

Current immobilization implementation of pediatric patients in five major public hospitals in Kuwait: a prospective study into policies and guidelines for radiology departments

M. Dashti*, M. Al-Abbad, A. Faleh, S. Al-Ostath.

Kuwait University, Health Sciences Center, Faculty of Allied Health Sciences, Radiologic Sciences Department.

***Corresponding author:** *Dr. Dashti, Kuwait University, Faculty of Allied Health Sciences, Radiologic Sciences Department, Sulaibikhat 90805 Kuwait. Email: drmohsen.dashti@gmail.com*

Abstract

An immobilization and restraint technique in pediatric radiography is essential to minimize repeat rates. Achieving proper positioning is one important factor in infants and young children radiography and considered a major challenge facing the radiographic technologist due to the fact that infant and young children are unable to neither cooperate nor understand simple verbal direction. The challenge in such vital field also arises from the fact that it is the technologist responsibility to ensure patient safety and minimize patient's movement and discomfort during examination. Although age-appropriate communication skills, proper education and training are very effective, they could be difficult to exercise on all patients in the category of infants and young children in the field of radiography.

Key word: Radiography, Pediatric patients, X-ray.

Introduction

The importance of valid policies and guidelines for the implementation of immobilization and restraint techniques in pediatric radiography is essential to minimize repeat rates, allowing a better understanding of such important yet not too discussed topic in the local and regional area. Achieving proper positioning is one important factor in infants and young children radiography and is considered as a major challenge facing the radiographic technologist due to the fact that infant and young children are unable to neither cooperate nor understand simple verbal direction (Linder & Schick, 2007).

The challenge in such a vital field also arises from the fact that it is the technologists' responsibility to ensure safety of patient and minimize patient's movement and discomfort during examination. This can be achieved by possessing age-appropriate communication skills, proper education and training. Although these methods are very effective, they could be difficult to exercise on all patients in the category of infants and young children in the field of radiography.

Literature review

The literature demonstrates in number of studies that the radiographers have a duty to combine an understanding of technical requirements as well as psychological needs when it comes to pediatric and children radiography (Linder & Schick, 2007; Allison & McHugh K, 2008; Graham & Hardy, 2004). The technical aspects can be developed from years of schooling and practicing; however, it is the psychological aspects that require intense training and experience to master. This can be mainly achieved by distracting the child in by the use of play/equipment to divert attention during a potentially stressful medical procedure is utilized. Distraction is considered as a simple strategy used cognitively to manage child's pain especially during a medical procedure including pediatric radiography. Distraction aims to divert the child's attention away from the medical procedure in order to reduce pain and distress. This according to the literature (Kleiber & Harper, 1999) could be done by either redirecting the patient's attention passively or by involving the patient in a distraction task actively. Therefore, if this aspect of

children and infant imaging is lacking, the need to implement different immobilization and restraint techniques become an essential tool for a successful radiography (Graham & Hardy, 2004).

Immobilization and restraint

Immobilization and restraint are defined as, rendering a child who is fixed or incapable of moving with their consent and the application of force to restrict movement against the wishes of a child, respectively (Steadman's medical dictionary, 1999). Immobilization and restraint techniques involve different means of implementation and various route of practicing. One way to implement restraint or to immobilize the child is by using the commercially available instruments, built and developed to limit motion artifact caused by uncooperative children or infants (Linder & Schick, 2007). Since motion blur the edges of closely spaced objects on image thus, leading to repeating the radiograph, there are devices and methods that have been used for reducing motion including (Linder & Schick, 2007; Hardy Boynes, 2003).

Another factor that is investigated in the literature, but not considered in the current study is the ability and the experience of radiographic staff in infants and young children radiography. Findings from that study (Cook *et al.*, 2001), triggered the curiosity to examine the need for education and training in techniques of child restraint and immobilization for radiographers especially since such training courses are known to be very limited in Kuwait.

Aim of the current study

The current study aims to describe lack of understanding the vital role of child restraint and immobilization techniques with respect to radiographers in different major hospitals in Kuwait and to emphasize on the need for policies and guidelines to implement them in pediatric radiography.

