

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

International Journal of Africa Nursing Sciences

journal homepage: www.elsevier.com/locate/ijans

A rapid-cycle evaluation and adjustment of paediatric tonsillectomy primary caregiver education: Qualitative research in implementation science

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ARTICLE INFO

Keywords:

Health education
Consolidated framework for implementation research
Rapid-cycle evaluation and adjustment
Paediatric tonsillectomy

ABSTRACT

Background: Tonsillectomies are generally performed on paediatric patients in ambulatory settings. The children are discharged after a short post-operative period of three to four hours which results in their parents becoming the primary caregivers at home. It is imperative that they receive extensive preparation and guidance on how to prevent, identify and manage complications related to the surgery at home. In this study, rapid-cycle evaluation and adjustment in combination with qualitative research in implementation science were used to show how health education can be revised during implementation.

Aim: The study aimed to evaluate and adjust the paediatric tonsillectomy primary caregiver health education at a designated ambulatory hospital.

Design: A rapid cycle evaluation and adjustment of paediatric tonsillectomy health education was done through qualitative research in implementation science. It was guided by the contextual and interventional facilitators and barriers of the Consolidated Framework for Implementation Research. Two rounds of semi-structured interviews were conducted with parents as the primary caregivers of children and nurses who was directly involved with the health education.

Results: The process of evaluation and adjustment provided the researcher with valuable information that were applied to create a more compressive piece of primary carer health education. A guideline was created with current information to manage pain, eating practices and to limit post-operative haemorrhaging.

Conclusion: Rapid-cycle evaluation and adjustment in combination with qualitative research in implementation science is effective to revise health education processes and material.

1. Introduction

The tonsillectomy procedure is described as a frequently performed surgical procedure in the ambulatory setting (Mitchell et al., 2019; Wozney et al., 2017). It is routinely performed on paediatric patients to treat recurrent acute tonsillitis (Doganer, Rohrer, Aydogan, Thurston, & Saglam, 2015). The patients are discharged after four to six hours of observation post-operatively (Dwyer-Hemmings, 2018). While the tonsillectomy procedure is generally considered a low risk procedure it is however, associated with complications such as uncontrolled pain, nausea, vomiting, dehydration and bleeding. It is therefore important that primary caregiver education should focus on the prevention, identification and management of possible post-operative complications. It should be provided before the procedure and reinforced after

the surgery (Spector, Saint-Victor, & Kay, 2016).

2. Background

Performing surgical procedures such as tonsillectomies at ambulatory hospitals as an alternative to admission to acute hospitals contributes to decreased healthcare costs. It also provides paediatric patients with the opportunity to recover at home (Amoils, Chang, Saynina, Wise, & Honkanen, 2016; Wong, Hui, & Wee, 2016). The postoperative home-based period is often described as an uncertain period for primary caregivers (Waniga, Gerke, Shoemaker, Bourgoine, & Earanond, 2016). Before patients are booked for ambulatory surgery careful patient selection and proper communication regarding post-operative care and complications are required (Parah & Khan, 2019).

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<https://doi.org/10.1016/j.ijans.2024.100692>

Received 31 July 2023; Received in revised form 11 March 2024; Accepted 18 March 2024

Available online 19 March 2024

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Primary caregivers are often not equipped with the necessary knowledge to manage their children postoperatively at home (Yang et al., 2016). To improve their knowledge and skills they require an extensive educational program to guide them in identifying, preventing and managing complications (Arsenault, Blouin, & Guiton, 2016). The program should focus on possible complications such as nausea, vomiting, dehydration, oedema, uncontrolled bleeding and pain to reduce admissions to acute care hospital settings. The information should be accurate, accessible and easy to implement within the home environment. When health education is not provided by reputable sources, such as doctors and nurses, primary caregivers tend to refer to online information that is often not reviewed or validated (Vishnevetsky, Burrows, & Tan, 2018).

The first author had vast experience in ambulatory care and more specifically the care of children peri-operatively when tonsillectomies were done in the designated hospital. She noticed that primary caregivers struggled to identify, prevent and manage postoperative complications at home. The health education that were delivered to them did not provide the required support that they needed resulting in them seeking additional medical care.

The research was, therefore, directed to evaluate and adjust the paediatric tonsillectomy primary caregiver education in the designated ambulatory hospital.

3. Methods

3.1. Design

A rapid-cycle evaluation and adjustment of the paediatric tonsillectomy primary caregiver health education in the designated ambulatory hospital was done through a qualitative research approach in implementation science (Duvenage, 2022). Implementation research is a growing field for improving healthcare (Dako-Gyeke et al., 2020) and is often used to address a slow adoption of evidence-based practices

(Livingood, Bilello, Lukens-Bull, Smotherman, & Choe, 2020). In this study, it was used to evaluate and improve primary caregiver health education (Refer to Fig. 1).

