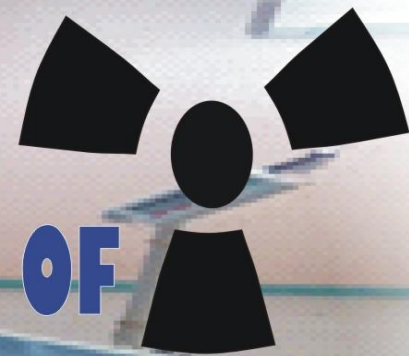


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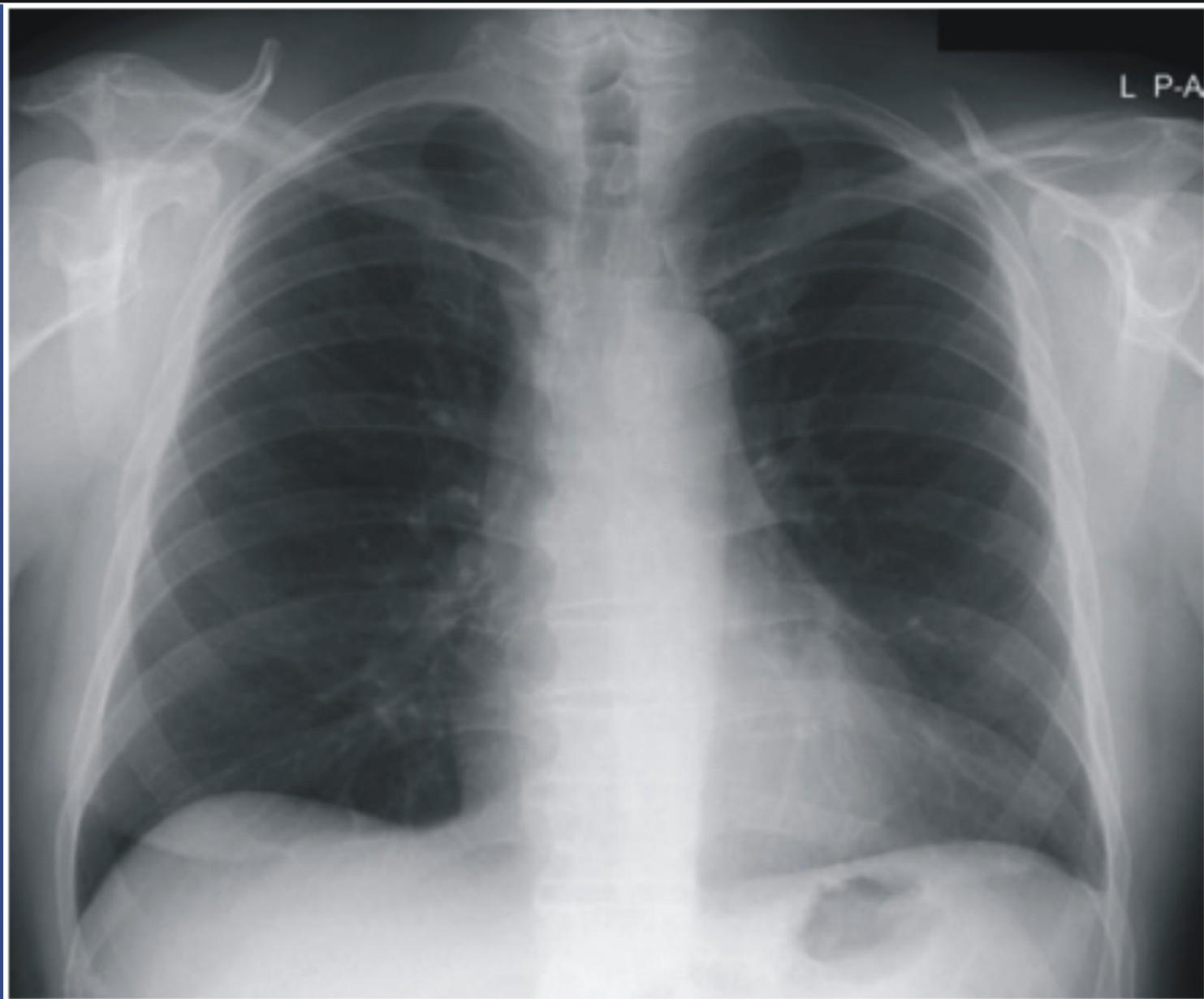


