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LEVELS OF PAIN AND INDEPENDENCE OF DAILY ACTIVITIES (ADL) ON OSTEOARTHRITIS PATIENTS

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ABSTRACT

Patients with osteoarthritis will experience pain and limitation of motion which has an impact on difficulty in performing activities of daily living (ADL). Patients with these conditions also require recovery after *total knee replacement* surgery to restore normal physical, psychological, social, habitual and daily life activities. This study aims to determine the description of pain levels and independence of activity daily living (ADL). This study uses a descriptive design. The population of this study were all *total knee replacement* patients, 37 samples were selected using *purposive sampling*. The results showed that a total of 49.7% experienced severe pain and 84.6% of respondents had *activity daily living* (ADL) activities that were not independent. Nurses are needed to help improve the health status of ostheoarthritis patients so that the patient's quality of life can be maintained optimally. Avoid diseases that can aggravate and can fulfill daily needs independently. Health agencies need to further improve health promotion regarding the maintenance of independence and efforts to overcome pain levels in ostheoarthritis patients..

Keywords

activities daily living, pain and osteoarthritis.

INTRODUCTION

Osteoarthritis is a degenerative disease of the joints that involves cartilage, joint lining, ligaments, and bone, causing pain and stiffness in the joints (The American Rheumatism Association, 1987; Pratiwi, 2015). The most common complaint of osteoarthritis is joint pain, especially when the joint moves or bears weight, and will decrease at rest. Often sufferers feel pain in asymmetrical joints that increases gradually over several years (Wijaya, 2018).

Pain on movement can arise due to joint capsule irritation, periostitis and periarticular muscle spasm. In the early stages, pain is only localized to certain parts, but if it continues, pain will be felt throughout the joint affected by osteoarthritis. This pain is often

accompanied by swelling, decreased joint motion, and mechanical abnormalities (Imayati & Kambayana, 2011; Arismunandar, 2015).

Joint pain in osteoarthritis often causes sufferers to be afraid to move which over time will result in decreased muscle and joint function. Joint pain also causes a decrease in *activity* so that it can affect the patient's ability to fulfill the needs of daily life (*activity daily living*) or ADL which ultimately causes decreased productivity (Chintyawati, 2014). Older people feel less confident in ADLs due to physical impairment and pain which can result in a low quality of life (Lucić & Grazio, 2018).

The total knee replacement (TKR) surgical technique is one of the solutions for the treatment of osteoarthritic knee joints. Kienzle, et al., 1995; Carr, et al., 2012). Total knee replacement is performed by replacing the caput of the femur bone with a spherical prosthesis and replacing the acetabulum with a bowl-shaped prosthesis. Contraindications for hip arthroplasty are if there is still an active infection (Willmott, 2016). Complications that occur are infection, nerve and vascular damage, dislocation, instability, and loosening. Infection can occur during surgery and form a wound after surgery, or it can be years after surgery due to bacteremia from another location. According to O'Brien et al. (2020) nerve damage that occurs can lead to another condition, namely *Drop Foot*. This can lead to an unsafe gait which potentially increases the risk of falls. The prevalence of this event is reported to be 19 per 100,000 people (Carolus et al., 2019). This will make patients who undergo TKR surgery experience limitations in carrying out daily activities (ADL) (Pratiwi, 2015).

According to Andri et al., (2020) the inability of postoperative patients to perform ADLs has a negative impact on quality of life, slower patient discharge, and prolonged wound healing. The impact of complaints experienced by postoperative bone and joint patients causes a lack of movement activities by patients. Although postoperative total knee replacement patients must still do movement activities to train muscle strength and fulfill ADLs. Moving prevents muscle stiffness, thereby reducing pain, improving blood circulation, restoring the physiological function of organs, increasing metabolism, and accelerating wound healing (Fitamania, 2022). To prevent prolonged disability and to determine the decline in ADLs, postoperative physical abilities are needed (Mustiko & Pristianto, 2021).

ADLs can usually be managed by individuals so that they can live independently. According to Brunner and Suddart (2010), increasing postoperative patient compliance with ADLs will accelerate recovery and improve patient quality of life. According to Alghadir et al., (2016). postoperative recovery is the return to normal physical, psychological, and social functioning, as well as daily routines and activities. Patients will be transferred to a recovery room or ward after surgery. The patient's chances of recovering quickly after surgery are the sooner they get out of bed, start walking, eating, and drinking (Allsop, 2018). Major postoperative patients need the ability to move (Nurhayati and Frayoga, 2017).

