Quick Response Code Osteoarthritis Exercise to Improve Life Quality of the Elderly in Covid-19 Pandemic

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ABSTRACT
Regarding the high prevalence of osteoarthritis cases that are vulnerable to the elderly group, So as an effort to avoid the occurrence of osteoarthritis in the elderly by getting physiotherapist services, but since the beginning of 2020 there has been a Covid-19 pandemic. This situation becomes a barrier for the elderly to get direct services from physiotherapist, because the elderly are one of the groups that have a high risk of being infected with the virus. Based on this, we innovate to take advantage of technological sophistication as a solution to thedelay in physiotherapy services so that it can be developed as a means of telephysiotherapy in facilitating control of the elderly orproviding virtual exercise and education that is easy to understand and to do independently. In line with this, theresearch team utilized smartphone technologythrough the use of a quick response (QR) code as a means of providing exercise to help the elderly avoid osteoarthritis. The purpose of this study was to determine the effectiveness of the QR code in providing exercise to improve the quality of life of the elderly during the COVID-19 pandemic. The method used in this research was a study case with 10 elderly respondents. The results obtained from this study are 8 out of 10 elderly respondents experienced an increase from pre-test to post-test after exercise through QR Code. The use of QR Code as a means of telephysiotherapy in providing effective exercise to improving the quality of life of the elderly during the COVID-19 pandemic.
Keywords: *Osteoarthritis, elderly, covid-19, QR code*

INTRODUCTION

Health issues are a responsibility for all of us, because health is one of the most important and a basic part of the quality of life which is reflected in the fulfillment of basic human needs. One of the diseases that can interfere with the mobility of human life is osteoarthritis.

Osteoarthritis is a disease that often causes pain and movement disability that interferes with daily activities. This disease is characterized by abrasion of joint cartilage and irregular formation of new bone on the joint surface. Pain is the biggest symptom in joints with osteoarthritis.

The prevalence of OA in the world is in the high category of 2.3% to 11.3% it is the most musculoskeletal disease that often occurs in the 12th order among all existing diseases. Meanwhile, the prevalence of OA by age in Indonesia is quite high, 5% at the age of 40 years, 30% at the age of 40-60 years, and 65% in the elderly over 61 years (Abdurachman et al, 2019).

In Indonesia, elderly people who suffer from disabilities due to osteoarthritis are estimated at two million. A quarter of the entire female population and one-fifth of the entire male population over the age of 60 years can be affected by osteoarthritis (Pratiwi, 2015).

Regarding the high prevalence of osteoarthritis cases that are vulnerable to the elderly, one of the efforts to prevent the occurrence of osteoarthritis in the elderly is with physiotherapy services, but who would have thought that the current situation was not fine, because of a pandemic phenomenon.

Since the beginning of 2020, there has been a pandemic that has spread throughout the world, including Indonesia is also affected by this pandemic. The pandemic caused various activities to be paralyzed and caused a lot of losses in various sectors, including health that was most affected (Zhou et al, 2020).

From this situation, the provision of health services, especially physiotherapy services, also experienced obstacles. In addition, this virus is very easily transmitted so that it becomes a barrier for the elderly to be able to get direct service from a physiotherapist, because it is the elderly who are currently very susceptible to the COVID-19 pandemic. This is according to Siagian's opinion, 2020 which states that the elderly (elderly) group is one group that has a higher risk of being infected with the Corona Virus.

Based on this, We think of utilizing the sophistication of smartphone technology as a solution to the delay in physiotherapy services. The various benefits and uses offered by smartphones can also be used by the elderly, not a few elderly people are now starting to be active in using smartphones.

The digital marketing research institute Emarketer estimates that in 2018 the number of active smartphone users in Indonesia has reached more than 100 million people. Reporting from a survey on the use of Information and Communication Technology (ICT) in 2017 shows that more than half of Indonesian people already have a smartphone 50,79% of them are elderly people aged 50-65 years. This shows that not all of the elderly today are technology-stuttering elderly.

Considering this, so we from the research team agreed to do research by utilizing smartphone technology during the current pandemic, namely by using a quick response code. Where this technology makes it easier for humans to access applications such as web, browser, email, and even video streaming that can be accessed by anyone and anywhere (Indriasari, 2012).

Seeing the advantages of this quick response code, researchers feel that it has the potential to be studied more deeply to be used as a telephysiotherapy medium for the elderly so that it can be developed as a long-term health facility that facilitates control in the elderly or provides exercise, intervention and education virtually but is easy to understand and do independently.

In this regard, we from the research team took the initiative to make a study that aims to find out how effective the quick response code for osteoarthritis exercise is to prevent osteoarthritis in order to improve the quality of life of the elderly during the COVID-19 pandemic.

