



A Literature Review

The Effect of Music Therapy to Lower Pain Scale among Post-Operating Patients

Ade Fitriani¹, Fidya Anisa Firdaus¹, Fidiyanti Amatilah¹, Haryani¹¹ STIKes Muhammadiyah Ciamis, Jln. KH. Ahmad Dahlan No. 20 Ciamis 46216, Indonesia

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CORRESPONDENCE

Phone: +62 822-1785-1581

E-mail: adefitriani879@gmail.com

A B S T R A C T

Introduction: Postoperative pain is a problem of patient complaints that often occur mostly in hospitals as a consequence of post-surgery that cannot be avoided. The negative effects of pain can be controlled by managing pain which is a very important part of patient care including the provision of pharmacological therapy and non-pharmacological therapy in the form of cognitive behavioral interventions such as relaxation techniques, music therapy, imagery and biofeedback. Overcoming pain in postoperative patients by providing music therapy.

Method: This research method used an experimental design with a literature review approach. The search for articles used 6 journal databases including PubMed, JSTOR Wiley Online Library, Sage Journal and Taylor & Francis Online and Google Scholar as many as 6 articles that met the inclusion criteria were reviewed. All articles were selected using an assessment of articles that met the inclusion criteria, including publication range 2015-2020, in English and Indonesian, open access full text pdf. There are also exclusion criteria, namely book chapters, abstract proceedings and posters. This assessment uses the Critical Appraisal Skills Programmed (CASP) instrument.

Result: The selection results obtained 6 articles with 137 respondents with an average age of 24 years. The results of the review show that the music therapy method has a positive effect on helping to overcome pain in the nursing process for postoperative patients.

Conclusion: Conclusion based on the literature review, it can be found that the provision of music therapy has a better activity in postoperative pain management. The suggestion of this literature review is that this music therapy can be applied directly in the hospital which aims to reduce the patient response to post-patient patients.

INTRODUCTION

Post operation is the period starting when the patient enters the recovery room and ends in the follow-up evaluation room in a clinical setting or at home (Arif & Sari, 2019). When the patient returns to the outpatient reception room or nursing unit, the patient is usually well preserved. Post surgery can also cause discomfort such as abdominal distension, thirst, nausea, urinary retention, constipation, restlessness and pain (Nurdiansyah, 2015). Elective and emergency surgery is a very

stressful event for everyone who wants to do surgery (Arif & Sari, 2019)

Postoperative action is an act of opening or removing body tissue that can change the and function of the body (Heriana, 2014). Postoperative action is the action of all treatment using an invasive way to open or display the part of the body to be performed postoperatively by making an incision (Potter & Perry, 2010). Postoperative actions are performed on patients with various diseases

due to certain indications. Post surgery can cause discomfort to the patient, because it can cause trauma to the tissue which can cause pain (Sesrianty & Wulandari, 2018).

Postoperative pain is one of the problems of patient complaints that often occurs mostly in hospitals as a consequence of post-surgery that cannot be avoided (Nurdiansyah, 2015). As many as 77% of postoperative patients received inadequate pain treatment with 71% still experiencing pain after being given medication and 80% described still experiencing moderate to severe pain (Katz, 2005).

Postoperative pain is caused by mechanical stimulation of the wound which causes the body to produce pain chemical mediators (Setiawan, Khaerunnisa, Ariyanto, & Firdaus, 2020). Pain can arise in almost every postoperative simulant incision to reduce and overcome the release of insulin and fibrinolysis which will slow down the postoperative wound healing process (Ariyanto, Setiawan, & Oktavia, 2021). The pain that occurs in almost every postoperative incision, if not treated, will have a dangerous effect and will interfere with the healing process, therefore more effective treatment is needed to minimize pain experienced by patients (Arif & Sari, 2019). Postoperative pain can be subjective because no two individuals experience the same pain and no two events of the same pain produce identical responses or feelings in each individual (Nurdiansyah, 2015).

