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The Effectiveness of Modern Acoustic Music as Distraction Technique for Reducing Menstrual Pain



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Abstract

Menstrual discomfort is characterized by lower abdominal cramps with varying intensity ranging from mild to severe. The root cause of menstrual discomfort lies in the increased or imbalanced production of endometrial prostaglandins during menstruation. Menstrual discomfort has negative impacts on daily life by disrupting activities, reducing focus and motivation for learning, and causing significant financial losses due to the high costs of medication and medical treatments. The aim of this study was to determine the effectiveness of using acoustic music as a distraction method to reduce menstrual pain. Research sample of 38 respondents was selected using simple random sampling from a total population of 256 students. This study employed a pre-experimental design with a one-group pretest-posttest procedure. Research instrument consist menstrual data, general questionnaire sheets, Numeric Rating Scale (NRS) sheets, Standard Operating Procedures (SOPs), smartphones, earphones, and modern audio music. The data analysis indicated that the use of modern acoustic music as distraction technique was effective to reduce menstrual pain among female students at SMAN 4 Kota Kediri.

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INTRODUCTION

Menstrual discomfort also known as dysmenorrhea is a common side effect experienced during menstruation, particularly in the lower abdomen and thighs (Hayati & Hasanah, 2018). Dysmenorrhea can occur before or during the menstrual period. It is a condition characterized by pain that develops when prostaglandin hormones are released excessively leading to increased uterine contractions (Meinawati & Malatuzzulfa, 2021). Globally 90% of young women experience menstrual issues, with over 50% of menstruating women experiencing primary dysmenorrhea, and 10-20% of them experiencing severe symptoms (Alatas et al., 2019). In Indonesia there are 112,657 cases of dysmenorrhea (69.35%), with 59,000 cases of primary dysmenorrhea and the remainder being secondary dysmenorrhea. Primary dysmenorrhea affects 60-75% of young women. According to statistics from the Adolescent Reproductive Health Survey (SKRR) in East Java, it is estimated that 4,662 adolescents experienced dysmenorrhea in 2021. Among them, 4,297 individuals (90.25%) reported primary dysmenorrhea, while 365 individuals (9.75%) reported secondary dysmenorrhea (SKRR, 2021).

Due to reduced focus and lack of motivation to study caused by the pain experienced, adolescent girls may suffer from the effects of dysmenorrhea, which can disrupt their daily activities (Hayati & Hasanah, 2018). Women experiencing dysmenorrhea also incur significant financial losses due to the cost of medication and medical treatments (Alatas et al., 2019). The increased production of prostaglandin hormone (PG) F₂-alpha, a cyclooxygenase (COX-2) that can cause hypertonicity and constriction of blood vessels in the endometrium, leads to ischemia and pain in the lower abdomen, resulting in dysmenorrhea in young women. Menstruation can be painful due to prolonged and intense contractions of the uterine wall, high levels of prostaglandin hormones, and the dilation of the uterine wall caused by menstrual blood flow (Alatas et al., 2019).

The use of analgesic as part of pharmacological therapy for relieving dysmenorrhea discomfort can lead to various negative side effects, such as drowsiness, anxiety, nausea, and constipation (Sari et al., 2018). Therefore, non-pharmacological therapy, which is safe and often has fewer side effects is an alternative preferable treatment. The distraction technique is one type of non-pharmacological therapy that can be used to manage pain by minimizing exacerbating factors. Attention diversion is used to divert attention from painful

thoughts, thereby preventing conditions that can increase discomfort due to worries (Mida et al., 2021).

According to a study by Mida et al. published in 2021 titled "The Influence of Classical Music Therapy on the Reduction of Primary Dysmenorrhea in Adolescent Girls at SMA Negeri 1 Buton," explain that listening to music is one of the pain-distracting method (Mida et al., 2021). There are several advantages of using music therapy, including affordability, safety, lack of negative side effects, and its suitability for individuals who cannot receive physical therapy to alleviate their pain (Paramitha, 2018). Modern acoustic music utilized in this research. Apart from being popular among young people today, acoustic music can serve as a tool to divert attention from the discomfort menstruation due to its calmness and softness melody and its ability to help listeners focus on expressing their emotions and feelings through lyrics. Acoustic music also has a relaxing effect and can uplift the listener's emotions (Gani, 2021). We chose the title "The Effectiveness of Modern Acoustic Music as Distraction Technique for Reducing Menstrual Pain Among Students at SMAN 4 Kota Kediri" because many of them still experience menstrual pain and are unable to effectively manage their discomfort. This research aims to address this issue and prevent a decline in the quality of healthy life. especially if menstrual pain or dysmenorrhea persists over a long period of time.