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Eliciting Patient Cooperation in Paediatric Radiography with Inducement Devices

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ABSTRACT

Purpose: Obtaining good quality images whilst minimizing repeat examinations and radiation dosage in paediatric radiography requires patient co-operation. This study aims to assess the usability of inducement devices to gain child cooperation during paediatric radiography in Lagos, Nigeria.

Method: A cross-sectional study design was employed to sample information on the use of child inducement devices by Radiographer and Radiologist during paediatric radiography. A 19-item close ended questionnaire was administered to 70 Radiology personnel consisting of 45 Radiographers and 25 Radiologists. Questions were fashioned in a way to gain insight on best practices to gain the child patient cooperation. Some questions relating to demographics, experience and employment were included. Following collation descriptive statistics were developed.

Results: Results showed that paediatric examinations were frequently carried out in the study area (75%). About 87% of respondents were of the opinion that the use of inducement devices aided in the production of better quality images. Light-up (72%) and Musical (27%) toys constituted the most effective inducement devices, and were considered the most valuable (86.9%) toys by Radiology personnel.

Conclusion: The results show that the use of inducement devices elicits child cooperation and improves the ease of paediatric examinations.

Keywords: Paediatric, cooperation, child inducement, Radiography, devices

Introduction

Paediatric radiography is one of the most challenging aspects of Radiography practice. The challenges border on the need to achieve diagnostic quality images whilst minimizing patient dose. Optimized practice and adherence to dose limits is essential in any radiographic examination [1].

Optimization in paediatric radiography is particularly important as children have 2 – 4 times higher risk of late manifestation of harmful effects of ionizing radiation [2]. Achieving a considerable level of cooperation from the child patient during radiographic examination is an essential element in the quest for optimization.

The radiography suite could be inundating to the young patient, and unfamiliar environment has been reported to cause anxiety [3]. The initial instinct of a child in such environment is usually to cry and stay close to their parents [4]. This reaction may pose challenges to the Radiology personnel, including but not limited to performing the radiographic examination and obtaining the required examination results. These challenges have often been the reason for exposure of the carer, who ends up holding the child during the radiographic procedure.

Care givers often assist in immobilizing the child during the procedure thus reducing patient motion which often cause blur and compromise image in.

To avoid undue exposure of such carers, there is a need to make the child patient comfortable as soon as they come into the X-ray department. A good knowledge of a child's needs is paramount to providing the desired level of comfort, and this can be guessed from the child's behavior.

Behavioral changes in humans from birth to the end of adolescence are influenced by biological and psychological parameters. As the individual progresses from dependency to increasing autonomy, their social and psychosocial natures vary [5]. According to Cook [6], child psychology has been used in the context of diagnostic imaging to divide childhood into six groups, each of which has its different needs and capacities. Each group requires a different level of interaction, tolerance and understanding [7].

Developmental changes may occur as a result of genetically-controlled processes known as maturation or as a result of environmental factors and learning, but most commonly involves an interaction between the two [8]. Therefore, an understanding of the child patient's needs, development and psychology is essential for staff working in paediatric radiography. Such understanding is crucial to developing strategies to ensure a successful radiographic examination.

In the developed world, the use of toys by children is common, and toys have been shown to elicit a child's interest, creating opportunities for children to acquire, practice and perfect new skills [7]. Consequently, child inducement devices such as toys have been explored to elicit paediatric patients' co-operation during radiographic examinations.

In sub-Saharan Africa where toy usage is sparse, there is a paucity of literature on the impact of inducement devices in paediatric patients' cooperation during paediatric radiography. This deficiency underscores the need for research on this subject. Therefore this study aims to ascertain whether radiology personnel explore the use of child inducement facilities to elicit cooperation from paediatric patients and their level of satisfaction with the impact of such devices.

