The Effect of Maternal Embrace And Breastfeeding Toward Infant Pain During Immunization Injection In Health Center of TomohonSulawesi Utara

Pungus Arlyn JV[1], Inayah I[2], Murtiningsih[3], Suryati Y[4], Ropei O[5]

[1](*School Of Health Sciences Jenderal Achmad Yani, Cimahi*)
[2](*School Of Health Sciences Jenderal Achmad Yani, Cimahi*)
[3](*School Of Health Sciences Jenderal Achmad Yani, Cimahi*)
[4](*School Of Health Sciences Jenderal Achmad Yani, Cimahi*)
[5](*School Of Health Sciences Jenderal Achmad Yani, Cimahi*)
Corresponding Author:Pungus Arlyn J V

Abstract:*Immunization is given regularly in order to prevent dangerous diseases. Therefore, immunization is fundamental in public health. However, immunization in infants may cause trauma due to pain during injection. Maternal embrace and breastfeeding is one of the non-pharmacological actions that can reduce pain in infants when administering injections. This study is conducted to discover the effect of maternal embrace and breastfeeding toward infant pain during immunization injection. This study employed the nonequivalent posttest quasi-experiment with control group design, with the maternal embrace and breastfeeding intervention. Accidental sampling technique was applied to collect data from the sample, which are the infants who were undergoing the immunization injection. Each group, intervention group and control group, comprises 18 participants. FLACC scale was used as the pain response instrument. Independent T-test is used in this study to analyze the result and the test results show, infants pain in the intervention group is 100% moderate, whereas in the control group it is 100% severe. There exist differences in infantlevel of pain during immunization injection in intervention group and control group with p = 0.000 < 0.05.*

Based on this finding, maternal embrace and breastfeeding is beneficial in non-pharmacological pain management. Moreover, it can be applied to atraumatic care in order to improve patient care and comfort, provide nursing care, particularly to reduce infants pain.

Keywords : *breastfeeding, injection, maternal embrace, pain*

I. Introduction

Children in all countries routinely have been immunized to prevent dangerous diseases, so immunization is the basis of public health. Immunization given to infants is an act that can cause trauma during injection because it can cause pain. Most of the basic immunizations given, such as BCG, Hepatitis B, DPT, and Measles are done by intracutaneous, subcutaneous, and intramuscular injection. The pain caused by the injection is an acute pain that the child feels as an unpleasant sensory and emotional experience resulting from tissue damage (Hockenberrry & Wilson, 2007). One of the side effects of immunization injections that can cause distress in the pain (Chambers, Taddio, Uman, et., Al, 2010). Pain in the baby can only be shown by way of facial expressions and limb movements that seem to resist and rebel when the action will take place.There are various actions that can be done to reduce pain in infants (Prasetyo, 2010). These actions are pharmacological and nonpharmacological measures.Breastfeeding reduces pain and is an effective way of relieving pain when getting injections of hepatitis B vaccine (Modarres, Rahnama, et., Al., 2013). Obeidat and Shuriquie (2015) explain, the combination of breastfeeding and mother hugs effectively reduce the pain response in infants when a needle is stabbed in the blood. Breastfeeding has many benefits for mothers and infants as a form of pain management, and as well as non-pharmacological therapy. When the mother gives breast milk to the baby, it is a distraction of pain relief, and improves the trust between mother and baby, resulting in bounding attachments that can make the baby feel comfortable.

II. Material And Methods

The design used in this study was Quasi Experimental post testnon equivalent with control group with maternal cuddle intervention and breastfeeding. This research was conducted to determine the effect of maternal

---

embrace and breastfeeding on infants who were injected with immunization in the intervention group.Total population of babies who get immunization injection was 189 babies.

Study Design: The research design used in this study is Quasi Experiment Design with the type of Posttest only equivalent Control Group Design.

Study Location: This research was conducted at Tomohon Health Center, Tomohon City, North Sulawesi Province.

Study Duration: This research starts from 6th August until 16th August 2018.

Sample Size: The total number of respondents for both groups in this study were 36 respondents, consistof 18 respondent in intervention group and 18 respondent in control group.