METHOD

This research conducted with quantitative approach with a pre-experimental design and utilizes the one-group pre-test and post-test procedure. Menstrual pain was the dependent variable, while the effectiveness of using the distraction techniques the independent variable. This research was conducted from March 2nd to May 22nd, 2023, at SMAN 4 Kota Kediri. Population of this research consisted of 256 female students that experiencing menstrual pain, and the research sample was 38 female students with primary menstrual pain determined through probability sampling. Questionnaires was used for gather basic information such as the respondents' age, as well as menstrual information including menarche, menstrual cycle, menstrual duration, and family history of menstrual pain in ordinal scale. Other instruments included observation sheets to measure the intensity level of pain before and after the intervention was given. Standard Operating Procedures (SOPs), mobile phones, headsets, and modern acoustic music were also used. Statistical analysis using Wilcoxon Signed Rank test.

RESULT

This research was conducted from March 2nd to May 22nd, 2023, at SMAN 4 Kota Kediri. Population of this research consisted of 256 female students that experiencing menstrual pain, and the research sample are 38 female students with primary menstrual pain determined through probability sampling. Using questionnaire, we gather information consist menarche, menstrual cycle, duration of menstruation, and family history of menstrual pain, intensity of menstrual pain before and after intervention.

Table 1 Respondents Characteristics and Family History of Menstrual Pain

No.	Characteristic	f	%
1	Age (years old):	16	39.5
		17	44.7
		18	15.8
2	Menarche age (year old):	≤ 8 – 10	26.3
		11 – 14	63.2
		≥ 15	10.5
3	Menstrual cycle (days):	< 21	23.7
		21 – 35	34.2
		> 35	42.1
4	Menstruation Durations (Days):	< 3	0.0
		3 – 7	73.7
		> 7	26.3
5	Family History of Menstrual Pain:	Yes	63.2
		No	36.8

Referring to Table 1, It is evident from the research results that women aged 17 years constitute 44.7% of respondents, which is almost half of the total sample. 63.2% of the respondents experienced their first menstruation at the age of 11 to 14 years. Menstrual cycles of more than 35 days account for 42.1% of almost all respondents. The majority proportion of 73.7% has a menstrual cycle between three and seven days. Based on the table shown, there were no respondents whose menstrual period was less than three to seven days. As many as 63.2% of respondents had a family history of experiencing menstrual pain during menstruation.

Table 2 Menstrual Pain Before and After Intervention

Pain Intensity	Frequency and Percentage				p-value
	Pre		Post		
	F	%	f	%	
No Pain	0	0.0	3	7.9	0.001
Mild	5	13.2	12	31.6	
Moderate	14	36.8	17	44.7	
Severe	16	42.1	5	13.2	
Very Severe	3	7.9	1	2.6	

Based on Table 2, it is stated that before being given the distraction technique of modern acoustic music to reduce menstrual pain, the majority of respondents experienced severe pain, with 16 participants (42.1%), and moderate pain with 14 participants (36.8%). After the intervention and observation, the results showed that 5 respondents (13.2%) experienced severe pain, and 17 respondents (44.7%) experienced moderate pain. Based on the given p-value of $0.001 < 0.05$, it can be concluded that there is a significant difference in menstrual pain. Then we can conclude that the use of modern acoustic music as distraction technique is effective in alleviating menstrual pain in young female.

DISCUSSION

Menstrual Pain Intensity among Female Students at SMAN 4 Kota Kediri After Listening Modern Acoustic Music as Distraction Technique

The research findings mentioned above are consistent with a study conducted by Indah Juliana et al. in 2019 titled "The Relationship between Dysmenorrhea and Menstrual Cycle Disorders among Adolescents in SMAN 1 Manado." The study involved 92 respondents, and the majority of them reported experiencing menstrual pain in various capacities, with data collected from 30 individuals. Among them, 27 individuals experienced oligomenorrhea (>35 days), 35 individuals experienced poly menorrhea (21 days), and the remaining respondents had regular menstrual cycles. According to Chen (2018), if the menstrual cycle is irregular, the amount of blood flow may be greater and accompanied by severe pain.

