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Children's and Parent's Perceptions of a Magnetic Resonance Imaging Examination

■ Jenny Gårdling, MSN, RN; and Marie Edwinson Månsson, PhD, RchN

ABSTRACT: **The aim of this study was to describe children's and parents' perceptions after a magnetic resonance imaging (MRI) examination. Semistructured interviews with eight children and eight parents were conducted. The interviews were analyzed using a phenomenographical approach. Both children and parents perceived a sense of security when they received preparation/information. The children perceived that it was positive to have their parents present. Children and parents also felt a sense of security from the positive attitude of the health professionals. They perceived anxiety if they felt that the preparation/information they were given was insufficient. The MRI scanner caused anxiety because of its size, design, and sound, and they were anxious about the risk of a failed examination. The children talked much about the difficulty of lying still. The parents perceived that more information about the MRI examination should be offered. By having the knowledge of how children and their parents perceive an MRI examination could help and guide health professionals for better understanding and high-quality care. (J Radiol Nurs 2014;33:30-34.)**

KEYWORDS: **Magnetic resonance imaging; Children; Parents; Nursing; Perceptions.**

INTRODUCTION

Both adults and children need to know what will take place during any health care procedure so that they can prepare themselves. It is easier to carry out an examination or treatment if the situation is understood by the recipient (Edwinson Mansson, 1992). Article 12 of the Convention Committee on the Rights of the Child (CRC; UNICEF, 1999) states that children, like adults, are entitled to be consulted about what is suggested for them and may express their views in all areas related to this issue. The child patient has the right to be offered understandable information regarding the different types of treatments and examinations available. A Nordic standard for children and young people in care (NOBAB, 2005), which is based on the CRC, notes that children and parents should be informed about the status of a child's illness, and the suggested treatment and care, in order that the child should understand.

Researchers often rely on information from significant adults, like parents, when collecting data about children's thoughts, feelings, and experiences (Kortesluoma, Hentinen, & Nikkon, 2003). However, interviews with children and their parents can help health professionals to understand them better, thus helping them to help the children through unfamiliar procedures and in their efforts to provide high-quality care for children.

AIM

The aim of this study was to describe children's and parents' perceptions after a magnetic resonance imaging (MRI) examination.

METHOD

In the present study, a qualitative approach with a phenomenographical direction has been used.

Sample

The children and parents who participated in this study were selected consecutively for an interview. Inclusion criteria were that all participants could understand and speak Swedish. The participant children were a

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The result from the manuscript has been previously presented in ECR March 2012 in Vienna.

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mix of both genders and aged 6-10 years. From a developmental psychology point of view, children aged between 6 and 10 years were selected as these are children who attend school from Grade 0 to Grade 4. The participating children had undergone their first ever MRI examination. The parents who accompanied their child to the examination were also interviewed. The loss rate in this study was 10 children with parents and was because of that some children had their examinations with pharmacological sedation and others because of cancellations or refusal to participate.

Instrument

Semistructured interviews with open questions were used. The author who performed the interviews (JG) allowed the respondent to talk about a phenomenon and its importance to them rather than their being guided by the author's interest (Polit & Beck, 2006). Open questions increase the reliability of the resulting material when a child's views are to be investigated, and they also allow the child to describe their views in their own words (Kortesluoma et al., 2003). An interview guide was designed and was used as a topic guide to ensure that all topics were relevant (Polit & Beck, 2006). One or more topics were formulated based on the open questions, trying to access different aspects of a phenomenon (Uljens, 1989).

Implementation

During the period from September 2004 to May 2005, a total of 18 children and their parents were asked to participate in the study. Finally, interviews were made with eight children who had recently undergone an MRI examination, together with their parents. Of these eight children, five were girls and three were boys. The parents were interviewed together with their child and asked to explain what they had done, while at home, to prepare themselves and their child and what they had thought about in relation to the pending examination. The authors were not present during the MRI examination of the children included in this study.

Together with an invitation to participate, the parents received written information about the study. Those who wished to participate were asked to give their written consent using an enclosed prestamped reply envelope. One of the authors then contacted each family by telephone a few days before the examination. After the MRI examination, each child was interviewed first with parent present; thereafter, the parents were interviewed together with the child. The interviews were recorded and written out verbatim.

Analysis

A phenomenograpical approach was used to analyze the interviews. The first step in the analysis was to get acquainted with the material and form an overall impression. The next step was to find similarities and differences in the interviewee's statements (Marton, 1981). The aim was to sort the perceptions into contents wise different groups (Uljens, 1989) by comparing the similarities and differences in the expressed perceptions. These groups were formulated so that the content was reflected or characterized as well as possible called description categories. They are clear ideas that are brought together to describe a persons perceived world (Marton, 1981). Description categories arise to clearly separate the thoughts of the thinking and the thinker. Thereafter, the result reliability and validity were tested (Uljens, 1989).

