

Original Article

Use of Nonpharmacological Methods of Nurses in Pediatric Intensive Care Clinics During Pandemic

Seyda Binay Yaz, PhD, RN

Assist. Prof. Faculty of Health Sciences, Pediatric Nursing Department, Izmir Bakircay University, Izmir, Turkey

Aysenur Atay

Graduate Education Institute, Nursing Principles Department, Izmir Bakırçay University, Izmir, Turkey

Correspondence: Seyda Binay Yaz, Faculty of Health Sciences, Pediatric Nursing Department, Izmir Bakircay University, Izmir, Turkey. E-mail: seyda binay80@gmail.com, seyda.binay@bakircay.edu.tr, Address: Izmir Bakircay University, Post-box:35665 Menemen, Seyrek Izmir, Turkey.

Abstract

Purpose: This study was conducted to determine the status of nurses working in pediatric intensive care clinics to apply nonpharmacological methods in reducing pain during the pandemic process.

Methods: This descriptive and cross-sectional study was conducted between February and May 2021. The sample of the study consisted of 165 nurses working in pediatric intensive care clinics. Research data were collected with the Nurses Introductory Information Form and Nonpharmacological Method Application Questionnaire prepared by the researchers. Statistical analysis of the data was done in a computer environment using the Package for Social Sciences (SPSS) 26.0.

Results: It was determined that 54.5% of the nurses first chose the application in which pharmacological and nonpharmacological methods were used together in the pain method. 58.8% of the nurses stated that the pandemic process affected their practice of nonpharmacological interventions, among the reasons are difficulty in accessing protective equipment (28.1%), the weight of working conditions (20.6%), tiredness (19.6%).

Conclusion: It was determined that almost all of the nurses working in the pediatric intensive care units wanted to receive training on nonpharmacological pain management.

Keywords: Pain management, nonpharmacological methods, nurse, pediatric, COVID-19

Introduction

The COVID-19 pandemic was declared by the World Health Organization (WHO) as of March 2021 (Huang, Wang, Li, et al, 2020; WHO, 2020). The fact that a large number of people are infected in a short time and especially the need for intensive care has revealed the importance of the concept of "care", which is the main purpose of nursing. Again, due to a social need, the "nursing profession" has come to the fore (Çevirme and Kurt, 2020). Nurses are among the groups that take the most active role in managing the pandemic process. One of the most important factors that enable people to enjoy their profession and to be professionally motivated is that people feel safe while performing their profession. However, occupational risks await nurses during caregiving during the COVID-19 outbreak in clinics or other similar work environments (Choi, et al, 2020). In this process, the

events experienced all over the world and in our country have shown that there are problems in the supply of health workers and personal protective equipment, especially in quality and quantity to meet the increasing demand. In the statement of the World Council of Nursing (ICN), dated June 3, 2020, it was stated that although all numbers could not be reached, more than 23,000 healthcare workers worldwide were infected with COVID-19 and 600 nurses died due to this infection (ICN, 2020). In the first days of the pandemic, they had to work in a busy schedule and long working hours, without taking a break. Serrano-Ripoll et al. (2020) in the study in which they investigated the effects of epidemics on the mental health of healthcare workers; As a result of the 117 studies examined, health professionals during and after epidemics; reported high levels of acute stress disorder, anxiety, burnout, depression, and post-traumatic stress disorder (Serrano-Ripoll, Meneses-

Echavez, Ricci-Cabello et al, 2020). It is necessary to maintain the current health services in the best way during the pandemic period. Pain management is of great importance, especially in newborns and children. The International Association for the Study of Pain (IASP) defined the pain experienced by every human since the existence of man in 1979 as an unpleasant sensory and emotional experience originating from any part of the body, developing due to existing or potential tissue damage (Aygin and Var, 2012).

