Quality of the Italian Websites for Parental Guidance on the Indications for Tonsillectomy in Children

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Abstract

Introduction   The quality of information on websites about tonsillectomy regarding the knowledge level may be low. Tonsillectomy is a surgical procedure to hypertrophy of the palatine and pharyngeal tonsils. So, it is an invasive procedure with possible complications, which creates insecurity in parents. Significantly, Internet searches have been increased to address possible health concerns, questioning the quality of websites about tonsillectomy.

Objective   To evaluate the readability, reliability, and comprehensiveness of the Italian websites dedicated to parental guidance regarding the indications for tonsillectomy in children.

Methods   The search engine _google.it_ was used to search the websites. The Gulpease index, which is a widely used readability formula ranging from 0 (difficult) to 100 (easy readability), was employed to evaluate these websites. The Health on the Net Code of Conduct (HONcode) was used to assess the quality of information, by taking ethical principles into account, with values ranging from 0 to 13. The content comprehensiveness of the web pages was assessed by assigning points ranging from 1 (very insufficient) to 5 (very satisfying) to each page. A final comparison with previous studies on tonsillectomy published on websites from other countries was performed.

Results   Fourteen Italian websites were selected, and the Gulpease index showed a mean average of 40.77 ± 8.45. The mean of the HONcode analysis was 6.00 ± 1.92, in which the principles with the poorest scores were _Attribution_ and _Update_. As far as the comprehensiveness of the websites is concerned, the resulting mean was 2.57 ± 0.77, in which _Indications_ was the topic with the highest mean, whereas _Benefits_ was the one with the lowest.

Conclusion   The Italian websites were characterized by a lower readability level, a middle position regarding ethical principles, and the same (insufficient) comprehensiveness of tonsillectomy when compared with websites from different countries.

Keywords
► internet
► patient portals
► patient information
► readability
► tonsillectomy

Introduction

Tonsillectomy is a surgical procedure performed in cases of hypertrophy of the palatine and pharyngeal tonsils; it may occur as a result of genetic influence[1] or immune responses.[2] Between 1999 and 2004, tonsillectomy represented 35.4% of the total otorhinolaryngologic surgeries performed in Italian children aged 2 to 11 years.[3] From 2002 to 2008, 14,770 cases were treated with surgery.[4] A comparison was made with other countries, such as the United States, where 737,000 tonsillectomies were performed in 2006,[5] the United Kingdom with 39,262 surgeries,[6] and Germany, where 54,441 surgical procedures were undertaken in 2014.[7]

Several indications and diagnoses for new surgical techniques have been recently proposed,[8] which take into consideration how the benefits may induce positive changes in the quality of life.[9,10] Although these indications and benefits may conflict with the existing literature,[11] information is available in international scientific journals aimed at all health practitioners and researchers. All the information needs to be carefully passed on to the general public, especially in the case of parents whose children have to undergo surgery.

Given that surgical intervention is an invasive procedure requiring general anesthesia with possible complications,[12] some parents who have children with an indication for a medical procedure might feel insecure. Searching online for information concerning the process, doubts about pre and postoperative care or risks associated with the surgery is common practice. Online searches could influence, to a certain degree, parents or guardians and their decisions about the procedures proposed in this respect.[13]

YouTube provides low-quality information about tonsillectomy to inform parents or guardians.[14] Recent research shows that the quality of the information available on the Turkish and American websites provides parents with poor knowledge about tonsillectomy.[15,16] Specific research on otitis media websites shows that a minimum high-school level of education is needed to understand their content,[17] which may prove problematic. It is, therefore, necessary to consider the grammatical legibility aspect when working on the content of websites destined for parental guidance on indications for tonsillectomy in children.[18]

This may explain the reason why people, who are interested in the subject of tonsillectomy, can find it difficult to search for adequate information online. Thus, it is convenient to properly filter available information for parents and guardians to allow the identification of more adequate sources on tonsillectomy in terms of content readability and reliability.

The aim of the present study was to evaluate the readability, reliability, and comprehensiveness of the Italian websites for parental guidance on indications for tonsillectomy in children.

