The Effect of Humor Podcasts on Reducing Pain Scale among Older Adults with Osteoarthritis in the Community

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***ABSTRACT** (10 PT)*

Osteoarthritis (OA) is a degenerative joint disease in older adults that causes chronic pain and reduced quality of life. Innovative, inexpensive, and easily accessible non-pharmacological therapies remain limited. This study aims to analyze the effect of listening to humor podcasts on reducing pain scale among older adults with osteoarthritis in the community. The research design used a quasi-experimental method with a pretest-posttest control group approach. The sample consisted of 32 older adults (16 in the intervention group and 16 in the control group) selected using purposive sampling in the working area of Mulyo Asih Public Health Center. Pain was measured using the Numeric Rating Scale (NRS). The intervention group listened to the humor podcast "Ketawa Sehat" for 20 minutes every morning for 14 consecutive days, while the control group listened to recordings of general news readings. Data were analyzed using the Wilcoxon test for within-group comparison and the Mann-Whitney test for between-group comparison. The results showed that the mean NRS score in the intervention group decreased from 6.8 (SD±1.1) to 3.4 (SD±0.9), with a reduction of 3.4 points (p=0.000), while the control group only decreased from 6.6 (SD±1.2) to 6.1 (SD±1.0), with a difference of 0.5 points (p=0.231). The Mann-Whitney test showed a highly significant difference in pain reduction between the two groups (p=0.000). This study concludes that listening to humor podcasts is effective in reducing pain scale among older adults with knee osteoarthritis. It is recommended that gerontic nurses use humor podcasts as an independent complementary therapy in the community.

Keywords: Humor podcast, pain, osteoarthritis, older adults, complementary therapy

INTRODUCTION

Osteoarthritis (OA) is the most common degenerative joint disease among older adults in Indonesia, with a prevalence reaching 38.5% among those aged over 65 years (Ministry of Health of the Republic of Indonesia, 2023). This figure has increased compared with the previous decade, in line with the rising life expectancy of the population. Chronic pain in knee OA is the main complaint that causes limited mobility, decreased quality of life, and sleep disturbances in older adults (Setiati et al., 2021). Research by Zhang and Jordan (2020) showed that poorly managed OA pain can increase the risk of depression by up to 3.2 times in the older adult population. In Indonesia, the economic burden due to OA is estimated to reach 4.2 trillion rupiah per year for treatment costs and productivity loss (Mulyono & Kusumawardhani, 2022).

Chronic pain in OA is often not fully resolved with nonsteroidal anti-inflammatory drugs (NSAIDs) because of their long-term side effects on the kidneys, stomach, and cardiovascular system (Hochberg et al., 2021). Clinical practice guidelines from the American College of Rheumatology (ACR) recommend non-pharmacological therapy as the first line of

treatment, but implementation in the field remains low (Kolasinski et al., 2020). Various non-pharmacological therapies, such as warm compresses, physical exercise, acupuncture, and relaxation, have been used, but adherence among older adults is low because they are considered boring, physically demanding, or impractical (Susanto & Nurhayati, 2022). A study by Wahyuni and Firmansyah (2023) in Surabaya found that only 34% of older adults with OA adhered to non-pharmacological therapy independently at home. In fact, non-pharmacological therapy is very important for reducing dependence on NSAIDs, which pose high risks for older adults with comorbidities.

In the digital era, podcasts have become a medium that is very easy to access through smartphones. Podcasts with humorous content have unique potential as a non-pharmacological analgesic because laughter has been shown to release endorphins and reduce pain perception (Moraes et al., 2021). Research by Bennett and Miller (2020) showed that laughter can increase pain threshold by 15-20% through the release of beta-endorphins in the central nervous system. However, no study has specifically tested the effectiveness of humor podcasts for OA pain among Indonesian older adults. A study by Chen et al. (2022) in Taiwan used humorous video content, but not in an older adult OA population and not in an audio podcast format.