Sample size calculation : The sample size calculation in this study uses a minimum sample calculation based on quasi-experimental research (Hidayat, 2011), as follows: (t - 1) (r - 1)> 15. It takes 16 respondents in each group. So that the total respondents needed for both groups are 32 children. To anticipate the possibility of a dropout or procedural error, the respondent will add 10% by completing the formula below (Sastroasmoro& Ismail, 2011): n ^ '= n / ((1-f)) Based on the calculation results obtained the number of samples for each group is 17.7 (rounded to 18). So that the total number of respondents for both groups in this study were 36 respondents.

The inclusion criteria in this study are:
1. Babies aged 0-12 months
2. Babies who get breast milk directly from their mothers (breastfeeding)
3. Infants receiving measles and DTP-HepB / Hib immunization given through intramuscular injection in the lateral thigh section

The exclusion criteria in this study are:
1. Babies who get breast milk, but use pacifiers.
2. Uncooperative infants and parents

Procedure methodology :
- In collecting data, researchers did not involve nurses or other health workers in assessing the pain response in infants when immunization was injected. the researcher only brought a research assistant in the process of taking pictures and recording when injecting immunizations. and the assessment of pure pain responses by the researchers themselves.
- Data collection is carried out in accordance with the implementation of immunizations at the puskesmas. The implementation of immunization at the puskesmas was carried out for 2 weeks in eight villages.
- During the implementation of the research, visitors who come to fill in the attendance list, and register, babies weighed, and health workers or cadres fill in the KMS book.
- Researchers selected respondents according to the inclusion criteria.
- The researcher introduces himself to the respondent, explains the purpose and objectives of the study, as well as the research procedure to the respondent and provides an opportunity to ask questions.
- The researcher gave informed consent sheets to respondents who were willing to participate, and asked respondents to sign the informed consent.
- Before the procedure starts, the researcher will ask several questions to complete the respondent's demographic data.
- The Immunization attendant nurse prepares the vaccine. The type of immunization given is combo and measles immunization.
- In the intervention group, the steps were taken is:

a) The researcher asked the mother of the respondent to breastfeed the baby for 2 minutes before being injected with immunization, after 2 minutes the baby was given an intramuscular injection of immunization on the lateral thigh, after injection, the baby was hugged / embraced by his mother for 2 minutes. Injections are carried out by the same health worker.

b) Researchers record using a digital camera, since the baby is breastfed (before the injection process), during the procedure and up to 1 minute after the injection is complete.

c) Researchers maintain distance from the baby and see the baby's response state.

d) Pain assessment is performed when injecting immunizations using FLACC pain scale.

- In the control group, the steps taken are:

a) The baby is not carried by his mother, and is not given breast milk before the injection, the baby is held by the nursing staff or cadre when given an injection

b) Researchers document using a digital camera, since the baby starts to be held by the nurse (before injection), during the procedure and up to 1 minute after injection.

c) Researchers maintain distance from the baby and see the baby's response state.

d) Pain assessment is performed when injecting immunizations using FLACC pain scale.

e) After the level of pain is assessed, the mother is welcome to breastfeed her baby.

f) To mothers in the control group, researchers provided leaflets about the importance of maternal embrace and the benefits of breast milk in reducing pain. This leaflet is given so that the implementation of the ethical principle is justice for each respondent.

- Researchers check the completeness of the data and thank the respondents who participated in the study.

Statistical Analysis :

Univariate analysis aims to create a factual and accurate structured data picture about the facts and the relationship between the phenomena under study (Riyanto, 2011). Univariate analysis in this study was conducted to explain or make a picture of the data related to the dependent variable, namely the pain and data on the characteristics of respondents including age, gender and ethnicity. Categorical data (nominal or ordinal variables) are presented in the form of percentage distributions, while for numerical data (interval scale variables or ratios) the presentation is in the form of mean, median, standard deviation, minimum value, maximum value and 95% CI (confidents interval) In this study, the variables of age, sex and weight of the presentation of the data are in the form of frequency distribution with a percentage (proportion). Whereas for pain intensity is a type of numerical data if the goal is to see the difference in mean value, median, standard deviation, minimum value, maximum value and 95% CI between pain intensity in both groups.

