Impact of an information leaflet on parental knowledge, anxiety and satisfaction in an Irish paediatric Computed Tomography Department

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Aims and objectives

Parents play a significant role in preparing the child for a Computed Tomography (CT) examination. Educating parents is pivotal in ensuring patient cooperation as it allows the parent to sufficiently prepare their child. It also has the added advantage of potentially reducing parental anxiety. By reducing the parent's anxiety, the patient's anxiety can potentially be reduced prior to arrival in radiology. This may also positively impact patient cooperation.

Parental anxiety can result from uncertainty and a lack of knowledge experienced by parents[1]. Patient information is designed to reduce anxiety and allow informed consent [2].

There are numerous studies in the surgical setting which have demonstrated reduced child anxiety when interventions were introduced to reduce parental anxiety [3,4,5]. There are very few studies on public knowledge and perceptions of CT or on parental knowledge of CT imaging.

Insufficient or irrelevant information can have a negative influence on service satisfaction [6], as anxieties and concerns may not be addressed [7].

The aim of this study is to evaluate the impact of an information leaflet on parental knowledge, anxiety and satisfaction in a paediatric CT department.

Methods and materials

A prospective study was undertaken to investigate the impact of an information leaflet on parental knowledge, anxiety and satisfaction. A CT information leaflet for parents was designed, which acted as the intervention for this study. The study was conducted in two phases. The first phase involved parents in a control group, which did not receive the CT information leaflet. The second phase examined parents in the study group, who received the CT information leaflet with the CT appointment letter at least 14 days before the CT appointment. The two phases were structured to prevent the control group coming into contact with the intervention group.

Information Leaflet Design Process

The information leaflet was designed to inform parents and allow them to sufficiently prepare their child before coming to the CT department. The leaflet was designed under guidance from the hospital Children's Health Information Centre (CHIC). Key stakeholders in the design process included radiographers, radiologists, medical physicists and parents.

Participants

Those who met the inclusion criteria (Figure 1) were invited to participate in the research study on the day of the CT appointment. To avoid selection bias all participants which met the inclusion criteria were invited to participate during both phases.

Participation and response rates were quite good. The participation rate for the control group was 88% (15 out of a potential 17 participants). The participation rate for the study group was 93% (14 out of a potential 15 participants). The response rate was 100% for both groups. The simplicity of the questionnaires possibly contributed to the high participation and response rates.

Questionnaires

Participants were required to complete questionnaires before and after the CT scan. The pre-scan questionnaire was designed to evaluate the parent's knowledge and understanding of CT, their personal information seeking behaviors and parental anxiety before their child's CT scan.

The parent's level of knowledge was evaluated with 9 statements which the parent had to decide if they were true or false through tick boxes. Each statement could be marked

as 'true', 'false' or 'don't know'. These statements were similar to statements used in the study conducted by Maher *et al.* [8] and Chesson *et al.* [2] as they were deemed relevant. Visual analogue scales (VAS) were used to measure anxiety. The descriptive words at the opposite ends of the scale were 'not anxious at all' and 'extremely anxious'. The parent was also asked to provide detail on possible causes of anxiety for them to allow a more in depth understanding of the causes of parental anxiety when coming for a CT scan.

The second questionnaire was brief to encourage participation. Parents were required to complete this section after their child had their CT scan. The VAS was employed to measure parental satisfaction with their visit to the CT department, how prepared they felt they were for the CT appointment and how useful they found the information they received for their scan. The descriptive terms used for the above three measures were:

- 'very unsatisfied' and 'extremely satisfied'
- 'totally unprepared' and 'very prepared'
- 'not helpful at all' and 'very helpful'

The questionnaires were piloted with 10 parents to ensure clarity and ease of understanding. Minor adjustments in language were made with wording before finalising the questionnaire.

Administration staff were involved in providing the questionnaires to parents when they checked in for the appointment. This was to avoid introducing bias and influence into the study. The questionnaires were completed in the privacy of a quiet waiting area in the CT department. The parent was given an envelope to seal the questionnaire in once completed and the questionnaires were stored in the designated boxes within the CT department.

