

Original Research

An Overview Of The Quality Of Life Of Knee Osteoarthritis Patients At The Surakarta Orthopedic Hospital

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ABSTRACT

Background: Osteoarthritis is a chronic degenerative disease of the joints. Functional limitations experienced by people with knee osteoarthritis are related to changes in quality of life. Knee Osteoarthritis needs to be assessed as a whole which includes several domains of quality of life, namely the domains of pain, stiffness and physical function. This study was conducted to determine the correlation between pain intensity and quality of life in patients with knee osteoarthritis.

Methods: a quantitative study using an analytic observational method with a cross-sectional approach. Population of 70 patients, a sample of 33 patients. The research was conducted in October 2020 at the Orthopedic Hospital in Surakarta City, Central Java, Indonesia. Data were collected by direct interviews to assess pain intensity based on the Numeric Rating Scale (NRS) and assess quality of life based on the Western Ontario McMaster Universities Osteoarthritis Index (WOMAC) questionnaire. Normality test using Sapiro Wilk because the data is normally distributed. Hipotesis test using Pearson correlation.

Results: Age range of patients with knee osteoarthritis mostly occurred at the age of 56-60 years, women had a greater frequency of experiencing knee osteoarthritis with a frequency of 78.8%, the most incidence of knee osteoarthritis was experienced by patients with normal BMI, namely 54.5%. The results of the Pearson correlation test showed a significance value of Sig. (2-tailed) is 0.000149 <0.05, which means that there is a significant correlation between the variables between pain and quality of life. Has a positive relationship and strong relationship strength ($r = 0.613$).

Conclusion: There is a significant correlation between pain intensity and quality of life in patients with osteoarthritis

ARTICLE HISTORY

Received : May 19th, 2021

Accepted : May 26th, 2021

KEYWORDS

knee osteoarthritis; quality of life; surakarta; womac;

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Cite this as: Rachmat, N., Minulyo, A., & Zubaidi, A. (2021). An overview of the quality of life of Knee osteoarthritis patients at the Surakarta Orthopedic Hospital. *Jurnal Keterapian Fisik*. <https://doi.org/10.37341/jkf.v0i0.271>

INTRODUCTION

Musculoskeletal disorders are one of the causes of chronic disability which has a high prevalence both in the world and in Indonesia. One of the musculoskeletal

disorders that has the highest prevalence is osteoarthritis with an incidence of up to 303 million people in 2017 in the world. Osteoarthritis can occur in various joints of the body, but the most common usually occurs in the joints of the knees, hands, hips and spine (Kloppenborg & Berenbaum, 2020). From the prevalence of osteoarthritis cases, the type of osteoarthritis in Indonesia reaches 5% at <40 years old, 30% at 40-60 years old, and 65% at > 61 years old (Ismaningsih & Selviani, 2018) and it is predicted that in 2025 it will increase as much as 40% is due to the increasing elderly and obese population (Farr II et al., 2013). Knee osteoarthritis is a chronic non-inflammatory degenerative disease of the knee, characterized by damage to the articular cartilage and soft tissue that causes pain, functional impairment and disability (Verges et al., 2019). Damage to the structure of the knee and its manifestations causes a person with knee osteoarthritis to experience difficulty in carrying out daily activities, which may have an impact on their quality of life.

In the definition presented by the World Health Organization (WHO), quality of life does not only include welfare from physical aspects but also from psychological and social aspects. More broadly, quality of life is defined as a system of values and culture that is in tune with the individual goals where a person lives, in harmony with the expectations, standards of living and interests they have (Ruževičius, 2014). From this definition, it can be seen that it is not certain that someone who does not have physical disabilities such as amputation, blind, disabled and osteoarthritis without deformity can be said to have a better quality of life. Each individual will have a different perspective in interpreting the quality of life, which can be categorized as good (Barcaccia et al., 2013)