METHODS

This research uses the case study method was conducting in-depth research on a situation or event called a case by using systematic ways of making observations, data collection, analysis of information and reporting of results.

The research was carried out on August 20 to September 3, 2021, which took place at Jl dg. Ramang Makassar. The population of this study was a group of elderly people and the sample of the study was the elderly aged 60-70 years who were randomly selected.

Data collection techniques used are case studies, interviews, and literature reviews. This study uses quantitative data analysis techniques.

The research design begins with making videos about physiotherapy and exercise videos for the elderly, then the videos are made in the form of a google drive link. The next step is to find some respondents (elderly), the respondents are then given a pre-test questionnaire, the next step is to apply exercise for 3x a week after that evaluation with a post-test questionnaire, the last step is to conduct direct interviews related to the Quick Response Code Osteoarthritis Eksercise shown by researchers.

RESULTS

In this study, researchers took samples of elderly people aged 60-70 years who were selected randomly.

NO	Respondent	Age	Pre-Test	Post-Test	Result
1	H B	70 Th	30%	30%	0%
2	A M	67 Th	30%	40%	10%
3	BM	68Th	50%	80%	30%
4	HB	60Th	60%	80%	20%
5	HM	70Th	30%	30%	0%
6	MY	65Th	40%	60%	20%
7	RW	60Th	50%	70%	20%
8	HN	62Th	70%	90%	20%
9	SRR	61 Th	60%	90%	30%
10	A	66 Th	60%	90%	30%

Based on the results of the pre-test and post-test, which can be seen in the table of research results, it shows that 8 out of 10 respondents experienced an increase in the results of the pre-post test difference. The results of the increase obtained vary depending on the existing respondents. From

the beginning of the pre-test there were 3 respondents who had a pre-test score of 30%. The results of the pre-test can be said to be low, 1 of the 3 people experienced an increase of only 10% and 2 of them did not experience an increase at all.

Figure 1. Elderly exercise QR code brochure

Figure 2. *Education on the use of QR codes*

Figure 3. Interview with the elderly

Figure 4. Demonstration of elderly exercise

DISCUSSION

Referring to the explanation of the Quick Response (QR) Code Osteathritis Exercise concept above, we can see that the QR Osteoarthritis Exercise is designed for the prevention of osteoarthritis in the elderly. This can be seen in the configuration of the content contained in the QR code which displays videos of elderly exercise that are interesting to imitate. The video was made by researchers to be able to prevent the elderly from osteoarthritis so that they can improve the quality of life of the elderly during the covid-19 pandemic.

According to Bijlsma and Knhar, 2007 osteoarthritis is generally associated with functional limitations that can be improved by various rehabilitative interventions, such as joint-specific exercises, physical fitness, and physical modalities. Education and self-management are very important to prevent joint motion limitations in the most adequate way, that is by exercising.

The exercise video contained in the QR Code is 10 minutes, starting with warming up, core movement, and cooling down. To get effective results, exercise is done 3 times a week. This is stated in the research of Handayani and Wibisono, 2020 which states that by doing elderly gymnastics 3 times a week it will be more effective to get many benefits, the quality of life of the elderly will also increase.

In addition, the Quick Response Code for Osteathritis Exercise is very easy to access with one scan so that it can make it easier for the elderly when they want to do exercise. The collaboration of excellence in terms of effectiveness and efficiency of QR codes will make it easy to implement.

After doing research for a week, the results obtained are 8 out of 10 elderly respondents experienced an increase in the results of the pre-test to the post-test on the questionnaire to improve the quality of life

This Osteoarthritis QR code is also supported by elderly respondents through direct interviews who stated that "Implementation of this QR code is very easy and simple for me to use and the exercise movements in it are easy to imitate, so I can easily learn and can access anytime and anywhere with friends or neighbors in my complex" (Mrs. St. Raodah).

Therefore, based on the research that has been done, the researcher assumes that the application of the Quick Response Code Osteoarthritis Exercise is effective in preventing osteoarthritis to improve the quality of life of the elderly during the COVID-19 pandemic.

CONCLUSIONS

The conclusion of this study is that during the COVID-19 pandemic, telephysiotherapy can be a solution in remote

physiotherapy services. QR code is a scanner system that can be one of the media in providing physiotherapy service content to the public. Utilization of QR Code as a means of telephysiotherapy in providing effective exercise in improving the quality of life of the elderly during the COVID-19 pandemic.

The suggestions in this study are, with the use of telephysiotherapy solutions through QR code media, it is recommended to be further developed so that it can be used more effectively. It is also recommended for the elderly to routinely access the QR code and apply elderly exercise regularly in order to improve their quality of life, and for future research, it is recommended to conduct research with a longer period of time to get better effectiveness.

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