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Improvement of Post-surgery Pain Management in Children: A Participatory Action Research

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ABSTRACT

Background: Pain management in children is one of their rights and a treatment priority. This issue is considered as one of the accreditation standards in hospitals. Therefore, it is necessary to anticipate enhancement of pain management quality in hospital plans. This participatory action research (PAR) aimed to improve pain management in children under surgery.
Methods: This qualitative study was performed as a PAR. Steps of action research, including problem defining, planning, execution, and evaluation were assessed for pain management in children. The research was completed in department of pediatrics surgery, and operation room of a selected teaching hospital in Isfahan, Iran. Participants were managers, nurses, doctors, mothers, researchers, and personnel of department of pediatrics surgery and the operation room. Purposive sampling was performed until data saturation. The data were collected through participatory observation, interview, meetings, and referring to the documents of children under operation. The data were analyzed by content analysis and discussed according to lewin's change theory.
Results: Findings of the present study demonstrated that pain management involves three areas of assessment, intervention, and pain evaluation. These subjects manifested as six themes, namely "necessity of understanding pain management", "change painfulness", "continuity of pain screening and recording", "evaluating mothers", "change struggles", and "progression in training programs".
Conclusion: According to the results of this study, continuous management and evaluations of pain in children after surgeries seems to be necessary. It is recommended that specific training programs and specific post-operation protocols be prepared for children.

1. Introduction

All children have the right for pain relief and the policy of the hospitals should consider patients' right regarding assessment and proper control of pain based on accreditation standards. It is emphasized that patient's pain get screened and treated during the primary medical evaluations and surgical treatment.[1] In recent decades, pain in children has been the subject of special interest.

The American Academy of Pediatrics emphasizes that all the painful actions should be anticipated, prevented, and properly treated.[2] Although many studies have been performed in this regard, policies of hospitals do not manage pain suitably and health personnel avoid administering pain relief methods due to various reasons. Therefore, most children going under therapeutic and diagnostic procedures, experience the short-

term and long-term destructive effects of pain, which might impose negative impacts on their growth and development.

Different factors lead in inefficiency of pain relief in children. Some of these factors are insufficient initial trainings for service providers, limitation or lack of correct knowledge considering pain control in children, fear from addiction to narcotics, or incorrect beliefs about respiratory depression in neonates.[3, 4] In addition, attitudes and beliefs of doctors result in avoidance from administering medication, especially narcotics. Even the agents may not be applied at suitable timing when they are prescribed and be administered just based on patient's requirement (PRN).[5, 6]

Results of the study performed by Namnabati et al. (2016) indicated that pain management is of average value in attitudes of nurses and doctors.[7] Considering the importance of the issue, nurses and doctors should have sufficient knowledge about evaluation and diagnosis of pain intensity, as well as supplementary treatments and non-medication methods for pain relief. As a result, they will be able to control the pain with positive attitudes.

Health service personnel control pain according to the organizational policies. Consequently, organizational barriers play an important role in pain management.[8, 9] The literature demonstrates that one of the limitations in pain control is lack of proper frameworks for different neonatal and pediatric age ranges. Consequently, it is of high necessity to compile guidelines for pain treatment and supervise favorable execution of these frameworks.

It should also be pointed that insufficient skills of nurses in pain assessment leads in improper pain treatment.[10, 11] Moreover, findings of another study on pain control in neonates demonstrated that there is a gap between the performance of nurses with their knowledge and attitude. This gap is mainly due to the hospital policies and affects execution of pain control plans.[12]

Therefore, changes in health systems toward enhancement of children health seem necessary for favorable pain management based on accreditation standards, policies, and organizational functions. The evidence in the literature are indicative of some performance failures that need fundamental changes.[5, 9, 12]

Changes in an organization require a participatory approach in order to get executed. As a result, applying participatory approaches could cover the aims of researchers. This study aimed to investigate improvement of pain management in pediatrics surgery department of a teaching hospital in Isfahan University of Medical Sciences, Isfahan, Iran through qualitative approach and participatory action research (PAR).