Bivariate analysis is used to prove the hypotheses that have been formulated and also carried out to determine the relationship or influence or differences between the two variables (Riyanto, 2011). In this study, bivariate tests were conducted to determine the effect of maternal embrace and breastfeeding on infant's pain when injecting immunizations in the intervention group and in the untreated control group. To determine the type of test used, a homogeneity and normality test is first carried out. Homogeneity or equality tests were performed on each data between the control group and the intervention group. To find out the effect was done by independent t test test with a significance level of $\alpha = 0.05$. Before conducting the t test, the normality of the data is tested with the Skewness value. The statistical test used was independent sample t test.

In this study the bivariate test was conducted to determine the effect of maternal embrace and breastfeeding toward infant pain when injecting immunizations in the intervention group and in the control group (without treatment). To determine the type of test used, the normality test is first done. Normality test is used to determine whether the data distribution on each variable is spread normally. The results of the normality test for the intervention variable, the result of the comparison of skewness and standard skewnes error is obtained: 0,000 / 0,536 = 0,000, the result is between -2 and 2. Means the normal distribution, the data intervention variable is in the normal form. For the control variable results from the comparison of skewness and standard skewness error is 0.041 / 0.536 = 0.076, meaning the control variable is normally distributed.

The variance homogeneity test is performed to check whether the variances of the two groups are the same. The procedure used to interpret the results of homogeneity by looking at the comparison of the value of Levene statistics with a confidence level of 0.05. If the significance value of the statistical test results> 0.05, it is concluded that the variance in the subject is the same or homogeneous. If the significance value of the statistical test results <0.05 then it is concluded that the variance in the research subject is not the same. Levene statistics result for variance homogeneity test, testing with Levene Statistics shows the value of Sig. (0.475)> 0.05. This indicates that the variance between groups is the same (homogeneous). In this study independent t test can be done.The results of statistical tests with independent t-test can be said have a significant difference in the average of pain between those given cuddles and breastfeeding and those who were not fed and breastfed with p = 0,000 at alpha 5%.

III. Results

Data collection was conducted on 6th August- 16th August 2018, then analyzed using univariate and bivariate analysis.

1. **Univariate Analysis**
   a. **Overview of Demographic Characteristics of Intervention Group and Control Group Respondents**

   Based on Table 1 showsthe age of the respondents who were the most from the intervention group were 3 months old infants, namely 6 babies (16.7%), while the least were 7 and 10 months old as many as 1 baby (2.8%). The majority of infants in the control group were 5 months of age at 5 infants (13.9%) and at least 1, 10 and 11 months of age as many as 1 baby. Table below shows that out of 36 infant respondents who were given immunization injections, the highest proportion of sex characteristics, in

the intervention group were 67.7% of men, and 61.1% were women in the control group. And for the weight, it shows the intervention group of infants weighing 6 and 7 kg amounted to 6 babies (16.7%), and the least were infants with weight 8 and 9 kg as many as 1 baby (2.8%). While the baby's body weight in the control group was at most 5 kg, namely 6 babies (16.7%) and at least 10 kg body weight as much as 1 baby (2.8%).

Table 1
Distribution of Frequency of Respondents by Age, Gender, Weight (N = 36)

Characteristics of respondents		Intervention Groups (given maternal embrace and breastfeeding) (n = 18)		Control Group (not given maternal embrace and breastfeeding) (n = 18)	
		F	%	F	%
Age of infant	1month	-	-	1	5,6
	2month	4	22,2	4	22,2
	3month	6	33,3	5	27.8
	4 month	2	11,1	-	-
	5 month	4	22.2	3	16.7
	7 month	1	5,6	-	-
	9 month	-	-	3	16,7
	10montth	1	5,6	1	5,6
	11 month	-	-	1	5,6
Total		**18**	**100**	**18**	**100**
Sex	Male	12	67.7	7	38,9
	Female	6	33.3	11	61,1
Total		**18**	**100**	**18**	**100**
Weight (kg)	5	4	22,2	6	33,3
	6	6	33,3	4	22,2
	7	6	33,3	3	16,7
	8	1	5,6	2	11,1
	9	1	5,6	2	11,1
	10	-	-	1	5,6
Total		**18**	**100**	**18**	**100**

b. **Description ofpain in infant when injecting immunization(Intervention group -given maternal embrace and breastfeeding)**
   Based on Table 2 the results of the analysis showed that the average of pain in the intervention group was 5.50 (95% CI: 5.24 -5.76), with a standard deviation of 0.514. The lowest pain is 5 andthe highest is 6. From the results of the interval estimation it can be concluded that 95% is believed that the average of pain in infants in the intervention group is between 5 to 6.

