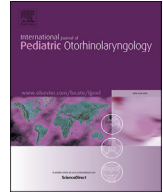




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# Design and validation of key text messages (Tonsil-Text-To-Me) to improve parent and child perioperative tonsillectomy experience: A modified Delphi study



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## ABSTRACT

**Objective:** Parents can struggle while providing perioperative tonsillectomy care for their children at home. Short message service (SMS) technology is an accessible and direct modality to communicate timely, evidence-based recommendations to parents across the perioperative period. This study focused on validating a SMS protocol, Tonsil-Text-To-Me (TTM), for parents of children undergoing tonsillectomy.

**Methods:** This study used a modified Delphi expert consensus method. Participants were an international sample of 27 clinicians/researchers. Participants rated level of agreement with recommendations across seven perioperative domains, derived systematically from scientific and lay literature. A priori consensus analysis was conducted using threshold criterion. A multidisciplinary team of local clinicians were also individually interviewed to consolidate text messages and implement recurrent suggestions. **Results:** In the modified Delphi panel, 30 statements reached threshold agreement (>3.0 of 4.0); recommendations surrounding diet (3.87) and hygiene (3.83) had the highest level of consensus, while recommendations regarding activity (3.42) and non-pharmacologic pain management (3.55) had the lowest consensus. The 30 statements reconfigured into 12 concise text messages. After further interviews with local clinicians, 14 final text messages were included in the SMS protocol to be sent two weeks preoperatively to one week postoperatively.

**Conclusion:** This study illustrates the development of TTM which is designed to deliver key sequential text messages at the optimal time during the perioperative setting to parents caring for their children who are undergoing tonsillectomy.

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## 1. Introduction

Tonsillectomy is one of the most commonly performed surgical procedures in North American children [1–3]. It is frequently performed as an outpatient or ambulatory procedure; thus, the onus of perioperative care largely resides with caregivers [4]. Unfortunately, caregivers often feel unprepared to manage common perioperative concerns and tasks, which can be attributed to a lack of information and psychosocial guidance [5]. Previous studies have

illustrated that only a fraction of medical information is accurately recalled by parents, with nearly half of the content remembered incorrectly [6,7]. For many parents, tonsillectomy is their child's first surgical procedure, making postoperative experiences such as nausea, vomiting, reduced oral intake, and uncontrolled pain particularly difficult to manage [2,4]. In fact, one third of parents utilize healthcare services in the 14-day postoperative period [5], and most emergency department and physician visits after tonsillectomy are treat and release cases which could be effectively managed at home [3].

Research has also shown that parents often feel anxious, helpless, and face difficulty knowing how to respond to their child's symptoms at home during the postoperative period [8–11].

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Consequently, parents frequently turn to the Internet for information and validation, and may make decisions based on outdated, inaccurate or incomprehensible information [12,13]. Contemporary literature reveals that online perioperative care recommendations often exceed recommended reading levels and are seldom supported by evidence based medicine [14–16]. Several other educational modalities for delivering perioperative care instructions have been investigated with nominal results. For instance, Crandall et al. provided an age appropriate pain education booklet to children preoperatively, but did not find any significant improvements in measures of anxiety, pain, oral intake, or sleep [17].

Text messaging, also known as short message service (SMS), is a simple, quick, and cost-efficient communication modality that has been shown to improve medical appointment adherence as well as treatment compliance [18]. Recent studies have illustrated that SMS can enhance both healthcare provider-patient relationships and patient education [2,19]. An estimated 3 billion people worldwide use mobile phones, including the majority of North American adults [18,20]. There is also a generational shift towards smartphone technology, as 97% of young adults reported using SMS in a recent Pew Research Center study [21]. Despite the pervasive use and positive potential of text messaging, the body of literature evaluating SMS as a component of perioperative education remains in its infancy. Opportunities to harness this technology for high frequency surgeries like tonsillectomy are particularly attractive. Informed by our previous study that reviewed recommendations on tonsillectomy-related websites [22], we performed a modified Delphi study to assess consensus-levels among healthcare providers on which key messages should be included in a perioperative SMS service, Tonsil-Text-To-Me (TTTM).