2. Methods

2.1. Design

This qualitative study was designed to enhance pain management in pediatrics surgery unit of a teaching hospital in Isfahan, Iran in 2016 through PAR approach.

2.2. Participants and settings

Purposive sampling was performed until data saturation. The participants included 50 individuals from hospital environment, such as the managers, nurses, doctors, mothers, and personnel of pediatrics surgery unit and operation room. In addition, researchers from nursing and midwifery, as well as medicine faculties participated in the study.

2.3. Data Collection

The data were collected through participatory observation, interviews, and referring to the documents. Participatory observation (observer as the participant) allowed the researchers to accurately clarify the situation by observation and participation in some activities with regard to the position and responsibility. Moreover, it encouraged the participants for improvement of pain management. Group meetings were held and interviews were completed with all the individuals who were personnel of the hospital. Interviews were 15-60 min and were performed in the office of department manager, operation room, and surgery ward.

This study is part of the research that was completed based on steps of action research.

A. Problem defining: This is the most important and fundamental step in action research that began with participation, agreement, and tendency of participants. Necessity of the research should be clarified before starting this step. Firstly, a meeting was held with managers and nurses of the department and the objectives of the research, as well as the necessity for pain management improvement were discussed.

The present situation versus the ideals were assessed and disputed. Questions were posed regarding pain in children under surgery, how it is evaluated and controlled in department of surgery, operation room, and recovery, and also the methodes for managing this pain.

The data were collected by bedside observation of pain management process. Different areas, including pain assessment form for different ages and execution of PRN orders for narcotics injection

were investigated. In addition, interviews with personnel and checking the documents of children accepted for surgery were performed. The results were analyzed using traditional content analysis approach.

B. Planning: F our official and several unofficial sessions were held with all the nurses and doctors involved in this study. Educational content was determined according to the text books, articles, and ideas of the specialists regarding medication and non-medication methods of pain control. In addition, times of the workshops were planned.

Based on the needs, forms of pain evaluation were prepared for three age ranges of children under 3, 3-7, and over 7 years. These forms helped to assess pain intensity in recovery, at the time entrance in the department, and three days post-surgery.

C. Execution: All the anticipated plans were executed in this step. Initially, the researcher held a workshop for personnel of surgery wards and operation room. Professors and personnel of nursing and midwifery as well as medicine faculties participated in the workshop. Medication and non-medication methods for pain control, tools of evaluating pain in children and how they are used, methods for recording children pain in documents, types of agents administered, indications, and contraindications were all taught in this workshop.

Next, it was decided to prepare the forms for pain evaluation and attach them to the documents. Attaching the forms was not mentioned in the routine program of the hospital. Therefore, execution was accompanied by some problems because the forms were attached in the department of pediatrics and some of the children went directly to the operation room without pain evaluation. Consequently, it was decided in cooperation with the operation room that the forms be filled out in the operation room and then handed out to the department.

The research team identified and evaluated all the strength and weakness points by direct control of the process. The limitations were identified by giving feedbacks to the managers and members and recommendations were proposed.

D. Evaluation: Evaluation in this study meant making decisions and reconsiderations during all the steps. After each stage, the results were assessed and reconsidered in meetings with participants and decisions were made for the next steps.

2.4. Ethical considerations

The ethical code for this study was taken from the Ethics Committee of Isfahan University of Medical Sciences. Aims of the study were clarified for the managers and personnel before holding the meetings, workshops, and preparation of the forms. Informed consents and permissions for recording the interviews were taken from the participants and the place of interview was determined considering their ideas. The participants were assured about confidentiality of their names and information.

2.5. Statistical analysis

The data were analyzed by traditional content analysis approach. The analysis started by reading all the data repeatedly. The data were read word by word to extract the codes and the semantic units were determined. The codes were allocated to the semantic units. Words used by the participants and the implying codes (impressions of the researchers from the statements) were utilized for coding.