Data Analysis and Statistics

The results were collated and coded into a password protected spreadsheet. Descriptive and inferential statistics were calculated to demonstrate the results while the Mann Whitney U test was used to test statistical significance. The probability statistic (p-value) for each test was then compared against the criteria of 0.05 to determine if the findings were statistically significant (see Figure 2).

Images for this section:

Inclusion Criteria	Exclusion Criteria
Parents and legal guardians of paediatric patients.	If the accompanying adult was not the parent or legal guardian of the child.
The patient must be attending for a scheduled outpatient CT appointment.	Acute CT referrals (due to the associated increase in anxiety)
Participant must have fluency in English.	If the potential participant was not fluent in English.
	If the patient was late for the scheduled CT appointment.

Fig. 1: Inclusion and exclusion criteria

Variable	*P-value*	*Action regarding Null hypothesis*
Number of correct answers	0.087	P>0.05, null hypothesis cannot be rejected.
Number of incorrect answers	0.572	P>0.05, null hypothesis cannot be rejected.
Number of 'don't know' responses	0.278	P>0.05, null hypothesis cannot be rejected.
Measure of anxiety	0.002	P<0.05, null hypothesis can be rejected.
Measure of satisfaction	0.023	P<0.05, null hypothesis can be rejected.
Measure of feeling prepared for the scan	0.04	P<0.05, null hypothesis can be rejected.
Measure of 'helpfulness' of the information	0.181	P>0.05, null hypothesis cannot be rejected.

Fig. 2: Statistical test results for numerous variables when tested against the presence or lack of intervention.

Results

Parental knowledge of CT was evaluated by comparing correct, incorrect and 'don't know' responses. Anxiety and satisfaction were evaluated by comparing the mean rank figures for the control and study groups.

Parental knowledge of CT

The mean and median values for the correct responses for the study group were slightly higher compared to those of the control group (Figure 3). The mean and median values for the incorrect and 'don't know' responses for the study group were slightly lower than those of the control group. In some questions the study group appears to have provided more incorrect answers and less 'don't know' responses suggesting a false confidence in their knowledge of CT. This also raises the question of how effective an information leaflet is.

Information wants and seeking behaviours

36% of participants in the study group sought further information prior to attending for the appointment. This is noticeably higher compared to the control group, where only 7% of participants sought further information.

40% of participants within the control group would've preferred further information, which is higher compared to the study group, where 14% of participants would have preferred further information.

Anxiety and satisfaction

The mean rank for anxiety in the study group (9.93) was much lower in comparison with the control group (19.73), which was statistically significant. When comparing the control and study groups, scores over 50 were considered high anxiety. Figure 4 demonstrates the lower percentage of high anxiety scores amongst the study group (14% gave a score greater than 50) compared with that of the control group (26% gave a score greater than 50).

The mean rank for satisfaction for the study group was higher (18.68) compared to that of the control group (11.57). This difference was also statistically significant. The satisfaction scores from participants were overall very high. The lowest satisfaction score was 66 from a participant in the control group. Satisfaction scores greater than 90 were considered as

extremely satisfied. Figure 5 demonstrates the difference between the control group (66% gave a score greater than 90) and the study group (92% gave a score greater than 90).

Images for this section:

	Correct Answers		Incorrect Answers		'Don't Know' responses	
Mean	4.67	5.71	2.87	2.57	1.47	0.79
Median	4.00	6.00	3.00	3.00	1.00	0.50

Fig. 3: Mean and median figures for the control group (blue) and study group (pink) in relation to parental knowledge of CT