Preoperative and postoperative invasive interventions [newborn examination, blood collection, venous catheter insertion, arterial catheterization, NG catheter insertion, foley catheter insertion, rectal tube application, aspiration, postural drainage, They experience a myriad of pain and stress due to surgery, circumcision, dressing change and removal of sutures (Cignacco, et al, 2007). The pain experienced by children negatively affects growth by causing changes in the development of the brain and senses, as well as affecting their behavior, interaction with their families, and diet (Dincer, Yurtcu and Gunel, 2011).

Pain management can be achieved with the right pharmacological and nonpharmacological approaches without harming the child (Sahiner and Bal, 2016). Nonpharmacological applications increase the effectiveness of drugs when used together with analgesics, and eliminate pain by releasing our body's natural morphine and endorphins without the use of analgesics. In addition, it is an important option because it eliminates the side effects caused by pharmacological methods, increases the quality of life, does not impose an economic burden, and shortens the length of hospital stay. For example, methods such as giving pacifiers, swaddling, kangaroo care, mother's voice, milk or scent, music, oral glucose solution, shaking toys are used in newborns with pain, whereas hot/cold application, therapeutic touch, massage, acupuncture are used in older children and adolescents. Physical interventions such as reiki and aromatherapy are effective (Wente, 2013; Khalil, 2018).

Considering that the nurse has been with the patient longer than other team members, she should use her independent roles in detecting pain and applying nonpharmacological methods primarily (Khalil, 2018; Dikmen, Usta, Ince et al, 2012). The study aimed to determine the cases of nurses working in pediatric intensive care clinics to apply

nonpharmacological methods in reducing pain during the pandemic process.

Methods

Study design, setting, and sample: This research is a descriptive and cross-sectional study planned to determine the use of nonpharmacological methods in reducing pain during the pandemic process of nurses working in pediatric intensive care clinics. The universe of the research; According to TUIK data announced by the Ministry of Health, the number of working nurses was reported to be 204 thousand 969 people (TUIK, 2020). The number of nurses working in the intensive care unit in Turkey is not known. The calculation was made based on the number of general nurses. The number of nurses to be sampled was calculated using the Epi Info Statcalc program. The number of nurses to be sampled was 165 at an 80% confidence interval.

Data collection: Study data were collected between February and May 2021. The universe and sample of the research were reached via g-mail accounts and WhatsApp groups by contacting the unit responsible on the specified dates. Nurses who can use a smartphone or computer, agree to participate in the research, and work in pediatric intensive care clinics were included in the study. The survey form was created using the Google Documents website. Before starting the survey, there was a question for nurses to consent to participate in the study. The study was started after answering the question "I completely voluntarily participate in this study" as "yes or no". Nurses' Introductory Information Form and Nonpharmacological Method Application Questionnaire, which were prepared by the researchers by scanning the literature, were used as data collection tools.

Instruments

Nurses Introductory Information Form: The form prepared by the researchers contains a total of 9 items related to age, gender, education level, years of service, unit of employment, years of working in pediatric clinics, marital status, having a child, and the desire to receive training on pain relief methods.

Nonpharmacological Method Questionnaire Form: In the form prepared by the researchers by scanning the literature, participating in activities such as seminars/congresses related to child health and diseases, taking previous training/lesson on pain control in children, 3 of the most important issues related to pain control, starting from 1 most importantly, It includes questions about the first

attempt to be made when the child has pain, the use of a pain assessment scale as a standard in clinics, the effect of the pandemic process on the application of nonpharmacological methods, the reasons for its effects, and which nonpharmacological methods are applied to the child with pain.

Ethics: Permission was obtained from the non-interventional ethics committee (decision no: 2021/162) of a state university to conduct the study. The questionnaire was created using the Google Documents website, and before starting the questionnaire, nurses were informed about participation in the study, and a consent question was included. In addition, the approval of the Ministry of Health was obtained through the Scientific Research Platform of the General Directorate of Health Services of the Ministry of Health (2021-01-20T19_02_37).

Analysis: The data were evaluated with SPSS 26.0 program in the computer environment. Descriptive statistics in the analysis of data; number, percentage, mean, standard deviation were calculated.