Next, the codes that had similar meanings were summarized for clarification and categorized as themes and subthemes. Lincoln and Guba's evaluation criteria, including credibility, transferability, dependability, and confirmability were applied for data validation.[13]

As the first step for evaluating the present situation, group sessions were held in management office of the hospital with the researchers, managers, supervisors, and some nurses. Voices were recorded with permission from the people present in meetings and the issues regarding improving pain management were discussed.

Afterwards, the audio files of discussions were typed word by word, read, and encoded. Some more meetings with manager of pediatrics surgery department, operation room, and recovery seemed to be necessary for accurate analysis of the data and determination of the problems. After completion of other interviews, codes of this part were also assessed and the main themes and subthemes were formed by comparing and determining the similarities and differences.

As the second step, an official meeting was held with the managers to plan the actions. The audio files of this step were also typed, encoded, and classified. In order to correct the defects in data collection, some unofficial sessions and discussions were planned and held. Official and unofficial interviews were performed with nurses and mothers during the execution and evaluation step. Some of these stages had overlaps and assessment of one part could lead to another problem being revealed and the process was restarted. It should be mentioned that some themes were not confirmed by the research team after data analysis and the meetings were held again. After reevaluations, the resultant themes were finally accepted. In addition, other collection methods, such as participatory and

long-term bedside observations were also considered to strengthen data analysis.

3. Results

The data obtained in this study were the results of interviews with 50 individuals of hospital personnel (doctors, nurses, and secretaries) as well as mothers. According to the findings, the participants included 45 women and 5 men with mean age of 38 years. Other demographic characteristics of the individuals are demonstrated in Table 1. Findings of the present study entailed 230 items making up 38 subthemes. The subthemes were categorized as 12 groups in six themes.

Pain management encompasses three areas of checking, intervention, and evaluation. The results of current study were extracted as six themes, namely "necessity of understanding pain management", "change painfulness", "continuity of pain screening and recording", "evaluating mothers", "change struggles", and "progression in training programs" (Table 2). Extraction of the themes is well described below.

1.Necessity of understanding pain management: At the beginning of the study, problem definition was necessary according to the steps of action research. Presence at bedsides, in addition to meetings and interviews determined that enhancing pain control requires understanding the stages of evaluation and intervention. Considering pain treatment, one of the nurses in pediatric surgery department stated that "we observe, if the child has pain, well we administer the analgesic based on the order…… If he/she is so restless we inject phenobarbital".

2.Change struggles: Improving pain management requires changes with cooperation of doctors and nurses. Therefore, preparing pain evaluation forms suitable for the conditions of pediatrics surgery department was of great importance.

It was emphasized in the planning step that pain control is needed regarding the hospital policies. Consequently, the pain evaluation form was prepared applying the ideas of all the participants. The problems concerning form preparation were solved by cooperation of the managers. One of the managers stated that "considering the importance of pain evaluation, we pose the subject in the policy making session of the hospital, so that the pain evaluation forms become official and can be used for all patients". Moreover, in order to motivate the personnel, it was agreed that the hospital acknowledge the cooperating people.

3.Evaluating mothers: Concerning family-centered care in the department of pediatrics, mothers are the main caretakers. Mothers consider the needs of their children and cooperate with the personnel about cares, such as administering the oral medications, incensing, hygiene cares, calming, helping the child to think of other things, and reporting the pain. Furthermore, mothers are with neonates all the time and screen them well. Therefore, doctors and personnel usually ask the mother about the pain condition. One of the nurses said that "if there is something wrong with the child, mother comes and tells us that my child is restless and she calms the child herself".

4.Progression in training programs: Some changes were needed during the execution process. It was proposed officially and unofficially in the meetings with managers and personnel that training programs and workshops should be held in this regard. As a result, workshops with cooperation of nurses and doctors from the hospital and the faculty of nursing and midwifery were held.

Topics of the workshops included pain definition, how to evaluate children in different ages, and application of different pain evaluation forms. Moreover, the participants were familiarized with various medication and non-medication interventions for pain control. One of the participants stated that "we did not think that the pain evaluation tools are specific for each age". One of the nurses told us about addiction to narcotics: "we are always afraid of addiction to narcotics…. Really we are not yet sure but we administer if it is in the order".

