

The Relationship between Anxiety and the Level of Joint Stiffness in Colles Fracture Patients

Hubungan antara Kecemasan dengan Derajat Kekakuan Sendi pada Pasien Fraktur Colles

Muhammad Ariffudin^{1*}, Zainab Az Zahra²

¹ Department of Orthopedic Surgery, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Jalan Brawijaya, Tamantirto, Kasihan, Bantul, Special Region of Yogyakarta, Indonesia.

² Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Jalan Brawijaya, Tamantirto, Kasihan, Bantul, Special Region of Yogyakarta, Indonesia.

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*CORRESPONDENCE:

zainabazzahra3@gmail.com

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Abstract: Colles fracture is 15% of the whole fracture incidents in adults, and joint stiffness is the most common complication. Anxiety is one of a variety of factors strongly associated with an increased risk of disability and pain intensity in patients with musculoskeletal disorders. This study aims to identify the relationship between anxiety and the level of joint stiffness in Colles fracture patients. This research is an observational analytic study with a cross-sectional design. Data collection was carried out in the physiotherapy of PKU Muhammadiyah Gamping Hospital from March to October 2018 by interview using a questionnaire. Data were analyzed using the Spearman correlation test. The result of the study with 13 respondents showed 9 people (69.2%) did not experience anxiety, one person (7.7%) experienced mild anxiety, one person (7.7%) was in moderate anxiety, and two others were in severe anxiety (15.4%). Meanwhile, in terms of the level of joint stiffness, three people (23.1%) were in mild stiffness, three people (23.1%) were in moderate stiffness, six people (46.2%) were in severe stiffness, and one person (7.7%) was in highly severe stiffness. Statistical test of the relationship between anxiety and the level of joint stiffness in patients with Colles fracture showed no significant correlation ($p=0.808$). It can be concluded that there was no relationship between anxiety and the level of joint stiffness in fracture patients.

Keywords: Anxiety; Colles fracture; Joint stiffness

Abstrak: Fraktur colles merupakan 15% dari seluruh kejadian fraktur pada dewasa, dan kekakuan sendi merupakan komplikasi yang paling sering terjadi. Kecemasan adalah salah satu dari berbagai faktor yang sangat berkaitan dengan meningkatnya risiko kecacatan dan intensitas nyeri pada pasien dengan kelainan muskuloskeletal. Penelitian ini bertujuan untuk mengetahui hubungan antara tingkat kecemasan dengan derajat kekakuan sendi pada pasien fraktur colles. Penelitian ini merupakan penelitian analitik observasional dengan desain cross sectional. Pengumpulan data dilakukan di bagian fisioterapi RS PKU Muhammadiyah Gamping pada bulan Maret-Oktober 2018 dengan cara wawancara menggunakan kuesioner. Data dianalisis menggunakan uji korelasi Spearman. Hasil penelitian dengan responden berjumlah 13 orang, menunjukkan 9 orang (69.2%) tidak mengalami kecemasan, 1 orang (7.7%) mengalami kecemasan ringan, 1 orang (7.7%) sedang dan 2 orang lainnya berat (15.4%). Sedangkan derajat kekakuan sendi, 3 orang (23.1%) kekakuan ringan, 3 orang (23.1%) kekakuan sedang, 6 orang (46.2%) kekakuan parah dan 1 (7.7%) orang kekakuan sangat parah. Uji statistik hubungan antara tingkat kecemasan dengan derajat kekakuan sendi pada pasien fraktur colles menunjukkan tidak bermakna ($p=0.808$). Disimpulkan bahwa tidak ada hubungan antara tingkat kecemasan dan derajat kekakuan sendi pada pasien fraktur.

Kata Kunci: Kecemasan; Fraktur colles; Kekakuan sendi

INTRODUCTION

Colles fracture or fracture of the distal radius is one of a wide variety of common fractures in the wrist. Generally, it often occurs due to a fall in which hands are in a rested state and usually occur in children and the elderly. When someone falls with stretched hands, the hands will go into stiff that can cause the hand to be twisted and pushed the forearm. Distal radius fractures are 15% of fracture incidents occurring in adults.¹

In America, 1.5% of all emergency incidents at the National Hospital Ambulatory Medical Care Survey (NHAMCS) are fractures on hands and wrists. The incidence rate of Ulna radius fractures reaches 44% of all hands and wrists fractures.^{2,3} Colles fractures can cause a variety of complications, namely re-displacement, malunion, weak inferior radio-ulnar joint, joint stiffness, traumatic arthritis on the wrist, rupture of the extensor pollicis longus tendon, and so on. The most common complication is stiffness.^{4,21,22}

In a study conducted at Panembahan Senopati Hospital Bantul in 2014, there were 41.2% of emergency patients experiencing severe anxiety.⁵ In a hadith, which means, "The Parable of believers in the attitude of love, mercy, and affection is like a structure of the body; if a part of the body is sick, then the others will have difficulty in falling asleep or feel fever" [HR. Muslim]. This hadith indicates that one member of the body can affect the limbs of the other.