Ethical Considerations

Advisory recommendations have been given by the Swedish Health Scientific Ethics Board at the Department of Health Sciences, Lund (VEN A8-04). The children gave their verbal assent, and all the parents gave their written informed consent (World Medical Association, 2008).

RESULTS

The results are presented on the basis of the description categories that emerged from the analysis (Table 1).

Children's and Parent's Perceptions of Security

Preparation Gave Security. Preexamination visits to the MRI examination room were offered, and the participating children and parents often noted that they perceived the possibility of a visit to the MRI examination room before the examination as enhancing their feeling of security. Some children wished to have an information leaflet about the MRI examination sent home to them before the examination date.

The children noted that they would like to have had known more information before the examination; for example, a chance to look around the examination room, to see what was behind the MRI scanner, and listen to the sound as they had been informed that the machine was noisy.

The parents, who had seen photographs of an MRI examination while on the ward with their children before the examination, felt that this form of preparation was useful. One parent felt more secure as she had a previous experience of what would take place.

Parents Presence During the Examination Gave the Children a Sense of Security. The interviews revealed that the participating children found it comforting that their parents were with them in the examination room. Some children could see their parents throughout the examination, whereas others felt their presence by touch. Some of the children talked to their parents when the

Table 1. Categories of responses

Description categories	Children's perceptions	Parent's perceptions
Security	Preparation	Preparation
	Parents presence	Being present
	The light inside	Health personnel's care
	Personnel alarm	
Anxiety	To little preparation	The sound
	The MRI scanner	The possibility of a failed examination
Laying still	Difficult to know how still	
	Might fall asleep	
Information		The need to prepare their children
		Request for more information

MRI = magnetic resonance imaging.

MRI scanner was silent. Even if the child neither saw nor heard their parents, they thought that it was comforting to know they were nearby.

> They held my feet. I thought it was pretty nice (boy 10 years).

Some children felt secure from having a stuffed toy animal with them and that it could go through the tunnel with them. Other factors that made the examination easier were listening to music or a story as this helped to divert the children's thoughts.

All the participating parents had been present in the examination room while their child was examined. The parents felt that they had helped by touching their child, being present and by speaking to their child during pauses. Unfortunately, some parents were not aware about these possibilities.

The Light Inside the MRI Scanner and a Personal Alarm Gave a Sense of Security. There was a light inside the MRI tunnel that helped the children to feel more secure. Initially, most of the children thought that it would be dark inside the tunnel but were pleased to find that the light remained on.

During examination, the children had a personal alarm in the form of a bulb that they could hold into their hand as they went into the tunnel. The personal alarm gave the children a sense of security as they were told that they could use it if they wanted to interrupt the examination.

Health Care Personnel Offered Security. The attitude of the health care personnel played an important role in the examination room. As one parent expressed, it was "alpha and omega" that the health care personnel were pleasant. The fact that the health care personnel talked with the children and not at the children increased the parent's sense of security.

> The most important thing is good health care personnel, and so it was. It makes a difference. It means a lot. They understood that it is worth being a bit soft and really talk. They get it back (parent of a girl aged 6).

Children's and Parent's Perceptions of Anxiety

Too Little Preparation Resulted in Anxiety. None of the participating children had any previous knowledge of an MRI examination at the time they received notice of their impending examination.

> I did not really know how, I did not know what would happen. Then I got a bit worried (girl aged 8).

Before the examination, many of the children thought that it was exciting even if it was daunting. What was exciting about the examination was to go into the tunnel. Some children noted that they felt stressed, were nervous, and thought that it could be tough as it might not be fun to be inside the camera. One child was concerned about the length of time the examination would take.

The MRI Scanner Gave Rise to Anxiety. All but one of the participating children did not know what the MRI scanner looked like, before they arrived for the examination, which caused them some anxiety. What they knew they had learned from their parents.

> My dad said it would look like a long hole that I would go through but it was not, I lay still when I was in it (boy aged 9).

The participating parents felt anxious because they knew little about the examination because of the limited information they received beforehand.

What they reacted to, during the examination process, was the sound. Some parents would have preferred to have been offered a sample sound test before the examination.

> It is a sound that is not normal (parent of girl aged 9).

The children also talked much about the sound. Perceptions were different, but most of them perceived the sound as loud and harsh. Some of the children wanted to listen to the sound before the examination.

