INTERACTIVE VISUAL EDUCATION TO ENHANCE KNOWLEDGE OF LOW BACK PAIN AMONG THE ELDERLY AND CAREGIVERS AT OLAK KEMANG HEALTH CARE, JAMBI CITY

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ABSTRACT

Low back pain is a common degenerative illness among the elderly, significantly impacting their quality of life and independence. Insufficient understanding of effective management frequently worsens the disease. The objective of this community service program was to enhance comprehension of low back pain among elderly and their caregivers at the Olak Kemang Public Health Centre in Jambi City. The programme consisted of an instructional session with 41 participants utilising a multidisciplinary-developed interactive visual module, accompanied by a practical demonstration of stretching exercises. A pre- and post-test design was used to quantitatively evaluate the alteration in participants' knowledge. The data were examined with the Wilcoxon and Pearson chi-square tests. The findings indicated a statistically significant enhancement in participants' knowledge, with the median score increasing from 60 (range: 30-80) in the pre-test to 85 (range: 50-100) in the post-test ($p < 0.001$). The number of participants who attained a passing score (≥70%) rose considerably from 19 to 31 ($p = 0.007$). The interactive visual education program effectively enhances awareness regarding lowback pain among the elderly and their caregivers. This strategy is highly recommended for implementation in other community health programs.

Keywords: Low back pain; caregiver; health education; elderly.

ABSTRAK

Nyeri punggung bawah (low back pain) merupakan penyakit degeneratif yang umum terjadi pada kalangan lanjut usia (lansia) dan berdampak signifikan terhadap kualitas hidup serta kemandirian mereka. Kurangnya pemahaman mengenai manajemen yang efektif sering kali memperburuk kondisi penyakit tersebut. Tujuan dari program pengabdian masyarakat ini adalah untuk meningkatkan pemahaman mengenai nyeri punggung bawah pada lansia dan pendamping (caregiver) mereka di Pusat Kesehatan Masyarakat (Puskesmas) Olak Kemang, Kota Jambi. Program ini terdiri dari sesi penyuluhan yang diikuti oleh 41 peserta dengan menggunakan modul visual interaktif yang dikembangkan secara multidisiplin, disertai dengan demonstrasi praktis latihan peregangan. Desain pre-test dan post-test digunakan untuk mengevaluasi perubahan pengetahuan peserta secara kuantitatif. Data dianalisis menggunakan uji Wilcoxon dan Pearson chi-square. Temuan menunjukkan adanya peningkatan pengetahuan peserta yang signifikan secara statistik, dengan skor median meningkat dari 60 (rentang: 30-80) pada pre-test menjadi 85 (rentang: 50-100) pada post-test ($p < 0,001$). Jumlah peserta yang mencapai skor lulus (≥70%) meningkat secara signifikan dari 19 menjadi 31 ($p = 0,007$). Program edukasi visual interaktif ini efektif dalam meningkatkan kesadaran mengenai nyeri punggung bawah pada lansia dan pendamping mereka. Strategi ini sangat direkomendasikan untuk diterapkan pada program kesehatan masyarakat lainnya.

Kata kunci: *Nyeri punggung bawah; pendamping (caregiver); pendidikan kesehatan; lanjut usia.*

INTRODUCTION

Elderly health is a key program of the Community Health Center (Puskesmas) as a fundamental health care service facility. The World Health Organization (WHO) defines elderly or senior citizens as individuals aged 60 years or older. This description encompasses both the age factor and the health issues and complexities encountered by this demographic. The health of the elderly is a critical concern, particularly given the rising percentage of older individuals in the global population. Indonesia has had a notable rise in its older population, attributed to enhanced life expectancy and advancements in healthcare services. According to recent estimates, the old population in Indonesia in 2020 was around 26.82 million, representing 9.92% of the total population. The number of senior individuals is anticipated to rise, reaching an estimated 28.8 million by

2025, which would constitute 11.34% of the overall population. Elderly individuals frequently encounter an increased prevalence of health issues, encompassing degenerative diseases, cognitive decline, and mental health disorders that may adversely impact their quality of life.[1-4] Degenerative diseases in the elderly are one of the greatest challenges in public health, reflecting variations in physiological and psychological vulnerability with increasing age. Degenerative diseases encompass various chronic ailments that can impair the quality of life in the aged, such as hypertension, diabetes mellitus, heart disease, osteoarthritis, and Alzheimer's disease.[5-6] A primary factor affecting the incidence of degenerative disorders in the elderly is the aging process itself. With aging, the body undergoes a deterioration in physiological function, heightening the susceptibility to chronic diseases.[7-8]