According to the research report by Charu et al. cited in Nurhayati's book (2022), one of the factor's causing dysmenorrhea is a family history of menstrual pain. This study found that 39.46% of women experiencing menstrual pain had relatives who also suffered from the same symptoms, such as their mother or siblings, indicating a strong association between family predisposition and menstrual pain. The study suggests that this is due to genetic influences, whereby if there is a family history of menstrual pain, it is likely to have an impact on the psychological well-being of the women. Another study by Mool Raj et al., published in the same book, found that women with a family history of dysmenorrhea, such as their mother or siblings, had a 3x higher risk of experiencing menstrual pain compared to women without such a history. According to Ani et al. (2022) there are several factors causing menstrual severe pain including early menarche at young age, longer menstrual cycles, and longer duration of menstruation, as well as a family history of menstrual disorders. However, the majority of respondents in this survey did not experience early menarche, and the average duration of menstruation ranged from 3 to 7 days, which falls within the normal range.

We concluded that unusual menstrual cycles and a family history of menstrual pain are two significant factors contributing to menstrual discomfort. In this study, menstrual pain was not found to be influenced by characteristics such as age at menarche or the length of menstrual cycles. This finding aligns with the statement made by

Ediningtyas (2019) in the research titled "Analysis of Factors Causing Primary Dysmenorrhea among Medical Students in University of Sebelas Maret." According to the research findings, fast food consumption, lack of exercise, prolonged menstrual cycles, stress, and a family history of dysmenorrhea were identified as factors that can contribute to dysmenorrhea. Other variables such as early menarche, longer menstrual cycles, smoking, and alcohol consumption did not have an impact in the study.

Menstrual Pain Intensity among Female Students at SMAN 4 Kota Kediri After Listening Modern Acoustic Music as Distraction Technique

According to Muttaqin (2018) distraction technique is a strategy to reduce pain by redirecting the client's attention to something else, reducing awareness of the pain and even increasing pain tolerance. Short-term disturbances are found to be the most effective. In line with Hasmida (2021) that chose the audio distraction technique by offering music therapy using modern acoustic. Music is used for the distraction technique because listening to music is an activity commonly enjoyed by most people, especially among young people. Acoustic music has calming and peaceful characteristics, and it can guide the listener's expression through lyrics that depict unique emotions and sentiments. This is also consistent with the research conducted by Gani & Fadhila (2022) who suggest that classical music is a preferred type of music for therapeutic purposes. According to a study, classical music has a calming rhythm, provides a soothing effect, and can help listeners relax. The selection of classical music therapy, as proposed by Potter and Perry, is based on the belief among music professionals that the rhythm of classical music closely resembles a person's heartbeat, which is around 60 beats per minute. However, in order to cater to the modern era and appeal to the tastes of the younger generation, further research is needed as the popularity of classical music has been declining over time and is less favoured, especially among young people in this century. Acoustic music shares similarities with classical music in terms of rhythm, producing slow and gentle sounds, which are desired acoustic qualities as they can evoke a sense of tranquillity.

According to the researchers above, the research findings support the notion that listening to modern acoustic music can reduce menstrual pain. Modern acoustic music therapy can help patients be

more calm and more relaxed, enabling them to manage and ultimately alleviate the pain naturally.

Analysis of the Effectiveness of Distraction Technique Using Modern Acoustic Music in Reducing Menstrual Pain among Female Students at SMAN 4 Kota Kediri

Statistical analysis using the Wilcoxon Signed Ranks Test resulted in a Z-score of -4.855 and p -value of 0.001, indicating the rejection of the null hypothesis (H_0). Leading to the conclusion that the use of modern acoustic music as distraction technique is effective for reducing menstrual pain among female adolescents at SMAN 4 Kota Kediri.

