



Parental satisfaction with post-adenotonsillectomy in the developing world

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SUMMARY

Aim/background: Tonsillectomy with or without adenoidectomy is one of the most commonly performed surgical procedures by the otolaryngologists in the pediatric population. The aim of this study is to evaluate parental expectation and satisfaction following tonsillectomy with or without adenoidectomy. **Materials and methods:** Hospital-based prospective study of all consented parents whose children had tonsillectomy with or without adenoidectomy over a period of 13 months (February 2008 to February 2009) using a cross-sectional method. Pre- and post-surgical questionnaire-based Interview was conducted for them and information retrieved included biodata, pre- and post-surgical symptoms on follow-up in the clinic of obstructive sleep apnoea, snoring, mouth breathing and rhinorrhea, parental expectation and satisfaction after surgery. All data were entered into statistical data using SPSS version 11 and analyzed and the results are presented in tables and figures.

Results: A total of 29 patients had adenotonsillar surgery, who were within the age range of 1.50–14 years with a mean age of 5.50 (SD = 4.06 ± 0.75). M:F ratio was found to be 3:1 (22 males and 7 females). Parents were satisfied with the expected outcome in terms of symptoms post-operatively in 96.6% while only one 3.4% were not satisfied.

Conclusion: Majority of the parents (96.6%) were satisfied with the expectation of immediate resolution of symptoms; however, obstructive adenotonsillar hypertrophy remains an important problem to be solved to achieve total parental satisfaction in adenotonsillar operations.

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1. Introduction

Most parents are familiar with tonsils and adenoids as they or their children might have had tonsillitis or sore throats, snoring, persistent nasal obstruction, mouth breathing or difficulty with breathing, or may know someone who has undergone a tonsillectomy or adenoidectomy [1]. Various literatures had focused on the efficacy of tonsillectomy for the two most important indications (recurrent febrile tonsillitis [2,3] and obstructive sleep apnoea [4–8]). Despite the fact that the tonsillectomy originated in ancient times in 1000 BC [9] and it figures prominently in the list of ‘useless operations’ [10], it is still one of the most commonly performed surgical procedures by otolaryngologists in the pediatric population [11]. Previous study on satisfaction was related to patients–staff relationship undertaken in a Nigerian hospital [12], in which patients were satisfied.

There is evidence that satisfaction is an important measure of the outcome, both because it is related to the improvement in health status and it is useful in assessing patterns of communica-

tion [13–15]. This pattern of communication is particularly important in pediatric care, because the quality of care has to satisfy both the children and their accompanying parents [13,14].

Surgery is considered to be appropriate if the benefit to the patient clearly outweighs the risk and the measure of the benefits is the post-operative improvement in the preoperative problems as seen in patients with adenotonsillar hypertrophy who had tonsillectomy with or without adenoidectomy or adenoidectomy with or without tonsillectomy.

The aim of the study is to evaluate parental expectation and satisfaction post-tonsillectomy with or without adenoidectomy in their children compared to their preoperative symptoms.

2. Materials and methods

This is a hospital-based prospective study to assess the expectation and satisfaction of all consented parents whose children had tonsillectomy with or without adenoidectomy over a period of 13 months from February 2008 to February 2009 after approval from the hospital authorities using a cross-sectional method. A written and understood informed consents were obtained from both the parent and/or the child (adolescent) that states whether or not they participated in the study that would in no way affect the care of their child, that their assessment/child would not become known to the third party, that they agreed to

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Table 1
Demography.

Demographic data	Frequency (%)
Total number of patients	29
Age range	1.5–14 years
Mean age	5.50 years
Median age	3.00 years
Modal age	3.00 years
Standard deviation	4.06 ± 0.75
Educational status of parents	
Non-formal education	10.3%
Primary	17.2%
Secondary	37.9%
Tertiary	34.5%

complete a follow-up questionnaire in the clinic 6 weeks after surgery and also consent to scientific evaluation of their children's data. Questionnaire-based Interview was conducted for them and information retrieved included biodata, pre-surgical clinical symptoms, post-surgical symptoms on follow-up in the clinic, their expectation and satisfaction after surgery. The grading of symptoms varied from non-recurrence of the symptoms (rhinorrhea, recurrent sore throat, snoring, refusal of feeds, noisy breathing, mouth breathing, apnoea), occasional, frequent and very frequent. The grading are occasional occurrence of symptom which is 1–3 episodes lasting less than 1 week within 6 weeks, frequent is 4–6 episodes lasting between 2 and 4 weeks and very frequent is more than 6 episodes lasting more than 4 weeks.