Table 2 :
Description of Pain in Infant (given maternal embrace and breastfeeding)
(N = 18)

Variabel	Mean	SD	Min-Max	95%CI
Pain	5,50	0.514	5-6	5,24 – 5,76

c. **Description of the level ofpain in infant when injecting immunization(Control group –not givenmaternal embrace and breastfeeding)**
   Based on table 3 the results of the analysis showed that the average pain in the control group was 7.94 (95% CI: 7.63 -8.26), with a standard deviation of 0.639. The lowest pain is 7 and the highest pain is 9. From the interval estimation results it can be concluded that 95% is believed that the average of pain in infantin the intervention group is between 7 and 9.

Table 3:
Description of Level of Pain in Infant (not given maternal embrace and breastfeeding)
(N = 18)

Variabel	Mean	SD	Min-Max	95%CI
Pain	7,94	0.639	7-9	7,63 – 8,26

2. **Bivariate analysis**
   In this study the bivariate test was conducted to determine the effect of maternal embrace and breastfeeding on the infant pain when injecting immunizations in the intervention group and in the control group

(without treatment). Based on Table 4 below, it was found that the average of pain when injecting immunization in the intervention group (which was given cuddles and breast milk) was 5.50 with a standard deviation of 0.514, whereas for infants who were not given an embrace and breastfeeding, the average pain was 7.94 with a standard deviation of 0.639 .

Table 4:Distribution of The AveragePainLevel of Infants who were injected with immunization in the intervention group and control group (N = 36)

Group	N	Mean	SD	SE	P Value
Intervention Groups (given maternal embrace and breastfeeding)	18	5,50	0,514	0,121	0,000
Control Group (not given maternal embrace and breastfeeding	18	7,94	0,639	0,151	

IV. Discussion

From the results of the study, it was found that all infants experienced moderate levels of pain when given huddle treatment and breast milk. This is shown when injecting immunizations, where babies appear to grimace or frown, not calm, restless, tense, stretched, moaning or whining, soothed with occasional touches, hugs and speech, or diverted to favorite objects. At the time of the study, the baby was given breast milk before and after the injection, and was hugged by his mother during the injection, the baby looked calm. Even though at the time of injection the baby looks grimacing, keeps crying, and stretches, but the reaction shown by the baby can be calmed by the voice of the mother, the baby's body is gently patted to soothe, and breastfed by the mother, so that the baby feels pain because the injection can be distracted. This is in line with the research of Harrison, et al (2016) saying breastfeeding can help reduce feelings of pain during vaccination, and reduce crying behavioral responses during and after vaccination. The same thing was said by Taddio, et al. (2010), breastfeeding has been shown to have an analgesic effect, because some aspects of breastfeeding, such as hugging a child, skin-to-skin contact, milk that feels sweet and sucking, can reduce pain response individually.

A feeling of comfort will arise due to the mother's arms able to stimulate the baby's body to release endorphin hormones. Increased endorphins can affect mood and can reduce anxiety, this hormone causes the muscles to relax, and calm so that the level of pain experienced by the baby can decrease (Haruyama, 2011). Touch stimulates tactile nerve endings on the skin, so that the release of endorphins, oxytocin and serotonin hormones so as to produce a pleasant feeling (Barlow & Brown, 2010). Dekapan can reduce pain response due to painful procedures (Uman et al, 2013; Yamada et al, 2008). Breastfeeding reduces the perception of the intensity of pain from the baby when injected, is also effective in reducing baby crying (Kaur, Kaur, Kalia, Bharti, 2009).

The mother's touch given during her baby's embrace is one of non-pharmacological pain management in nursing practice. The intervention was presented from several research literature collected from Medline, Cinahl, and the Cochrane Library, period 1984-2004, which recorded 12 randomized control studies and two metaanalysis studies of non-pharmacological pain management methods in nursing practice. Similar to Shah's research, Taddio, McMurty, et al (2015), the effectiveness and safety of pharmacotherapy and the combination of interventions (breastfeeding, sweet solution, topical anesthesia) during vaccination are effective interventions that can be used in infants and children to reduce pain during vaccine injection.