In some literature it is stated that the quality of life is an important aspect. The quality of life is likened to a changing and increasing fashion, without the quality of human life there will be no standards, aimless and tasteless. There are many factors that affect the quality of life of patients with knee osteoarthritis, according to (Choojaturu et al., 2019) individual factors that influence include gender, education level, income, occupation and the degree of disease severity and symptoms experienced while environmental factors that influence, namely availability of adequate health and medical services and access to health facilities. Quality of life cannot be measured if only by looking, it is necessary to extract deeper information through interviews and measurement with instruments. Various kinds of measuring instruments to determine a person's quality of life have been developed, one of which is the WOMAC index. This instrument is a measuring tool that can be used to measure pain, stiffness and physical function (Alfatafta, 2019)

In a study conducted by (Sathiyarayanan et al., 2017) revealed that WOMAC is a useful screening tool and is widely used in identifying symptoms that arise in individuals who are suspected of having osteoarthritis, this is because this questionnaire is able to cover the criteria for establishing the diagnosis of osteoarthritis contained in the American College of Rheumatology (ACR). By knowing the quality of life for knee osteoarthritis patients, the intervention that is developed will be more effective because it can help overcome the things that prevent them from achieving a better quality of life. The evaluation of quality of life was carried out at the Orthopedic Hospital in Surakarta. The majority of patients at the Surakarta Orthopedic Hospital are patients with knee osteoarthritis and has different quality of life. The existence of situations and conditions in the field based on factors of severity and various kinds of interventions carried out by

the Orthopedic Hospital in Surakarta for osteoarthritis patients, thus motivating the researchers to find out more about osteoarthritis by using the WOMAC instrument.

Among chronic rheumatic diseases, knee osteoarthritis has the highest prevalence rate and is one of the causes of pain and disability for sufferers (Litwic, 2013). In general, knee osteoarthritis occurs in the elderly, but it does not rule out the possibility that it also occurs in young people due to activities that cause stress and trauma to the joints. In Indonesia, the prevalence of osteoarthritis reaches 5% at <40 years old, 30% at 40-60 years old, and 65% at > 61 years old. Based on the diagnosis, NTT (East Nusa Tenggara) health workers had the highest rate of 33.1%, West Java 32.1%, Bali 30%, and Jakarta 21.8% (Sonjaya, 2014). Among patients with knee osteoarthritis, about 80% of sufferers experience limitations in movement and 25% experience limitations in carrying out daily activities (Neogi & Zang, 2013). The limited function experienced by osteoarthritis sufferers, especially the knee part, is related to changes in quality of life and other studies suggest that changes in quality of life in osteoarthritis sufferers are one of the direct consequences of limited space, pain, muscle imbalance, and limitations in physical function.

Pain and quality of life are measurable determinants of health. Pain intensity can be measured using several measurement tools, one of the most frequently used is the numeric rating scale (NRS) which then classifies pain into mild, moderate, and severe pain degrees (Hartrick, 2003). Quality of life can be measured through several instruments, including Short Form-36 (SF-36), Western Ontario and McMaster Universities Arthritis Index (WOMAC), World Health Organization Quality of Life (WHOQOL) (Burholt & Nash, 2011). Meanwhile, the relationship between pain and quality of life of patients. Knee osteoarthritis patients have often been studied, but not yet at the Surakarta Orthopedic Hospital. Thus, the aim of this study was to determine the correlation between pain intensity and quality of life in patients with knee osteoarthritis at the Surakarta Orthopedic Hospital.