Methods

The methodology used in this investigation consisted of three specific stages, namely collection, evaluation, and comparison of the selected websites. It is emphasized that the search for websites and analysis was performed by a judge, who has expertise in the subject on tonsillectomy and is fluent in the Italian language (*first and second stage*). The *third stage* consisted of comparison with publications from other countries on this subject, and it was performed by the team of five researchers involved in this study.

First Stage: Collection
First of all, *tonsillectomia* was the keyword selected for the online search on *Google.it* for the first semester of 2018. The first 10 pages from this search engine were consulted using predetermined descriptors.

As a result, specialized websites in the healthcare field were considered as the inclusion criteria and they were evaluated based on protocols addressing the study objectives. The exclusion criteria regarded scientific articles, YouTube videos, news websites, online discussion group forums, non-specialized websites/blogs in the healthcare field, and websites created by laypeople containing personal stories, which are not supported by evidence-based medicine.

Second Stage: Evaluation
The content of these websites was analyzed based on two protocols previously established in the existing literature, aimed at investigating the level of readability and ethical principle. Furthermore, the comprehensiveness of tonsillectomy was also assessed.

As the Flesch Reading Ease Score (FRES), which is an index used in several languages, was not available in Italian, the readability level was assessed by using the Gulpease index, defined by the Linguistic Pedagogical University Group of the University of Rome "La Sapienza"[19]. The Gulpease index considers two linguistic variables: the length of the word and the sentence in relation to the number of letters, as shown in the following formula:

$$89 + \frac{300 \times (\text{sentence number}) - 10 \times (\text{letter number})}{\text{word number}}$$

The result ranges from 0 (difficult) to 100 (easy readability). As far as the result interpretation is concerned, scores under 80 were considered to be difficult to read for those who only attended elementary school; 60 meant difficult to read for those who studied in high school and 40 are difficult to read for those with a higher education qualification.[20,21]

To evaluate ethical principles (reliability), the Health on the Net Code of Conduct (HONcode) was used,[20] attributing scores from 0 to 13; the higher the score, the better the website quality.[21] The items taken into account are listed below, in ►**Table 1**:

At the end of the second stage, rigorous expert judgment assessed the comprehensiveness of each website to determine whether the website content included the following topics:

Definition of tonsillectomy;
When it is indicated;
Risks;
Benefits;

Table 1 Ethical principles considered in the Health on the Net Code of Conduct (HONcode)[20]

ETHICAL PRINCIPLES	DEFINITION BY HEALTH ON THE NET CODE
Financial disclosure	Identify funding sources
Advertising policy	Clearly distinguish advertising from editorial content
Complementarity	Information should support the doctor-patient relationship
Authoritative	Indicate the authors' qualifications
Attribution	Cite the sources of published information
Transparency	Accessible presentation, accurate email contact
Updates	Respect the regular updates of websites

Preoperative recommendations;
Postoperative recommendations.

These topics were elaborated partially from the concepts in the DISCERN tool, in the second part, which is related to the quality of the information.[22] The possible scores, s according to this tool, were as follows: 1 (very insufficient), 2 (insufficient), 3 (regular), 4 (satisfactory) and 5 (very satisfactory). To standardize the score, the topics that should be addressed were designated following the current literature in the area. When all the specifics of each topic were addressed, the score was 5 (►Table 2).

Third Stage: Comparison of Worldwide Publications

The quality of the Italian websites was assessed by comparing results obtained in different studies published worldwide on the same topic. Four studies were found to be particularly suited for this comparison, and their details are listed below:

Accuracy of Internet Guidance on Pediatric Otolaryngology Procedures[15]

- Country of origin: Turkey
- Methods: DISCERN plus questionnaire (reliability/ethical principles and comprehensiveness assessment)

Quality and Readability of Web Sites for Patient Information on Tonsillectomy and Sleep Apnea[16]

- Country of origin: United States
- Methods: Flesch-Kincaid Reading Grade Level (FKGL) and Flesch Reading Ease Score (FRES) (readability assessment), DISCERN instrument (reliability/ethical principles and comprehensiveness assessment)

Table 2 Specificities of each comprehensiveness topic to websites evaluation[22,23]