In healthcare complex interventions are used to deliver care that is equally complex. In order to understand the factors that influence the implementation of interventions, systematic research is required. In this study, contextual and interventional factors that influenced the implementation of health education was studied to provide information for continuous improvement of the intervention. With rapid-cycle evaluation and adjustment the improvement does not happen after a period of time. It is done during implementation to ensure that improvement is done as and when required (Keith, Crosson, O'Malley, Cromp, & Taylor, 2017).

The process of rapid cycle evaluation and adjustment provided the researchers with useful tools to quickly conduct practical research within the opportunities and constraints that existed in the healthcare service (Johnson, Gustafson, Ewigman, Provost, & Roper, 2015). The Consolidated Framework for Implementation Research (CFIR) was used to ensure that the contextual and interventional factors that influenced the implementation of primary caregiver health education were explored and the intervention was adjusted. Damschroder and Lowery (2013:4) developed the framework from 19 theories in intervention and implementation research with the goal of integrating theories into one consolidated framework, to act as a guide for implementation research. The advantages of using a framework in a qualitative approach in a rapid-cycle evaluation and adjustment refer to the multiple cycles of primary qualitative data collection and analysis through a hybrid inductive/deductive approach (Skillman et al., 2019). Qualitative studies are performed when information surrounding a phenomenon is not extensive. In implementation research it is used when valid measures are not available and quantitative research is not feasible (Cohan, Crabtree, Damschroder, Hamilton, Heuttin-Roberts, Leeman, Padgett, Palinkas, Rabin, & Reisinger, 2018).

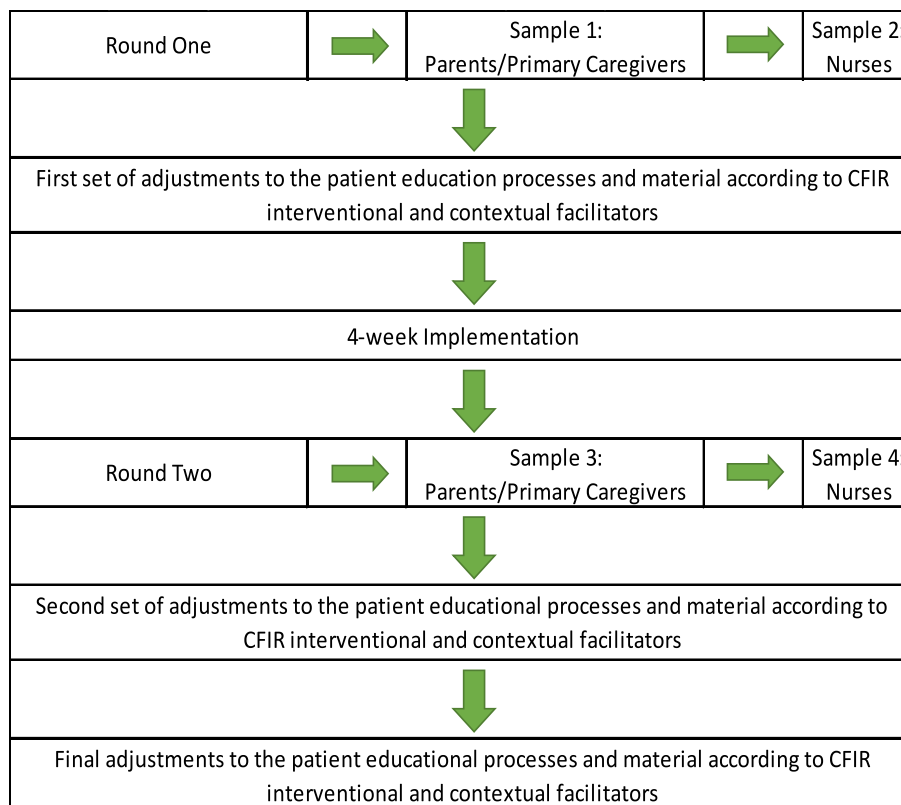


Fig. 1. The research methodology.

3.2. Research setting

This research was conducted in a day hospital in the Gauteng Province of South Africa that specialises in ambulatory procedures with no overnight stay facilities. The hospital is equipped with 32 beds of which 10 beds are reserved for paediatric patients. Ten professional nurses, two enrolled nurses and four enrolled nursing auxiliaries provide the nursing care. The professional nurses are responsible for the primary caregiver education to parents, and when parents are not available, other caregivers of children after the tonsillectomies and before discharge.