MATERIALS AND METHOD

The type of research used in this research is non-experimental quantitative research that uses analytical observational methods with a cross-sectional approach. The research was conducted in October 2020 at the Orthopedic Hospital in Surakarta City, Central Java. The populations of this study were 70 patients with osteoarthritis who came for treatment at the Surakarta Orthopedic Hospital in the 2019-2020 periods. The sample in this study consisted of 33 participants who were clinically diagnosed with knee osteoarthritis who met the inclusion criteria. Inclusion criteria (a) Patients diagnosed with knee osteoarthritis, (b) Patients aged ≥ 50 years, (c) Male and female sex, (d) Willing to fill out the WOMAC questionnaire. *Data were collected by direct interviews to assess pain intensity based on the Numeric Rating Scale (NRS) and assess quality of life based on the Western Ontario McMaster Universities Osteoarthritis Index (WOMAC) (Hawker et al. 2011). This instrument has been tested for its validity and reliability in the client population with osteoarthritis (Hawker et al. 2011). The research data is in the form of scores using the WOMAC index, so that the data obtained is in the form of ratio data. The data that has been collected is recapitulated, and then data processing is carried out which includes editing, coding and tabulation. The software used for data analysis is SPSS statistics 23 for windows. Normality test using Shapiro Wilk because the data is normally distributed. Hipotesis test using Pearson Correlation. ethical clearance was obtained from ethical comitee Sebelas Maret university.*

RESULTS

This study was conducted in October 2020, which aims to determine the impact of knee osteoarthritis on quality of life using the Western Ontario McMaster Universities (WOMAC) at the Surakarta Orthopedic Hospital. Subjects in this study were all osteoarthritis patients aged ≥ 50 . The sampling technique used in this study was purposive sampling technique, which is a sampling method based on the characteristics of the inclusion criteria, of which 33 people were included in the inclusion criteria consisting of 26 women and 7 men. The measuring instrument used is the Western Ontario McMaster Universities (WOMAC) questionnaire. The description of the characteristics of research subjects is shown in Table 1 as follows:

Table 1. Characteristics of subjects

Description	Frequency	Percentage (%)
Usia		
51-55 year	5	15.2
56-60 year	10	30.3
61-65 year	4	12.1
66-70 year	9	27.3
71-75 year	3	9.1
76-80 year	2	6.1
Gender		
Male	7	21.2
Femal	26	78.8
IMT		
Normal 18.5 – 25	18	54.5
Obesity > 25	15	45.5
Occupation		
Not Work	19	57.6
Work	14	42.4
Comorbid		
No comorbid	9	27.3
One comorbid	16	48.5
More than one comorbidities	8	24.2

Source: Primary Data, 2020

Quality of life in terms of pain scores, joint stiffness scores, physical function scores obtained from the WOMAC questionnaire are as follows: (1) Based on the pain score, the research subjects were grouped into five groups, namely walking on the surface with the most average score obtained at the weight level, amounting to 10 people (30.3%) going up or down stairs at a very heavy level (54.5%), 11 people at night when sleeping at a moderate level (33.3%), sitting and lying down at a moderate level. 12 people (36.4%), and standing upright at a severe level were 13 people (39.4%). (2) Based on the stiffness score, the research subjects were grouped into two groups, namely after you walked in the morning at a heavy level of 12 people (36.4%), and after sitting, waking up and after resting in a day were at a heavy level. amounted to 16 people (48.5%). (3) Based on the physical function score, the research subjects were

grouped into 17 groups, the score for descending the stairs at the very heavy level was 15 people (45.5%), 15 people were climbing the stairs at the very heavy level (45.5%), standing from sitting at a heavy level totaled 12 people (36.4%), to standing had the same total score at moderate and heavy levels (36.4%), bending to touch the floor was at a moderate level amounting to 14 people (42, 4%), walking on a flat surface was at a moderate level amounting to 16 people (48.5%), getting on or off a vehicle at a heavy level totaled 14 people (42.4%), going shopping was at a moderate level amounting to 13 people (39.4%), wearing socks are at a moderate level, amounting to 13 people (39.4%), waking up from sleep are at a heavy level totaling 12 people (36.4%), removing socks is at a moderate level a total of 13 people (39.4%), lying on the bed were at the moderate level, amounting to 13 people (39.4%), entered or going out of the bathroom is at a moderate level amounting to 10 people (30.3%), sitting at a heavy level totaling 11 people (33.3%), for defecating at a moderate level amounting to 11 people (33.3%) 18 people (54.5%) did heavy household tasks, and 18 people did light household tasks at a moderate level (54.5%).