Methods

The current study focused primarily on the use of self-designed questionnaire described below and a group of 78 participants (radiographers) from five major public hospitals in Kuwait to acquire and analyze the data.

Pediatric questionnaire

A self-designed questionnaire appropriate for measuring the characteristics of a sample population was used to examine samples from five major hospitals in Kuwait. The questionnaire applied the technicality recommended in previously published work related to the aim of the current study (Graham & Hardy, 2004; Oppenheim, 1996) to ensure its effectiveness. The questionnaire defined three major terminologies; restraint, immobilization and distraction at the beginning to give the participant a better understanding of the scope of the questions. Fourteen designed questions were included to reach the aims and objectives of the study.

The questions concentrated on the aspect of the participant's view and to take on the use of immobilization as well as the overall knowledge of the available commercial immobilization instruments. The questions also focused on the participant's view on the necessity of training and education courses developed to enhance such an important patient care aspect of their daily job.

Factors influencing the implementation of different means of restraint and immobilization as well the frequency to utilize such techniques were also covered in the questionnaire. The possibility of using different distraction methods during a radiographic examination of pediatrics was also mentioned in the questionnaire as well as the participant's view on the essential need for training course examining distraction techniques was also considered.

Hospitals and participants

Seventy eight participants from five different major hospitals in Kuwait including; Mubarak, Amiri, Military, Jahra and Sabah took part in this study. The participants were all radiographers working in Kuwait from different nationalities with 36 males and 42 females. Thirty five participants had 5 years or less experience in their current department, 18 participants had an experience of 6-10 years, 9 participants with 11-15 years experience, 5 participants had 16-20 years experience and 11 participants had 20 years or

more experience in their current radiology department.

majority (89%); however, agreed on the necessity of such proper training course.

Table 1: Perceived need for restrain according to age of child (n=54)

Age	Always	Usually	Sometimes	Rarely	Never
0-3 months	33	6	6	5	4
3-12 months	39	11	4	0	0
1-3 years	24	21	7	2	0
3-5 years	2	19	25	6	2
5-12 years	1	4	12	19	18
12-15 years	1	1	5	14	33
15 years +	1	1	2	5	45

Results

The first 5 questions were answered by all participants; however, only 69% (n=54) answered questions 6-9 since they did not apply to the rest. 72% of participants (n=56) indicated that they were parents to one or more living child and 54% (n=42) showed that they were aware of local guidelines in their departments regarding the restraint of children and use of immobilization techniques. Of the 36 participants who were unaware of local guidelines in their departments regarding the restraint of children and use of immobilization techniques, 78% (n=28) indicated the need for such guidelines. When asked if they use any restraint or immobilization technique on pediatrics in their departments, 69% (n=54) indicated a positive answer. Only 56% (n=30) of participants indicated that they have not received any specific training in techniques for the safe use of restraint or immobilization of pediatrics or children. The

Influential factors affecting participants to use one or more form of restraining or immobilization techniques included; age of child, safety of child, radiation protection, time available for examination, necessity of examination, child’s level of distress, child’s level of understanding, presence of mental/physical disorder, presence/absence of parents and others. Participants who undertook child restraint as part of their clinical practice (n=54) were asked to identify from the mentioned influential factors, which factor(s) would suite them the best (Fig.1). The most influential factors in deciding whether to restrain a child were child safety (91%), age of child (89%), radiation protection (85%), distress level (83%), mental and understanding level with the same score (81%), parent (78%), time (76%) and finally necessity of examination (65%).

Participants were asked to indicate the frequency for using a restraining technique based on the specified age groups provided in the questionnaire (Table 1). The results indicated that the age group between 3-12 months scored the highest among all other groups, showing 72% of respondents always used a restraining technique compared to only 44% to the age group between 1-3 years, 4% to the age group between 3-5 years and 2% to the age group between 5-12 years.

Majority of the participants (91%) indicated that they used holding by parent to facilitate child restraint followed by sand bags (61%), bandages/tape (57%), commercial immobilization devices (56%), and finally holding by a staff member (30%). Fig. 2 shows the break-down of restraining method/equipment used by the participants.