These symptoms were in addition associated with number of days the child could not go to school and were graded as occasional being absence between 1 and 3 days within the 6 weeks, frequent is absence of 4–6 days within 2–4 weeks over 6 weeks then more

than 6 days absence from school lasting more than 4 weeks over the study period as very frequent and the use of over the counter antibiotics to relieve the above symptoms were also graded as above pre- and post-operatively, and compared. Excluded were children whose parents did not consent and those with incomplete responses as graded above.

All information were entered into statistical data using SPSS version 11, analyzed and the results are presented in tables and figures.

3. Results

A total of 30 patients had adenotonsillar surgery but data could not be completed on one of the children which was the only mortality recorded, thus 29 patients form the basis for the study with a mean age of 5.50 (SD = 4.06 ± 0.75). The age range was from 1.50 to 14 years with modal age being 3.00 years, which constituted about 24.1% of the study population. Male to female ratio was 3:1 (22 males and 7 females). The parental level of education showed that majority (37.9%) had secondary education as shown in Table 1.

The specific pre- and post-operative symptoms of the patients as observed by the parents varied; however, the commonest and worst symptoms were rhinorrhea, recurrent sore throat, snoring, refusal of feeds, noisy breathing, mouth breathing and the telling effects were loss of school days and recurrent use of both over the counter antibiotics and also prescribed antibiotics. The grading varied from non-recurrence of the symptoms, occasional, frequent and very frequent (Tables 2 and 3). The parental likely symptoms for which their child had surgery from which they expected relieve were listed and majority of the parents listed snoring in 100%, interruption of sleep in the night (sleep apnoea) in 93.2%, mouth breathing in 79.3%, nasal obstruction and discharge in 65.5% others

Table 2
Specific preoperative symptoms.

Symptoms	Non	Occasional	Frequent	Very frequent	Total
Sore throat	2 (2.9)	7 (24.1)	6 (20.7)	14 (48.3)	29 (100)
Dysphagia or refusal of feeds	6 (20.7)	4 (13.8)	14 (48.3)	5 (17.2)	29 (100)
Snoring	2 (6.9)	2 (6.9)	17 (58.6)	8 (27.6)	29 (100)
Sleep apnoea	9 (31.0)	1 (3.4)	12 (41.4)	7 (24.1)	29 (100)
Rhinorrhea	9 (31.0)	1 (3.4)	12 (41.4)	7 (24.1)	29 (100)
Mouth breathing	5 (17.2)	2 (6.9)	12 (41.4)	10 (34.5)	29 (100)
Coughing	14 (48.3)	7 (24.1)	8 (27.6)	-	29 (100)
Weight loss	29 (100)				29 (100)
Noisy breathing	8 (27.6)	4 (13.8)	16 (55.2)	1 (3.4)	29 (100)
Hearing loss	28 (96.6)	1 (3.4)			29 (100)
Otorrhea	28 (96.6)	-	1 (3.4)		29 (100)
Speech changes	24 (82.8)	3 (10.3)	2 (6.9)		29 (100)
Daily activity loss including schools preoperative		3 (10.3)	17 (58.7)	9 (31.0)	
Antibiotic use preoperative			12 (41.4)	17 (58.6)	

Table 3
Specific post-operative symptoms observed 4–6 weeks post-surgery.

	Non	Occasional	Frequent	Very frequent	Total
Sore throat	26 (89.7)	3 (10.3)	-	-	29 (100)
Dysphagia or refusal of feeds	25 (86.2)	4 (13.8)			29 (100)
Snoring	18 (62.1)	11 (37.9)			29 (100)
Sleep apnoea	25 (86.2)	4 (13.8)			29 (100)
Rhinorrhea	25 (86.2)	4 (13.8)			29 (100)
Mouth breathing	26 (89.7)	3 (10.3)			29 (100)
Coughing	22 (75.9)	6 (20.7)	1 (3.4)		29 (100)
Weight loss	29 (100)				29 (100)
Noisy breathing	28 (96.6)	1 (3.4)			29 (100)
Hearing loss	29 (100)				29 (100)
Otorrhea	29 (100)				29 (100)
Speech changes	29 (100)				29 (100)
Daily activity loss including schools post-operative	1 (3.4)	4 (13.8)	24 (82.8)		
Antibiotic use post-operative	23 (79.3)	6 (20.7)			

Table 4
Parental likely indication for surgical intervention.