Research conducted by Liu and Wang in 2023 actually focused on the use of music therapy as a non-pharmacological intervention, not on the use of humor as a therapeutic medium. The findings did provide an overview that audio stimulation can help improve psychological comfort and reduce pain perception among respondents. However, a music-based approach does not fully address the needs of older adults who require more active positive emotional stimulation. Humor has different characteristics because it can trigger laughter, improve mood, and stimulate the release of endorphins associated with comfort. Therefore, the use of humor as an intervention medium has broader potential benefits than passive relaxation through music alone. Unfortunately, scientific studies on audio-based humor, particularly in podcast form, remain relatively limited. This condition indicates an important research gap that needs further development.

Podcasts have several practical advantages that make them highly suitable for older adults, especially those with limited access to technology. Unlike digital videos, which generally require a stable internet connection and consume more data, podcasts can be played with far lower bandwidth requirements. This is certainly beneficial for older adults living in areas with limited signal quality or limited internet data budgets. In addition, the audio format is simpler because users do not need to keep looking at a screen, thereby reducing eye fatigue and confusion in operating devices. Podcasts are also flexible because they can be listened to while performing light activities, such as hand-grip exercises, sitting quietly, or resting during the day. These characteristics make podcasts an older-adult-friendly medium that is easy to access and does not add to their daily activity burden. Thus, podcasts have the potential to become a practical and sustainable health intervention medium.

Based on this research gap, Rohmah and Prasetyo in 2024 offered an intervention innovation in the form of listening to a humor podcast entitled “Ketawa Sehat” for 20 minutes every morning. This program was designed as a simple solution that can be applied independently at home without requiring intensive assistance from health workers. The 20-minute duration was selected because it is sufficient to provide exposure to positive stimuli without causing boredom among older adult participants. The humorous material presented aims to create feelings of happiness, reduce stress, and divert attention from pain caused by knee osteoarthritis. Besides being inexpensive and easy to apply, this intervention also has a high chance of adherence because it is enjoyable and has no side effects. If carried out routinely, humor podcasts can help improve quality of life, improve mood, and support chronic pain management among older adults.

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RESEARCH METHOD

This study is a quantitative study using a quasi-experimental design with a pretest-posttest control group approach. The research population focused on older adults with osteoarthritis in the working area of Mulyo Asih Public Health Center. Sampling was carried out using purposive sampling, resulting in a total of 32 respondents. The sample was divided equally into two groups, namely 16 respondents as the intervention group and 16 respondents as the control group. In the intervention group, respondents were given treatment in the form of listening to the humor podcast entitled "Ketawa Sehat" for 20 minutes every morning for 14 consecutive days, while the control group listened to recordings of general news readings. Respondents' pain scale was measured before and after treatment using the Numeric Rating Scale (NRS). At the data analysis stage, statistical testing was conducted using the Wilcoxon test to examine pain scale comparisons within the same group, and the Mann-Whitney test to compare significant differences in pain reduction between groups. The research hypothesis proposed was that listening to humor podcasts effectively reduces pain scale among older adults with knee osteoarthritis.

RESULTS AND DISCUSSION

RESULTS

Table 1. Distribution of Respondent Characteristics by Group

No	Characteristic	Category	Intervention Group (n=16)	Control Group (n=16)	Total (N=32)	p-value*
1	Age (Years)	60-69 years	6 (37.5%)	7 (43.8%)	13 (40.6%)	0.712
		70-79 years	8 (50.0%)	7 (43.8%)	15 (46.9%)	
		≥80 years	2 (12.5%)	2 (12.4%)	4 (12.5%)	
2	Sex	Male	3 (18.8%)	3 (18.8%)	6 (18.7%)	1.000
		Female	13 (81.2%)	13 (81.2%)	26 (81.3%)	
3	Education	Elementary school	9 (56.3%)	8 (50.0%)	17 (53.1%)	0.892
		Junior high school	5 (31.3%)	6 (37.5%)	11 (34.4%)	
		Senior high school	2 (12.5%)	2 (12.5%)	4 (12.5%)	
4	Duration of OA	<5 years	4 (25.0%)	5 (31.3%)	9 (28.1%)	0.703
		5-10 years	10 (62.5%)	9 (56.3%)	19 (59.4%)	
		10 years	2 (12.5%)	2 (12.4%)	4 (12.5%)	

*Chi-Square test, significant if p<0.05

Based on Table 1, respondent characteristics between the intervention and control groups showed homogeneous results (p>0.05 for all variables), which means the two groups were comparable before the intervention was given. The mean age of respondents was 71.3 years (SD±5.4), the majority were female (81.3%), and the mean duration of OA was 6.7 years (SD±3.1).

