IMPROVING MC-KENZIE EXERCISE CAPABILITIES THROUGH SIMULATION METHOD IN THE AGRICULTURE AREA

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ABSTRACT

Introduction: Low back pain is one of the factors causing morbidity and mortality in agricultural areas, namely pain syndrome experienced by individuals caused by poor body position. This can result in injury to soft tissue structures that include muscles and ligaments. The purpose of community service is to improve the knowledge and skills of farmers in the PTPN XII Gunung Gambir Jember Agricultural Area in preventing low back pain.

Methods: Community service activities are carried out by providing education through simulations to farmers. The reason for choosing this method is that farmers prefer real experiences compared to lectures.

Results: Simulation learning and role play will allow farmers to learn firsthand through watching, practicing, and role-playing how to do the Mc-Kenzie Exercise. Thus, it is hoped that farmers will experience an increase in knowledge and skills in preventing low back pain.

Conclusion: Community service activities can increase farmers' knowledge of skills about Mc-Kenzie exercises to prevent low back pain without side effects.

KEYWORDS

mc-kenzie; low back pain; simulation

1. INTRODUCTION

Indonesia is an agricultural country where most of the people's livelihoods are farmers. Agriculture is one of the most demanding types of work in the environment. Low back pain (LBP) is a common problem in the musculoskeletal system that occurs in agricultural areas (Fibriansari et al., 2019). Low back pain is a problem syndrome pain caused by the wrong position (Susanti et al., 2015). Low back pain is the leading cause of living with disability in both developed and developing countries for many years. One of the occupational health and safety problems that are often experienced by farmers (Kanti et al., 2019). Nerve damage in low back pain can cause disability and reduce a person's quality of life (Pratiwi, 2020).

The prevalence of low back pain in the world has been reported, with an estimated mortality rate of 10. The incidence in Indonesia is around 3.1%, the highest in agricultural areas, more in adults than other groups. Based on cases of occupational diseases in Indonesia, the incidence in East Java in 2010 reached 107.4 million people. Based on previous research on workers, the risk factors for

worker posture reached 15%, work at 18%, and work duration at 58% (Marchianti et al., 2017).

Low back pain is defined as a symptom that cannot be specifically validated and is categorized as a musculoskeletal disorder (Princess et al., 2021). LBP is the most common problem felt in the lumbosacral spine and paraspinal region. Low Back Pain can cause activity limitations such as carrying objects, sitting or standing for long periods, twisting, and squatting, which can result in work restrictions and cause not to come to work, disability arising from this pain has a significant economic impact (Alhakami et al., 2019). Globally, LBP ranks in the top 10% of disability-adjusted debilitating conditions (DALYs) (Namnaqani et al., 2019).

Mc-Kenzie exercise is one way to reduce discomfort in low back pain. This exercise is to train the muscles that are felt during back pain. Mc-Kenzie exercises consist of flexion and extension movements to relieve pain, exercise back physique, reduce stiffness in sore muscles, and restore elasticity to achieve full comfort for the patient and improve health status (Lam et al., 2018).

Jember has several tea plantations with the uniqueness and coolness of the mountainous area, one of which is the PTPN XII Gunung Gambir Tea Plantation Area which is located in Pasi, Gelang Village, Sumberbaru, Jember. This area belongs to the Pandalungan culture which refers to an area in the northern and eastern coastal areas of East Java Province, where the majority of the population has a Madura cultural background (Tjahyadi et al., 2020).

In general, the surrounding community works in the agricultural and plantation sectors. People tend to work in highlands and uneven roads, which pose a risk of injury, one of which is back pain and health problems due to work and the work environment. One of the efforts made to maintain and improve public health is through health promotion activities through simulations in the form of health education (Ninuk et al., 2020). According to the Indonesian

Ministry of Health, (2020) health promotion aims to provide learning from by and for the community through local socio-cultural conditions and is supported by health-oriented public policies so that they can improve the ability of the community, especially in the health sector. With the provision of health information in addition to increasing knowledge, the expected outcome is behavior change (Haris et al., 2019).

So, Mc-Kenzie exercises can be used to prevent low back pain by stimulating the Pandalungan community to make it easier to deal with pain and easier to carry out daily activities. The purpose of this study was to improve the knowledge and skills of farmers in the plantation area of PTPN XII Gunung Gambir Jember in preventing low back pain.

2. MATERIAL AND METHODS

Community service is packaged in the form of an Mc-Kenzie exercise simulation to increase knowledge and skills in preventing low back pain. The targets of this activity are tea farmers in the PTPN XII Gunung Gambir Tea Plantation Area Jember. These farmers were chosen because they are expected to be able to disseminate information and how carry out the Mc-Kenzie exercise according to Figure 1.