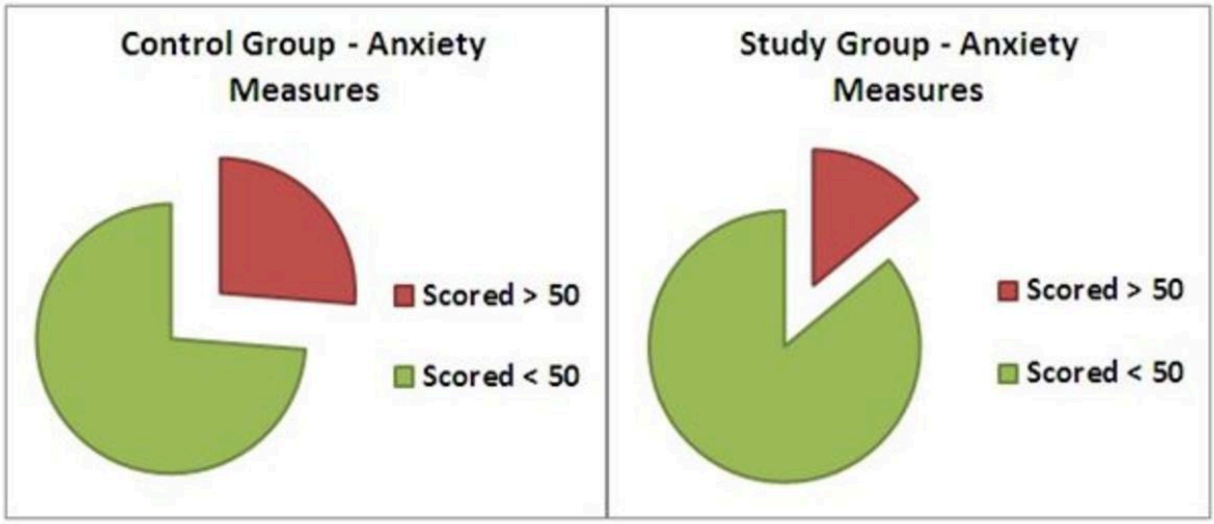

Fig. 4: A comparison of anxiety scores between the control and study groups. >50 indicates a high level of anxiety

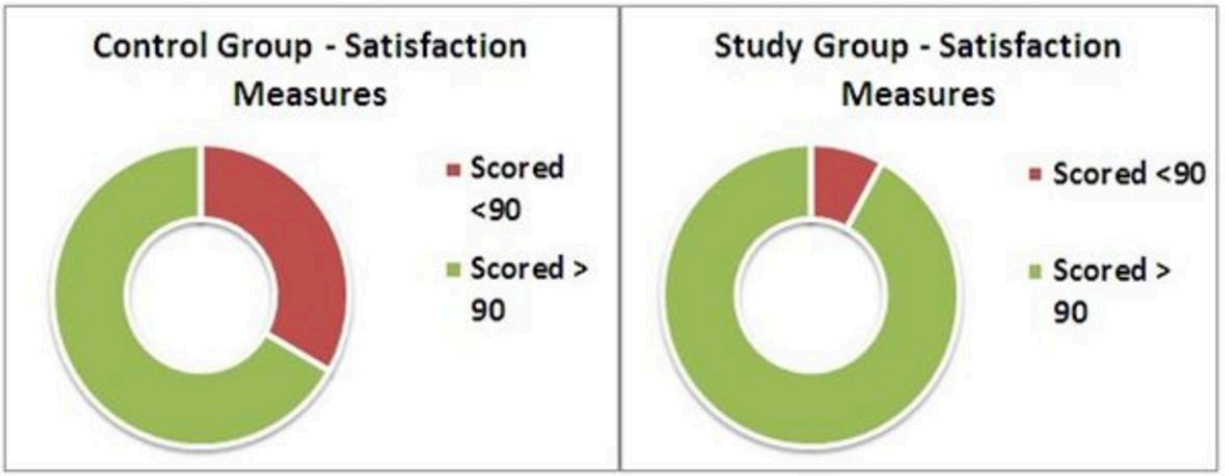

Fig. 5: A comparison of satisfaction scores between the control and study groups. >90 indicates a high level of satisfaction

Conclusion

This study highlights the need for further research into the role of information in paediatric radiology. A significant difference in anxiety and satisfaction has been demonstrated between the control and study groups, suggesting the information leaflet had a positive impact on parental anxiety and satisfaction.

While there were differences in knowledge between the control and study groups, this difference was not statistically significant. The study highlighted deficiencies in parental knowledge of CT, which may be important in the future as consent in paediatric CT becomes more topical. Other methods of information may also be more effective in improving parental knowledge on CT.

Personal information

This work was carried out by Radiography and Medical Physics staff in Temple Street Children's University Hospital which is part of Children's Health Ireland.

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Images for this section:

Fig. 6

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