The results showed that all infants experienced severe pain when they were not given maternal embrace and breastfeeding treatment. This can be seen in babies who frown continuously, close their jaw, chin, kick, pull legs, jerks, crying constantly, screaming, sobbing, difficult to be entertained. At the time of the study, there were some babies who were not calm or even began to get nervous, some looked tense. When the baby is not hugged by his mother, and will be injected the baby seems to start to get nervous and cry, even when injected and after being injected the baby still sobbing and takes a few minutes to calm the baby.

Based on the results of the study, it was found that there were differences in the level of pain of infants who were immunized in the group treated in the form of embrace and breastfeeding with the group not treated with breastfeeding and breastfeeding, and can be seen from the results of p = 0,000 at alpha 5%. This is evidenced by all babies experiencing moderate pain when given treatment while those who were not given hug treatment and breastfeeding all babies experienced severe of pain.

The results of this study also showed a decrease in pain response in the cuddled and breast milk groups compared to the non-cuddled and breast milk groups. Breastfeeding by breastfeeding also uses therapeutic touch, skin stimulation and relaxation. The sweet taste of lactose in breast milk is like the sweet taste of sucrose which can stimulate the release of endogenous opioids which can help reduce pain. The hug given during breastfeeding will give skin contact between the mother and her baby, will stimulate the body to release the

hormone oxytocin (a hormone that is associated with peaceful movements and also love) so that it will affect the psychology of the baby itself. Touches given during breastfeeding can stimulate encephalin release which is also an endogenous opioid (Maulana, et al, 2014).

V. Conclusion

Based on the t-independent test results p value 0,000 (p value ≤ 0.005) then Ha was accepted. There is a difference of pain in infants when injecting immunization in the intervention group and the control group with p = 0,000 . The result show that the intervention of maternal embrace and breastfeeding could decreased pain in infant during injection of immunization.