3.3. Participants

The parent/caregiver sample consisted out of parents/caregivers who had children who received tonsillectomies at the designated hospital and professional nurses who were involved in the health education of the parents. The researchers used purposive sampling to recruit participants who experienced the phenomenon and were willing to communicate their experiences with the researchers (Palinkas et al., 2015). The nurse participants were selected based on their level of participation in educating primary caregivers how to care for children who have had tonsillectomies. The parents/caregiver's sample was selected from a specific date and potential participants who agreed to take part in the study were approached. The nurse sample (N=10) remained the same in both rounds (Refer to Table 1) but the parents'/caregiver's sample varied from round one (N = 11) to round two (N=10). The parents/caregivers were all mothers of the children, married and had medical insurance. They have had no previous experience with post-tonsillectomy care at the time of the study.

3.4. Data collection and analysis

The data collection and analysis lasted from May 2020 to August 2021. During round one the first author evaluated the original paediatric tonsillectomy primary caregiver health education (Refer to Fig. 2) through semi-structured interviews based on the facilitators and barriers of the CFIR with eleven primary caregivers and ten nurse participants. The interviews were guided by the contextual and interventional barriers and facilitators that influence the implementation of interventions. After an inductive (thematic) and a deductive analysis according to the domains of the CFIR of the transcribed interviews, the first author adjusted the health education guideline. The staff from the designated ambulatory hospital implemented the improved guideline for a four-week period. During the second round of semi-structured interviews with ten primary caregivers and ten nurse participants who had been

Table 1
Nurse participant demographics (involved in both rounds of data collection).

Nurse participants	Professional qualification	Academic qualification	Years in position	Years in nursing
NP1	Professional nurse	Diploma	9	31
NP2	Professional nurse	Diploma	8	38
NP3	Enrolled nursing auxiliary	Certificate	3	18
NP4	Enrolled nurse	Certificate	7	9
NP5	Professional nurse	Diploma	10	30
NP6	Professional nurse	Diploma	7	20
NP7	Enrolled nursing auxiliary	Certificate	2 months	7
NP8	Enrolled nurse	Certificate	7	27
NP9	Professional nurse	Diploma	8	21
NP10	Enrolled nursing auxiliary	Certificate	3 months	7

involved in the health education during the four-week period, the improved guidelines were evaluated during individual semi-structured interviews according to the facilitators and barriers of the CFIR. Final adjustments were made. Refer to Fig. 3 for the improved guideline.

3.5. Ethical considerations

The Faculty of Health Sciences Research Ethics Committee of the University of Pretoria gave ethical clearance (reference no.111/2020) for the research, and approval for the study to be conducted at the designated ambulatory hospital was obtained from the hospital management. Participant confidentiality and privacy were respected. All participants gave written consent before participation, which was voluntary. The participants were informed about their rights to withdraw from the research at any time.

3.6. Trustworthiness of the findings

The researchers used the criteria of the "Big-Tent" model to ensure trustworthiness of the findings and integrity of the study (Tracy, 2010). A worthy topic was research. Due to the complications that children may develop after tonsillectomies at ambulatory hospitals, relevant research-based primary caregiver health education is required. In this study, the first author, supervised by two experienced researchers evaluated and adjusted the guidelines for paediatric primary caregiver health education. The researchers paid careful attention to detail in the data collection and analysis processes (rich rigor criterium) and used self-reflection to prevent biasness (sincerity criterium). They addressed the credibility criterium by engaging the participants in the evaluation of the guidelines for primary caregiver health education. The criteria of resonance and significance was achieved as the second set of primary caregiver participants benefited from the improved guideline. The researchers met the criterium of meaningful coherence by addressing the research question with an appropriate research methodology. Refer to the description of the ethical considerations for a description of the ways in which the first author addressed the ethical criterium of the "Big-Tent" model to ensure trustworthiness of the findings and integrity of the study.

4. Results of the first round of data analysis

The participants were not satisfied with the original health education. According to them it was not based on recent evidence and did not sufficiently involve the caregivers. The following categories apply:

4.1. The original health education did not meet the needs of the primary caregivers

The needs of the primary caregivers were not met due to a lack of detailed information regarding the prevention and management of complications. The original guidelines could also contribute to parental confusion and anxiety due to the use of medical terminology. The caregiver participants verbalised that the guideline did not provide them with sufficient and relevant information about possible complications and the management thereof: "No one told me (primary caregiver participant) anything about bleeding, I was not shown how to look in my children's throats. The mouth spray that was provided did not work. My children are three years old and they do not want to open their mouths for me to check and spray their throats" (Primary caregiver participant 1).