In response to the questions addressing whether distraction methods were used by the participants in clinical practice and proper training was received, only (10%) and the vast majority (74%) indicated that they always used distraction and agreed on the need for receiving proper training for

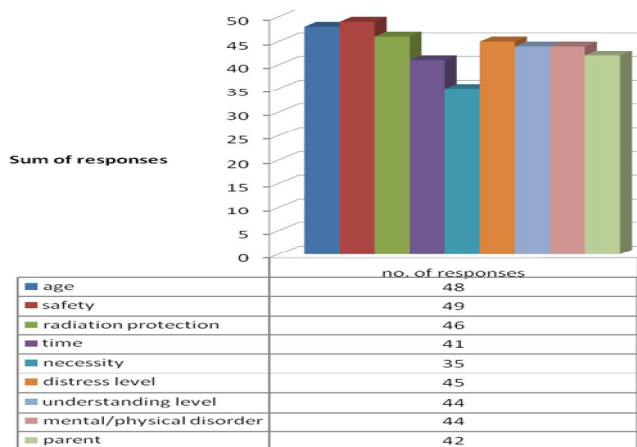


Fig.1: Factors influencing the decision to restrain a child (n=54)

distraction methods, respectively. Of the 78 participants, 51 (65%) indicated that their departments lacked a suitable range of equipment to aid in the distraction of children during the examination. Fig. 3 shows greater details of the frequency for using distraction techniques as an alternative to restraint or immobilization techniques.

With respect to the commercially available immobilization devices only 33% (n=26) of participants were familiar with Pigg-O-stat and 36% (n=28) with plastic mold. Fig. 4 demonstrates the break-down and types of commercially

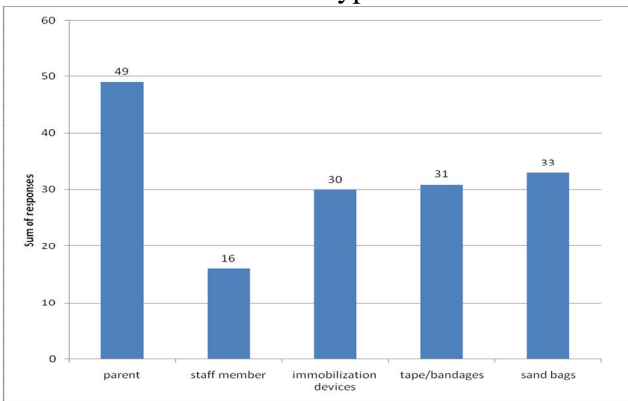


Fig.2: Methods of restraint/equipment use

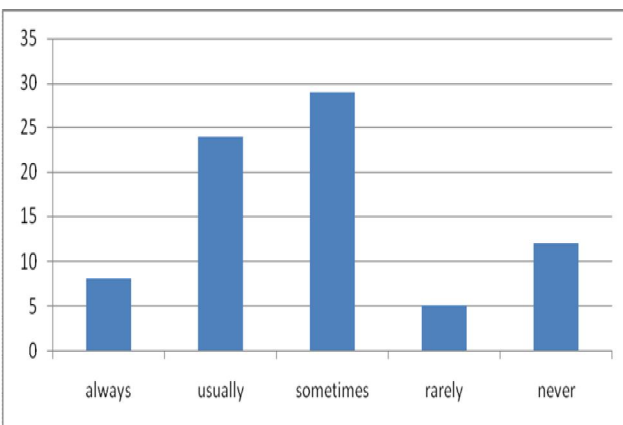


Fig.3: The use of distraction as an alternative to restraint by the participants (n=78)

available immobilization devices the participants were asked about.