Reference

[1]. Asosiasi Ibu Menyusui Indonesia. (2007). Informasi seputar pemberian ASI. http://beingmom.org/index.php/2007/11/27. Diperoleh tanggal 30 April 2018.
[2]. Barlow, J., & Stewart-Brown, S. (2010). Tactile stimulation in physical health infants: Results of a systematic review. Journal of Reproductive and Infant Psychology, 28(1), 11-29.
[3]. Bueno M., Yamada J., Harrison D., Kahn S., Adams-Webber T., Beyene J, et al. A systematic review and meta-analyses of non-sucrose sweet solutions sucrose for pain relief in neonates. Pain Research & Management 2013;**18**(3): 153–61.
[4]. Chambers, C., T., Taddio, A., Uman, L., S., & McMurty, C., M., for the HELPinKIDS Team. (2010). Psychological interventions for reducing pain and distress during routine childhood immunizations: A systematic review. Pediatric Journal. 31: S77-S133.
[5]. Dharma. (2011). Metodologi penelitian keperawatan (pedoman melaksanakan dan menerapkan hasil penelitian). Jakarta: CV. Trans Info Media.
[6]. Erkul, M., & Efe, E. (2017). Efficacy of breastfeeding on babies pain during vaccinations. Breastfeeding medicine, 20(20), 4-5.
[7]. Ethycasari. (2018). Perbandingan efektifitas antara metode bounding (dekapan) dan stimulus kutaneusdalam mengurangi rasa nyeri suntuikan intramuskuler.
[8]. Fikawati, Sandra. (2016). Gizi ibu dan bayi. Jakarta: Rajawali Pers.
[9]. Gibney, J., Michael. (2009). Public health nutrition. Oxford: Blackwell Publishing Ltd.
[10]. Harrison D., Reszel J., Bueno M., Sampson M., Shah VS., Taddio A., Larocque C., Turner L. (2016). Breastfeeding for procedural pain in infants beyond the neonatal period. CochraneDatabase of Systematic Reviews, 10:CD011248
[11]. Harrison D., Sampson M., Reszel J., Abdulla K., Barrowman N., Cumber J., et al. Too many crying babies: A systematic review of pain management practices during immunizations on YouTube. BMC Pediatrics 2014;**14**(134).
[12]. Harrington, J. W., S. Logan., C. Harwell., J. Gardner., S. Jessica and E. McGuire.(2012). Effective analgesia using physical interventions for infant immunizations.Pediatrics129 (5): 815-822.
[13]. Haruyama, S. 2011. The Miracle of Endorphin. Bandung : Qanita.
[14]. Hidayat, Aziz Alimul (2011). Metode Penelitian Kesehatan Paradigma Kuantitatif. Surabaya: Health Books Publishing.
[15]. Hidayat, A., Aziz Alimul & Uliyah Musrifatul. (2014). Pengantar kebutuhan dasar manusia (edisi 2) Buku 1. Jakarta: Salemba Medika.
[16]. Hockenberry, M., & Wilson, D. (2007). Wong's nursing care of infants and children. St. Louis: Mosby Elsevier.
[17]. (2009). Essential of Pediatric Nursing. St. Louis Mosby Year Book.
[18]. Ibrahim, A., R., A. (2010). Menyusui: Proses melekatkan ikatan batin ibu dan bayi. Jakarta: IDAI.
[19]. Kaur L., Kaur S., Kalia R., Bharti B. (2009). Analgesic effect of breastfeeding in infants during immunization injections : Randomized control trial. Nursing and Midwifery Research Journal, 5(4), 142-154.
[20]. Kozier, Erb, Berman & Snyder. (2010). Buku ajar fundamental keperawatan, konsep, proses dan praktik. Jakarta : Buku Kedokteran EGC.
[21]. Lambrenos, K., & McArthur, E. (2003). Introducing a clinical holding policy. Pediatric Nurs, 15(4), 30-3.
[22]. Leite AM., Silva ACTO., Castral TC., et al. (2015). Breastfeeding and skin to skin contact for pain relief of newborns during hepatitis B Vaccination. Rev. Eletr. Enf, 17(3), 1-8
[23]. Linhares M. B. M., Gaspardo C. M., (2017). Non-pharmacological management of neonatal pain : Research and clinical practice in the Neonatal Intensive Care Unit. Estudos de Psicologia, 34 (3), 345-354.
[24]. Margetts, M. Barrie. (2009). Gizi Kesehatan Masyarakat. Jakarta: Buku Kedokteran EGC.
[25]. Mathew P. J., Mathew J. L. (2013) . Assessment and management of pain in infants. Postgrad Med J, (79), 438-443.
[26]. Maulana, D., D. E. Martini dan F. Ummah.(2014). PerbedaanEfektifitasPemberian ASI danLarutanSukrosa Oral terhadapResponNyeriBayiSaatDilakukanPenyuntikanImunisasi di PuskesmasLarenKecamatanLarenKabupatenLamongan.Surya 3 (19): 1-12.
[27]. McCrory, C., & Murray, A. (2013). The effect of breastfeeding on Neuro-Development in Infancy. Matern Child Health J, 17:1685-1687.
[28]. Modarres, M., Jazayeri, A., Rahnama, P., Montazeri, A. (2013). Breastfeeding and pain relief in full-term neonates during immunization injections: a clinical randomized trial. BMC Anesthesiology, 13(22), 1471-2253.
[29]. Nursalam, (2014). Metode penelitian ilmu keperawatan, pendekatan praktis (Edisi 3). Jakarta : Salemba Medika.
[30]. Obeidat, H. M., & Shuriquie, M. A. (2015). Effect of breastfeeding and maternal holding in relieving painful responses in full term neonates. J Perinat Neonat Nurs, 29(3), 248-254.
[31]. Perkumpulan Perinatologi Indonesia (Perinasia), (2010). Perawatan bayi berat lahir rendah dengan metode kanguru. Jakarta: Dipublikasikan.
[32]. Potter, A. P., & Perry, G. A. (2009). Buku Ajar Fundamental Keperawatan: Konsep, Proses, dan Praktik Edisi 7. Jakarta : EGC.
[33]. Prasetyo. (2010). Konsep dan proses keperawatan nyeri. Yogyakarta: Graha Ilmu.
[34]. Probowati, E. (2017). Effectiveness of Breastfeeding and non-nutritive sucking on pain relief in infant immunization. Belitung Nursing Journal, 3(2), 107-108).
[35]. Ranuh, I., G., N., G., Suyitno, H., Hadinegoro, S., R., S., Kartasasmita, C., B., Ismoedjianto, Soedjatmiko. (2014). Pedoman imunisasi di Indonesia. Jakarta: IDAI.
[36]. Rahayuningsih, S. I. (2012).EfekPemberian ASI terhadap Tingkat NyeriBayiSaatPenyuntikanImunisasi di Kota Depok.Idea Nursing Journal 3 (2): 78-88.