According to a nurse participant the original paediatric tonsillectomy health education lacked detailed explanations of potential complications: "No, I do not feel that the health education meets the needs of the patients, because some of the words are a bit difficult and the patients might struggle to understand" (Nurse participant 3).

THE TONSIL OPERATION (TONSILLECTOMY): Health education

RECOMMENDED FOOD
Ice cream, Jelly, Apples, Biscuits, Biltong, Give fluids liberally

AVOID
Bananas, Pineapples, Tomatoes, Avocado's and spices for 1st two weeks

PAIN
Post-operative pain can last up to 14 days. Very often all goes well for the first few days and on the fourth or fifth day the pain worsens. The best treatment for this is abundant food.
The patient will be discharged from hospital with a syrup or some tablets for pain- in addition we may find it desirable to add some antibiotics. Should you run out of it, the prescription may be repeated. No drugs should be repeated more often than four to six hourly. It is advisable to take it an hour before meals and at bedtime.
Please do not give any medicine containing aspirin!

GENERAL INFORMATION
It is essential that the patient should start eating as soon as possible after the operation and stop as a result of pain. Refraining from chewing and swallowing causes muscular spasm and infection which can be very painful.
Ear ache is very common and is almost always referred from the throat. Should it be accompanied by deafness, please notify doctor immediately.
For the first two days the patient may run a temperature. The pain medication should be sufficient to counteract this.
Yellow scabs in the throat do not mean infection, but are due to the healing.

HAEMORRHAGE
This complication may arise during the first two weeks, especially when the patient does not eat. Should this happen, give patient ice to suck and inform Doctor and take patient to the nearest hospital or clinic.

Please arrange immediately for a revisit post-operatively. Make a follow up appointment for three weeks, immediately after the patient leave the hospital.

Fig. 2. Original patient education.

4.2. The original health education did not encourage active parental involvement

To successfully facilitate active parental involvement, a good understanding of the pre- and post-operative recommendations to prevent and manage complications is necessary. The primary caregiver participants verbalised that they did not want to be passive recipients of information. By sharing their experiences and insecurities, active parental involvement would have been possible. They displayed an interest in taking part in the educational process. They expressed a desire to share their experiences in a group setting while receiving information from nurses: "I do think it is very nice to involve us as parents in the health education but I also know that it is not always possible. I think it would be very good if there was a nurse that could interact with the parents when they had questions" (Primary Caregiver Participant 8).

Without proper adjustment of the original health education, active parental involvement would not be possible: "As a parent, I was very unsure and felt like I was thrown into the deep side. I think it is a good idea to involve parents more" (Primary Caregiver Participant 4).

4.3. Detailed information based on recent evidence required

The main focus of the nurse participants was to provide the primary caregivers with up to date and relevant information. Health education should be evaluated and adjusted regularly to provide accurate, concise and detailed information. The nurse participants felt that there should have been a system in place to ensure that the original health education was kept current: "All patient education needs to be evaluated regularly to prevent it from becoming outdated. I believe that there should be a system in place that requires reevaluation of health education every two to four years. The information that is provided to parents and caregivers should be clear, simple and easy to read and patients should get this information during times

that they are not distracted" (Nurse Participant 5).

The primary caregiver participants appeared stressed during the hospitalisation of their children which resulted in them not paying attention when verbal health education was provided to them: "I think it is very important to evaluate and adjust health education because parents are stressful when it comes to their kids. They hear what information is provided to them but they do not always listen to the doctor's instructions. A revised up to date piece of information needs to be placed that parents can fall back on when they arrive home" (Nurse Participant 2).

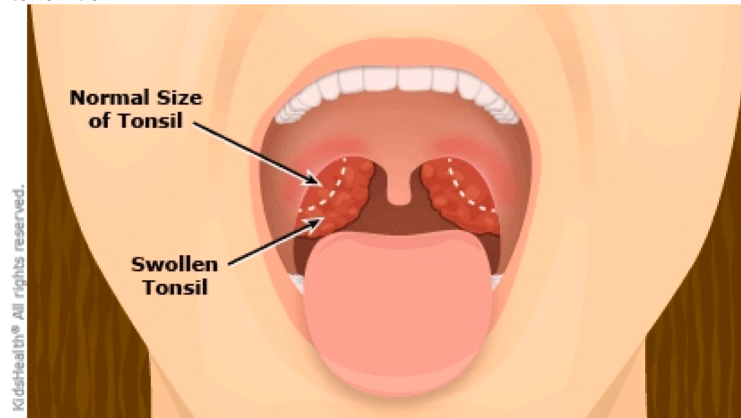
Detailed health education includes information about the prevention, identification and treatment of possible complications. The original guideline failed to provide adequate health education: "I would suggest that the health education be more detailed. My child developed a major complication that ended up in a severe infection and I was not allowed to speak to the doctor directly. I was only allowed to speak to the receptionist and she kept on reassuring me that it is normal. After two failed attempts I was forced to contact my home physician" (Primary Caregiver Participant 3).