Results

The research was carried out with 165 nurses. 87.3% of the nurses are female, and 53% are between the ages of 26-30. When the educational status of the group was examined, it was determined that 70.3% of them were undergraduate, 15.8% graduate, 9.1% high school graduates, and 4.8% associate degree graduates. Of the nurses, 50.9% work in pediatric intensive care units, 40% work in neonatal intensive care units, and 8.5% work in pediatric surgery intensive care units. While 26.7% of the nurses have professional seniority between 1-5 years, 35.8% between 6-10 years, 87.3% of them have been working in pediatric intensive care clinics for 10 years or less.

Nurses were asked about their desire to receive training on pain relief methods, and 94.5% answered "yes" (Table 1). A 64.2% of the nurses stated that they had received training/course on pain control in children before. It was determined that the three most important subjects needed for pain control were pain diagnosis and assessment (47.9%).

The vast majority (80.1%) of the participants in the study used the phrase 'I evaluate the pain' for their first attempt when the child has pain. When the nurses participating in the study were asked, "Is a standard pain assessment scale used in your clinic?", 90.9% of them answered "yes". 58.8% of the nurses stated that

the pandemic process affected their practice of nonpharmacological interventions, among the reasons are difficulty in accessing protective equipment (28.1%), the weight of working conditions (20.6%), tiredness (19.6%), lack of time (17.1%), difficulty in working with protective equipment (14.6 %) (Table 2).

A 54.5% of the nurses answered the question of what is the first method they used for pain relief, saying that they used pharmacological and nonpharmacological interventions together. The nonpharmacological pain relief methods commonly used by nurses in interventional procedures for children are given in Table 3.

The methods most frequently applied by nurses to the child with pain are; positioning (9.5%), giving a pacifier (8.6%), embracing (8.4%), massage (8.2%), reducing environmental (8.1%), therapeutic touch (6.2%), toy distraction (6.0%) (Table 3).

Discussion

Children cannot express pain like adults because of language development and cognitive deficiencies. This makes pain a difficult and complex phenomenon to understand in children (Kristjansdottir, et al, 2012). Evaluation of pain is very important to identify pharmacological or nonpharmacological interventions, aid in the diagnosis, and observe for surgical or other complications. Reducing the effects of nurses' pain due to invasive procedures in children; They need to be able to effectively manage pain to relieve their physical and emotional effects (Dikmen et al, 2012; Kristjansdottir et al, 2012). A 64.2% of the nurses participating in this study stated that they received training on pain control in children, and 94.5% expressed their desire to receive training on pain relief methods. Another study whose results are in line with these data is Mathew et al. made by (2011). In their studies to determine the knowledge, attitudes, and behaviors of pediatric intensive care nurses towards pain, it was concluded that one-third of the nurses did not receive training on the subject (Mathew, Mathew and Singhi, 2011). In the study of Beytut et al., it was reported that the majority of nurses (75.7%) did not receive any training on pain (Beytut, et al, 2009). According to the results of different studies; it is seen that the nurses' training on pain management is not at the desired level. It is thought that nurses who do not receive training can find themselves competent in line with their experiences (Guney and Avci, 2017).

Table 1. Sociodemographic characteristics of nurses

		n	%
Gender	Female	144	87.3
	Male	21	12.7
Age	18-25	28	17.0
	26-30	53	53.1
	31- 35	46	27.9
	36-40	20	12.1
	41-above	18	10.9
Education status	High school+ Associate degree	23	13.9
	Undergraduate	116	70.3
	Graduate	26	15.8
Marital status	Married	77	46.7
	Single	88	53.3
Status of nurses to have a child	Yes	70	42.4
	No	95	57.6
Working Unit	Pediatric Intensive Care	84	50.9
	Neonatal Intensive Care	66	40.0
	Neonatal-Pediatric Surgery Intensive Care	15	9.1
Years of work as a nurse	≤ 1 year	13	7.9
	1-5 years	44	26.7
	6-10 years	59	35.8
	11-20 years	37	22.4
	20 years and above	12	7.3
Years of work as a nurse in intensive care units	≤ 1 year	25	15.2
	1-5 years	71	43
	6-10 years	48	29.1
	11-20 years	18	10.9
	20 years and above	3	1.8
Desire to receive training on Pain Relief Methods	Yes	156	94.5
	No	9	5.5
Total		165	100.0