This pain can be overcome with pain management interventions, especially in postoperative pain, namely by providing therapy that does not cause side effects, is simple and is not expensive, including relaxation, distraction, stimulation, therapeutic and guided imagery techniques (Widianti, Andriani, Firdaus, & Setiawan, 2021). One way to distract someone from pain is music therapy. According to Kate and Richard Mucci, in their book *The Healing Sound of Music*, they explain that the human body has its own rhythm. A person's ability to reach rhythms and sounds within them that can make musical healing more effective (Hastomi & Sumaryati, 2012).

Music therapy is one of the self-care measures in managing pain. Several studies have shown that the type of music that is effective in dealing with pain is music. This is because music has a tempo that ranges from 60-80 beats per minute in tune with the human heartbeat (Suherman, 2010). Research also shows that music is useful for relaxing a person, creating a sense of security, prosperity, relieving sadness, overcoming postoperative patient anxiety levels and relieving pain and reducing stress levels. This occurs due to a decrease in adrenal corticotropin hormone (ACTH) which is a stress hormone (Bernatzky et al. 2011). So music therapy is a non-invasive complementary therapy that can be used to treat pain intensity. This music in addition to stimulating the intelligence performance of the brain Right, music can also stimulate neural plasticity (Yuwantari, 2011). Music also has a structure in accordance with the pattern of human brain cells (Firmansyah, Setiawan, & Ariyanto, 2021; Wirasti, 2011).

The benefits of music therapy have also been recognized as a form of complementary therapy (Complementary Therapy) besides acupuncture and massage therapy, apart from having an aesthetic aspect, music therapy also has a therapeutic effect so that it is widely used to help heal, calm and improve physiological conditions (Sesrianty & Wulandari, 2018). Listening to music can also help produce endorphins (a type of morphine that can reduce pain) which play a role in inhibiting pain transmission in the central nervous system, so that the intensity of pain can be reduced. Music works on the limbic system which will be delivered to the system to build muscle contraction, so that it can overcome muscle contraction (Potter & Perry, 2009). In a relaxed state the body will be stimulated to produce endorphins that react to pain, causing a sense of calm and in the end it will stimulate body organs and reproduces cells damaged by post surgery (Smelzeral, 2008). The data collection instrument used in the study was an observation sheet using Numeric Rating Scale (NRS) and interviews. Apart from its many benefits, music therapy is also very easy for postoperative patients to do.

However, it is necessary to have a comprehensive study of the impact or effect of music therapy to treat pain in postoperative patients, which is presented from various existing studies, so that it can be applied in the nursing care process (Evidence Based Research). The facts illustrate that music therapy interventions have not been carried out in general in every health facility (Setiawan et al., 2021).

OBJECTIVE

This study was conducted systematically following the scientific method presented in the literature review article with the aim of explaining the effect of music therapy for overcoming pain in postoperative patients.