It also aims to examine what category of inducement devices mostly elicit the desired response in children undergoing radiographic examinations.

Material and Methods

This cross-sectional study involved consented radiographers and radiologists practicing in Lagos metropolis, Nigeria. Prior to the study, a careful explanation of the nature of the research was given to the respondents as to elicit full cooperation and tackle the issue of confidentiality. A well-structured questionnaire was used for data collection with a return rate of 98.5%. Participants were radiology staff randomly drawn from radiology departments in the study area, and consisted radiographers (n = 45) and radiologists (n = 25). Their years of experience ranged from 1 to 16 years. Participants were drawn from both the public and private health sector. Paediatric patients between the age bracket of 3 months to 2 years were used. This age bracket is usually most dependent on adults and more responsive to toys.

An operational hypothesis was formulated to investigate whether there was any improvement in the use of child inducement facilities during paediatric radiography. The decision criterion was to accept the operational hypothesis if the percentage of respondents with positive remarks about the relevance of toys in practice exceeded 60. Questions fielded sought to extract information about frequency of participation in paediatric radiography, necessity of child co-operation, availability and type of inducement facilities and perception of the relevance of toys for success of examinations. The responses were collated and entered into Excel databases. Following collation descriptive statistics were developed.

Results

Sixty-nine respondents returned completed questionnaires (69/70: 98.4%). A total of 20 questions were included in the questionnaire and were properly answered. In terms of years of experience, majority of respondents fell within the 5-10 years bracket with twenty six respondents (38%).

The results obtained showed that the frequency of paediatric examinations carried out by both groups of professionals was high. Fifty-two respondents affirmed that they attend to paediatric cases more than adult patients (Figure 1). The type of devices employed to gain the child's cooperation was found to be important and light up toys were most effective (72%) as depicted in Figure 2.

Respondents in one question contained in the questionnaire were asked to comment on the relevance of toys in radiographic practices. Sixty respondents (86.9%) affirmed that the toys were invaluable in achieving good images with paediatric patients (Figure 3).

Table 1: Responses to questions on the necessity of child co-operation during examinations plus need for carers to be available and the availability of toys at the facilities where the professionals practice.

The results demonstrates high frequency of paediatric radiographic examinations in the study area. It also shows a good level of satisfaction in the use of inducement devices for paediatric radiography amongst radiology personnel. The high frequency of paediatric radiographic procedure is unsurprising as children are tender and susceptible to various elements that could cause falls, ill health or physical injury. The implication of this high frequency would be a subject of concern if repeated examinations follow the same upward trend. From the perspective of radiation safety, it is needful that radiographic examinations occur without necessity for repeats and child patient co-operation is a key to achieving this.

Studies have shown that a friendly environment puts a child at ease and makes him comfortable [7]. The presence of a parent or relative greatly influences the co-operation level received by the professionals during the radiographic procedures. This was observed by the respondents. The confidence drawn from a familiar face in the room may positively impact on the success of any paediatric examination.

However, for the purpose of radiation protection of the care giver, alternatives must be found as adjuncts to care givers for inducing child co-operation in paediatric radiography. Inducement devices are thought to be useful to calm and quieten child patients while the procedure lasts. In the current study, respondents almost unanimously affirmed that these devices contributed to the success of the examinations (Table 1). Improved level of co-operation could sometimes lead to avoidance of unnecessary radiation exposure to care givers.

The current study demonstrates that light up toys were most effective in inducing child co-operation as shown by respondents. This may probably be due to the fact that the strobe effect (flickering nature) was attractive to children and the color combinations were alluring. The sound producing toys were also effective, and have previously been shown to elicit child patient co-operation in another study. In that study, Chronis showed that paediatrics responded more to light and sound⁸. Increasingly, it is logical that surrounding the child patient in the ray room with devices that can provoke calmness may be useful in encouraging child patient co-operation during x-ray examinations.

Following the percentage (>60%) of respondents with a positive response on the relevance of toys in practice, we can accept the hypothesis that use of child inducement facilities can go a long way in improving patient co-operation in paediatric radiography. Thus, strategies that induce a child's co-operation are relevant to optimization of paediatric radiography and should be implemented in all radiology settings.