5.Change painfulness: There were several challenges in pain evaluation, completing the forms, and attaching them in the execution stage and during observations. Many of the nurses mentioned low number of personnel, noisiness of the ward, and high patient acceptance in evening shifts as obstacles for pain evaluation. One of the participants stated that "the department is too crowded and noisy. We do not have time to complete the evaluation forms. We check the child when he/she comes from operation room but we do not have time to fill in the forms after that".

Filling out the forms in recovery room was also difficult for the personnel due to time limitations. Even the facial expression and behavior of the personnel indicated that they were under pressure in recovery room and the forms could worsen their situation.

The reason for naming this theme was these difficulties and resistance to change. One of the personnel said that "You see the patient is severely ill…..he/she has hemorrhage and I should adjust the

serums. He/she is restless, has low oxygen pressure….how can I fill in the form?". Another nurse stated that "They should provide sufficient personnel and facilities, so that we can continue".

6.Continuity of pain screening and recording: Pain management requires checking, intervention, and evaluation continuously. Therefore, it is essential to check the child's pain and record it in the documents. Considering the importance of pain evaluation, pain of the patients is recorded in a specific part at the time of acceptance and history taking. Afterwards, medication and non-medication interventions are performed if needed.

Bedside checking and document reading revealed that narcotics and analgesics are usually applied at the initial stages post-surgery when the pain is severe. In addition, supplementary agents, such as acetaminophen and phenobarbital are used for restlessness and continuous analgesia. One of the doctors stated that "Well, patients are visited every day and we leave orders if they have pain….. Mostly they have pain on days one and two".

Results of the current study led to creation of some themes that might enhance pain management. However, changes require some policies, for which proper personnel, management, and supports are necessary. In order to improve the quality of interventions, all the mentioned parts should be evaluated repeatedly.

Table 1. Demographic characteristics of the participants

Row	Participant	Number	Mean age (years)	Work place	Mean experience (years)	Type of participation
1	Nurse	6	34	Pediatric surgery department	13	Coordination and participation in sessions and interviews, coordinating the workshops, pain evaluation in different shifts, administering the medication and non-medication interventions
2	Doctor	2	45	Pediatric surgery department	26	Participation in sessions and policy making for pain management, administering analgesics, coordinating the interventions
3	Anesthesiologist	2	41	Operation room and recovery room	8	Determining the type of medication interventions in operation room or recovery
4	Anesthesia assistant	2	29	Recovery	3	Cooperation in medication interventions
5	Secretary	2	35	Operation room and pediatric surgery	4	Coordination and cooperation in the official process
6	Mother	30	38	Pediatric surgery	-	Pain evaluation and non-medication interventions
7	Researchers	6	45	Nursing faculty, medicine faculty, pediatric surgery department	20	Coordinating the sessions, preparing the evaluation forms, holding and teaching in the workshops, administering the medication and non-medication intervention, managing the study

Table 2. Formation of subthemes, groups, and themes

Theme	Main groups	Subthemes
1.Necessity of understanding pain management	Need for pain evaluation according to the evolution period	- Ignoring pain in different ages - Using a single form for infancy to adolescence - Lack of time for continuous evaluation Awareness through mother
	Insufficient pain treatment post-surgery	- Sleeping children are painless - Analgesic sufficiency just in the operation room - Belief in analgesic effect of phenobarbital
2.Change struggles	Active participation	- Efforts for preparing pain evaluation forms - Considering benefits and form fill out - Attaching the evaluation forms to the documents
	Considering the medication and non-medication interventions	- Considering child pain with age - Administering PRN agents - Administering analgesics in the operation room - Expressing challenges of pain control
3.Evaluating mothers	Dependence on mother report	- Mothers' warnings about children pain - Administering analgesic with mother referral - Administering PRN agents with mother referral
	Conscious mothers	- Full-time presence of mother beside the child - Rapid report of pain by mother - Tranquilizing by non-medication methods
4.Progression in training programs	Decision making for improving training programs	- Planning the pain management workshop - Preparing different pain evaluation forms - Agreement on the suitable form for the department
	Executional participation	- Pain workshop - Distributing pain subjects among the personnel - Control and completion of evaluation forms
5.Change painfulness	Challenges for filling out the form	- Problem for writing due to the low number of personnel - Crowded department - High evening acceptances - Not being the routine job
	Urgency of action instead of recording	- Post-surgery cares - Priority of post-surgery cares compared to the evaluation forms - Necessity of controlling hemorrhage
6.Continuity of pain screening and recording	Importance of pain recording	- Lack of record means lack of intervention - Emphasize on recording medication interventions
	Attention to the importance of evaluation	- Need for reevaluation - Repeated form fill out - Mother's feedback