This is supported by Muttaqin (2018) who explains that sensory stimulation through listening to music can create a sense of comfort and satisfaction in the listener. This may have an impact on the Reticular Activating System (RAS), a brain region located just above the spinal cord that is responsible for arousing motivation and enthusiasm. When an individual receives adequate or excessive sensory input, the RAS blocks unpleasant impulses. Endorphins can be released as a response to pleasurable sensory stimulation. The body produces endorphins, which are substances that help alleviate pain. Similar to opiate drugs like morphine, endorphins can have an effect on the pain perception areas in the brain. The body experiences less pain when endorphins are released as needed. his result also relevant with study conducted by Saavedra & Sternberg (2020) titled "A randomized controlled study investigating the use of music therapy for the treatment of primary dysmenorrhea-associated pain" carried out on 52 students from Universidad del Rosario (Bogota, Colombia).

The treatment group consisted of 29 participants, while the control group consisted of 23 participants. The administration of music therapy has been proven successful in alleviating primary dysmenorrhea for the first 5-12 hours of menstrual pain, with the effect lasting for 3-6 hours, according to the findings of this research with a p -value of 0.001. The same results are shown in a study conducted by Karakuş Selçuk & Baysal (2022) titled "The effect of dark chocolate and music on pain and anxiety in young women with primary dysmenorrhea: Randomized controlled trial." This study explores how young women with primary dysmenorrhea may manage their pain and anxiety through listening to music and consuming dark

chocolate. The research was conducted on 84 nursing students from Manisa Celal Bayar University Faculty of Health Sciences, Manisa, Turkey, who were divided into three groups (chocolate group: 30 participants, music group: 29 participants, and control group: 29 participants). Statistically, the study found that the average intensity of menstrual pain in young women decreased significantly in both the dark chocolate group (pre-intervention: 6.40 ± 1.63 , post-intervention: 5.00 ± 2.10 , p -value = 0.001) and the music group (pre-intervention: 6.72 ± 2.18 , post-intervention: 5.56 ± 2.08 , p -value = 0.005). Therefore, the administration of dark chocolate and music therapy has a significant effect in reducing menstrual pain and anxiety in adolescents with primary dysmenorrhea. Another study also reaches the same conclusion (Aulya et al., 2022) on "Mozart Music Therapy for Primary Dysmenorrhea in Adolescent Girls in West Java" with a significant p -value of $0.001 < 0.05$, indicating a decrease in the average primary dysmenorrhea after the administration of classical music (Mozart) therapy.

We conclude that variability in pain perception and pain threshold levels contributes to the variation in pain intensity after the intervention. The lack of support from family in managing pain, as none of the respondents had a family history of menstrual pain, was found to result in an increase in pain reported by some respondents after receiving the intervention. This is supported by (Zakiyah, 2015) that individuals perceive pain differently, leading to variations in pain intensity following music therapy. Age, gender, attention, fatigue, previous experiences, coping styles, and social support from family and friends are variables that impact respondents' perception of pain intensity. Based on the fact that some participants reported feeling worse after the intervention, we conclude that using modern acoustic music as a distraction technique may be less effective in reducing menstrual pain at a qualitative measure. However, they found that using modern acoustic music as a distraction technique was effective in reducing the severity of menstrual pain in young women, despite some participants experiencing worsened pain.

CONCLUSION

In conclusion, based on the findings of this study, it can be concluded that the use of modern acoustic music as a distraction technique is effective in reducing the intensity of menstrual pain among adolescent girls. These findings contribute to the understanding of non-pharmacological approaches to manage menstrual pain and highlight the potential benefits of incorporating music therapy as a part of pain management strategies for young women.

SUGGESTION

Further studies are necessary to enhance our understanding of the effectiveness of using the distraction technique of modern acoustic music in reducing menstrual pain. Conducting research with a larger sample size can provide more robust and reliable results. This study can serve as a valuable reference for future studies investigating the use of music therapy to alleviate pain intensity, allowing for comparisons and further exploration of the topic. By building upon the findings of this study, future research can contribute to a more comprehensive understanding of the potential benefits and effectiveness of music therapy for managing menstrual pain.

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This research was personally funded by the researcher, which grants greater independence and control over the research process. Self-funding can provide researchers with the flexibility to design and execute study according to specific objectives and research questions, without external influences or biases. This can contribute to the credibility and integrity of the research findings.

CONFLICTS OF INTEREST

The author states that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

In this research, the journal author contributes by presenting empirical evidence about the effectiveness of using music as a method of reducing menstrual pain. Through the research conducted, the author provides new insights into how music therapy can be an effective alternative in managing menstrual pain for young women.

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