This study is not without limitations. Funding was a major area of concern for this study as regards covering a wider area of the country. The close ended questions give a limited scope in responses. True feelings on a topic are not readily captured. Conversely, the strength of this study is its reliability of the data since it is reproducible.

Table 1: Responses to questions on the necessity of child co-operation during examinations plus need for carers to be available and the availability of toys at the facilities where the professionals practice

RESPONSE	*NECESSITY	**AVAILABILITY
YES	68 (99%)	57 (83%)
NO	1 (1%)	12 (17%)
TOTAL	69	69

*Necessity: Necessity of child cooperation and need for carer during exam
 ** Availability: Availability of toys and play facilities at centre

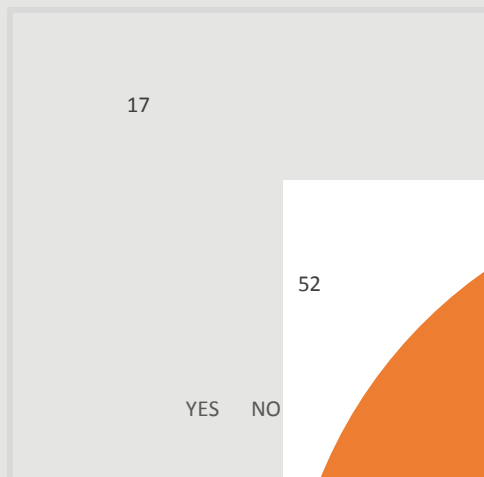


Figure 1: Showing the frequency of examinations in paediatric radiography

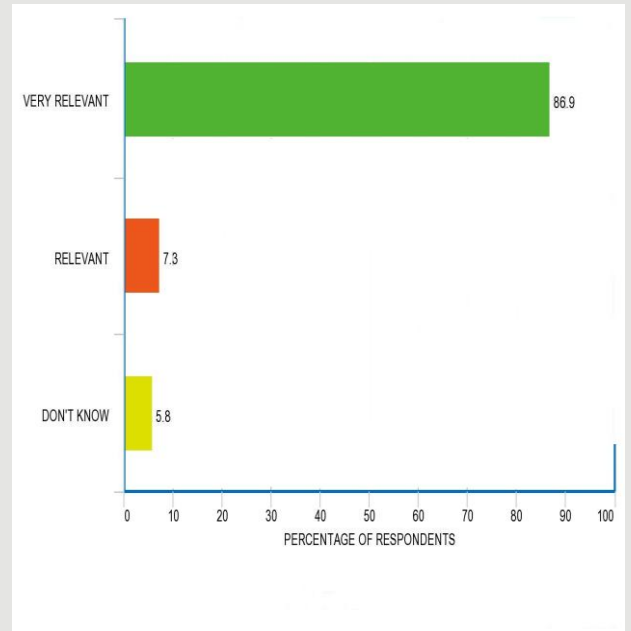


Figure 3: Respondents' opinion on the relevance of use of toys during paediatric radiographic examinations.

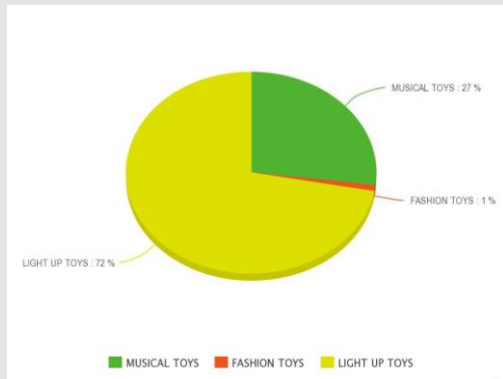


Figure 2: Category of toys available at facilities and degree of response by paediatric patients

Conclusion

The work demonstrates that the use of inducement devices elicits child co-operation and improves the ease of paediatric examinations. Thus, implementation of these devices during paediatric radiography may improve work efficiency as well as optimization of paediatric imaging.

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