COMPREHENSIVENESS TOPICS	SPECIFICITIES	NUMBERS OF DISCERN QUESTIONS
Definition of tonsillectomy	It is a surgical procedure performed under general anesthesia to remove the palatine/pharyngeal tonsils; the surgery is performed through the mouth; there is no incision in the skin; sutures/stitches are not always necessary, and do not need to be removed after they surgery.	*9 Does it describe how each treatment works?*
When it is indicated	Hypertrophy of the palatine/pharyngeal tonsils that cause daytime/nocturnal breathing difficulties; frequent throat infections; after a peritonsillar abscess or recurrent complaints of caseous tonsillitis.	*12 Does it describe what would happen if no treatment 1 is used?*
Risks	Risks of general anesthesia; bleeding during surgery and in the postoperative period. Soon after the surgery the following can occur: fever, vomiting that can cause dehydration, sore throat/ear pain.	*11 Does it describe the risks of each treatment?*
Benefits	Improved breathing, sleeping quality of life.	*10 Does it describe the benefits of each treatment? 13 Does it describe how the treatment choices affect 2 overall quality of life?*
Preoperative recommendations	Fasting	*9 Does it describe how each treatment works?*
Postoperative recommendations	Cold liquids and foods; normal diet one week after the procedure; one week of rest without physical activities or sun exposure.	*9 Does it describe how each treatment works?*

Comprehensiveness, Readability, and Reliability of Brazilian Web Sites Available for Lay People's Guidance on Adenotonsillectomy[22]

- Country of origin: Brazil
- Methods: Quality analysis (comprehensiveness assessment)

Online Tonsillectomy Resources: Are Parents Getting Consistent and Readable Recommendations?[23]

- Country of origin: Canada
- Methods: readability level (readability assessment) and quality analysis (comprehensiveness assessment)

Results

First Stage: Collection

Fourteen Italian websites were selected and analyzed in this study. Google Page rank was used as an algorithm to rank these websites in their search engine results, as shown below:

- Web site 01 - https://www.sergioalbanese.it/it/Per-i-pazienti-chirurgici/Informazioni-sugli-interventi/Tonsillectomia-informazioni.html
- Web site 02 - https://www.burlo.trieste.it/content/tonsille-adenoidi-perch-quando-operare
- Web site 03 - http://www.ospedalebambinogesu.it/tonsillectomia#.WyItvS1_rcs
- Web site 04 - http://www.medicina360.com/tonsillectomia.html (at the current date, the site is down)
- Web site 05 - http://www.medicina360.com/tonsillectomia.html
- Web site 06 - http://www.vincenzotarantino.it/tonsille.html
- Web site 07 - http://www.meyer.it/index.php/newsletter/febbraio-2017/2317-tonsille-ferme-dove-siete
- Web site 08 - https://francescopilolli.it/tonsillectomia/
- Web site 09 - http://www.carlogovoni.it/interviste/460-quando-togliere-tonsille
- Web site 10 - https://www.paginemediche.it/benessere/mamma-e-bambino/tonsille-infiammate-cosa-fare
- Web site 11 - https://www.amicidelbambinomalato.it/infezioni-tonsille-adenoidi/
- Web site 12 - http://www.rinolaringoiatria.com/gola/la-chirurgia-delle-adenoidi-e-delle-tonsille/
- Web site 13 - https://www.stefanodigirolamo.it/divulgazione/problematiche-respiratorie/
- Web site 14 - http://www.casadicurasanpaolo. it/tonsillectomia/

Second Stage: Evaluation

The Gulpease index, used in the first analysis, revealed that the mean of all websites was 40.77 ± 8.45 (►**Table 3**).

The second analysis consisted in the evaluation of ethical principles through the HONcode, whose mean was 6.00 ± 1.92 (►**Table 4**). *Advertising policy* (1.36 ± 0.63) and *Authoritative* (1.36 ± 0.50) obtained the highest scores, whereas *Attribution* (0 ± 0), and *Update* (0.71 ± 0.83) had the lowest ones.