## 2. Materials and methods

We used a modified Delphi process, which is an interactive forecasting method that relies on a panel of experts. Usually, the experts respond to a questionnaire, which can be followed by subsequent questionnaires depending on the level of consensus achieved [23]. An online Delphi process was employed as it permits involvement of geographically distant and informed individuals, anonymity of responses, and lack of interaction among participants to prevent the views of prominent personalities from dominating the group [23]. Between August 2016 and January 2017, a three step top-down consensus analysis was used to establish the content for the TTTM service (see Fig. 1 for overview). Step one involved assembling a broad list of recommendations cited in current tonsillectomy online resources and contemporary academic literature.

Step two consisted of an online survey to gather expert opinion to identify recommendations with a high level of consensus. Step three extricated more detailed input from a panel of local healthcare providers through individual interviews; this group plans to pilot the TTTM service in the future.

### 2.1. Assembling a list of recommendations

An initial list of recommendations was identified in a review of online pediatric tonsillectomy resources published between 2005 and 2016; details of this entire process are published elsewhere [22]. All recommendations identified in the review with frequency effect size (FES) of at least 10% were included. This ensured that extreme outliers were screened out. In conjunction, a rapid scoping review of relevant literature in PubMed database using the keywords “pediatric”, “tonsillectomy” and a variable third search query using “recommendations”, “guidelines”, “care” and “perioperative” was performed on June 2017. From these two search strategies, a comprehensive list of 53 unique recommendations was compiled across seven perioperative domains: (1) pre-surgery preparation, (2) non-pharmacological pain management, (3) pharmacological pain management (4) hygiene, (5) diet, (6) activity, and (7) reasons to contact a healthcare provider.

### 2.2. Modified Delphi and interview processes

In round one, a panel of clinical experts was recruited from the American Society of Pediatric Otolaryngology (ASPO) Sleep Disordered Breathing (SDB) Focus Group using the public online survey domain SurveyMonkey®. The aim was to recruit clinicians with a rich understanding of perioperative care practices for tonsillectomy, rather than attempt sociodemographic representativeness. The ASPO SDB Focus Group was selected as they are composed of sub-specialty trained otolaryngologists with clinical interest and research expertise in SDB and tonsillectomy. Participants were sent a brief information sheet detailing the study via email, with a link to the survey containing the tonsillectomy recommendations identified above. In the online survey, experts were asked to either agree or disagree with the recommendation statements using a 4-point Likert scale, ranging from “not at all” to “quite a bit.” [24] Reminder emails for participation were not sent after the round one survey was distributed.

The analytic strategy was consistent with similar Delphi studies and recommended approaches to consensus analysis [25]. Survey responses were analyzed by calculating group means and standard deviations. For round one, recommendations that reached a high

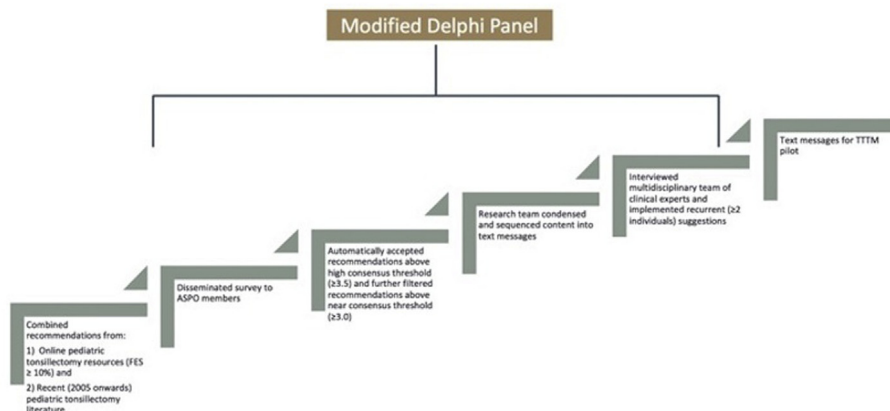


Fig. 1. Sequences to create Tonsil-Text-To-Me pilot text messages.

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