Table 2. Nonpharmacological method application situations of nurses

	n	%
Status of receiving education/lesson on pain management in children		
Yes	106	64.2
No	59	35.8
The most important three issues needed for pain management		
Pain diagnosis and assessment	79	47.9
Pharmacological interventions	78	47.3
Nonpharmacological interventions	8	4.8
First attempt when the child has pain		

Assessing pain	132	80.1
Consulting a physician	19	11.5
Administering prescribed pain reliever if needed	7	4.2
Treatment with non-drug methods	7	4.2
The use of pain assessment scale in the clinic		
Yes	150	90.9
No	15	9.1
Scales used in clinical pain assessment		
NIPS	64	35.2
Verbal Pain Scale	51	28.0
Face scale / Wong Baker	28	15.4
FLACC	18	9.9
N-PASS	12	6.6
Behavioral Pain Scale	9	4.9
Total	182*	100.0
The practice of nonpharmacological methods in the pandemic		
Yes	68	41.2
No	97	58.8
Total	165	100.0
The effect of the pandemic on the practice of nonpharmacological methods		
Difficulty accessing protective equipment	56	28.1
Weight of working conditions	41	20.6
Tiredness	39	19.6
Lack of time	34	17.1
Difficulty working with protective equipment	29	14.6
Total	199*	100.0

*Multiple responses received

Table 3. Nonpharmacological methods used by nurses for pain management in pediatric intensive care units

	n	%
The first method used for pain relief		
Pharmacological	30	18.1
Nonpharmacological	45	27.2
Both of them	90	54.5
Total	165	100.0
Nonpharmacological methods used in pediatric intensive care units		
Positioning	141	9.5
Pacifier	127	8.6
Embracing	124	8.4
Massage	121	8.2
Environmental modification	119	8.1
Touching the treated area/Therapeutic touch	92	6.2
Toy distraction	88	6.0
Music + speaking	87	5.9
Providing pre-process information	85	5.8

Heat/cold application	83	5.6
Parent involvement	79	5.3
Kangaroo care	74	5.0
Sucrose	62	4.2
Video distraction	59	4.0
Post-application rewarding	55	3.7
Breathing exercise	49	3.3
Dreaming	33	2.2
Total	1478*	100.0

*Multiple responses received

Pediatric nurses need to determine the cause, type, and severity of the child's pain, the factors that reduce and increase the pain, and not to have false beliefs and thoughts about pain (Apaydın, et al, 2019). The effectiveness of medical intervention-related pain management depends on the nurse's knowledge, attitude, and skills (Twycross, 2013; Stanley and Pollard, 2013). In the study, nurses were asked about the three most important subjects they needed regarding pain control, and these subjects were determined as pain diagnosis and evaluation (47.9%), pharmacological interventions (47.3%), and nonpharmacological interventions (4.8%). Pain assessment in children involves the use of reliable, valid, sensitive, and developmentally appropriate tools that include both physiological and behavioral indicators (Apaydın, Ciftcioglu and Efe, 2019).

Gol and Onarici examined nurses' attitudes towards pain assessment in children and that nurses generally observed children's behaviors; They reported that 97.5% followed and evaluated pain based on crying, 97.5% restlessness, and 90% facial expression. In addition, it was found that 95% of the nurses did not know any pain assessment scale at all, those who knew only knew about the visual analog scale, and none of them used pain scales in the clinic (Gol and Onarici, 2015). In a study conducted in Finland, nurses reported that they rarely or never used pain scales, and in another study conducted in North India, all of the nurses did not use any pain scales (Salantera,1999). Contrary to these studies, in the current study, 90.9% of the nurses stated that they used a pain assessment scale as a standard. The reason for the difference between these studies may be that the level of knowledge of nurses about pain has increased over time.