METHOD

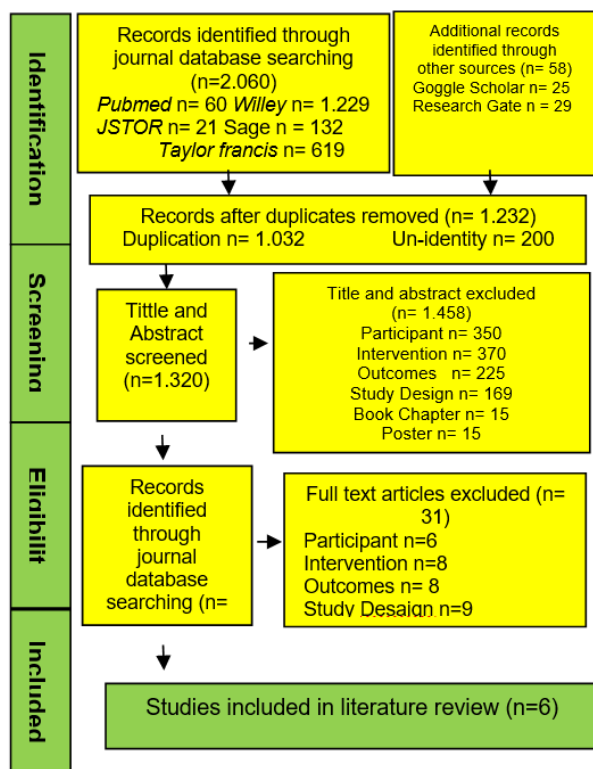


Figure 1. Prisma Process

Search strategy

The search strategy was carried out on several databases including; PubMed, JSTOR, Wiley Online Library, Sage Journal, and Taylor & Francis Online using MeSH terms and keywords in advanced search engines; (Therapy music [Mesh]) AND (decreased pain [Mesh]) AND post operation) OR

(EXPERIMENT).

In addition, the author searched two journal databases, namely google scholar. Which was published in 2015-2020 according to the literature inclusion criteria of this review in Indonesian and English as well as complete accesses in the original article form. Participants or population (P) in this study were postoperative patients with intervention (I) music therapy, Outcomes (O) in the form of pain relief, Study Design (S) The research conducted was experimental with pre-test. Experiments involving male and female subjects from several hospitals and patients who continued treatment at home using music therapy interventions Where observations were made twice, namely before and after the intervention The criteria for the inclusion were purposive sampling and accidental sampling conduct an analysis process of each reviewed article and retrieve the detailed information needed to assess music therapy for pain management in postoperative patients.

Selection of relevant studies

The selection process begins with removing duplications with inappropriate article titles in the search for basic data using Microsoft Excel. The abstracts from the selected articles were further analyzed to ensure compliance with the inclusion criteria. In the second round of article selection process, the author conducts a full text review to prevent doubts about the selected article. Furthermore, the authors searched for and selected the studies that were considered the most relevant to be reviewed using PIOS. All articles that met the inclusion criteria were fully reviewed without a meta-analysis.

Critical assessment

All articles were fully reviewed, specifically criticized and rated using the Critical Appraisal Skills Programmed (CASP) instrument by 4 (four) independent authors (FAF, FA, H and HS). The articles chosen are articles that have a good CASP level with a value of 7-8 points and 5-6 points sufficient. Disagreement was related to the assessment of the articles and the ranking scores, so the authors completed the discussion with the help of a senior mentor (HA). However, the authors still found many

difficulties, so they conducted a discussion again with the help of senior researchers (AF and HS).

Data extraction

The study has extracted data on the intervention and control groups consisting of: total number of respondents, interventions, methods and results.

Data Synthesis

Since this research review included only level I, II and III evidence studies, where the research steps were not homogeneous, no meta-analysis was carried out. The findings in this study are presented in a narrative summary form with the treatment group with or without treatment or Regular care.

RESULTS

Article selection

Articles identified using predefined search keywords in a combined database search conducted from 2015-2020 resulted in 2,060 articles as described in Figure 1. Three times were filtered, most studies did not include articles that did not meet the PIOS result criteria. Subjects were not in pain (n-360), did not use the music therapy intervention (n-370), did not focus postoperatively (n = 225) and did not use the experiment (n = 169). In addition,

200 rticles were excluded because they did not have identity with 1,032 duplicate articles, 15 book chapters, 15 posters and 14 proceeding abstracts which had also been eliminated in the Excel microsof application.

Research Characteristics

The number of participants seen in this study was 137 people who were assigned randomly with 68 participants in the intervention group and 68 participants in the control group. The results of the study in the intervention group showed a positive effect on the patient' s quality of life. This literature consists of 6 articles, and all interventions were reported to be significantly effective in addressing the pain intensity of postoperative patients. The subjects in this study were patients of various types of postoperative patients. Write results in logical sequence. Begin it with description of characteristics of the sample. Provide explicit result for each study purpose and indicate whether each purpose (or hypothesis) was supported or declined. When presenting results in a table or figure, do not repeat all those contents in the text. Present only the summary of the text. Describe only new and important aspects of the study. Do not repeat all information from results section or any section above.