4.4. Primary caregiver expectation of health education

The primary caregiver participants expected to receive detailed guidance on diets and pain management. Unfortunately, the educational guideline disappointed them: "Give more written information on the recovery process, how will the process proceed, are there specific things that I must focus on. What is normal and what is not?" (Primary Caregiver Participant 5). Some participants did not know who to contact in the case of complications: "I would have loved to have a quick discussion on what I could expect at home and who to contact when a complication arises" (Primary Caregiver Participant 3).

THE TONSIL OPERATION (TONSILLECTOMY): Health education

The tonsillectomy operation is the most common surgical procedure carried out in the day-care setting. The procedure includes the total removal of the tonsils that is situated in the throat. The reason for the operation is as discussed with the physician but is most likely because of repeated tonsillitis.



How long does it take to recover from surgery?

It takes most children 7-14 days to recover from a tonsillectomy procedure. Some children feel better in just a few days and some take as many as 14 days to recover.

Are there any risks related to a tonsillectomy procedure?

Tonsillectomy is a surgical procedure that includes some risks. After surgery, a child may have:

- Bleeding in their mouth (from the tonsils)
- Throat pain that lasts up to two weeks
- Temperature greater than 38-40 Celsius
- Vomiting or a feeling like they have to vomit
- Thirst or dryness, especially if they are vomiting (dehydration)

EATING AND DRINKING AFTER THE OPERATION

Eating and drinking are very important after surgery as they will clean and heal the throat. It is essential that the patient should start eating as soon as possible after the operation and not stop eating as a result of pain. Refraining from chewing and swallowing causes muscle spasms and infection which can be very painful.

Hydration is extremely important! Make sure your child also drinks plenty of fluids throughout the day for the first few days after surgery. If your child is not eating a normal amount of food, give them some drinks containing sugar which will ensure they are getting some calories for energy.

- Give pain medication 30 to 60 minutes before eating to relieve the pain of swallowing
- Your child may find drinking and eating chilled or icy drinks and food soothing
- Your child should continue with brushing his or her teeth after every meal

Recommended food:

- Ice cream, Jelly, Apples, Coarse Rusks, Provita, Muesli, Weatbix, Nuts, Dry wors, Biltong, Coke.
- It is very important that adequate fluid intake is encouraged to prevent dehydration.
- Coke, sprite and other fizzy drinks help keep wound clean
- Chewing gum keeps the throat muscle supple and can improve the healing process.

Food that should be avoided at home for the first two weeks:

- Bananas, Pineapples, Tomato's, Avocado's, Cheese curls, Spices, Milk.

POSSIBLE COMPLICATIONS THAT MAY BE EXPERIENCED AFTER THE OPERATION:

Fig. 3. Revised patient education.

1. BLEEDING

The first 24 hours after the tonsillectomy procedure is the danger period in which bleeding can be observed. If there is excessive bleeding (more than a little spit up) from the mouth or nose and the child is swallowing constantly they may be swallowing blood and this **SHOULD** be reported to the physician immediately. **If it isn't office hours go straight to the emergency department.**

Note that: It is not unusual to vomit up old blood (dark in colour) after the surgery (once or twice) but if it persists immediately give the patient ice to suck and inform the physician.

2. PAIN

For the first several days (occasionally up to 14 days) following surgery, pain in the throat is to be expected. This can be controlled by taking medication exactly as prescribed by the physician. Pain medication should not be repeated more often than four to six hourly.

Patients often experience intense pain at night. This pain can be relieved by administering medication such as Panamor or a Voltaren suppository before bedtime.

It is very important not to take additional medication such as aspirin which can lead to increased bleeding.

Ear pain, especially with swallowing is also a common occurrence after surgery, it is not an ear infection. The same nerve that travels to the throat is connected to the ear, so stimulation of this nerve can lead to earache. When the earache is accompanied by deafness, please notify the physician immediately

Things to do to relieve pain

- Ice to the neck
- Chew gum
- Have a humidifier in the room

3. HIGH TEMPERATURE

For the first two days after the operation, it is normal for the patient to have a temperature of 38 to 40 degrees. Pain medication that is prescribed should be sufficient to treat the elevated temperature.