The Possibility of a Failed Examination Caused Anxiety. Some of the participating parents stated that they were anxious

that the examination would fail and that their child would have to go through it again. The greatest anxiety the parents felt was that their child would move if they talked to them which cause blurred images. The children also noted that they did not dare to talk to their parents while inside the tunnel as if they moved, the examination might be a failure.

The parents talked a lot about their child being still. It was difficult to know how still the child needed to be. Furthermore, they did not know how long the examination would take.

Children's Perceptions of Laying Still

It Was Difficult to Know How Still to Lie. What all participating children talked about was that they had to lie still. The children perceived lying still as being very difficult and hard to do. Another difficulty was to know how still one should be. The children wanted more information about if, how, and when they could move. The children thought about something else and tried to relax which helped them lie still. Other children thought that listening to music or a story made the examination easier. One child wanted to watch TV because he said "then you lie still." Another difficulty was the length of time the examination takes. All the children said that they moved a little during the examination. In addition, all the children expressed that they wanted to have a break during the examination where they could come out of the scanner for a while and move around a little and then continue.

To Lie Still Meant That You Might Fall Asleep. Almost all the children noted that they were anxious about falling asleep. They said that when you are asleep, you move and if you move, the examination can fail. They did not want the examination to fail because they did not want to have to do it again. Some of the parents reported that their children had asked them what would happen if they fell asleep during the examination. The light inside the MRI scanner was pleasant and helped the children to stay awake.

> I kept my eyes open as I was afraid I might fall asleep. Because if I had fallen asleep I could have moved (girl aged 6).

Parent's Perceptions of the Information They Received

The Need to Prepare Their Children Before an MRI Examination. The notice advising the planned examination that was sent home to the families contained very little information of value. It would be better if more detailed information about the examination was given together with the notice.

> We had talked a little about it, or I did not know what it looked like. That she would pass through a machine I knew but what it looked like, I did not know (parent of girl aged 9)

Some parents pointed out that as a parent, you feel you know best what your child needs to know; some children need to know more and some less.

Requests for More Information Related to the MRI Examination. Information that would be useful to parents would be the duration of the MRI.

> We talked a lot about the time. He was afraid that it would take a long time (the parent of a boy aged 9).

Some parents said that, in fact, the examination took less time than they expected. Another point that emerged was the need for extra time for the examination if the child was restless. Also required is clear consideration for a child's eventual past experience of hospital care so that personalized preparation can be made.

DISCUSSION

Method Discussion

According to Piaget (1968), the art of reflection is not fully developed in children in the concrete operational stage, that is, from 6-7 to 11-12 years of age. Piaget (1968) argues that children can think logically about things that they can feel and touch but are most intuitive in the abstract fields. Their thoughts are concrete. Children's way of understanding is still dependent on their personal experiences, even if the child uses previous experience (Piaget, 1968). Despite this background, we chose to interview children aged 6-10 years. The children we interviewed told us much about what they had experienced; they tried to express feelings about their own experiences. Andersson (1998) writes that children are more affected than adults by a current situation, that is, such as an interview, but also that children are less likely to change reality in order for it to appear in a better light.

Result Discussion

This study shows that the health care personnel's interaction and communication with the child is of great importance as this increased the child's sense of security. Giving children the possibility to abort the examination if they felt insecure gave them a sense of being involved. Smart (1997) found that despite good preparation, a child can still feel insecure. When a child undergoes examinations, it is important that the child is at the center of the procedure where its needs can be continuously observed.

It is important for all health professionals to be aware of the benefits of preparing children for examination and treatment. If children are prepared properly, it will mean for them: "the unknown will be known" (Edwinson

Mansson, 1992). In comparison, the children in this study perceived that they knew too little about the examination beforehand and were for that reason more anxious. If a child fully understands why the examination should be made and what will take place, they are prepared for what will happen and feel less anxious and better able to handle any unpleasant experiences (Felder-Puig et al., 2003; Gladh, 2003). According to Tornqvist (2010), a visit to the examination room to view the apparatus, coupled with age appropriate information, can also reduce anxiety. The child and parent gained a better understanding which helped them to manage their anxiety. According to developmental psychology knowledge, children's way of understanding is dependent on what they perceive (Piaget, 1968).

In this study, parents gave their children some information at home before the examination. Unfortunately, some important information was omitted. This situation might have led to increased anxiety among the participant parents and children. Parents found it difficult to help and support their children during the MRI examination as they had inadequate knowledge. This lack of information can create unnecessary anxiety to the parents and their child causing the examination to fail, requiring the child to undergo the examination again.