Among the nonpharmacological pain relief methods commonly used in interventional procedures in pediatrics; listening to music, giving a pacifier, breastfeeding, giving oral sugary (sucrose, glucose) solutions, applying massage, maintaining skin

contact with the mother, changing positions (Shah, Taddio, Rieder et al, 2009; Taddio et al, 2009). It was determined that the most common methods used by the nurses participating in the study to reduce pain were giving information before the procedure, allowing parent participation, touching the treated area, reducing environmental stimuli, positioning, pacifier/breastfeeding, toy giving, massage, hot application/cold application. In the study, it was determined that nurses used pacifier/breastfeeding as a pain relief method at a high rate. In a systematic review, the most effective methods used to reduce pain in newborns; pacifiers, swaddling, and shaking (Pillai et al, 2015). In their study, Elserafy et al. investigated the analgesic effects of pacifier sucking, sucrose, and glucose in simple procedures such as bloodletting and heel puncture in term newborns (Elserafy et al, 2009). In the study, it was determined that they resorted to physical interventions such as reducing environmental stimuli, positioning, holding, and massage, which are nonpharmacological methods. In the study conducted with 111 pediatric surgical nurses in 15 university hospitals, the most commonly used environmental methods were; avoiding talking loudly with the baby, touching it less, paying attention when opening and closing the incubator, not using devices such as radio and television near babies, not making a sound when using cabinets, drawers, dustbins, avoiding sharp smells such as alcohol and perfume near the baby, and reducing light sources (Efe, et al, 2013).

It was concluded that the nurses included in the study used methods such as listening to music and speaking, breathing exercises, watching videos/television, and daydreaming, which are among the cognitive-behavioral interventions applied to divert attention, at a low rate. The distraction technique has been used in a variety of ways by parents and healthcare professionals to reduce pain and anxiety associated with medical procedures and has been found to be effective (Uman, et al, 2013).

Working intensively under difficult conditions during the COVID-19 pandemic undoubtedly affects the current mood of healthcare workers (Polat and Coskun, 2020). Healthcare workers who feel at risk and anxious and do not have adequate pandemic preparedness may not be able to provide adequate and quality healthcare, with occupational exposure and challenge specific to the pandemic period (Pala and Metintas, 2020). The effect of the pandemic process on the practice of nonpharmacological methods was questioned by the nurses who took part in the study, and 58.8% of them answered yes. When the reasons were examined, it was found that difficulty in reaching the protective equipment, the severity of the working conditions, tiredness, and difficulty in working with protective equipment. Braquehais et al. (2020) and Shaukat et al. (2020) in their literature review on the mental and physical effects of the epidemic in health care workers, working in a high-risk department, a family member diagnosed, inadequate hand hygiene before and after contact with patients, use of inappropriate personal protective equipment, close contact with patients, long They concluded that daily contact hours and being unprotected are important risk factors, health workers experience high levels of depression, anxiety, insomnia and stress, and female health workers and nurses are more affected by this situation (Braquehais, et al, 2020; Shaukat, Ali and Razzak, 2020).

Conclusions: In the study, it was determined that 94.5% of the nurses working in pediatric intensive care units wanted to receive training on nonpharmacological pain management. It was determined that 54.5% of the nurses first chose the application in which pharmacological and nonpharmacological methods were used together in the pain method. It has been reported that the most commonly used nonpharmacological methods for pain relief are positioning, pacifier/breastfeeding, cuddling, reducing environmental stimuli, and massage, touching, and shaking. During the COVID-19 pandemic, 58.8% of the nurses stated that nonpharmacological methods could not be applied. They stated that the reasons for not being able to apply are the difficulty in reaching the protective equipment, the weight of the working conditions, fatigue, lack of time, and the difficulty of working with the protective equipment. Along with pharmacological methods in pain management, nonpharmacological pain relief methods should also be included in the clinical setting, considering the pediatric age group and the characteristics of the child patient. In this regard,

nurses and other health professionals should be provided with training on effective pain management in children. This training should be rearranged and repeated in special cases - for example, during the COVID-19 pandemic process. In special work areas such as pediatric intensive care units, an arrangement can be made to reduce the workload of nurses, and it can be ensured that they allocate more time to children. It is recommended to increase the number of studies on pain relief methods in special services and crises.