4. NAUSEA AND VOMITING

Your child may have nausea or vomiting after surgery which should go away by the next day. Give only sips of clear liquid until the vomiting stops. If your child continues to vomit, contact the doctor immediately or go to the emergency room.

WHAT ELSE DO I NEED TO KNOW?

- **Physical activity**

Encourage your child to play quietly for the first few days after surgery. Plan for your child to be out of school or day-care for 7 to 10 days after surgery. When your child is back at school, they should not participate in vigorous activity for 2 weeks.

- **Bad breath**

Bad Breath is a normal part of the healing process and it will go away in 7 to 10 days after surgery. Do not be alarmed if you see yellow scabs in the tonsil bed at the back of the throat. These yellow scabs start to form on the second day after surgery and are a normal part of the recovery process and do not mean infection. When children refuse to eat, these yellow scabs become thicker and may lead to increased pain and bleeding.

- **Congestion and drainage**

It is normal for patients to have increased nasal congestion and increased mucus drainage after a tonsillectomy procedure. This will usually go away in 7 to 10 days after surgery.

- **Voice changes**

Your child's voice may sound different (hyper nasal) for several weeks after the tonsillectomy surgery.

- **Upset stomach**

This is common for the first 24 to 48 hours after the surgery

Fig. 3. (continued).

4.5. Nurse expectation of the caregivers during the children's recovery

The nurse participants realised that the original educational

guideline could not act as a guide throughout the recovery process: *"Have verbal discussions with the parents and discuss the important information in detail. Important information will refer to the physician's contact*

When should I call the doctor?

- If your child has not urinated in 12 hours
- If your child refuses to drink fluids for 12 hours
- If your child has a fever of 38-40 degrees for more than six hours that does not go away after giving prescribed medication.
- Severe pain is not relieved with prescribed pain medication
- Vomiting continuously
- Contact the physician at the rooms on this particular number.

When should I take my child to the emergency department?

You should take your child to the emergency department when they have bleeding from the mouth or nose, or vomiting bright coloured blood. Bleeding can occur up to two weeks after the surgery.

Who should I call if I have any questions?

For any questions and queries, you are also welcome to call the hospital and the physician.

Please arrange for a follow-up appointment immediately after you leave the hospital for three weeks after the operation.

Fig. 3. (continued).

details and the prevention of possible complications” (Nurse Participant 8).

The nurse participants tried to make up for the limitations of the original health education guideline: “Nurses need to explain to the patient, parent or caregiver in an understandable language it doesn’t help if you explain some things in high terms. Go down to the level of the patient and explain health education on that level” (Nurse Participant 1).

4.6. Unfamiliar hospital environment

The primary caregiver participants described the ambulatory setting as an intimidating and unfamiliar environment. The increased noise level in the paediatric ward had a negative impact on the understanding and comprehension of health education: “The paediatric ward is not always conducive for patient education because it is sometimes very busy and noisy” (Nurse Participant 3). The original health education guideline did not make provision for a proper orientation to the ward routines and operating theatre schedules: “They did not give any information on the theatre time, so we waited a long time without knowing what was going on (Primary Caregiver Participant 2).

4.7. Lacking pre-operative preparation

Primary caregiver participants are often stressed and experience elevated levels of anxiety when they receive health education prior to the surgery: “More improved doctor’s information before the procedure, preferably on the day of the first consultation. On the day of the actual operation, tension is high and the nurses are often very busy and cannot ease the tension with the current way of providing health education” (Nurse Participant 4).

Many of the primary caregiver participants prepared themselves preoperatively with information they received from family, friends and the internet: “I prepared myself with information from friends and google searches. For the first ten days, I felt confident but now on day ten seeing how they are struggling felt less confident” (Primary Caregiver Participant 1).

4.8. Poor empowerment of primary caregiver with the original guidelines

The term empowerment was described in this study as the proper understanding of health education. Health education should be aimed at the encouraging of the primary caregiver to be actively involved in the care of their children postoperatively: “Health education should be provided through proper communication in the ward and parents should be

allowed to ask questions throughout their stay in hospital” (Nurse Participant 1). Unfortunately, children were discharged without their parents being properly prepared to take care of them: “I did not know what complications could develop. I read on the paper something about bleeding I think it can take place twenty-four hours after the operation and if it is bright red I should worry” (Primary Caregiver Participant 4). The original guideline referred to haemorrhage and not many primary caregiver participants were familiar with the meaning of the word: “The word haemorrhaging should be replaced with the word bleeding as not everyone understands the term. Health education should be at the level of the patient” (Nurse Participant 1).

