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Multimedia based health information to parents in a pediatric acute ward: A randomized controlled trial☆

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ABSTRACT

Objective: To determine whether multimedia based health information presented to parents of children with breathing difficulties in a pediatric acute ward, is more effective than verbal information, to reduce parental anxiety and increase satisfaction.
Methods: This randomized controlled trial was conducted in a pediatric acute ward in Norway, from January to March 2011. Parents were randomly assigned to a multimedia intervention ($n = 53$), or verbal health information ($n = 48$). Primary outcome measure was parental anxiety, and secondary outcome measures were parental satisfaction with nursing care and health information.
Results: Parental anxiety decreased from arrival to discharge within both groups. At discharge the anxiety levels in the intervention group were no lower than in the control group. There was no difference in satisfaction with nursing care between the groups, but parents in the intervention group reported higher satisfaction with the health information given in the acute ward ($p = .005$).
Conclusion: Multimedia based health information did not reduce anxiety more than verbal information, among parents to children with breathing difficulties. However, after discharge the parents were more satisfied with the multimedia approach.
Practice implications: More research is needed to recommend the use of multimedia based information as a routine to parents in pediatric emergency care.

1. Introduction

Breathing difficulties caused by lower respiratory tract infections (LRTI) are a common cause of the referral of children to the health care system. For the parents, the child's increased respiratory efforts are frightening, and a transfer to emergency care may reinforce the parents' anxiety even more [1]. Anxious parents may be less compliant with their child's medical treatment [2], and their anxiety may negatively impact the child's coping skills [3].

Obviously, the medical treatment of the child's breathing difficulties will relieve parents' anxiety. Previous research has found that health information of good quality and relevance may reduce parents' anxiety and increase their satisfaction with the hospital visit [4]. However, it may be challenging to give sufficient health information in a busy emergency department (ED). Several studies have shown that multimedia techniques may be more effective than verbal and written information in increasing parents' medical knowledge and satisfaction [5–7], but few studies have assessed whether multimedia may be beneficial to reduce parental anxiety in emergency care [8].

In this study our main objective was to evaluate whether an intervention with multimedia based health information to parents of children with breathing difficulties in a pediatric acute ward, could be more effective than verbal information, in reducing parental anxiety. Our secondary objectives were to study whether such intervention could increase satisfaction with nursing care and with the health information given in the pediatric acute ward.

2. Methods

2.1. Study design

A randomized, controlled, non-blinded study was conducted in an urban pediatric acute ward in Norway. Participating parents were either assigned to the intervention group receiving multimedia based health information combined with verbal instructions, or to a control group with verbal information only. The study was approved by the Hospital's Ethics Committee, registered in www.clinicaltrials.gov, and written informed consent was obtained from the participants.

☆ Trial registration number: NCT01659879 (Clinicaltrials.gov Identifier).

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2.2. Participants

In Norway, unless very urgent, all children with acute illnesses are evaluated in primary health care; by the family doctor, or at general emergency departments. Pediatric acute wards receive children with severe illnesses and children who need further evaluation and treatment. Our study was carried out in the acute ward at the Department of Pediatrics, St. Olav's University Hospital in Trondheim, Norway, from January to March 2011. Every year the acute ward receives 3500–4000 children referrals, where approximately 60% are treated as outpatients and 40% are admitted to the Department of Pediatrics.

Eligible participants were parents of 0–15 year's old children with breathing difficulties caused by LRTI (bronchiolitis, laryngitis or pneumonia) or asthma exacerbation. Another eligibility criteria was the parents' ability to communicate and read Norwegian. Exclusion criteria were children with chronic diseases who had direct access to the acute ward, children with oxygen saturation less than 90%, or other very sick children who needed urgent treatment. One parent from each family was included in the study, and the participants were recruited all days of the week by the nurses in the acute ward.