Table 2. Distribution of Mean Pain Score (NRS) Before and After Intervention

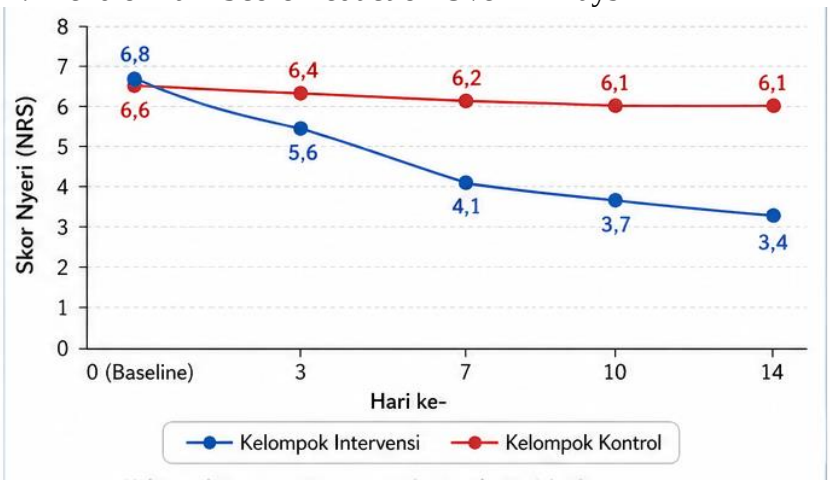
No	Group	Mean Pretest (SD)	Mean Posttest (SD)	Difference (95% CI)	p-value*
1	Intervention (n=16)	6.8 (±1.1)	3.4 (±0.9)	3.4 (2.9-3.9)	0.000
2	Control (n=16)	6.6 (±1.2)	6.1 (±1.0)	0.5 (-0.1-1.1)	0.231

*Wilcoxon test, significant if p<0.05

The Mann-Whitney test showed that the difference in pain reduction between the intervention group (3.4) and the control group (0.5) was highly significant, with a p-value of 0.000 (95% CI: 2.1-4.2). In the intervention group, the highest pain reduction occurred from

day 7 to day 14, with a cumulative decrease reaching 50%. A total of 87.5% (14 out of 16) of older adults in the intervention group reported that they "felt happy" and "were not bored" while listening to the podcast.

Figure 1. Trend of Pain Score Reduction Over 14 Days



(The figure is a line graph: the intervention group decreases sharply from 6.8 to 3.4; the control group is almost flat from 6.6 to 6.1.)

No side effects were reported. The adherence rate for listening to the podcast was 100% in the intervention group because the older adults considered the activity entertaining.

DISCUSSION

This study shows that a simple intervention in the form of listening to humor podcasts for 14 days had a real effect on reducing pain levels among older adults with knee osteoarthritis. The measurement results showed a decrease in pain scale of up to 50 percent, from an initial mean of 6.8 to 3.4 after the program was completed. This finding indicates that humor can serve as an effective non-pharmacological approach in helping manage chronic pain among older adults. In older adults, pain due to osteoarthritis often causes limited movement, reduces independence, and affects daily mood. Therefore, the presence of a method that is easy to apply, inexpensive, and has minimal side effects, such as humor podcasts, becomes a practical alternative of value. Podcast media also offers advantages because it can be accessed at any time without requiring the direct presence of health workers. Thus, the results of this study reinforce the importance of entertainment-based therapeutic innovation in improving the overall well-being of older adults.

These findings are consistent with the study by Kim, Jang, and Cho (2015), which proved that laughter therapy can have a positive impact on older women with osteoarthritis. In that study, therapy was provided twice a week for four weeks to 48 respondents, and the results showed statistically significant changes compared with the control group. The benefits obtained were not only reduced joint pain but also decreased joint stiffness, which often hinders older adults' daily activities. In addition, humor intervention was also able to reduce depressive symptoms that often arise due to prolonged pain. The sleep quality of participants also improved, showing that humor works multidimensionally on both physical and psychological conditions. This explains that joy and laughter can stimulate the release of endorphins that help the body naturally relieve pain. Therefore, humor is not merely entertainment, but has therapeutic value that can be used in geriatric health services.