The analysis is based on the total score of the Western Ontario McMaster Universities WOMAC questionnaire) by adding the total of the sub-categories, then the total scores of the sub-categories will be added up to become the total score. In each evaluation category there is an assessment range, pain category (0-20 points: 5 items with a value range of 0-4), stiffness (2 items with a value range of 0-8) and physical function (17 items, with a value range of 0- 68). A high total score indicates severe pain, stiffness and physical disability. The maximum score for this questionnaire is 96 points. Based on the total value of WOMAC, after the patient filled in all the parameters, the researcher calculated the results of these parameters so that they could be classified according to the interpretation of low risk (≤ 70 points) and high risk (≥ 70 points). Table 2. Shows that based on the overall total, the research subjects are grouped into two groups. For the low category ≤ 70 points totaled 26 people (78.8%), and for the high category points ≥ 70 were 7 people (21.2%).

Tabel 2. Risk

Risk	frequency	Percentage (%)
Low ≤ 70 point	26	78,08
High ≥ 70 point	7	21,02
Total	33	100

Source: Primary Data, 2020

The results of the normality test of pain data and quality of life using the Saphiro Wilk test showed normal data (0.51 and 0.24). The result of correlation test using the significance of the Pearson correlation is 0.000149. These results are < 0.05 which indicates that there is a significant relationship between pain and quality of life in patients with knee osteoarthritis. The correlation value of 0.613** indicates the direction of the positive correlation with the strength of the strong relationship.

DISCUSSION

From the results of the research that has been done, it is obtained an overview of the characteristics of the 33 samples who participated in this study and the quality of life of patients with osteoarthritis conditions at the Surakarta Orthopedic Hospital. Osteoarthritis is a classic age-related disorder. This condition is described as a chronic

degenerative disease and is considered a consequence as we get older. Based on the results of the analysis carried out in this study, it is known that the condition of knee osteoarthritis has the greatest frequency at the age of 50 to 60 years and at the age of 66 to 70 years. This study is in line with the theory described by (Herikurniawan et al., 2014) which states that the prevalence of OA is quite increasing at > 40 years of age and increases at > 60 years of age, this is because in parents the volume of water from the young bones increases and the protein structure of the bones degenerates, the cartilage begins to degenerate by peeling off or forming small young bones. According to (Anderson & Loeser, 2010) the logical relationship between the prevalence of osteoarthritis and age is in old age, where aging occurs in all body systems including the musculoskeletal system where there are changes in joint and cell structure and matrix in the joint tissue, thereby increasing the susceptibility to osteoarthritis. . This aging will cause many changes in joint function including sarcopenia, loss of balance and proprioceptiveness and increased joint stiffness, while changes in joint tissue including cartilage become more fragile, chondrocytes lose their anabolic ability and perform more catabolic activities, lose normal bone structure, increase stiffness. tendons and ligaments and degeneration of the meniscus. These changes are exacerbated by other risk factors, causing osteoarthritis.

In this study, it is known that the frequency of patients who experience osteoarthritis is mostly female patients as many as 26 people while male patients are 7 people. Gender or gender is one of the systemic factors of osteoarthritis. This is due to the presence of menopause in women which affects hormonal conditions that play an important role in the development of osteoarthritis. Body Mass Index (BMI) is one of the local risk factors for osteoarthritis. BMI is associated with obesity or overweight experienced by patients with knee osteoarthritis. In this study, it was found that almost half of the total sample had a BMI above the average. Increased loading on the joints due to excessive body mass can result in damage to the synovial joints, ligaments and other structures (Lespasio et al., 2017). But in fact, from the results of this study, it was found that the highest percentage of knee OA patients was 54% of the total sample were patients with normal BMI.