Table 1. Characteristics of the article

No	Author (Year) title	Method	Result
1	V. Searunti at al, (2018) <i>Terapt classical music playing piano) Reducing the intensity of Neri in Pasion Post Operation Sesrunti at al., 2018)</i>	Purpose : to find out classical music therapy influences (wave plan) for reduce pain intensity Design: Experiment Sample: 17 respondents Intervention: Music Therapy Classical Instrument : observation and questionnaire	Based on the results of the study it can be concluded that the pain intensity of the respondent before giving classical music therapy (piano strains) with the respondent's pain level is on a moderate pain scale, the respondent's pain intensity after giving classical music therapy (piano strains) is a moderate pain level, there is a difference in the average The pain intensity of respondents before and after giving classical music therapy (piano strains) with an average difference of 0.90 and p value = 0.000, where there is a decrease in pain after the intervention so that it can be concluded that there is an effect of classical music therapy (piano strains) on postoperative pain intensity.
2	A. Astuti et al (2016) <i>The Effect of Klaaik</i>	Purpose: To find out Influence Therapy music Classic Against	The results showed that the pain scale before being given classical music therapy in

<p><i>Music Therapy on the Decrease in the Nyert Scale Level of Post-Operation Patients Astuti et al. 2016)</i></p>	<p>Derivation Patient Nveri Scale Level Post Operations Design : Experiment Sample: 36 respondents Intervention: Classical Therapy music Instrument : Observation</p>	<p>postoperative patients resulted in the majority of patients experiencing moderate pain as many as 36 (100%) respondents and pain scales after being given classical music therapy in postoperative patients, it was found that the majority of patients experienced mild pain as much as 23 (63.9%) respondents.</p>
<p>3 <i>M. Arif et al. (2018) The Effectiveness of Mozart's Music Therapy on Decreasing Meri Intensity in Post-Fracture Surgery Patients (Arif at al, 2018)</i></p>	<p>Purpose: To find out Effectiveness Therapy music Mozart Against Slump Post Patient Pain Intensity Fracture Surgery Design : Experiment Sample: 15 respondents Intervention : Therapy music Instrument : Numeric rating scale (NRS) and observation.</p>	<p>The results of non-parametric statistical test analysis using Wilcoxon with a confidence level of 95% ($\alpha = 0.05$) obtained p value is 0.001, thus $p \text{ value} > \alpha$ ($0.001 > 0.05$) so it can be concluded that effective Mozart therapy can reduce intensity. Post Operation Fracture Pain Patients.</p>
<p>4 <i>N Purwaningtyas et al, (2020) The Effectiveness of Giving Classical Music Paste To Decrease The Pain Intensity Of Post Sectio Caesaree Patients In The Flamboyant Room I Reud Salatige (Purwaningtyas et al., 2020)</i></p>	<p>Purpose: To find out the effectiveness of the classical application of www to music pain intensity in the patient Design: Experimental Sample: 15 respondents Intervention: classical Therapy music Instrument :</p>	<p>The results showed that the average age of the respondents was 29 years with most of the education in junior high school, the average pain before intervention was 7.60 and after intervention was 5.73. There was a significant difference in pain intensity before and after classical music therapy was given (P value 0.000). Statistically, classical music therapy can reduce pain intensity in post-caesarean section patients (P value 0.000).</p>
<p>5 <i>Aas Agustini, (2018) The Effect of Classical Music Therapy on Decreasing Pain Intensity Post Operast Patient Hemie (Aat Agustini 2018)</i></p>	<p>Purpose : to find out classical music therapy influences against decreased intensity pain in postoperative patients Design: Experiment Sample : 20 respondents Intervention: classical music therapy Instrument : Numeric Rating Scale (NRS)</p>	<p>The results showed that most of the 20 respondents before being given classical music therapy experienced moderate pain and experienced mild pain after being given classical music therapy. There was a decrease in pain intensity after giving classical music therapy with an average of 1.650 in the 1st session of the study and a decrease of 1.950 in the 2nd session of the study. The results of the paired t-test analysis showed that the value of p value = 0.000 ($p < 0.05$). There is an effect of classical music therapy on reducing pain intensity in post hernia surgery patients.</p>
<p>6 <i>T.E.Nurdiansyah (2015) Solvent Music Therapy Against Pain Response in Patients With Post Operation T. ENurdiansyah, 2015)</i></p>	<p>Purpose : To determine the effectiveness of music therapy on postoperative patient pain response Design: Experimental Sample: 34 respondents Interventions : Music and therapy pain response Instrument : Numeric Rating Scale (NRS) dan Faces Pain Scale Resived (FPSR)</p>	<p>The results showed the difference in the difference in postoperative pain response between the intervention group and the control group, as evidenced by the difference in the intervention group of 2.65 and the difference in the control group of 1.59. The confounding factor had no effect on the pain response, namely past pain experiences (p-value = 0.387), gender (p-value = 0.068) and music culture (p-value = 0.599).</p>

