83.
8. Nikakhlagh S, Rahim F, Boostani H, Shirazi STB, Saki N. The Effect of Adenotonsillectomy on Quality of Life in Adults and Pediatric Patients. Indian J Otolaryngol Head Neck Surg. 2012 Jun; 64(2): 181-183.
9. Salman N, Ozturk G, Akin I, Kilicaslan S, Demirel F, Delibas N The effect of adenotonsilectomy on ghrelin, leptin, IGF-1 levels and growth parameters in children with adenotonsillar hypertrophy. J Pediatr Endocrinol Metab. 2014 Sep;27(9-10):885-90.
10. Witsell, David & J Orvidas, Laura & Stewart, Michael & T Hannley, Maureen & M Weaver, Edward & Yueh, Bevan & L Smith, Timothy & Goldstein, Nira. (2008). Quality of life after tonsillectomy in adults with recurrent or chronic tonsillitis. Otolaryngology--head and neck surgery: official journal of American Academy of Otolaryngology-Head and Neck Surgery. 138. S1-8. 10.1016/j.otohns.2007.08.015.
11. Schwentner I, Schmutzhard J, Schwentner C, Abraham I, Höfer S et al: The impact of adenotonsillectomy on children's quality of life. ClinOtolaryngol. 2008 Feb;33(1):56-9.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Silu M, Deepchand, Samor V, Gupta G. Impact on Quality of Life After Adenotonsilleomy in Pediatric Patients. Int J Med Res Prof. 2018 Mar; 4(2):175-80.

DOI:10.21276/ijmrp.2018.4.2.039