Indications	Frequency (%)
Nasal	
Nasal obstruction and discharge	19 (65.5)
Persistent nasal discharge	1 (3.40)
Persistent nasal obstruction	2 (6.90)
Nasal obstruction and speech changes	1 (3.40)
Otological	
Persistent hearing loss	1 (3.40)
Pharyngeal	
Snoring	29 (100)
Mouth breathing	23 (79.3)
Unilateral tonsillar enlargement	1 (3.4)
Peritonsillar abscess	–
Recurrent tonsillitis	3 (10.2)
Obstructive sleep apnoea	27 (93.2)
Parental perceptual outcome	
Satisfied	28 (96.6)
Not satisfied	1 (3.4)

Table 5
Expectation.

Do you expect resolution of problems after surgery?	Yes: 25 (86.2)	No: 1 (3.4)	I do not know: 3 (10.2)
How long after surgery?	Immediately: 26 (89.7)	Few weeks: 2 (6.9)	Few months: 1 (3.4)

as in Table 4. About 86.2% expects resolution of the problems after surgery (Table 5).

Parents were satisfied with the expected outcome in terms of symptoms post-operatively in 96.6% while only one 3.4% was not satisfied as the preoperative symptoms which were worse post-operatively.

4. Discussion

Satisfaction only occurs when services meet or exceed the customer's expectations or perceptions [16]. For continued quality improvement, it is therefore imperative that health care providers know the customers' perceptions and expectations. Evaluation of quality of health care remains complex and challenging; a process which nowadays cannot be ignored [16]. A total quality management used in many health care organizations emphasizes the use of outcome indicators as measures of quality. Adenotonsillectomy is one of the most frequently performed surgical procedures in childhood [17] as seen in our data above and at the same time it is one of the most controversial operations. In the present study an attempt was made to evaluate the parents' expectations before tonsillectomy and their assessment of the benefit of adenotonsillectomy 4–6 weeks after surgery in a non-selected consecutive group of pediatric adenotonsillectomies.

Parental educational status was found to be higher among the parents of the subjects as more than 70% of the parents have secondary education which further support the understanding of the expectation and satisfaction of the parents and outcome of decision. Previous studies have claimed that parents' satisfaction is based firmly on their expectations and that those expectations vary substantially as a function of background and demographic factors [18]. Variability in parental expectations may explain higher satisfaction among those with low parental education levels which is not the case in our study. Lower parental education levels offering lower expectations is a subject of another study.

The efficacy of adenotonsillectomy was confirmed by comparing the preoperative symptoms with the post-operative symptoms. Paradise et al. [2] succeeded in verifying the efficacy of

tonsillectomy for children with frequent tonsillitis in a randomized study. In our study the number and severity of acute throat infections dropped significantly after tonsillectomy with the number of patients having symptoms of sore throat dropping from 93.1% to 10.3% patients post-surgery. This is a relevant improvement, even if one takes into account the number and severity of episodes of tonsillitis recorded are lower, however Paradise et al. [2] have pointed out, 'the question whether documented histories of recurrent throat infections are more predictive than those undocumented is unanswered'. The reduction in the severity of nasal discharge, obstruction, mouth breathing in the post-operative compared to preoperative was part of the criteria considered by parents to assess their satisfaction. Our observation that about 86.2% of the children eat better after adenotonsillectomy compared to 20.7% pre-adenotonsillectomy coincides with reports given in the literature [19,20]. However no subjective change in weight of our patient was observed by the parents compared to other studies that could objectively demonstrate weight gain after tonsillectomy [3,4,20,21].

The most common reason for adenotonsillectomy from our study is obstructive tonsils, which is similar to the findings in other studies [19,22–24]. This includes children with a verified obstructive sleep apnoea syndrome, children who snores, sleep poorly and suffer from daytime fatigue or irritability without documented occurrence of apnoea, as well as children who eat poorly due to their enlarged adenoid and tonsils or have a hot potato voice [23]. The golden standard for verifying obstructive sleep apnoea is polysomnography which is not available in our center thus confirmation by polysomnographic studies cannot be performed in our suspected cases. While snoring alone correlates poorly with an obstructive apnoea syndrome, the correlation is good in the case of regularly observed breathing disorders [25,26]. Both obstructive sleep apnoea and the complex of symptoms including snoring, restless sleep, and daytime fatigue can largely be reduced to the barest minimal or eliminated by adenotonsillectomy based on our report, in which there is reduction in the severity of symptom and this is similar to other studies elsewhere [3–7,26,27]. These symptoms disappeared in 75.9–96.6% of our patients higher than the value from studies elsewhere [28]. The interruptions in breathing which are particularly worrisome for parents disappeared in 86.2% of the patients. Mortality recorded in the study was due to the aspiration in the morbid obese child of 3 years with body weight of 27 kg, poor developmental milestone (bisyllable speech, just walking with support and liquid diet).