5. Results of the second round of data analysis

After the first round of data analysis was completed, the original paediatric tonsillectomy health education (Refer to Fig. 2) was revised according to the outcome of the analysis. The revised health education (Refer to Fig. 3) was implemented for a four-week period which was followed by a second round of evaluation through semi-structured interviews. The findings indicated that the participants were satisfied with the revised health education. According to them the caregivers were sufficiently involved and the content therefore met their health education needs of primary caregivers, were based on recent evidence. The health education took place during the intraoperative period when the caregivers were motivated to learn how to care for the children after discharge from hospital. The following categories were identified:

5.1. Revised guidelines meet the needs of primary caregivers

The need that primary caregivers had regarding the identification, prevention and management of complications referred to having a clear understanding of the possible complications related to the tonsillectomy procedure. The primary caregiver participants were convinced that the adjusted health education addressed their needs. It provided them with clear, concise and understandable information: “I used the information provided, my child experienced severe pain and I emailed the doctor and he adjusted the prescription” (Primary Caregiver Participant 19). The nurse participants were also very positive about the adjusted health education: “The way in which tonsils is removed changes therefore the health education should be adjusted to suit these new and improved methods. New complications that need to be focused on” (Nurse Participant 4).

5.2. Active involvement

The primary caregiver participants appreciated opportunities to learn from the nurses and from other primary caregivers: *“Yes, parents should be involved because parents learn from one another”* (Primary Caregiver Participant 15). The adjusted health education was done during the intraoperative period. As the children were in theatre the primary caregivers could listen to and interact with the nurse without interruptions: *“The way in which the health education was provided to me was good, this was done while my child was in theatre”* (Primary Caregiver Participant 16).

Health education material becomes user friendly when it is concise, easy to understand and available. The nurses shared printed copies of the revised health education material with the primary caregivers that they appreciated: *“The fact that the health education was readily available helped me, I could go back and refer to it when unsure”* (Primary Caregiver Participant 20).

5.3. Participants' view of revised guidelines

The nurse participants were impressed by the revised health education and stated that: *“The new guideline provides the parents with more information and a better understanding of what to do in an emergency situation”* (Nurse Participant 6) and: *“The tonsil health education is good, new information leaflet is more comprehensive. It gives clear information to parents and the graphics is good”* (Nurse Participant 8). The primary caregiver participants were also very positive about the revised health education: *“I think I was so stressed about postoperative bleeding that I focused so much on that and then my child developed an infection which I feel could have been prevented”* (Primary Caregiver Participant 14).

5.4. Nurses' expectation of the caregiver during recovery

The nurse participants were of the opinion that the revised health education did meet the needs of the primary caregivers. They described the revised guideline as a comprehensive piece of information that provides primary caregivers with enough information to identify, prevent and manage post-operative complications: *“Parents and caregivers need information about pain management, eating patterns and other complications. The new health education does address these needs in a comprehensive manner”* (Nurse Participant 2).

The nurse participants' perspective of quality patient education was referred as information that provide primary caregivers with exact information on what to do during the development of possible complications: *“Quality patient education is when parents know exactly what to expect before the procedure and when they are unsure, they have this information with them as a reference guide”* (Nurse Participant 1).

5.5. Intra-operative period used for primary caregiver education

Intraoperative patient education replaced pre-operative patient education in the revised guidelines. The intraoperative period allowed primary caregiver participants to receive information, think about it and then ask questions when they felt insecure or unsure. The revised health education guideline was referred to by primary caregivers as a textbook that they could use when they felt insecure or unsure. It resulted in primary caregiver participants leaving the hospital environment with a positive attitude towards care at home: *“Timing of education needs to be adjusted to a time that allows parents and caregivers to concentrate and not be distracted too much. Adjust education according to needs...an uncertain mother will ask a lot of questions whereas an experienced mother will only need a leaflet to read through”* (Nurse Participant 8).

5.6. Revised guidelines helped caregivers to feel comfortable in the unfamiliar hospital circumstances

Most of the primary caregiver participants verbalised that the health education that they received enabled them to feel comfortable during admission and on discharge from the ambulatory hospital setting. The information provided helped them to gain confidence in their ability to care for their children post-operatively: *“Yes, before I received health education from you, I was unaware of what could develop but afterwards I was more confident. After receiving the health education, I could phone home and ask stuff ready for our return”* (Primary Caregiver Participant 13).