Osteoarthritis (OA) is a prevalent degenerative joint condition among the elderly and is significantly associated with the etiology of low back pain. This ailment can impair joint cartilage, leading to discomfort, edema, and restricted mobility. In adults aged 65 and older, the prevalence of osteoarthritis can attain 33.6%, signifying that this condition is quite prevalent among the elderly population.[9-11] On the other hand, low back pain is another common problem that is often triggered or exacerbated by osteoarthritis. Low back pain is a pain phenomenon localized in the lower back, attributable to several reasons, including musculoskeletal deterioration, inflammation, and trauma.[12-13] Researchs showed that more than 70% of individuals in industrialized countries complain of low back pain, and in the elderly, low back pain is often triggered by decreased muscle strength and mobility that occurs with age.[14] Prolonged low back pain can negatively impact the daily lives of older adults. The existence of this pain may lead to diminished physical function, interference with everyday activities, and suboptimal sleep quality. This discomfort often also affects mental aspects, such as increasing the risk of depression and anxiety.[15] According to research, pain experienced by older adults can make them more dependent on others, which impacts independence.[12]

A multidisciplinary approach is often used to treat low back pain in older adults. Research has shown that physical exercise programs, like gymnastics for the elderly, effectively reduce pain complaints and enhance functional abilities.[16] In addition, regular and routine physical therapy can also help older adults improve their muscle strength, mobility, and balance, thereby reducing the risk of falls. Family and social support are very important for people with osteoarthritis and low back pain. Older adults often face challenges in seeking appropriate medical care, and emotional and practical support from family can help them remain active and engaged in daily activities, thereby reducing the impact of their pain.[17-18] Efforts to reduce low back pain through appropriate education can help older adults and caregivers manage this condition. One effort to convey information and education is the use of interactive visual education modules. This interactive module is designed to enhance understanding of low back pain, its causes, and management strategies. Using interactive visual education modules allows for more engaging and easily understood information delivery for both seniors and caregivers. Multimedia-based education can improve information retention and motivate them to apply the techniques learned in their daily lives.[19-20]

Elderly health is a crucial issue, particularly with the increasing proportion of older adults in the global population. The urgency of elderly health arises from various factors, including the increased risk of disease, the need for better healthcare services, and the social challenges faced by this age group. The increasing number of elderly people is directly proportional to the increasing prevalence of chronic and degenerative diseases.[21-22] Managing degenerative diseases such as osteoarthritis and low back pain in the elderly presents a challenge for health services given their high incidence and impact on their quality of life and independence. This emphasizes the need to improve the quality of healthcare services to meet the complex health needs of older adults. Community service activities will be conducted at the Olak Kemang Community Health Center (Puskesmas) in Danau Teluk Village, Jambi City, a community health center under the auspices of the University of Jambi. Because this community health center is located across Jambi City, the number of patient visits is quite high, especially among the elderly, with approximately 20–30 visits per day. Low back pain is one of the most common degenerative diseases, along with hypertension and diabetes mellitus. According to data from the 2018 Basic Health Research (Riskesdas), the prevalence of musculoskeletal disorders, including low back pain, in the elderly population is quite significant. In general, reports indicate that low back pain can reach 49-90% of the elderly population in various regions.[23-24]

Caregivers play a crucial role in supporting older adults with low back pain. Research showed that family support can increase older adults' engagement in health programs.[25] Using interactive visual education modules allows for more engaging and understood information delivery for both older adults and caregivers. This visual and engaging educational approach is expected to improve information retention and motivate them to apply the techniques learned in their daily lives.[19,26] Furthermore, effective low back pain prevention and management programs should be a priority for public health providers in Jambi City. Physical training, such as elderly exercise and education on posture maintenance techniques during activities, is crucial for pain management. These interventions also aim to increase muscle strength and flexibility, which can help reduce pain complaints.[27]

METHODS

The Community Service program begins with coordination between the Community Service Team Leader and the Head of the Community Health Center. As a first step, a survey will be conducted to assess the condition of the premises and residents at the Olak Kemang Community Health Center. Health education and examinations will be part of the community service program. The community health center will test visitors' initial knowledge of back pain prior to the education. An orthopedic, neurology, or rehabilitation medicine specialist will then follow up with interactive visual techniques. Leaflets/brochures and a pocket booklet will be distributed to visitors during the education. After the education, participants will also be taught simple physical exercises for stretching and relaxation. The next activity will be a health checkup, including blood pressure and a physical examination. This step includes measuring weight, height, and waist circumference. Fourth- and sixth-semester students will be involved in the Community Service program. They will assist with blood pressure checks and health checks. The community health center is responsible for gathering all participants, specifically targeting elderly individuals aged 60 years and above, as well as their caregivers. Data analysis of pre- and post-test results was tested for normality using the Shapiro–Wilk test. Data that were not normally distributed were presented as medians (ranges). Differences in pre- and post-test scores were analyzed using the Wilcoxon test, while differences in the proportion of pass rates (cut-off score ≥70%) were tested using the Fisher's Exact Test. The level of statistical significance for all tests was set at $p < 0.05$.