Most adenotonsillectomies were performed because of recurrent acute tonsillitis and adenoiditis [2,17,16,22–24], obstructive symptoms of the nose with snoring. In 1930, Kaiser [29] could show that the number of annual occurrences of tonsillitis decreased significantly after tonsillectomy, which is similar to the findings in our study comparing pre- and post-surgical symptoms.

Previous literature suggests that tonsillectomies are performed for a single reason (e.g. recurrent infections, obstruction), our study shows that virtually all parents expect the tonsillectomy to remedy several 'problems' of cough, snoring, mouth breathing, poor appetite and recurrent throat infections all at once and immediately after surgery. Even if adenotonsillectomy is primarily performed to eliminate recurrent throat infections, parents also expect that the snoring or bad breath will disappear, the appetite improve or that the child will sleep better.

One might also speculate that parents who were not satisfied with the reduction of the episodes of sore throat were less willing to admit an improvement of other symptoms.

The present study was designed to demonstrate neglected assessment of the benefit of tonsillectomy by the parents. In our

study 96.6% of the parents were satisfied with the result of adenotonsillectomy and all the parents filled the questionnaire. Accordingly, the parents' satisfaction cannot be achieved by simply reducing the number or severity of throat infections alone (a result which can also be obtained by prescribing antibiotics). However the satisfaction is based on some of the additional symptoms that improved. This is illustrated by the fact that the non-satisfied parents reported almost the same benefit as the satisfied parents with regard to the reduction in the number of episodes of sore throat but only very limited success with regard to symptoms such as snoring, mouth breathing, recurrent nasal obstruction and discharge and chronic cough. Ten percent regretted that the tonsillectomy had not been performed earlier compared to study elsewhere that reported a higher value of 28% [30] but comparable with other studies [19,31].

In conclusion, the parental expectation of immediate resolution of key symptoms of obstructive sleep apnoea in 86.2% was met with 96.6% of parental satisfaction. The small sample size from a single setting is some of the limitations of this study and a multi-center study would have strengthened the outcome of this study.

Conflict of interest

No conflict of interest is declared.