5.7. Implementation of revised guidelines

The nurse participants viewed the implementation of the revised health education as a positive change to the ambulatory environment. It was experienced as a quality improvement in nursing. They were glad that the children and their primary caregivers could be discharged with sufficient preparation to prevent and manage complications: *“Yes, they are all willing to improve the health education and the way in which it is provided to parents and guardians”* (Nurse Participant 1).

6. Discussion

The revised set of primary caregiver education met the needs of the parents. They were confident that it provided them with enough information to prevent, identify and manage potential complications after discharge. According to [Chang, Hung, Hsu, Liu, and Wang \(2017\)](#) the use of written educational materials in conjunction with verbal instructions are a valuable source that patients can refer back to when necessary. On the other hand, do patients and their families that do not comprehend the health information that is provided to them tend not to comply with the prescribe treatment ([Ead, 2016](#)). Patients and their family members require health education that they understand and know how to use in order to make informed treatment decisions and follow postoperative instructions ([Aaronson, Cox, & Boss, 2019](#)).

A study done by [Jain, Levin, Hardy, Farrokhyar, and Reid \(2020\)](#) assessed the efficacy of a variety of tonsillectomy educational sources such as pamphlets, internet surge engines and nursing phone calls. These studies provided the researchers with mixed results where some have shown a reduction in perioperative anxiety and post-operative pain management and others demonstrated no difference in either. As such it is still unclear which modality of pre-operative paediatric tonsillectomy health education improves the quality of post-operative care at home. According to the results of the implementation of the revised primary caregiver education, the participants agreed that they wanted to be actively involved in the process of preparing themselves to take care of their children after discharge from hospital. It is therefore advised that nurses make use of a variety of health education methodologies.

Parents and children often feel anxious, uncomfortable and helpless before a surgical procedure which might negatively affect them all. Therefore, nurses should search for methods to reduce anxiety associated with surgery ([Aydin & Uyar, 2021](#)). Active parent involvement in health education is a method to reduce anxiety. The primary caregivers were actively involved in the implementation of the revised health education and they agreed that it helped them to gain sufficient knowledge to identify, prevent and manage potential complications post-operatively. Effective communication between nurses and primary caregivers is essential for the provision of quality paediatric healthcare. The manner in which health education is provided to parents should enable them to feel capable of taking care of their ill children ([Links et al., 2021](#)).

The primary caregiver participants preferred that the intra-operative period be used to prepare them to take care of their children after discharge from the hospital. According to [Gabriel et al. \(2018\)](#) during the intraoperative period primary caregivers experience a period of

increased suspense and anxiety. They are confronted with discomfort, the unfamiliar hospital environment and the surgery's potential longer-term impacts. Interaction with nurses who help them to manage their anxiety through applicable education to address their concerns may enable them to gain confidence in their abilities to prevent, identify and manage post-operative complications (Faramarzi, Roosta, Faramarzi, Salehi, & Matani, 2020).

7. Limitations

The study was done in one ambulatory hospital and a qualitative research methodology was used and the researchers therefore are not intended to be generalized to other populations and hospitals.

8. Conclusion

The nurse participants viewed the implementation of the revised primary caregiver education guidelines as a health care quality improvement process that enabled parents to be confident carers of their children post-tonsillectomy. They were willing to regularly evaluate and adjust the primary caregiver education material in future to ensure that the latest developments in post-operative tonsillectomy care are included. They also gained experience in taking part in rapid-cycle evaluation and adjustment of health education.

The revised primary caregiver education guideline is informative and serves as a source of information that the parents and other caregivers can refer to when they are uncertain about the care that the children require after the operation. It focuses on latest proven to be effective pain management practices, feeding alternatives, ways to improve the eating experience and methods to limit and manage post-operative bleeding. It provides caregivers with information about the prevention, identification and management of complications.

Disclosure statement: The authors did not benefit financially from the execution of the research.

Grants: The authors did not receive grants to conduct the research.

Contribution to the manuscript: Study conception: CD, NCvW; Data collection and analysis: CD; Supervision of the study: NCvW, RL; Drafting of the manuscript: CD; critical review: NCvW.

CRedit authorship contribution statement

C. Duvenage: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **N.C. Van Wyk:** Writing – review & editing, Writing – original draft, Validation, Supervision, Conceptualization. **R. Leech:** Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors acknowledge the contribution of the participants of the study. We honour the hospital management that allowed us access to use their facility to do the research.

Approval of proposal by Research Ethics Committee: The Faculty of Health Sciences Research Ethics Committee of the University of Pretoria gave ethical clearance (reference no.111/2020) for the research, and approval for the study to be conducted at the designated ambulatory hospital was obtained from the hospital management.

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