DISCUSSION

Measurement results

Observation and questionnaires

Observations and questionnaires are used to determine the pain intensity of respondents before giving classical music therapy (piano strains) with the respondents pain level on a moderate pain scale, the respondent's pain intensity after giving classical music therapy (piano strains) is a moderate pain level, there is a difference in the average intensity Respondents pain before and after giving classical music therapy (piano strains) with an average difference of 0.90 and p value = 0.000, where there is a decrease in pain after the intervention so that it can be concluded that there is an effect of classical music therapy (piano strains) on intensity postoperative pain. (Sesrynti et al., 2018)

Observation

Observations are used to show that the pain scale before being given classical music therapy in postoperative patients can result in the majority of patients experiencing moderate pain as many as 36 (100%) respondents and pain scales after being given classical music therapy in postoperative patients, the result is that the majority of patients experience mild pain. As many as 23 (63.9%) respondents (Astuti et al., 2016).

Numeric rating scale (NRS) and observation

The numeric rating scale (NRS) and observations were used to test non-parametric statistics using Wilcoxon with a 95% confidence level (α 0.05), the p value was 0.001, thus the p value $> \alpha$. (0.001 0.05) so it can be concluded that Mozart therapy can be effective in reducing the pain intensity of Postoperative Fracture Patients (Arif et al., 2018).

Numeric Rating Scale (NRS)

The numeric rating scale (NRS) shows that most of the 20 respondents before being given classical music therapy experienced moderate pain and experienced mild pain after being given classical music therapy. There was a decrease in pain intensity after giving classical music therapy by an average of 1,650 in research session 1 and a decrease of 1,950 in

research session 2. The results of the paired t-test analysis showed that the p value = 0,000 ($p < 0.05$). There is an effect of classical music therapy on reducing pain intensity in post hernia surgery patients (Aat Agustini., 2018)

The Numeric Rating Scale (NRS) and the Faces Pain Scale Revised (FPSR)

were used to show the difference in the difference in pain response of postoperative patients between the intervention group and the control group, as evidenced by the difference in the intervention group of 2.65 and the difference in the control group 1.59. The confounding factor has no effect on pain response, namely past pain experiences (p value-0.387), gender (p-value-0.068) and music culture (p-value = 0.599) (T. E. Nurdiansyah., 2015)

From each article found, the researchers concluded that music therapy interventions can be used as a relaxation technique for healing a disease by using certain sounds or rhythms. The type of music used in music therapy can be adjusted according to desire, such as classical music, instrumentals and slow music (Potter, 2005. Quoted from Erfandi, 2009). According to Syaputra (2015) The results also show that for 2 days of managing music therapy, the pain results were reduced from a scale of 4 to a scale of 2.