The inability to fulfill ADLs in postoperative patients has an impact on wound healing taking longer, patient discharge becomes slower and quality of life becomes worse (Allsop, 2018; Aji & Ediyono, 2022). The impact of complaints experienced by postoperative patients illustrates the lack of activity in patients, resulting in a decrease in movement activity. Meanwhile, almost all operations require movement activity as early as possible. Moving can prevent muscle stiffness so that pain is reduced, blood circulation is smooth,

restore the physiological function of organs, improve body metabolism, and accelerate wound healing (Allsop, 2018). Physical ability after surgery is useful for knowing the decline in ADL and prolonged disability (Aji & Ediyono, 2022).

Based on the above, the researcher considers it very necessary to examine how the description of pain levels, independence of *activity daily living* (ADL) and the characteristics of respondents, namely age, gender and employment status of osteoarthritis sufferers who undergo *total knee replacement*.

METHOD

This type of research is descriptive analytic research with a *cross sectional* approach. The purpose of this study was to describe the level of pain and the level of independence and dependence of osteoarthritis patients undergoing total knee replacement in the fulfillment of daily activities during hospital treatment. The sample of this study used a *total sampling* technique, namely all knee joint osteoarthritis patients who performed *Total Knee Replacement* at the Surakarta Orthopedic Hospital, totaling 37 respondents. Sample determination using inclusion and exclusion criteria.

The inclusion criteria used were patients diagnosed with grade III and grade IV osteoarthritis of the knee joint who performed *Total Knee* Replacement. While the exclusion criteria used are, patients with a diagnosis of grade I and II osteoarthritis, patients with post Total Knee Replacement prosthese dislocation due to infection, blood clotting disorders around the surgical area, problematic implants, neurovascular injuries, muscular diseases, for example polio myelitis, patients with a diagnosis of rheumatoid arthritis and patients who are not willing to become respondents.

The measuring instrument used was the *Numeric Rating Scale* (NRS) questionnaire to measure pain (Ornetti et al, 2011) and the *Barthel Index* checklist sheet to measure the independence of daily activities (ADL) (Mahoney & Barthel, 1965). and to measure the degree of joint pain.This study uses univariate data analysis which is displayed in a frequency distribution. This research has obtained ethical clearance number PP.03.01/XXX.3/1.572/2023 and permission with the number 489/SK/FSTK/Usahid- Ska/XI/2022

RESULTS

The research that has been carried out obtained the following data.

Table 1. Frequency Distrbution of Characteristic Based On Age, Gender and Employment Status (N=37)

No	Characteristics	(f)	(%)
1	Age		
	36-45 years	1	2,7
	old	5	13,4
	46-55 years	23	62,4
	56-65 years	8	21,5
	>65 years old		
2	Gender		
	Female	4	12,8
	Male	33	87,2
3	Employment		
	Status	23	61,7
	work	14	38,3
	not working		

Table 1 shows that the majority of respondents were between 56 and 65 years old, 62.4%, and the gender of the respondents was female, 87.2%. While the majority of respondents' employment status is working, as much as 61.7%.

Table 2. Respondents' Pain Level and *Activity Daily Living* (ADL) Independence (N=37)

No.	Category	(f)	(%)
1	Pain level		
	No pain (0)	0	0
	Mild pain (1-3)	6	24,2
	Moderate pain (4-6)	6	26,2
	Severe pain (7-10)	15	49,7
2	Independence level		
	Independent	8	15,4
	Not independent	29	84,6

Table 2 illustrates that almost half of the respondents experienced severe pain, namely 49.7%. In the ADL independence category, the majority of respondents were not independent as much as 84.6%.

DISCUSSION

The results of this study showed that most (87.2%) of the respondents were female. Likewise, research conducted by Chintyawati (2014) found 76.9% of respondents with osteoarthritis were female. The results of Wulandari's research (2014) also showed that most respondents were female, namely 69.7%. This is related to the presence of the hormone estrogen which women have as a cause of joint inflammation which increases the incidence of osteoarthritis more in women than men with a ratio of 2-3 : 1 (O'Connor, 2007; Pratiwi, 2015; Rahmadiyanti et al., 2016)

According to Hakam, et al (2023) and Ochieng, et al (2021) said gender had no significant effect on early postoperative pain and ADL outcomes, although the results for stiffness were better for men. And according to rahmasari, et al (2021) from the results of observations, male patients with independent categories are higher than female patients. because that the behavior between men and women has differences, this occurs due to hormonal influences and physical structure. Therefore, men tend to be more motivated to do something because of their strong physique.