References

- [1] C.W. Gross, S.E. Harrison, Tonsils and adenoids, *Pediatr. Rev.* 21 (3) (2000) 75–78.
- [2] J.L. Paradise, C.D. Bluestone, R.Z. Bachman, D.K. Colborn, B.S. Bernard, F.H. Taylor, et al., Efficacy of tonsillectomy for recurrent throat infection in severely affected children. Results of parallel randomized and non-randomized clinical trials, *N. Engl. J. Med.* 310 (1984) 674–683.
- [3] N. Roydhouse, A controlled study of adenotonsillectomy, *Lancet* 7627 (1969) 931–932.
- [4] G.J. Wiet, C. Bower, R. Seibert, M. Griebel, Surgical correction of obstructive sleep apnea in the complicated pediatric patient documented by polysomnography, *Int. J. Pediatr. Otorhinolaryngol.* 41 (1997) 133–143.
- [5] M. Zucconi, L.F. Strambi, G. Pestalozza, E. Tessitore, S. Smirne, Habitual snoring and obstructive sleep apnea syndrome in children: effects of early tonsil surgery, *Int. J. Pediatr. Otorhinolaryngol.* 26 (1993) 235–243.
- [6] C.L. Marcus, J.L. Carroll, C.B. Koerner, A. Hamer, J. Lutz, G.M. Loughlin, Determinants of growth in children with the obstructive sleep apnea syndrome, *J. Pediatr.* 125 (1994) 556–562.
- [7] J.R. Stradling, G. Thomas, A.R. Warley, P. Williams, A. Freeland, Effect of adenotonsillectomy on nocturnal hypoxemia, sleep disturbance, and symptoms in snoring children, *Lancet* 335 (1990) 249–253.
- [8] J.S. Suen, J.E. Arnold, L.J. Brooks, Adenotonsillectomy for treatment of obstructive sleep apnea in children, *Arch. Otolaryngol. Head Neck Surg.* 121 (1995) 525–530.
- [9] A. Drake, M.M. Carr, Tonsillectomy, otolaryngology and facial plastic surgery, in: A.J. Goldsmith, et al. (Eds.), *E-medicine Online Textbook*, 2003.
- [10] G. Domenighetti, B. Bisig, Tonsillectomy: a family-transmissible surgical procedure (letter), *Lancet* 346 (1995) 1376.
- [11] J.E. Dohar, J.A. Bonilla, Processing of adenoid and tonsil specimens in children: a national survey of standard practices and a five-year review of the experience at the Children's Hospital of Pittsburgh, *Otolaryngol. Head Neck Surg.* 115 (1996) 94–97.
- [12] A.K. Olusina, J.U. Ohaeri, M.O. Olatawura, Patient and staff satisfaction with the quality of in-patient psychiatric care in a Nigerian general hospital, *Soc. Psychiatry Psychiatr. Epidemiol.* 37 (2002) 283–288.
- [13] R. Fitzpatrick, Surveys of patient satisfaction. I. Important general considerations, *Br. Med. J.* 302 (1991) 887–889.
- [14] P.M. Whitty, I.H. Shaw, D.R. Goodwin, Patient satisfaction with general anaesthesia. Too difficult to measure? *Anaesthesia* 51 (1996) 327–332.
- [15] K.J. Kvaener, M.C. Moen, O. Haugeto, I.W.S. Mair, Paediatric otolaryngology—a parental satisfaction study in outpatient surgery, *Acta Otolaryngol. Suppl.* 543 (2000) 201–205.
- [16] I. Aydin Erden, A. Gulsun Pamuk, T. Ocal, U. Aypar, Parental satisfaction, *pediatric day surg. M. E. J. Anesth.* 18 (6) (2006) 1113–1121.
- [17] C.S. Derkay, Pediatric otolaryngology procedures in the United States: 1977–1987, *Int. J. Pediatr. Otorhinolaryngol.* 25 (1993) 1–12.
- [18] R. Fielding, A. Hedley, L. Cheany, A. Lee, Methods of surveying patients' satisfaction. Patients' satisfaction is based firmly on their expectations, *Br. Med. J.* 314 (1997) 227.
- [19] R.L. Blair, W.S. McKerrow, N.W. Carter, A. Fenton, The Scottish tonsillectomy audit. The Audit Sub-Committee of the Scottish Otolaryngological Society, *J. Laryngol. Otol.* 20 (1996) 1–25.
- [20] B.J. Conlon, M.J. Donnelly, D.P. McShane, Tonsillitis, tonsillectomy and weight disturbance, *Int. J. Pediatr. Otorhinolaryngol.* 42 (1997) 17–23.
- [21] J. Ahlqvist-Rastad, E. Hultcrantz, H. Melander, H. Svanholm, Body growth in relation to tonsillar enlargement and tonsillectomy, *Int. J. Pediatr. Otorhinolaryngol.* 24 (1992) 55–61.
- [22] Ch. Helmus, Tonsillectomy and adenoidectomy in the 1 and 2-year-old child, *Laryngoscope* 89 (1979) 1764–1771.
- [23] C.D. Bluestone, Current indications for tonsillectomy and adenoidectomy, *Ann. Otol. Rhinol. Laryngol.* 101 (1992) 58–64.
- [24] R.M. Rosenfeld, R.P. Green, Tonsillectomy and adenoidectomy: changing trends, *Ann. Otol. Rhinol. Laryngol.* 99 (1990) 187–191.
- [25] R. Brouillette, D. Hanson, R. David, L. Klemka, A. Szatkowski, S. Fernbach, et al., A diagnostic approach to suspected obstructive sleep apnea in children, *J. Pediatr.* 105 (1984) 10–14.
- [26] P. Nieminen, U. Tolonen, H. Lopponen, J. Luotonen, K. Jokinen, Snoring children: factors predicting sleep apnea, *Acta Otolaryngol. (Stockh.)* 529 (1997) 190–194.
- [27] C. Guilleminault, R. Winkle, R. Korobkin, B. Simmons, Children and nocturnal snoring: evaluation of the effects of sleep related resistive load and daytime functioning, *Eur. J. Pediatr.* 139 (1982) 165–171.
- [28] S.R. Mawson, P. Adlington, M. Evans, A controlled study evaluation of adenotonsillectomy in children, *J. Laryngol. Otol.* 81 (1969) 777–790.
- [29] A. Kaiser, Results of tonsillectomy: a comparative study of 2200 tonsillectomized children with an equal number of controls, *J. Am. Med. Assoc.* 95 (1930) 837–842.
- [30] Markus Wolfensberger, Jacques-André Haury, Thomas Linder, Parent satisfaction 1 year after adenotonsillectomy of their children, *Int. J. Pediatr. Otorhinolaryngol.* 56 (3) (2000) 199–205.
- [31] B.J. Conlon, M.J. Donnelly, D.P. McShane, Improvements in health and behaviour following childhood tonsillectomy: a parental perspective at 1 year, *Int. J. Pediatr. Otorhinolaryngol.* 41 (1997) 155–161.