In this study, the number of samples who did not work was 19 people while 14 others were workers. A person's occupational or occupational background is a risk factor for knee osteoarthritis. Some jobs that place heavy loads on the joints of the body are known to trigger osteoarthritis. Activities with crawling movements, bending over, causing the body to shake, repetitive movements and kneeling (squatting), standing for long periods (> 2 hours / day), lifting heavy objects (> 10 kg) and jumping all contribute to an increased risk of knee osteoarthritis. Jobs that can be a risk factor for knee osteoarthritis include construction workers, firefighters, agriculture, fishermen and factory workers (Yusecoy, E. Charles, Baker, & M.Burchfiel, 2015). Individuals who do not work and have sedentary activity patterns cause a decrease in the ability of the joints and muscles of the body which can worsen the condition of osteoarthritis by increasing pain (Lee, Son, Yeo, & Ha, 2019).

One of the prognosis for osteoarthritis sufferers is the presence or absence of comorbidities. These comorbidities will have an impact on the patient's physical function ability. In this study, it was found that 24 patients had comorbidities. Generally, diseases that accompany osteoarthritis include hypertension, obesity, diabetes and dyslipidemia. Patients with poor metabolic conditions may experience more severe osteoarthritis due to metabolic changes in cartilage. In addition, glucose

intolerance also exacerbates the inflammation that occurs in osteoarthritis. Osteoarthritis is the main cause of pain in elderly individuals so that it can lead to depression. The impact of depression itself on osteoarthritis affects the level of pain and functional disability. The presence of diabetes, heart disease and visual changes can cause greater disruption of physical function, which can interfere with the quality of life of sufferers (Kumar, Badyal, & Mahajan, 2015).

Pain is an uncomfortable sensation, which is a symptom of damage to certain body parts and can interfere with individuals in carrying out daily activities. This pain can appear and disappear suddenly, especially when the individual is doing certain activities. This pain is the result of the interaction between structural changes, peripheral and central pain processing mechanisms (Villafane, 2018). The severity of pain that occurs affects the quality of life of patients with osteoarthritis (Yuniarwati et al., 2019).

In this study, it was found that very severe and severe pain occurred when participants walked on a flat surface, went up and down stairs and stood up straight. This is due to various factors related to loading on the joints and being overweight or obese. When walking on a flat surface, the feet and knees, which are the main means of motion, will work together biomechanically and are linked in a kinetic chain, the flat surface, the position and movement of the feet affect the load that occurs on the knee, too heavy a load is accepted by degenerated knee joints cause pain (Iijima et al., 2017). This also applies when the activity is going up and down stairs and standing upright. During the activity of going up and down stairs, each joint in the leg to foot area will support the overall weight of the body, causing very pain in the joints that have osteoarthritis while standing upright, the main weight of the body plus the weight of gravity will be resting on both legs (Unver, Ertekin, & Karatosun, 2013).

Stiffness in the joints is a symptom that arises from the osteoarthritis of the knee. Stiffness is the sensation of tightness and swelling in the joints, especially the soft tissues and muscles, which makes the joints difficult and slow to move. In this study, participants reported feeling stiff after walking and getting up in the morning, sitting and resting. This is in accordance with the theory expressed by (K.W. & W.K., 2012) that in general, stiffness as a characteristic of OA appears in the morning after waking up. This stiffness occurs after a long immobilization phase and lasts more than 30 minutes and is caused by a misalignment of capsular fibrosis. (Filbay, Ackerman, Russell, & Crossley, 2015) revealed that the symptoms of osteoarthritis experienced by most patients have a negative impact on their quality of life.

One predictor that contributes greatly to the quality of life of patients with knee osteoarthritis (OA) is the physical function or functional capacity of the body to perform the desired daily activities. In this study, it was found that the participants' ability to perform functional activities was in moderate to severe degrees of severity. The damage caused by OA causes a loss of passion and is correlated with the psychological aspects of the patient so that it can interfere with the patient's work, leisure time, social life and sleep patterns which are very dangerous for the patient's quality of life (Aşkın, Özkan, Tosun, Demirdal, & İsnaç, 2017). The presence of clinical manifestations causes functional deficits and loss of independence when carrying out daily activities, increases the risk of depression and social isolation in patients, thereby increasing the risk of mobility and mortality (Nikolic et al., 2019).