Mozars music therapy is very effective in reducing pain intensity. Listening to music can also produce endorphins (substances like morphine can reduce pain / pain) which play a role in inhibiting the transmission of pain impulses in the central nervous system, so that pain sensations are reduced (Arif & Sari, 2019).

Music can work in the limbic system which will be delivered to the nervous system to regulate the contraction of the body muscles which can reduce muscle contraction (Arif & Sari, 2019). When a relaxed state, the body will be stimulated to produce endorphins which react to relieve pain and create a sense of calm, then in the end it will stimulate the bodys organs to reproduce cells damaged by surgery (Nurdiansyah, 2015).

Music therapy intervention should be carried out for approximately 30 minutes to one hour every day, but if you don't have much time, this therapy can be done for 10 minutes, because for 10 minutes it has helped the respondents' mind to rest (Sesrianty & Wulandari, 2018).

Research also shows that music therapy is beneficial for relaxing a person, creating a sense of security and well-being, releasing feelings of joy and sadness, reducing anxiety levels, releasing pain and reducing stress levels. This is due to a decrease in adrenal corticotropin hormone (ACTH) as a stress hormone (Bernatzky et al. 2011).

The author reads some of the various journals found. All experimental journals mention that they have randomized all the participants involved. However, not all are given a complete description of the randomization method that usually occurs because the journals that appear do not provide information on allocation concealment and blinding outcome. However, the researcher did blinding between the participants and the personal so that it strengthened what was found in each questionnaire.

There is no definite number stated in the theory regarding the most ideal number of a study, because statistical tests can be performed on each group. However, the smaller the number of participants involved will have an impact on increasing the percentage of drop outs who are involved not completing the research process until the end (end of study). As one example of Aat Agustini, (2018) in his research involving only 20 participants, 10 people entered the intervention group, 10 people entered the control group. When each 1 participant dropped out, the remaining only 9 participants in each group. However, the other 15 studies had a sizeable number of participants.

The findings in this literature review provide an overview of the development of nursing science. The effect of music therapy to deal with pain in postoperative patients can be an additional alternative in providing nursing care to postoperative patients. Social support among postoperative patients can occur if music therapy is carried out together with a routine and continuous schedule.

CONCLUSIONS

This study shows that classical music can show that classical music can be used in postoperative patients to reduce pain scales. This pain can be overcome with pain management interventions, especially in postoperative pain, namely by providing therapy that does not cause side effects, is simple and is not expensive, namely by doing relaxation techniques, distraction, stimulation and guided imagination. One way to divert the patient's attention from pain is music therapy which can provide comfort to the patient. Music therapy is also useful for relaxing a person, creating a sense of security and well-being, releasing joy and sadness, reducing anxiety levels, releasing pain and reducing stress levels.

The researchers recommend that further studies of music be carried out by comparing other interventions in more specific postoperative patients so that it can be carried out with more in-depth studies. The names of the authors listed in this article have no affiliation and involvement in personal relationships. All disagreements can be resolved by open discussion considering that each of the authors listed has their respective roles and functions in completing this article.

REFERENCES

1. V. Searunti et al, (2018) Therapeutic classical music playing piano) Reducing the intensity of Neri in Passion Post Operation Searunti et al., (2018)
2. A. Astuti et al (2016) The Effect of Klaiik Music Therapy on the Decrease in the Nyert Scale Level of Post-Operation Patients Astuti et al. 2016).
3. M. Arif et al. (2018) The Effectiveness of