Discussion

The topic of restraint and immobilization techniques in pediatric radiography is essential since repeat or retakes rates, accurate diagnostic,

patient dose, and many other factors are controlled by it (Kohda *et al.*, 2007). The findings of this study indicate the essential need to develop

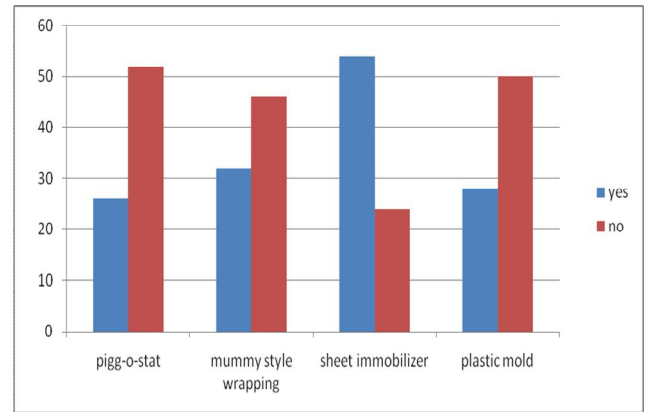


Fig. 4: Familiarity of commercially available immobilization devices by the participants (n=78) guidelines and policies for radiographers and health personnel working in the radiology department including nurses to follow and implement in pediatric radiography.

The fact that 31% of participants do not restrain or immobilize infants or children of any age group is an alarming result, indicating that the patient care is a topic that is well under appreciate it and cared for in major public hospitals in Kuwait. It is also important to point out that although 54% of participants showed that they were aware of guidelines regarding restraint or immobilizing children in their departments, these guidelines do not in fact exist in any of the public hospitals in Kuwait. This question in particular, was included deliberately to show the lack of essential policies in public hospitals and the misunderstanding that most radiographers have between understood what is taught in Kuwait University during their studies and what is available as real policies and guidelines in the working fields. It can be strongly suggested that, what radiography students learn during their second year in the university as part of "Patient care and management 202" course is confused with the actual written policies and guidelines in the hospitals that do not exist.

Proper training was also another alarming finding of this study since only 54% of respondents to that part of the questionnaire indicated receiving

such training. If any sort of actual training was made available to the participants then written guidelines and policies should be made available for all non trained radiographers. It should be noted that the training nature or program was not discussed by the participants.

Child safety and age of patient were found to be the most influential factors for the participants to use any kind of restraining or immobilization technique, whereas time and necessity of examination were the least influential factors to restrain the patient. Age break-down was another important finding of this study since it was indicated that 72% of participants agreed on restraining age group between 3-12 months compared to only 44% of participants cared to restrain patients between the ages of 1-3 years. The reason for such an action cannot be scientifically proven in this study; yet, one assumes that such action could suggest the lack of basic understanding from the radiographer that the children in this age group are the most active compared to any other groups. Therefore, restraining them could prove to be an essential decision. It should be noted that in most Arabic countries and especially Kuwait infants (0-12 months) are usually wrapped in a mummy-style wrapping throughout the day and only released during play times since, the Arabic culture trust that this method of wrapping helps the infants body posture and overall strength when the grow up. Hence, most infants in the age group of 3-12 months are wrapped and restrained already from any movement when they are presented for any medical imaging examination and therefore no extra restraining or immobilization techniques are usually needed. Unlike patients in the age group of 1-3 years where they are most active and especially require an immobilization and restraining technique.

Psychological effect of parent presence in the x-ray room during any radiographic procedure was apparent since the finding indicated that the vast majority (91%) of participants agreed holding by the parent was the number one restraining technique used with pediatric patients. The lack of

distraction equipments or means and the little knowledge of participants of such technique was another disappointing result found in this study. Only 10% of all participants showed that they always use distraction method during radiographic examination of a child. The majority (74%) of participants agreed on the need for proper training to strengthen their understanding of distraction methods and techniques.

Conclusion

Written guidelines and policies to implement proper restrain and immobilization methods and techniques are essential for all the hospitals in Kuwait. Frequent and professional proper training on different aspects of restraint and distraction methods used in pediatric radiography are also important and should be made mandatory for all health personnel working in the radiology department.

In conclusion, the proper implementation of restraint and immobilization technique in Kuwait hospital is a topic of great necessity but less interest based on the findings presented in this study. Further studies are required to pave the way for better understanding of this implementation. Proper training and in hospital courses are also needed to expand the knowledge of radiographers and increase their awareness.

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