[37]. Razek, A., & El-Dein, A., Z. (2009). Effect of breastfeeding pain relief during infant immunization injections. International Journal of Nursing Practice. 15(2) : 99-104.
[38]. Ridha, H. Nabiel. (2014). Buku ajar keperawatan anak. Yogyakarta: Pustaka Pelajar.
[39]. Riyanto, A. (2011). Aplikasi metodologi penelitian kesehatan. Yogyakarta: Nuha Medika.
[40]. Sari, D. Y. (2007). Imunisasi lindungi si kecil. http://www.gayahidupsehat online.com, diperoleh tanggal 29 Maret 2018
[41]. Sastroasmoro, S., & Ismael, S. (2010). Dasar-dasar metodologi penelitian klinis. Jakarta: Sagung Seto.
[42]. (2011). Dasar-dasar metodologi penelitian klinis, Edisi keempat. Jakarta: CV. Sagung Seto.
[43]. Sahebihag, M., H., Hosseinzadeh, M., Mohammadpourasi, A., & Kosha, A. (2011). The effect of breastfeeding, oral sucrose and combination of oral sucrose and breastfeeding in infants pai relief during vaccination. Original Article. 16(1): 1-7.
[44]. Sastroasmoro & Ismael. (2011). Dasar-dasar metodologi penelitian klinis Edisi ke-4. Jakarta: Sagung Seto.
[45]. Shah V., Taddio A., McMurty M., et al. (2015). Pharmacological and combined interventions to reduce vaccine injection pain in children and adults : Systematic Review and Meta-Analysis. The Clinical Journal of Pain, 31, S38-S63.
[46]. Soetjiningsih & Ranuh, IG., N. (2017). Tumbuh kembang anak (Edisi 2). Jakarta: EGC.
[47]. Srouji, R., Ratnapalan, S., Schneeweiss, S. (2010). Pain in Children: Assesment and Nonpharmacological Management. International Journal of Pediatrics, 2010, 5-6.
[48]. Stevens B., Yamada J., Ohlsson A.(2013). Sucrose for analgesia in newborn infants undergoing painful procedures. CochraneDatabase of Systematic Reviews, Issue 1.
[49]. Taddio A., Appleton M., Bortolussi R., Chambers C., Dubey V., Halperin S., Hanrahan A., Ipp M., Locket D., MacDonald N., Midmer D., Mousmanis P., Palda V., Pielak K., Riddell R. P., Rieder M., Scott J., Shah v. (2010). Reducing the pain of childhood vaccination : an evidence-based clinical practice guideline. CMAJ, 182 (18), E843-855.
[50]. Tansky C., Lindberg E. C. (2010) . Breastfeeding as a pain intervention when immunizing infant. The Journal for Nurse Practitioners, 6 (4), 287-295.
[51]. Uman L. S.,Birnie K. A., Noel M., et al. (2013). Psychological interventions for needle-related procedural pain and distress in children and adolescents. The Cochrane Database of Systematic Reviews,10,ID CD005179.
[52]. UNICEF (2009). Action for Right of Children (ARS). www.unicef.org, diunduh tanggal 18 April 2018
[53]. Wong. D., L., (2009). Pedoman klinis keperawatan pediatrik. Jakarta: EGC.
[54]. Wong, D. L. Hockenberry, M. Wilson, D. Winkelstein, M.L. & Schwartz, P. (2009). Buku ajar keperawatan pediatrik wong. Volume 2. (Edisi 6). Jakarta: EGC.
[55]. Yamada J., Stinson J., Lamba J., Dickson A., McGrath P. J., and Stevens B. (2008).A review of systematic reviews on pain interventions in hospitalized infants. Pain Research and Management, 13(5), 413–420.
[56]. Yuniarti Sri. (2015). Asuhan tumbuh kembang neonatus bayi – balita dan anak pra-sekolah. Bandung: PT Refika Aditama.