Table 3 Gulpease index and interpretations of the readability level for each of the websites assessed

WEBSITE	GULPEASE INDEX	GULPEASE INTERPRETATION
W01	33.10%	* Higher education
W02	35.40%	* Higher education
W03	33.67%	* Higher education
W04	50.30%	** High school
W05	44.20%	** High school
W06	43.53%	** High school
W07	46.21%	** High school
W08	31.00%	* Higher education
W09	36.89%	* Higher education
W10	57.03%	** High school
W11	29.08%	* Higher education
W12	52.49%	** High school
W13	36.32%	* Higher education
W14	41.62%	** High school

Abbreviation: W, website.
(*) > 40 = difficult to read for those with a higher education qualification; (**) > 60 = difficult to read for those who studied in high school.

As far as the comprehensiveness of the websites is concerned, the mean obtained was 2.57 ± 0.77 (►**Table 5**). Among the topics, *Indication* obtained the highest mean (3.71 ± 1.14), whereas *Benefits* obtained the lowest (1.29 ± 0.73). The other means were: *Definition* (3.21 ± 1.58), *Risks* (2.93 ± 1.44), *Recommendations pre* (2.00 ± 1.30) and *Recommendations post* (2.29 ± 1.33).

Third Stage: Comparison of Worldwide Publications

The dates about this study and about other studies from different countries are in ►**Table 6**.

Discussion

In Italy, tonsillectomy is a surgical procedure frequently performed on children and, as such, it may contribute to parents' insecurity. The online information available for parents may influence their decisions about the surgery. It is necessary to improve the online information about tonsillectomy so as to provide adequate information to facilitate access to the general population.

Only 14 Italian websites were found that fit the inclusion criteria for this research as compared with 50 websites in the United States,[24] 60 in Turkey,[15] and 113 in the United Kingdom.[25] The online information about tonsillectomy provided by health associations and educational institutions reveal a lack of clarity, usefulness, and completeness. Therefore, these websites fail to properly deal with the most common surgery-related fears and doubts of both parents as well as the general population.

Although the Flesch Reading Ease Score (FRES) is not available in the Italian language, this did not impede the

Table 4 The Health of the Net Code of Conducts (HONcode) of each Italian website, the seven principles and their sum

	Financial disclosure	Advertising policy	Complementarity	Authoritative	Attribution	Transparency	Updates	HON Code total
W01	1	1	1	2	0	1	1	7
W02	1	1	1	1	0	1	1	6
W03	1	1	2	2	0	1	0	7
W04	0	2	0	1	0	1	0	4
W05	0	2	0	1	0	0	0	3
W06	1	1	1	2	0	1	1	7
W07	1	2	2	2	0	1	2	10
W08	1	1	1	2	0	1	1	7
W09	1	1	2	2	0	1	0	7
W10	0	1	1	1	0	2	2	7
W11	1	2	0	0	0	1	0	4
W12	1	1	0	1	0	1	0	4
W13	1	1	0	1	0	1	0	4
W14	1	2	0	1	0	1	2	7
Mean ± sd	0.79 ± 0.43	1.36 ± 0.50	0.79 ± 0,80	1.36 ± 0.63	0 ± 0	1.00 ± 0.39	0.71 ± 0.83	6 ± 1.92

Abbreviation: sd, standard deviation; W, website.
Advertising policy - 0 lowest score and 1 highest score; All others items - 0 l lowest score and 2 highest score; HONcode total - sum of seven items from 0 to 13.

Table 5 Comprehensiveness of each website regarding six topics and the mean

	Definition of tonsillectomy	When it is indicated	Risks	Benefits	Preoperative recommendations	Postoperative recommendations	Mean
W01	3	4	2	1	2	3	2.50
W02	5	5	1	1	3	1	2.67
W03	5	4	4	1	4	3	3.50
W04	2	4	4	1	3	3	2.83
W05	5	4	5	3	4	5	4.33
W06	4	5	5	3	1	2	3.33
W07	1	3	2	1	1	1	1.50
W08	5	4	3	1	1	3	2.83
W09	2	5	1	1	1	1	1.83
W10	4	4	2	1	1	1	2.17
W11	1	3	1	1	4	1	1.83
W12	4	2	3	1	1	1	2.00
W13	1	1	4	1	1	4	2.00
W14	3	4	4	1	1	3	2.67
Mean ± sd	3.21 ± 158	3.71 ± 1.14	2.93 ± 1.44	1.29 ± 0.73	2.00 ± 1.30	2.29 ± 1.33	2.57 ± 0.77