The implementation method carried out in this community service activity is to provide information and skills through lecture and simulation methods. The simulation method is a learning method in which an imitation of a real event is made, in this case, farmers are invited to practice Mc-Kenzie according to the procedure. This method was chosen because it can provide an overview of real situations, enrich knowledge, and take action in dealing with real situations. Before and after the activity, farmers were asked to do pre-test and post-test. Knowledge measurement results are grouped into 3 categories,

Figure 1. Mc-Kenzie Exercise Procedure

namely: good (76%-100%), enough (56%-75%), and poor ($\leqq$ 55%).

3. RESULTS

This community service activity was carried out in the PTPN XII Plantation Area of Gunung Gambir Jember. The majority of farmers are men with a ratio of 80.5% and 19.5% with women. The largest proportion of farmers are aged 31-40 years and have worked more than 5 years. The general characteristics of farmers who are respondents are summarized in Table 1.

Table 1. The Farmers Characteristic of Respondent (n=36)

Characteristics	n	%
Gender		
Man	29	80.5
Woman	7	19.5
Age		
<30 years old	4	11.1
31-40 years old	16	44.5
41-50 years old	13	36.1
>50 years	3	8.3
Working time		
<3 years	4	11.1
3-5 years	12	33.3
>5 years	20	55.6
Education		
No school	9	25
Elementary School	21	58.3
Junior High School	5	13.9
Up high school	1	2.8

Table 2. Difference Knowledge Pre and Post Intervention

Variable	Pre		Post	
	n	%	n	%
Good	1	2.7	25	69.4
Enough	8	22.3	9	25
Poor	27	75	2	5.6

This can be seen from the monitoring of both verbal evaluations, written evaluations, and also skills. Farmers can answer several questions from the facilitator related to the material provided and can explain coherently and comprehensively about the Mc-Kenzie exercise. Some farmers can also demonstrate the exercises coherently and correctly can be seen in Figure 2.

The results of the pre-test and post-test can be seen in Table 2. It can be seen in the figure that before community service was carried out, the knowledge of farmers with the largest proportion of farmers was in the poor category ($\leqq$55%) as many as 27 farmers (75%) and only 1 person (2.7%) in the category of good knowledge (76-100%).

On the other hand, after being given knowledge and skills using simulation and role play methods, the largest proportion of farmers' knowledge in providing Mc-Kenzie Training was in a good category (25 people = 69.4%) and enough (9 people = 25%).

4. DISCUSSION

Efforts to increase the capacity of farmers in the PTPN XII Gunung Gambir Jember Plantation Area have reached the planned target. It was found that the farmer's ability to do the Mc-Kenzie exercise increased. This is shown from the results of the increase in the post-test score compared to the pre-test, as well as the ability to perform demonstrations, and simulations. This shows that community service can achieve the set targets.

Figure 2. Activities of Mc-Kenzie Exercise Education

Low back pain can cause limitations in activities such as carrying objects, sitting or standing for long periods, twisting, and squatting, which can result in work restrictions and lead to absence from work, disability arising from this pain has a significant economic impact (Alhakami et al., 2019). Mc-Kenzie Exercise has been recognized as one of the effective methods for treating LBP (Namnaqani et al., 2019). Mc-Kenzie exercise encourages self-care treatment through repetitive exercises and focuses on extensions including ROM exercises, manipulation, and patient education (Kim et al., 2018). Mc-Kenzie exercise emphasizes the phenomenon of centralization in the assessment and treatment of spinal pain, where pain originating in the spine is referred to distally, and through targeted repetitive motion, pain migrates back to the spine (Mann et al., 2021).

Health education with the simulation method is one method to provide knowledge, experience, and skills to farmers. The condition of the plantation area in providing health education requires the use of interesting simulation-based learning media and is more helpful in understanding the material presented.

The simulation method was chosen because the simulation has three main properties that can increase the activeness of students in the learning process, namely: 1) Simulation is a form of teaching technique that is oriented to the activeness of students in learning in the classroom, both teachers and students take a role in it (Caldas et al., 2020); 2) Simulation trains farmers in problem-solving skills through an interdisciplinary approach in learning (Bryant et al., 2020). Besides, it can also practice social skills that are relevant to people's lives; 3) simulation is a learning model that is dynamic in the sense that it is very suitable for dealing with changing situations that require flexibility in thinking and providing answers to rapidly changing circumstances.

5. CONCLUSION

The community service activity "Improving the Ability of Mc-Kenzie Exercise Through Simulation Methods in the PTPN XII Gunung Gambir Jember Plantation Area" has succeeded in increasing the ability of farmers to prevent low back pain. This can be seen from the evaluations carried out qualitatively and quantitatively which showed an increase in the knowledge and skills of farmers. Community service activities regarding the Mc-Kenzie exercise can be carried out on an ongoing basis by involving the occupational health unit to better ensure the sustainability of the program in the future.

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