2.3. Randomization and intervention

The nurses randomly assigned the participants to the intervention or the control group using sealed and shuffled envelopes that had been pre-randomized by the main researcher. The randomization was performed after the nurse's clinical assessment of the child. Parents randomized to the control group received verbal health information by the nurse and the pediatrician concerning the child's diagnosis, treatment and recovery time. This information was given while the child was examined and treated. Parents randomized to the intervention group received verbal information in the same way, but in addition they received multimedia based health information presented by the nurse. According to the child's diagnosis, set by the pediatrician, the nurse introduced the package of multimedia content with elements from the Norwegian website www.syktbarn.no (English version: www.childhealthguide.com) [9]. The multimedia information included video clips that demonstrated children with LRTI and breathing difficulties. The cause of the illnesses was explained in a plain language by a narrator using pictures and video animations. The nurse also used the written material on the website to teach the parents about prevention, treatment and complications of the child's illness. The entire extra session with the nurse in the intervention group was carried out in approximately 15 min depending on the parent's knowledge and questions asked. In addition, the parents in the intervention group were recommended to use this website as guidance after discharge from the hospital. No printed material about the study website was handed out.

2.3.1. The intervention website

The intervention website www.syktbarn.no is an open Norwegian online resource for parents of small children, and the site contains videos, audio clips, animations, illustrations, pictures and text materials regarding children's illnesses and normal development [9]. In addition, the parents can use an interactive symptom checker that will help them to decide what to do and when to seek medical advice when their child is sick. The uniqueness of the website is the authentic video clips of sick children with common childhood symptoms like breathing difficulties, signs of dehydration, rash, cough and fever. All the content of the website has been composed and developed by Norwegian pediatricians and physicians and later reviewed by pediatricians from university hospitals in Sweden, Finland, Germany and USA. The content has also been translated into Swedish and English and published on the domains www.sjuktbarn.com and www.childhealthguide.com.

2.4. Outcome measures

The primary outcome measure was parental anxiety, which was assessed with the State-Trait Anxiety Inventory (STAI) at arrival and discharge from the acute ward. The secondary outcome measures were parental satisfaction with nursing care, evaluated with the Consumer Emergency Care Satisfaction Scale (CECSS) at discharge, and parental satisfaction with the health information given in the acute ward, as measured by a telephone interview after discharge.

2.4.1. The State-Trait Anxiety Inventory (STAI)

The STAI is an instrument developed in the USA for measuring anxiety [10]. It is adapted into more than 30 languages and has been used extensively in cross-cultural research and clinical practice. The instrument is divided into two twenty-item scales. The state anxiety scale evaluates how people feel "*right* now, at this moment", and the trait anxiety scale assesses how people *generally* feel. Minimum score is 20 (score 1 – 'not at all' on all items) and the total score is 80 (score 4 – 'very much' on all items). Average state anxiety scores of 35.7 (men) and 35.2 (women) are regarded as normative for working adult people [10]. The STAI has been translated into Norwegian and validated by Haseth et al. [11].

2.4.2. The Consumer Emergency Care Satisfaction Scale (CECSS)

The CECSS is a questionnaire developed in the USA to measure consumer satisfaction with emergency department nursing care [12]. The instrument has been translated into Swedish, and modified and tested in persons accompanying adult patients [13,14]. This modified questionnaire contains 19 items within three nursing dimensions: teaching, caring and clinical competence. The items are scored from 1 (completely disagree) to 5 (completely agree). The instrument has not been translated into Norwegian, so in this study three Swedish-Norwegian individuals translated the modified Swedish version into Norwegian before use.

2.4.3. Telephone interview

A structured telephone interview of the participating parent was performed 1–2 weeks after hospital discharge. All interviews were performed by the same researcher, and all parents received the same question: "*How satisfied are you with the health information given in the pediatric acute ward on a scale from 1 to 5 where 5 being the best?*".

2.5. Sample size

A power calculation indicated that 46 children in each of the two groups would detect a 20% difference in state anxiety, with a power of 80% on the basis of a two-sided alpha level of 0.05. A minimum sample size of 95 respondents was required for the use of the instrument CECSS [14]. To compensate for loss of respondents, a total of 120 parents were attempted recruited in our study.

2.6. Statistical analysis

Analyses were conducted on an intention-to-treat basis, and performed by using the statistical software package IBM SPSS version 18.0 (IBM Inc 2010, NY). The Mann–Whitney U test and Chi-square test were used to compare baseline characteristics, and anxiety and satisfaction scores between the intervention and the