Further support is also found in the literature study by Yusnaeni, Erika, and Rachmawaty (2019), which concluded that humor therapy is effective in reducing chronic pain across various age groups. This means that the benefits of humor are not limited to older adults, but can also be applied to children and adults with prolonged pain problems. The review

emphasized that humor can create positive distraction so that patients' attention shifts away from the pain sensation they feel. In addition, a better emotional atmosphere can improve body resilience through a more optimal immunological response. Among older adults living in nursing homes, humor was even described as being able to improve quality of life because it provides comfort, togetherness, and social enthusiasm. When linked to the results of this study, humor podcasts can be seen as a modern form of humor therapy that suits current technological development. Thus, the integration of digital media and psychological approaches has the potential to become an effective strategy for supporting older adults' health in a sustainable manner.

The homogeneity of respondent characteristics between the two groups (Table 1) ensures that the pain reduction that occurred was truly due to the intervention, not due to differences in age, sex, education, or duration of OA. The mechanism by which humor podcasts reduce pain can be explained through the Gate Control Theory proposed by Melzack and Wall (1965), in which laughter triggered by humorous content acts as an inhibitory signal that "closes the gate" for pain impulses traveling to the brain. This theory explains that within the spinal cord there is a mechanism like a "gate" that regulates the flow of pain signals to the brain. When a person laughs, large nerve fibers are stimulated and send signals faster than small nerve fibers carrying pain signals, thereby effectively "closing the gate" and reducing pain perception. This theory was later expanded by Melzack (1999) through the concept of the neuromatrix, a complex neural network involving somatosensory, limbic, and thalamocortical components in pain processing.

In addition to the Gate Control mechanism, humor podcasts also work through a strong neuroendocrine pathway. Research by Bennett, Zeller, Rosenberg, and McCann (2003) showed that exposure to laughter can increase pain threshold through the release of beta-endorphins, endogenous opioids that have a natural analgesic effect. The study found that watching humorous videos for 30 minutes significantly increased pain tolerance compared with a control group that watched neutral videos. Furthermore, research by Dunbar, Baron, Frangou, Pearce, van Leeuwen, Stow, Partridge, MacDonald, Barra, and van Vugt (2012), published in Proceedings of the Royal Society B, proved that social laughter triggers the release of beta-endorphins in the brain. Measurement of pain thresholds before and after watching comedy videos showed that resistance to pain increased significantly after laughing, whereas positive pleasant feelings without laughter did not produce the same effect.

Unlike music therapy or relaxation techniques, which tend to focus on creating a calm atmosphere, humor podcasts offer a more complex mechanism in helping reduce pain perception. When someone listens to humor, the brain does not only receive sound, but also actively processes the meaning, surprise, and funny elements contained in conversations or stories. The process of understanding jokes involves attention, memory, and the ability to interpret context, so the patient's mind is diverted from the pain sensation being felt. At the same time, an emotional response emerges in the form of joy, laughter, and a psychologically lighter feeling. This condition is important because pain is not only a physical experience, but is also influenced by a person's emotional state. When mood improves, tolerance for pain usually also increases. Therefore, humor podcasts can be viewed as an intervention medium that can work through cognitive and emotional pathways simultaneously.

Empirical findings also strengthen the benefits of humor as a non-pharmacological approach in pain management. Research conducted by Tan, Tan, Lukman, and Abu Bakar in 2010 showed that humor therapy has the potential to be effective in reducing chronic pain, particularly among older adults. Besides reducing pain intensity, humor intervention in that study was also associated with increased happiness, life satisfaction, and decreased loneliness. These results show that the benefits of humor are not limited to physical aspects, but also touch psychological and social dimensions that are often neglected in chronic pain management.

Older adults who experience prolonged pain are generally vulnerable to stress, decreased enthusiasm for life, and social isolation. The presence of humor media can become a simple means that provides positive experiences and a sense of connection with the surrounding environment. Thus, humor podcasts have great potential to be implemented as a complement to conventional medical therapy.