Abbreviation: W, website.
Comprehensiveness: 1 - very insufficient, 2–insufficient, 3–regular, 4–satisfactory, 5 - very satisfactory.

analysis of the readability, as it has a similar formula duly calibrated for Italian.[19] This type of analysis had already been used in a previous study to assess the readability of the current informed consent forms used in cardiology[26] and that of the online silicosis-relevant information.[27]

The Gulpease index employed in this study showed a low level of readability (40.77% ± 8.45), because of the difficulties encountered by the general public in understanding the online information about tonsillectomy (►Table 3). The Gulpease index and the FRES are indexes with similar units of measures, that is, the proximity to 100% represents better

Table 6 Quality of Italian websites and journal publications addressing the topic of tonsillectomy compared with worldwide websites on

	Readability level	Reliability/ethical principles	Comprehensiveness
Italian websites	Mean 40.77% index difficult for less educated people	Medium	Insufficient
Turkish websites (ACAR et al, 2014)	*	Mean 37.37 index (maximum 80)	Incomplete information
North American websites (CHI et al, 2017)	42.3% difficult level	Mean 55.1 index (maximum 80)	Incomplete information
Canadian websites (WOZNEY et al, 2017)	47% of websites with inadequate readability	*	Incomplete information
Brazilian websites (PIÑA et al, 2019)	*	*	Insufficient/very insufficient

Legend: (*) - It was not evaluated.

results; in this way, a comparison was made between Italian websites and those of other. In other countries, the level of readability was slightly higher than the in Italian websites, for example the United States (42.3%),[16] United Kingdom (43.8%),[25] and Canada (47%)[28] (►**Table 6**). On one hand, these results show a certain degree of interest on behalf of doctors, institutions, and hospitals alike to provide online information on tonsillectomy, but on the other hand the language used is too technical and similar to that normally used in any medical care setting.

The HONcode evaluation (►**Table 1**) revealed that the ethical principles of Attribution (references of information) and Update were not sufficient, as also shown in ►**Table 4**. A comparison was made with other studies that used DISCERN, a similar instrument to assess the quality of information of websites. As far as the ethical principles are concerned, the American websites scored better results,[16] whereas the Turkish websites obtained the lowest score according to the DISCERN tool.[15] It can be concluded that, from a comparative perspective, the Italian websites hold a middle-ranking position as compared with other countries in terms of ethical principles (►**Table 6**).

As shown in ►**Table 5**, the comprehensiveness of information available on the websites was incomplete. A similar tendency was confirmed by other studies whose findings revealed either the existence of incomplete online information about perioperative care and expectations of tonsillectomy[28] or incomplete information about tonsillectomy in general.[15,16,23]

These websites failed to emphasize the benefits associated with this surgery and, therefore, parents are doubtful about the importance of this treatment for their children as the risks and benefits of tonsillectomy are not properly addressed.

In addition, it is important that preoperative information is made available on websites. For example, a simple information about presurgical fasting can guarantee that the surgery will be performed on the scheduled date, thus avoiding compromising the doctor's as well as a potential waste of time and money on the family's end, who would then need to reschedule the surgery due to an unfulfilled recommendation.

The importance of the present study lies in the assessment of the impact of the quality of online information for laypeople in an attempt to determine whether adequate information is provided so as to properly alert patients and their caregivers. Furthermore, the findings of the current work can inform future research in creating an evidence-based medicine site characterized by satisfactory legibility and quality concerning ethical principles to provide people with detailed information about tonsillectomy.

Conclusion

The Italian websites showed a low readability level, which means they require a high level of education to understand their content. Low adherence to the ethical principles was observed in these websites, as they failed to provide adequate Attribution (information references) and Updated information. The findings revealed a medium coverage of the sites due to their lack of information about the benefits of the procedure.

The comparison between Italy and other countries revealed that the Italian websites were characterized by a lower readability level, a medium position regarding the ethical principles covered, and the same (insufficient) comprehensiveness of tonsillectomy websites. Italian health professionals should be aware of this situation to be able to alert parents and provide the necessary information on tonsillectomy in a personal and professional manner.

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