Acknowledgment: We would like to thank and all the nurses who participated in the questionnaire.

Ethical approval: The study was approved by Bakircay University Non-Interventional Clinical Research Ethics Committee with the decision dated on 29.01.2021 and decision number 2021/162.

References

- Apaydin Cirik, V., Ciftcioglu, S., & Efe, E. (2019). Knowledge, practice and beliefs of pediatric nurses about pain. *J Pediatr Res*, 6(3):220-227.
- Aygin, D., & Var, G. (2012). Pain management in trauma patients and nursing approaches. *Sakarya Medical Journal*, 2(2):61-70.
- Beytut, D., Karayagiz Muslu, G., Basbakkal, Z., & Bal Yilmaz, H. (2009). Traditional beliefs and practices of pediatric nurses about pain. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi*, 2(3):12-17.
- Braquehais, M.D., Vargas-Caceres, S., Gomez-Duran, E., Nieva, G., Valero, S., Casas, M., & Bruguera, E. (2020). The impact of the COVID-19 pandemic on the mental health of healthcare professionals. *QJM: An International Journal of Medicine*, 113(9):613-617.
- Choi, K.R., Skrine Jeffers, K., & Logsdon, M.C. (2020). Nursing and the novel coronavirus: Risks and responsibilities in a global outbreak. *J Adv Nurs*, 76(7): 1486-1487.
- Cignacco, E., Hamers, J.P.H., Stoffel, L., van Lingen, R.A., Gessler, P., McDougall, J., & Nelle, M. (2007). The efficacy of nonpharmacological interventions in the management of procedural pain in preterm and term neonates. *Eur J Pain*, 11(2):139-152.
- Cevirme, A., & Kurt, A. (2020). COVID-19 pandemia and its reflections to nursing profession. *EJRSE*, 7(5):46-52.
- Dikmen, Y.D., Usta, Y.Y., Ince, Y., Gel, K.T., & Kaya, M.A. (2012). Determining of nurses' knowledge, behavior and clinical decision making regarding pain management. *Journal of Contemporary Medicine*, 2(3):162-172.
- Dincer, S., Yurtcu, M., & Gunel, E. (2011). Pain in Newborns and nonpharmacologic treatment. *Selcuk Medical Journal*, 27(1):46-51.
- Efe, E., Dikmen, S., Altas, N., & Boneval, C. (2013). Turkish pediatric surgical nurses' knowledge and attitudes regarding pain assessment and