4. Discussion

Aim of the present study was to improve pain management in children post-surgery. According to the findings of this study, pain management in children after surgeries could be enhanced through personnel cooperation and mothers participation. This PAR was performed in order to make changes and Lewin's change management model is utilized for the discussion. This theory includes three stages of unfreeze, change, and refreeze(Figure 1).[14]

The resultant themes of this study were matched with the lewin's model. The first step of the theory is unfreezing that reflected in themes of "necessity of understanding pain management" and "change painfulness". Unfreezing is the step in which need for change is clarified in a way that personnel and organization could easily accept the need.[14] This part is consistent with problem definition and description of the present situation in action research. The themes of "necessity of understanding pain management", "change painfulness", and "evaluating mothers" demonstrate the existing condition and challenge.

Results of the studies performed in Jordan and Iran indicated that lack of pain evaluation tools and not feeling the need for pain control post-surgery lead to insufficient pain relief in neonates and children.[15, 16] On the other hand, a mixed-method study completed in a center in England revealed that children and parents were satisfied with pain

management and considered it as the result of nurses' beliefs toward pain management.[17]

The "change painfulness" theme was due to the reluctance of nurses and doctors for pain management because of mistaken beliefs, such as lack of pain in children, pulmonary depression, addiction to narcotics, in addition to the limitations.

However, findings of the studies performed in last decades in Iran demonstrate that some barriers cause the pain problem to remain unsolved. The study conducted by Yari and Alhani showed that some barriers in aspects of management and personnel (limited time of nurses and lack of proportional number of nurses to the patients), education (unavailability of pain evaluation tools in pediatric department), environment and facilities (insufficient games and amusements in the ward), and motivation (dissatisfaction of the nurses with work shifts and hours) resulted in lack of pain management. Consequently, nursing committee of children pain control was proposed for the hospital.[18]

According to our results, "evaluating mothers" theme indicates that mothers also play a critical role in pain assessment. Literature also shows that in departments of pediatrics mothers should participate in cares. However, it has been emphasized that mothers, especially young ones are not always capable of checking the child's pain properly.[19, 20]

Twycross (2013) studied the attitudes of nurses toward barriers and facilitators of children pain in England. The mentioned study revealed that parents exaggerate pain of their child in order to get analgesics.[10] Therefore, the interactions between mothers, children, and other members of health team should get more investigated and understood. Moreover, mothers could get involved in educational and care processes of pain management as the main caretakers.

The second stage of change was consistent with the "change struggles" and "progression in training programs". Change initiates with movement from the old condition to the new one. In this stage, members try to change the organization by changing the values, attitudes, and behaviors. The participants choose the suitable methods for change in this step because they understand the need for change.

The "progression in training programs" theme manifested by presence in training programs and participation in preparing pain management forms. The educational programs led to augmented knowledge and change of attitude during the change stages. Results of the study performed by Namnabati et al. (2016) revealed that nurses had positive attitudes toward non-medication methods, while doctors had the positive attitude toward medication methods.[7] Furthermore, participation of the personnel in educational programs results in enhanced knowledge and better performance in pain management.[21]

The refreezing stage is when the behavioral patterns are accepted and the participants admit the changes with knowledge and ration. The behaviors become bevels and are stabilized. It is possible in this stage that changes in organizational culture, bevels, policies, and functions are required.[14]

Results of the current study, such as defining a proper protocol for pain management and preparing pain evaluation forms for different ages in addition to training programs were all consequences of refreezing. These results reflected as the "continuity of pain screening and recording" theme. It is important to know improving pain management requires considering all the features of pain in checking, interventions, and evaluation stages.