The condition of knee osteoarthritis in patients is known to have consequences for reducing mobility, increasing pain, muscle imbalance and inhibiting all daily activities which have an impact on disruption of social relationships, mental function, sleep

quality and economic needs related to medical costs (Frioui Mahmoudi et al., 2016); (Araujo, Castro, Daltro, & Matos, 2016). These factors are the cause of the poor quality of life status of patients with knee osteoarthritis. Quality of life in patients with knee osteoarthritis is a subject of frequent research focus. In this study, the patient's quality of life can be seen from the overall score of the evaluation using the WOMAC questionnaire. From the analysis, it is known that as many as 78.8% of participants have a high quality of life. An understanding of the quality of life of patients with knee osteoarthritis is important to help patients reduce symptoms, treat and determine appropriate rehabilitation for patients (Haraldstad et al., 2019).

In this study, the correlation between NRS scores and WOMAC scores was obtained using the Pearson Correlation test and obtained a significant value of 0.000149 ($p < 0.005$). This shows that there is a correlation between the VAS score and the WOMAC score with a moderate positive correlation value. It can be said that the higher the NRS score, the higher the WOMAC score, which means that the heavier the degree of pain a person eats, the lower the functional activity of the joints. These results are the same as research conducted by Kurniawan (2016) that the correlation between the quality of pain and the ability of functional activities in patients with knee osteoarthritis is significant. The same picture is also obtained from the results of research by Quintana (2008) which also shows a linear correlation between pain, body mechanical load and the incidence of disability in patients with knee osteoarthritis. The incidence of pain in knee osteoarthritis is closely related to the decrease in muscle strength around the knee. Long periods of inactivity in joint pain lead to atrophy, so muscle strength can be reduced by 3% in one week. Weakness of the limb muscles is one of the earliest and most common conditions in knee osteoarthritis (Losina et al., 2019). Changes in the anatomical structure that occur due to periosteal irritation, inflammation, soft tissue compression, muscle imbalance, and muscle spasm are contributing factors in the appearance of pain complaints that patients feel. This results in functional limitations in the form of instability and lack of movement with a variety of limited activities such as not squatting, rising from sitting, standing for a long time, exercising and other activities.

CONCLUSION

A study conducted in October 2020 at the Surakarta Orthopedic Hospital regarding the evaluation of knee osteoarthritis on quality of life using the Western Ontario McMaster Universities (WOMAC) has the following data results: (1) the age range of patients with knee osteoarthritis is most prevalent at the age of 56-60 years, (2) Women have a greater frequency of experiencing knee osteoarthritis with a frequency of 78.8% (3) The incidence of knee osteoarthritis is mostly experienced by patients with normal BMI, namely 54.5% (4) Patients who do not work have a higher frequency a large proportion of having knee osteoarthritis (5) The frequency of knee osteoarthritis patients who had comorbidities was greater, namely 72.7%.

In this study, it can be concluded that the quality of life resulted from the overall total pain, stiffness, and physical function with a percentage of 78.8% of the 26 low category patients, which means that the quality of life is high. The results of the Pearson correlation test showed a significance value of Sig. (2-tailed) is 0.000149 < 0.05 , which means that there is a significant correlation between the variables between pain and quality of life. Has a positive relationship and strong relationship strength ($r = 0.613$). Conclusion: There is a significant correlation between pain intensity and quality of life

in patients with osteoarthritis. In this study, the researcher only focused on the WOMAC instrument while there were still many other features related to the incidence of knee osteoarthritis that were not carried out. It is hoped that a more comprehensive follow-up study on the population of people in Indonesia with a wider coverage is expected.

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