RESULTS AND DISCUSSION

This community service activity was attended by 41 participants, consisting of elderly individuals and their caregivers at the Olak Kemang Public Health Center (Puskesmas), Jambi City. The participants showed high enthusiasm throughout the program, which included an educational session using an interactive visual module and a practical demonstration of simple stretching exercises for low back pain management. The effectiveness of the educational intervention was quantitatively measured using a pre-test and post-test questionnaire to assess the participants' knowledge regarding the causes, prevention, and management of low back pain. The results indicate a significant improvement in the participants' knowledge after the intervention. As shown in **Table 1**, the median score of the participants increased substantially from 60 in the pre-test to 85 in the post-test. The statistical analysis using the Wilcoxon test confirms that this improvement is highly significant ($p < 0.001$), demonstrating the effectiveness of the interactive visual education module in delivering information.

Table 1. Pre-test and post-test score

Activity	Score (n=41, %)	P value
Pre-test	60 (30-80)	<0.001*
Post-test	85 (50-100)	

*The data was not normally distributed, so it was presented in median (range) and the Wilcoxon test was used. The significance level used was p <0.05.

Furthermore, the analysis of the passing rate, with a cut-off score of ≥70%, also revealed a significant positive change. **Table 2** shows that before the educational session, only 19 out of 41 participants (46.3%) passed the minimum score. However, after the intervention, the number of participants who passed increased to 31 (75.6%). This increase in the proportion of participants achieving the target knowledge level was confirmed to be statistically significant by the Pearson Chi-Square test ($p = 0.007$). This finding reinforces that the educational program not only raised the average knowledge but also successfully helped a larger portion of the participants to reach a competent level of understanding.

Table 2. Number of participants who passed and failed the pre-test and post-test (cut off score ≥70%)

Activity	Passed (n)	Failed (n)	P value
Pre-test	19	22	0.007*
Post-test	31	10	

*Analysis using Pearson Chi-Square Test with a significance level of p <0.05

The significant improvement in knowledge among the elderly and their caregivers regarding low back pain is the primary finding of this community service program. This result aligns with the program's main objective, which was to enhance understanding through an innovative educational approach. The use of an interactive visual module proved to be a powerful tool for this specific demographic. This supports previous studies which suggest that multimedia-based education can enhance information retention and motivate individuals to apply learned techniques in their daily lives.[19,20] Elderly participants, who may have limitations in reading or concentrating on text-heavy materials, benefit greatly from visual aids, simplified language, and interactive elements that keep them engaged.

The success of this intervention can be attributed to several factors. First, the content of the module was developed by a multidisciplinary team (neurology, orthopedics, medical rehabilitation), ensuring the information was comprehensive, accurate, and practical. Second, the interactive nature of the session allowed for direct

questions and answers, clarifying doubts and reinforcing key messages. The inclusion of a practical demonstration of stretching exercises provided participants with actionable skills to manage their symptoms, moving beyond theoretical knowledge. This hands-on approach is crucial for translating knowledge into practice, which is a key component in effective management of chronic conditions like low back pain.[16,17]

Involving caregivers in the educational session was a strategic decision that likely contributed to the program's success. Caregivers play a pivotal role in the health management of the elderly, and equipping them with the right knowledge empowers them to provide better support.[28] An informed caregiver can assist in performing exercises correctly, modifying daily activities to prevent pain, and encouraging adherence to management strategies. This creates a supportive environment for the elderly, which is essential for managing chronic pain and maintaining independence.[18,28-38]

This program, however, is not without limitations. The evaluation was conducted immediately after the intervention (post-test), so it does not measure long-term knowledge retention or behavioral changes. Future programs could incorporate a follow-up evaluation several months later to assess the lasting impact of the education. Additionally, this activity was conducted at a single public health center, which may limit the generalizability of the findings. Nevertheless, the positive results suggest that this model of community education is highly promising and could be replicated in other primary healthcare settings across Jambi and other regions in Indonesia facing similar challenges with their aging populations. The findings strongly advocate for the integration of modern, user-friendly educational tools in community health programs to empower patients and their families in managing chronic degenerative diseases.

CONCLUSION

The community service program aimed at improving the understanding of low back pain among the elderly and their caregivers through an interactive visual module has been successfully implemented. The educational intervention resulted in a statistically significant increase in the participants' knowledge regarding the causes, prevention, and management of low back pain. The use of a visually engaging and interactive educational model proved to be highly effective for the elderly demographic. Therefore, this approach is a promising and recommended strategy for health education in primary care settings to empower patients and their families in managing chronic degenerative conditions.

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