Findings of a study on 1000 departments of pediatrics in United States of America (2016) indicated that all the departments perform pain evaluation routinely. However, there were some defects in intervention and evaluation parts that should be eliminated.[22] Therefore, pain in children needs to be managed in three steps of checking, intervention, and evaluation.[23] This purpose is achieved by action research cycles and Lewin's model leading to enhanced pain management and pain relief in children.

5. Conclusion

According to the results of this study, pain management improvement requires attention in all areas, including checking, intervention, and evaluation. Progress in training programs, change struggles, and presence of evaluating mothers are among the strength points, which could be helpful in pain management. Change process was accompanied by limitations, such as personnel deficiency, noisiness of the department, lack of sufficient time for filling out evaluation forms as the "change painfulness" theme. However, the barriers could be overcome based on Lewin's model and pain control in children after surgeries could be enhanced. It should be mentioned that regarding the inclusive PAR approach, part of this project was completed and action research cycles are in process in different steps.

Considering the type of change, action research studies require much time and insufficient time was one of the limitations of this study. Moreover, there were some limitations in execution part. For instance, multiple duties of the nurses and high number of patients lead to lack of enough time for completion. It was attempted to solve the problem

during the following sessions with the supervisor of the department. As a result, it is recommended to involve other members of the team through motivation and holding continuous training classes.

Conflicts of interest

The authors declare no conflicts of interest.

Authors' contributions

Mahboobeh Namnabati:Designing the study, supervising the research implementation, scientific edition, and final confirmation of the article, Mehrdad Memarzadeh: Cooperation in implementation of pain management, Fariba Taleghani: cooperation in preparing the article and design of the method of study, Zeinab Hemati: cooperation in preparation of assessment tools and designing the study, Farangis Samouei: cooperation inimplementation of pain management, Mehrdad Hosseinpour: cooperation in implementation of pain management and designing of study