- nonpharmacological and environmental methods in newborns' pain relief. *Pain Manag Nurs*, 14(4):343-350.
- Elserafy, F.A., Alsaedi, S.A., Louwrens, J., Sadiq, B.B., & Mersal, A.Y. (2009). Oral sucrose and a pacifier for pain relief during simple procedures in preterm infants: a randomized controlled trial. *Ann Saudi Med*, 29(3):184-188.
- Gol, I., & Onarici, M. (2015). Nurses' knowledge and practices about pain and pain control in children. *Journal of Hacettepe University Faculty of Nursing*, 20(29):20-29.
- Guney, M., & Avci, O. (2017). Determination the knowledge and applications of newborn intensive care units nurses related nonpharmacologic methods in pain management. Istanbul: Istanbul Medipol Univ.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., Xiao, Y., Gao, H., Guo, L., Xie, J., Wang, G., Jiang, R., Gao, Z., Jin, Q., Wang, J., & Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*, 395(10223):497-506.
- ICN. International Council of Nurses. (2020). More than 600 nurses die from COVID-19 worldwide. (cited 2020 Jun 15). Available from: <https://www.icn.ch/news/more600-nurses-die-covid-19-worldwide>
- Khalil, N.S. (2018). Critical care nurses' use of nonpharmacological pain management methods in Egypt. *Appl Nurs Res*, 44:33-38.
- Kristjansdottir, O., Unruh, A.M., McAlpine, L., & McGrath, P.J. (2012). A systematic review of cross-cultural comparison studies of child, parent, and health professional outcomes associated with pediatric medical procedures. *J Pain*, 13(3):207-219.
- Mathew, P.J., Mathew, J.L., & Singhi, S. (2011). Knowledge, attitude and practice of pediatric critical care nurses towards pain: Survey in a developing country setting. *J Postgrad Med*, 57:196-200.
- Pala, S.C., & Metintas, S. (2020). Healthcare professionals in the COVID-19 pandemic. *Estüdam Journal*, 5:156-168.
- Pillai Riddell, R.R., Racine, N.M., Gennis, H.G., Turcotte, K., Uman, L.S., Horton, R.E., Kohut, S.A., Stuart, J.H., Stevens, B., Lisi, & D.M. (2015). Nonpharmacological management of infant and young child procedural pain. *Cochrane Database Syst Rev*, 12:CD006275.
- Polat, O.P., & Coskun, F. (2020). Determining the relationship between personal protective equipment uses of medical healthcare workers and depression, anxiety and stress levels in the COVID-19 Pandemic. *Medical Journal of Western Black Sea*, 4(2):51-58.
- Sahiner, N.C., & Bal, M.D. (2016). The effects of three different distraction methods on pain and anxiety in children. *J Child Heal Care*, 20(3):277-285.
- Salantera, S. (1999). Finnish nurses' attitudes to pain in children. *Journal of Advanced Nursing*, 29(3):727-736.
- Serrano-Ripoll, M.J., Meneses-Echavez, J.F., Ricci-Cabello, I., Fraile-Navarro, D., Fiol-deRoque, M.A., Pastor-Moreno, G., Castro, A., Ruiz-Perez, I., Campos, R.Z., & Goncalves-Bradley, D.C. (2020). Impact of viral epidemic outbreaks on mental health of healthcare workers: a rapid systematic review and meta-analysis. *J Affect Disord*, 277:347-357.
- Shah, V., Taddio, A., Rieder, M.J., & HELPinKIDS Team. (2009). Effectiveness and tolerability of pharmacologic and combined interventions for reducing injection pain during routine childhood immunizations: systematic review and meta-analyses. *Clin Ther*, 31(Suppl 2):104-151.
- Shaukat, N., Ali, D.M., & Razzak, J. (2020). Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. *Int J Emerg Med*, 13(1):1-8.
- Stanley, M., & Pollard, D. (2013). Relationship between knowledge, attitudes, and self efficacy of nurses in the management of pediatric pain. *Pediatr Nurs*, 39(4):165-171.
- Taddio, A., Ilersich, A.L., Ipp, M., Kikuta, A., Shah, V., & HELPinKIDS Team. (2009). Physical interventions and injection techniques for reducing injection pain during routine childhood immunizations: systematic review of randomized controlled trials and quasi-randomized controlled trials. *Clin Ther*, 31(Suppl 2):48-76.
- TUIK. Turkish Statistical Institute (2020). Number of Health Care Professionals (cited 2020 Dec 13). Available from: <https://data.tuik.gov.tr/Kategori/GetKategori?p=saglik-ve-sosyal-koruma-101&dil=1>
- Twycross, A. (2013). Nurses' views about the barriers and facilitators to effective management of pediatric pain. *Pain Manag Nurs*, 14(4):164-172.
- Uman, L.S., Birnie, K.A., Noel, M., Parker, J.A., Chambers, C.T., McGrath, P.J., & Kisely, S.R. (2013). Psychological interventions for needle-related procedural pain and distress in children and adolescents. *Cochrane Database Syst Rev*, 10(10):CD005179.
- Wente, S.J.K. (2013). Nonpharmacologic pediatric pain management in emergency departments: A systematic review of the literature. *J Emerg Nurs*, 39(2):140-150.
- WHO. World Health Organization. (2020). WHO announces COVID-19 outbreak a pandemic. (cited 2020 Apr 16). Available from: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>