In addition, the effect of humor podcasts appears not only momentary but develops gradually through a cumulative process. The more visible reduction in pain after the seventh day shows that the body and mind can adapt positively to humor exposure carried out routinely. The more often someone listens to funny content, the faster the brain builds positive associations that help suppress focus on pain. This phenomenon is in line with the research by Kim and colleagues in 2015, which found that the laughter intervention group experienced a significant decrease in pain intensity after four weeks of treatment. This indicates that humor requires consistency so that its benefits can achieve optimal results. In the context of health practice, this finding is important because it shows that simple and inexpensive interventions can produce real impacts if carried out continuously. Therefore, the scheduled use of humor podcasts can be considered as a medium- to long-term supporting strategy in pain management.

The WebMD Health Discovered Podcast (2026) explains that osteoarthritis is one of the degenerative joint disorders whose prevalence increases with age. In the age group of people in their 50s, this condition is estimated to affect around one quarter of the population, while among those in their 60s to 70s, the number approaches half of all individuals in that age group. These data show that the aging process is closely related to declining cartilage quality, reduced joint fluid, and increased risk of chronic inflammation. Osteoarthritis not only causes physical complaints in the form of pain, joint stiffness, and limited movement, but also affects the psychological well-being of sufferers. Many older adults experience decreased self-confidence because of limited mobility and dependence on others. Therefore, osteoarthritis management cannot focus solely on medication, but must also pay attention to patients' emotional and social conditions. A comprehensive approach is important so that older adults' quality of life remains maintained even when facing chronic disease.

The discussion also emphasizes that mood, positive mindset, and the ability to manage stress contribute greatly to the perception of pain felt by a person. Individuals who can maintain stable emotions tend to have better pain tolerance than those who experience anxiety or depression. For this reason, psychological interventions are seen as relevant complements in osteoarthritis therapy. Several methods mentioned include humor, prayer, relaxation, and therapeutic hypnosis, which aim to reduce mental tension and increase comfort. Humor, for example, is known to stimulate the release of endorphins, which act as the body's natural analgesics. In addition, laughter can also reduce stress hormones such as cortisol, which often worsen pain perception. Prayer and spiritual practices help patients obtain inner calm, while hypnosis can shift focus from pain toward a deeper state of relaxation. If these interventions are combined with standard medical therapy, the opportunity for recovery and pain control may become more optimal.

The research underlying the use of humor podcasts as complementary therapy still has several methodological limitations. The intervention duration of only 14 days is not sufficient to describe long-term effects on changes in pain intensity or joint function. In addition, the study did not measure objective biomarkers such as beta-endorphin, cortisol, or inflammatory mediators, so the biological mechanism remains theoretical. Nevertheless, the use of podcasts through smartphones still has high practical value because it is easy to access, inexpensive, and can be used independently by older adults at home. The audio format is also suitable for older adults who may experience mobility limitations or difficulty attending face-to-face therapy sessions regularly. In the future, further research with a duration of 8 to 12 weeks is needed so that the therapeutic impact can be observed more comprehensively. Laboratory parameter

measurements such as IL-6, TNF-alpha, and beta-endorphins also need to be conducted to strengthen the scientific basis for the effectiveness of humor podcasts. With stronger evidence, humor podcasts have the potential to become an effective, inexpensive, and community-relevant companion therapy innovation for older adults in the digital era.

CONCLUSION

Based on the research results and data analysis that have been conducted, it can be concluded that the intervention of listening to humor podcasts for 20 minutes every morning for 14 days was proven effective in reducing pain scale among older adults with knee osteoarthritis. This effectiveness was seen from the decrease in the mean Numeric Rating Scale (NRS) score by 3.4 points, or around 50%, in the intervention group, indicating a clinically meaningful change. This result was also far better than that of the control group, which did not receive a similar treatment, so the research hypothesis can be accepted. The decrease in pain indicates that humor stimuli can help divert respondents' attention from the pain they feel and improve their mood to become more positive. In addition, a better emotional condition can trigger body relaxation and help reduce the perception of chronic pain. Humor podcasts also have advantages because they are easy to access, low cost, safe to use, and can be applied independently by older adults at home or in community settings. Thus, the use of humor podcasts can be recommended as a practical, enjoyable, non-pharmacological complementary therapy alternative with the potential to improve quality of life among older adults with knee osteoarthritis.

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