The data and hadith mentioned urge the researchers to identify the relationship between anxiety and the level of joint stiffness in Colles fracture patients undergoing physiotherapy at PKU Muhammadiyah Hospital Gamping Sleman.

This study was conducted to identify the relationship between the psychological state of the patient, especially the anxiety and the level of joint stiffness in patients at post-colles fracture therapy, and that the family and the people closest to the patient can give a positive influence on the prognosis and quality of life of the patients, especially on the level of the wrist stiffness.

MATERIALS AND METHOD

This research is an observational analytic study with a cross-sectional approach. It is such an observational since researchers only observed variables and did not give them a treatment. Analytic research is research whose results are not only at the level of description. It continues to making inferences carried out by using test statistics to analyze the data obtained. This study

used a cross-sectional approach as the research was carried out in one-time data collection to find the relationship between the independent variable and the dependent variable.

The population in this study were all Colles fracture patients at PKU Muhammadiyah Gamping Hospital Sleman from March 21, 2018, to October 25, 2018. The sampling technique in this study was total sampling, indicating that the number of samples was equal to the population.

The instrument in this study was a questionnaire. To identify the extent to which one's anxiety is mild, moderate, severe, or highly severe, it used a measuring instrument questionnaire modification known as the Hamilton Rating Scale for Anxiety (HRS-A) from the draft of Hawari (2004).⁶ This measuring device consisted of 14 groups of symptoms, each of which is listed with more specific symptoms.

To identify the level of joint stiffness on whether it is mild, moderate or severe, it used one type of tool measuring questionnaire modifications such as the Patient Rated Wrist Evaluation (PRWE) which consisted of 15 questions designed to measure pain wrist and inability to carry out daily activities. Data from the anxiety questionnaire were a numerical variable. Data were analyzed using a Spearman correlation test with the Statistical Product and Service Solutions (SPSS) 15.0 application program.

RESULT

Table 1 show that the age of most respondents was in the category of late elderly which was 60 to 69 years old with a total of 9 people (69.2%), while the least age of respondents was in the category of early elderly which was 50 to 59 years old with a total of 1 person (7.7%). In terms of gender, it could be seen that females dominated the respondents with a total of 7 women (53.8%). Furthermore, it could be seen that most common occupations were housewives and laborers, with a total of 4 people in each (30.8%), while the least type of work is an entrepreneur with a total of 1 person (7.7%). Then the most common cause of fracture is a fall with the number of 8 people (61.5%), while the least cause of the fracture is crashing with a total of 2 people (15.4%). Moreover, it can also be perceived that the most common fracture occurred on the left hand with a total of 9 people (69.2%), and the most common duration of physiotherapy is in the category of 1-5 times with a total of 11 people (84.6%).

Based on the Table 2, it can be seen that the most common anxiety level is in the category of no

Table 1. Respondent characteristics

Variable	f	%
Gender		
- Male	6	46.2
- Female	7	53.8
Total	13	100.0
Age		
- early elderly (50-59)	1	7.7
- late elderly (60-69)	9	69.2
- elderly (> 70)	3	23.1
Total	13	100.0
Occupation		
- Housewife	4	30.8
- laborer	4	30.8
- Entrepreneur	1	7.7
- Civil Servant	2	15.4
- Retired	3	15.4
Total	13	100.0
Causes of fracture		
- fell down	8	61.5
- slipped	3	23.1
- crashing	2	15.4
Total	13	100.0
Duration of physiotherapy		
- 1-5 times	11	84.6
- 6-10 times	1	7.7
- >10 times	1	7.7
Total	13	100.0
The hand fracture		
- right	4	30.8
- left	9	69.2
Total	13	100.0

anxiety (HAM-A score below 14) with a total of 9 people (69.2%), while the least anxiety level is in the category of mild anxiety and moderate anxiety with a total of 1 person at each category (7.7%).

Based on Table 3, it can be seen that the most common level of joint stiffness is in the mild category (PRWE score 21-40) and moderate category (PRWE score 41-60) with a total of 3 people (23.1%) in each category, while the least common level of joint stiffness is in the highly severe category (PRWE score 81-100) with a total of 1 person (7.7%).

Table 2. The Distribution of Respondents based on Anxiety Level

Variable	f	%
No Anxiety (<14)	9	69.2
Mild Anxiety (14-20)	1	7.7
Moderate Anxiety (21-27)	1	7.7
Severe Anxiety (28-41)	2	15.4
Total	13	100.0

Table 3. The Distribution of respondents based on joint stiffness

Variable	F	%
Mild (21-40)	3	23.1
Moderate (41-60)	3	23.1
Severe (61-80)	6	46.2
Highly severe (81-100)	1	7.7
Total	13	100

The relationship between anxiety and the level of joint stiffness has a value of -0.075. The result interpreted that there was a close relationship in the direction of the opposite correlation. Therefore, it indicates that the heavier the level of anxiety is, the lower the level of joint stiffness will be. This value will be significant if it shows $p < 0.05$. Meanwhile, the result of the data is $p = 0.808$, indicating that the value of the relationship between anxiety and the level of joint stiffness is insignificant, or there is no relationship between them.