- Mozart's Music Therapy on Decreasing Meri Intensity in Post-Fracture Surgery Patients (Arif at al, 2018)
4. N Purwaningtyas et al, (2020) The Effectiveness of Giving Classical Music Paste To Decrease The Pain Intensity Of Post Sectio Caesaree Patients In The Flamboyant Room I Reud Salatige (Purwaningtyas et al., 2020).
 5. Aas Agustini, (2018) The Effect of Classical Music Therapy on Decreasing Pain Intensity Post Operast Patient Hemie (Aat Agustini 2018)
 6. T.E.Nurdiansyah (2015) Solvent Music Therapy Against Pain Response in Patients With PostOperation T. E Nurdiansyah, 2015)
 7. Arif, M. & Sari, Y. P. (2019) The Effectiveness of Mozart's Music Therapy on Decreasing Pain Intensity Pasten Post Operast Turnal Fracture Health Medika Sainatika, 10 (1), 69 <https://doi.org/10.30633/jkmv.1011.310>
 8. Nurdiansyah, T.E (2015) Impact of Music Therapy on Pain Response in Patients with Post Operast at A. Dadi Tjokrodipo Hospital, Bandar Lampung City, Turnal Health, VI, 14-22
 9. Besrianty. V., & Wulandari, S. (2018) Classic Music Therapy of Piano Screen) Reduces The Intensity of NRS I Numeric Rating Scale before and after being given classical music for 10 minutes to the experimental group Based on the Mann-Whitnes test, it was found that the P value-0.007 p. 1 (1)
 10. Smeltzer & Bare (2002) Brunner & Suddarth Medical Surgical Nursing Textbook Volume 8 Edition 1. Jakarta: EGO
 11. Roscalch, Caroline B. (2012). Textbook of Basic Nursing Edition 10 Vol 3. Takarta: EOC.
 12. WHO (2015) Size and Distribution of Global Volume of Surgery in 2012. Retrieved 04 March 2017
 13. Potter & Perry (2010) Textbook on fundamental nursing. (Book 3 adiel 7) Takarta: EGO
 14. Katz, A.W. (2005). Cyclooxygenase 2 selective inhibitors in the management of acute and Concepts
 15. Firmansyah, A., Setiawan, H., Wibowo, D. A., Rohita, T., & Umami, A. (2021, March). Virtual Reality (VR) Media Distraction Relieve Anxiety Level of the Children During Circumcision. In *1st Paris Van Java International Seminar on Health, Economics, Social Science and Humanities (PVJ-ISHESSH 2020)* (pp. 611-614). Atlantis Press.
 16. Ariyanto, H., Setiawan, H., & Oktavia, W. (2021). A Case Study: Murotal Distraction to Reduce Pain Level among Post-Mastectomy Patients. *International Journal of Nursing and Health Services (IJNHS)*, 4(3), 325–331.
 17. Firmansyah, A., Setiawan, H., & Ariyanto, H. (2021). Studi Kasus Implementasi Evidence-Based Nursing: Water Tepid Sponge Bath Untuk Menurunkan Demam Pasien Tifoid. *Viva Medika: Jurnal Kesehatan, Kebidanan Dan Keperawatan*, 14(02), 174–181.
 18. Setiawan, H., Khaerunnisa, R. N., Ariyanto, H., & Firdaus, F. A. (2020). Telenursing meningkatkan kualitas hidup pasien dengan penyakit kronis, 3(2), 95–104.
 19. Setiawan, H., Nantia Khaerunnisa, R., Ariyanto, H., Fitriani, A., Anisa Firdaus, F., & Nugraha, D. (2021). Yoga Meningkatkan Kualitas Hidup Pada Pasien Kanker: Literature Review. *Journal of Holistic Nursing Science*, 8(1), 75–88. <https://doi.org/10.31603/nursing.v8i1.384>
 20. Widianti, W., Andriani, D., Firdaus, F. A., & Setiawan, H. (2021). Range of Motion Exercise to Improve Muscle Strength among Stroke Patients: A Literature Review. *International Journal of Nursing and Health Services (IJNHS)*, 4(3), 332–343.