Difficulty to lie still was noted by the participating children in most of the interviews. Studies have found that by giving instructions to children to lie as still as a statue, using special music, guided imagination, and audio–visual system have helped them to lie still (Rosenberger et al., 1997; Smart, 1997; Harned & Strain, 2000 and Tornqvist, 2010). One anxiety noted by the children, in this study, was the risk of falling asleep when they lay still. The children believed that if they fell asleep, they might move causing the examination to be a failure.

Information dealing with all the aspects of an MRI examination might result in less anxious children and parents, which can lead to better cooperation between all the parties during the examination (Lizasoani & Polanio, 1995; Felder-Puig et al., 2003; Tornqvist, 2010), which facilitates the examination and helps provide a better diagnostic result. Edwinson Mansson and Dykes (2004) concluded that information should be simple and honest and appropriate to the child's cognitive and psychological level of development. Children develop differently, and therefore, it is important to adapt information to each individual child.

CONCLUSION

The aim of this study was to describe children's and parent's perceptions of an MRI examination. To have the knowledge of how children and parents perceive, an MRI examination could help health professionals to understand them better, help the children through unfamiliar procedures, and provide high-quality care for children and their parents. This can reduce the amount of pharmacological sedation needed to reduce children's anxiety which could be an important contribution from an economical aspect.

References

Andersson, G. (1998). Barnintervju som forskningsmetod. *Nordisk Psykolog*, *50*(1), 18-41.

Edwinson Mansson, M., & Dykes, A.-K. (2004). Practices for preparing children for clinical examinations and procedures in Swedish pediatric wards. *Pediatric Nursing*, *30*, 182-197.

Edwinson Mansson, M. (1992). *The value of informing children prior to investigations and procedures. Thesis for Doctoral Degree*. Lund, Sweden: Lunds university.

Felder-Puig, R., Maksys, A., Noestlinger, C., Gadner, H., Stark, H., & Pfluehier, A., et al. (2003). Using a children's book to prepare children and parents for elective ENT surgery: Results of a randomised clinical trial. *International Journal of Pediatric Otorhinolaryngology*, *67*, 35-41.

Gladh, G. (2003). Effects of thoughtful preparation on the cathererization of children undergoing investigative studies. *Neurology and urodynamics*, *22*, 58-61.

Harned, R., & Strain, J. (2000). MRI-compatible audio/visual system: Impact on pediatric sedation. *Pediatric Radiology*, *31*, 247-250.

Kortesluoma, R.-L., Hentinen, M., & Nikkonen, M. (2003). Conducting a qualitative child interview: Methodological considerations. *Journal of Advanced nursing*, *42*(5), 434-441.

Lizasoain, O., & Polaino, A. (1995). Reduction of anxiety in pediatric patients: Effects of a pshychopedagogical intervention programme. *Patient Education and Counseling*, *25*, 17-22.

Martón, F. (1981). Phenomenography—Describing conceptions of the world around us. *Instructional Science*, *10*, 177-200.

Nordisk Standard för barn och ungdomar inom Hälso- och sjukvård (NOBAB). (2005). Utarbetad i enlighet med FN:s barnkonvention. Retrieved from http://www.nobab.se. August, 2012.

Piaget, J. (1968). *Barnets själsliga utveckling*. Lund, Sweden: CW.K Gleerup Bokförlag.

Polit, D., & Beck, C. (2006). *Essentials of nursing research. Methods, appraisal and utilization*. Philadelphia, PA: J.B. Lippincott Company.

Rosenberger, D., Sweeney, J., Gillen, J., Kim, J., Varanelli, M., & Óhearn, K., et al. (1997). Magnetic resonance imaging of children without sedation: Preparation with simulation. *Journal of the american academy of child and adolescent psychiatry*, *36*, 853-859.

Smart, G. (1997). Helping children relax during magnetic resonance imaging. *MCN American Journal of Maternal-Child nursing*, *22*(5), 236-241.

Tornqvist, E. (2010). *Going through magnetic resonance imaging—Patients' experiences and the value of information and preparation for adults and children. Thesis for Doctoral Degree*. Lund, Sweden: Lunds university.

Uljens, M. (1989). *Fenomenografi-forskning om uppfattningar*. Lund, Sweden: Studentlitteratur.

United Nations Children's Fund (UNICEF). (1999). Child right: United Nations Convention on the Rights of the Child. Retrieved from http://www.unicef.org/crc/crc/part1.hlm

World Medical Association. (2008). Declaration of Helsinki—Ethical principles for medical research involving human subjects. Retrieved from http://www.wma.net/en/30publications/10policies/b3/. August, 2012.