The prevalence of osteoarthritis increases with age. The disease usually first appears at the age of 25-50 years, and peaks between the ages of 40-60 years. The higher the age of the individual, the more at risk of developing various diseases due to the aging process (Anderson & Loeser, 2010).

According to Hakam et al., (2022) muscle weakness is often seen in the elderly. This is due to progressive congenital damage of neuromuscular connections and impaired trophic function of neurons, resulting in random loss of muscle fibers and consequent reduction in motor unit size. Despite this, rehabilitation can improve muscle strength and muscle activity (neurogenic factors) in the elderly. So that patients experience dependence. The patient's dependence on doing ADL can be caused by the fracture he suffered, namely in ostheoarthritis patients in fulfilling ADL needs experiencing limitations due to the pain they feel (Rahmasari et al., 2021). As a result of the pain felt, the patient performs avoidance actions.

The majority of respondents are working. Work is a person's activity as an effort to meet the needs of life or a means of earning income from the rewards for the activities carried out (Nugraha, 2017). Work is quite influential on osteoarthritis sufferers because it can cause interference with work activities and have an impact on reducing the quality of work and reducing income (Utari et al., 2021).

The knee joint is the strongest and most complex large joint in the body. However, among young adults and the elderly, the working function of the knee joint may begin to decrease. Osteoarthritis is a degenerative disease of the joints that involves cartilage, joint lining, ligaments, and bones, causing pain and stiffness in the joints. The Total Knee Replacement (TKR)

surgical technique is one of the solutions for treating knee joints that have osteoarthritis (Washilah et al., 2021; Wijaya, 2018).

Based on this study, it was found that almost half of the respondents experienced severe pain, namely 49.7%. In osteoarthritis, inflammatory mediators play a role in the progressiveness of the disease. In addition to the release of degrading enzymes, pro-inflammatory factors are also induced and released into the joint cavity, such as Nitric Oxide (NO), IL-1β, and TNF-α. These cytokines induce chondrocytes to produce proteases, chemokines, and eicosanoids such as prostaglandins and leukotrienes by attaching to receptors on the surface of chondrocytes and causing transcription of MMP genes so that the production of these enzymes increases. As a result, matrix synthesis is inhibited and cell apoptosis increases (Firestein et al., 2009). The progressivity of osteoarthritis of the knee joint is related to the level of pain caused. Grade III and IV knee joint osteoarthritis will produce more severe pain than grade I and II knee joint osteoarthritis. Conversely, after the action is taken, there is no stimulation of factors that cause inlfamation, so the resulting pain will decrease (Pratiwi, 2015; Utari, 2021).

In the ADL independence category, the majority of respondents in the category were not independent as much as 84.6%. The level of pain can affect the independence of Activity Daily Living (ADL) experienced by respondents as sufferers. If it is not resolved, the patient can enter an advanced stage, where the patient cannot carry out daily activities and his quality of life will decrease (Bawarodi et al., 2017). Joint pain has caused at least 97% of sufferers to experience limited movement and 7 out of 10 people experience decreased mobility, even some cannot move (Pratiwi, 2015).

ADL is a basic activity in the form of self-care carried out every day to meet the needs of daily life (Smeltzer & Bare, 2010). The patient's ability to perform activities of daily living (ADL) can be hampered by the condition of lower extremity fractures. The inability to fulfill activities of daily living (ADL) is a problem experienced by postoperative patients with bone parts that experience limited movement (Dewi, et al., 2020). Physical activity limitations increase in patients with high disease activity (Zamroni, 2015). Indications for Total Knee Replacement are carried out in patients who experience severe pain and functional disability due to joint surface damage due to osteoarthritis. Metal and acrylic prosthesis can be used, designed to create a functional, painless, and stable joint (Cho, 2014).

CONCLUSIONS

Patients with osteoarthritis will experience pain and limitation of movement which has an impact on difficulty in performing activities of daily living (ADL). The results showed that a total of 49.7% experienced severe pain and 84.6% of respondents had activities of daily living (ADL) not independently. Nurses are needed to help improve the health status of ostheoarthritis patients so that the patient's quality of life can be maintained optimally and can fulfil daily needs independently.

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