The relationship between the duration of physiotherapy and the level of joint stiffness has a value of -0.721. The result interpreted that there was a profoundly close relationship in the direction of the opposite correlation. It indicated that the longer the physiotherapy is, the lower the level of joint stiffness will be. The value will be significant if it shows $p < 0.05$. Meanwhile, the result of the data is $p = 0.005$, so that the value of the relationship between the duration of physiotherapy and the level of joint stiffness is significant.

DISCUSSION

In this study, the anxiety experienced by Colles fracture patients was relatively low. Out of 13 respondents, only two respondents experienced severe anxiety (15.4%), one respondent experienced moderate anxiety (7.7%), and one respondent experienced mild anxiety (7.7%). Meanwhile, more than half of respondents or 9 other respondents did not experience anxiety (69.2%).

The result may be due to the respondents' homogeneous age, such as more than 50 years old. Lutfa and Maliya (2008)⁷ state that anxiety disorders can occur at any age. However, it more commonly occurred in young adults due to the tendency of many problems that they might encounter. Age maturity influences a person in responding to his situation or his illness against his anxiety.⁸ In the study of Woodrow (2011),⁹ it reveals that tolerance to pain increases along with the increase of age; for example, as a person ages, the

understanding of pain and efforts to overcome it increases.

Unlike the level of anxiety, the level of joint stiffness in Colles fracture patients is quite high. Out of 13 respondents, only three respondents had a mild level of joint stiffness (23.1%), three respondents had a moderate level of joint stiffness (23.1%), six respondents (46.2%) were in a severe level, one respondent was in highly severe level (7.7%).

Late adults with more multisite stiffness may have an increased risk of disability than those who do not tend joint stiffness after taking into account the severity of pain and the conditions associated with stiffness.¹⁰ Furthermore, increasing age also causes a decrease in chondrocyte function and that the capacity for remodeling and maintenance reduces. The lack of tissue alteration and renewal leads to the accumulation of Advanced Glycation End-products (AGE), which later leads to increased rigidity.¹¹

The results of this study revealed that the relationship between the anxiety and the level of joint stiffness in Colles fracture patients undergoing physiotherapy at PKU Gamping Hospital showed the value $p=0.808$ and $r=-0.075$. It indicated that there was a deep relationship with the direction of the opposite correlation and the absence of a meaningful relationship between the anxiety and the level of joint stiffness in Colles fracture patients. The absence of the relationship is due to various factors, both internal and external factors of the researchers.

In the study by Erkardius et al., (2013),¹² it stated that the factors influencing knee joint contractures in the handling of femoral fractures operatively and non-operatively are lazy behavior experienced by 17 people (44.7%), obedient attitude experienced by two people (5.3%), and lack of knowledge experienced by one person (2.6%). Concerning this, another study revealed that the main factors causing the limited motion of the elbow joint are the disorder or limitations of the process of repositioning and immobilization, limited activity in the elbow joint due to pain, immobile elbow joints that will later cause static veins and spasm. The symptoms will then cause a shortage of oxygen and edema and exudation reaction, which ultimately cause limited motion in the joint stiffness.¹³ In both statements of the two studies, anxiety is not one of the many factors that affect joint contractures.

On the contrary, psychological factors such as depression, anxiety, and thoughts of the catastrophic disease are strongly associated with an increased risk of disability and pain intensity in

patients with musculoskeletal disorders.¹²⁻¹⁴ Similarly, fear, catastrophe, and depression significantly mediated the relationship between pain and disability ($p<0.001$).¹⁵⁻¹⁷ The effects of fear and depression on pain-related disability that are not related to ordinary physical activity indicated that psychological intervention is likely to be the best treatment choice for these factors.¹⁵ Symptoms of depression and Posttraumatic Stress Disorder (PTSD) generally occur after musculoskeletal trauma and are strongly associated with disability. Coping management, specifically catastrophic thinking (preparation for the worst) and anxiety in responding to pain, are also some disabilities associated with musculoskeletal disease. However, it has not been studied prospectively in musculoskeletal trauma patients.¹⁸

This study found a long-standing relationship between the level of joint stiffness and the duration of physiotherapy that showed a value of -0.721 . The result interpreted that there was a profound relationship in the direction of the opposite correlation. It indicates that the longer the physiotherapy is, the lower the level of joint stiffness will be. The value will be significant if it shows $p<0.05$. Meanwhile, the results of the data are $p=0.005$, indicating that the value of the relationship between the duration of physiotherapy and the level of joint stiffness is significant.

The result is in line with the research by Diong et al. (2016),¹⁹ stating that structured exercise produces small improvements in overall mobility after hip fractures. Moreover, the research by Bruder et al. (2013),²⁰ also stated that interventions carried out by physiotherapists in the rehabilitation of distal radial fractures mainly focus on disorders, including a range of movement, weight training, and mobilization of passive joints to increase range of movement.^{18,20}

CONCLUSION

There was no relationship between anxiety and the level of joint stiffness in Colles fracture patients.

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