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References

1. Mamirazavi H, Mohaghegh M, Mahdavi M. Standards of hospital` accreditation. Ministry of Health and medical education. Health vice.1th ed. Tehran: Nashre seda;2010.
2. World Health Organization. WHO guidelines on the pharmacological treatment of persisting pain in children with medical illnesses. World Health Organization; 2012.
3. 3.Stevens BJ, Abbott LK, Yamada J, Harrison D, Stinson J, Taddio A, et al. Epidemiology and management of painful procedures in children in Canadian hospitals. Canadian Medical Association Journal 2011; 183(7): 403-10.
4. Manchikanti L, Abdi S, Atluri S, Balog CC, Benyamin RM, Boswell MV, et al. American society of interventional pain physicians (asipp) guidelines for responsible opioid prescribing in chronic non-cancer pain: part 2-guidance. Pain Physician 2012; 15(3 Suppl): 67-116.
5. Carter B. Child and infant pain: principles of nursing care and management. 1th ed. Springer 2013.
6. Parvisi F, Alhani F. Studying the rate of knowledge and using of pain assessment tools in children and complaining the importance of education about it. Iranian Journal of Pediatrics 2005; 15(1): 190.
7. Namnabati M, Mohammadamini Z, Maroofi M, Barekatein B. Point of view of nurses and physition about pain management in infants. [MS Thesis]. Isfahan University of Medical Sciences 2016.
8. Namnabati M, Abazari P, Talakoub S. Identification of perceived barriers of pain management in Iranian children: a qualitative study. International journal of Nursing Practice 2012; 18(3): 221-5.
9. Scholten AC, Berben SA, Westmaas AH, Van Grunsven PM, De Vaal ET, Rood PP, et al. Pain management in trauma patients in (pre) hospital based emergency care: current practice versus new guideline. Injury 2015; 46(5): 798-806.
10. Twycross A. Nurses' views about the barriers and facilitators to effective management of pediatric pain. Pain Management Nursing 2013; 14(4): 164-72.
11. Bice AA, Gunther M, Wyatt T. Increasing nursing treatment for pediatric procedural pain. Pain Management Nursing 2014; 15(1): 365-79.
12. Aziznejadroshan P, Alhani F, Mohammadi E. Challenges and practical solutions for pain management nursing in pediatric wards . Joural BUMS 2015; 17(12): 57-64.
13. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. Qualitative Health Research 2005; 15(9): 1277-88.
14. Shirey MR. Lewin's theory of planned change as a strategic resource. Journal of Nursing Administration 2013; 43(2): 69-72.
15. Asadi Noghabi F, Soudagar S, Nazari O. Knowledge, attitude and performance of nurses regarding pain assessment and measurement, Bandar Abbas, Iran. Bimonthly Journal of Hormozgan University of Medical Sciences 2012; 16(5): 403-13.
16. Abdalrahim MS, Majali SA, Stomberg MW, Bergbom I. The effect of postoperative pain management program on improving nurses' knowledge and attitudes toward pain. Nurse Education in Practice 2011; 11(4): 250-5.
17. Twycross A, Finley GA. Children's and parents' perceptions of postoperative pain management: a mixed methods study. Journal of Clinical Nursing 2013; 22(21-22): 3095-108.
18. Allahyari A, Alhani F. Methods and processes to pediatrics' preparation for injection due to pain reduction. Iranian Journal of Pediatrics 2005; 1(1): 238.
19. Campbell-Yeo M, Fernandes A, Johnston C. Procedural pain management for neonates using nonpharmacological strategies: part 2: mother-driven interventions. Advances in Neonatal Care 2011; 11(5): 312-8.
20. Hockenberry M, Wilson D. Wong's Nursing Care of Infants and Children. 10 th ed. St. Louis: Mosby; 2015:36-40.
21. Varvani Farahani P, Hekmat Pou D, Saeedi M, Shamsikhani S. Investigation on the effects of pain assessment workshop on knowledge, attitude, and practice of nurses in Valie-Asr Hospital in Arak. Medical Care Journal 2014; 10 (3): 183-91.
22. O'neal K, Olds D. Differences in pediatric pain management by unit types. Journal of Nursing Scholarship 2016; 48(4): 378-86.
23. Namnabati M. Pain in children Isfahan. 1th ed. Isfahan University of Medical Sciences and Oroj; 2003: 8.

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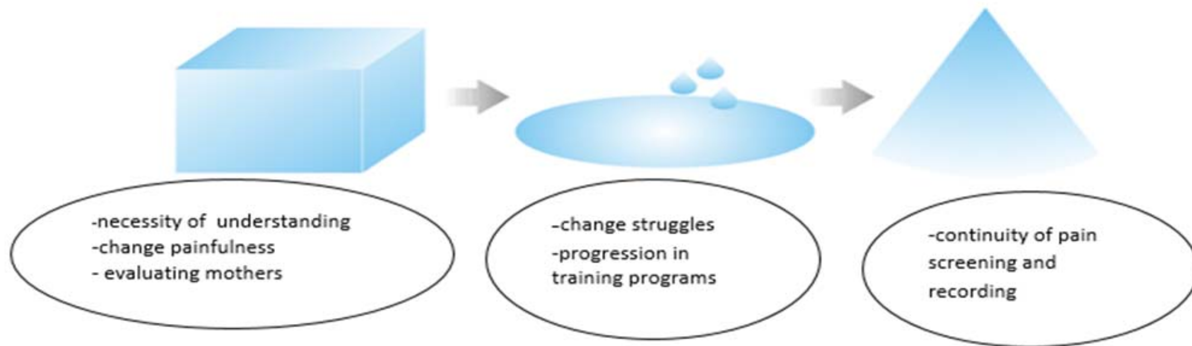

Figure 1. Steps of change according to the Lewin's model (unfreeze, change, refreeze)