
Adherence Level of Home Exercise Program Among Orthopedic Cases Patients Who Attended Physiotherapy Sessions: A Need Analysis

Nurul Atiqah Ayni Ayob¹, Mohd Azrul Anuar Zolkafi*¹, Kunjung Ashadi², Vikram Mohan³,
Faizal Ashram Baharam⁴

¹Fakulti Sains Sukan dan Kejurulatihan, Universiti Pendidikan Sultan Idris,
35900 Tanjong Malim, Perak, MALAYSIA

²Fakultas Ilmu Keolahragaan, Universiti Negeri Surabaya, 60213 Surabaya,
Jawa Timur, INDONESIA

³Faculty of Health & Social Sciences, Bournemouth University, UNITED KINGDOM

⁴Jabatan Fisioterapi, Hospital Pakar KPJ Pasir Gudang,
81700 Pasir Gudang, Johor, MALAYSIA

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ABSTRACT

This study aims to determine patients' adherence level to the exercises prescribed at home, understand factors that influence the laxity of adherence to the prescribed exercises, and identify the solution to improve patients' motivation and participation. A self-reporting survey was conducted on 100 volunteers (mean age: 26.26±5.42 years old) who currently receive physiotherapy management. This questionnaire was distributed through Google Form and consisted of general information, rehabilitation habits, and motivation. The response rate of the survey is 70%. From this survey study, 96% of participants were partially and totally not adhering to the prescribed exercises at home. Most participants are unable to recall the prescribed exercises, having lack of time and forget to do exercises are among the reasons for non-adherence. The participants' adherence to exercises at home was relatively low. The findings showed the most responses to the factors that influence the laxity of adherence to the prescribed exercises are unable to remember on how to do the prescribed exercises, having lack of time and forget to do the exercises. Besides, the findings found out two most selected solution to improve patients' motivation and participation to the prescribed exercises at home are monitoring by physiotherapist through online platform and create a reminder with video instruction on how to perform the exercises. Therefore, a specific solution must be developed to increase patient motivation and improve the quality of treatment and care.

Keywords: Rehabilitation, adherence, home exercises, physiotherapy, healthcare

INTRODUCTION

It has been shown that exercise benefits critical clinical outcomes such as pain, physical function and quality of life (Campbell et al., 2019; Fong Yan et al, 2018). Therefore, continuing to exercise is essential to ensure that a person's health is at an optimal level. However, many people who begin a supervised exercise program fail to finish the series of exercises and may be significantly affected by poor adherence to the program (Harwood et al., 2016). Therefore, it is critical to create scalable, feasible fitness programmes that address difficulties with poor attendance at the facilities and dropout rates. It

was shown that dropout rates for pain management programmes have been estimated to be as high as 40% (Martín et al., 2014), while dropout rates for exercise-based physiotherapy are typically between 30% and 40% (Rooks et al., 2007). In the meantime, dropout rates in the usual physiotherapy care are 42% (Brady et al., 2018) were consistent to those in previous study (Rooks et al., 2007). In order to address this, there has been an increase in interest in the home-based exercise program, which may be more practical for patients, especially those in the working population (Harwood et al., 2016).

In addition, it has been acknowledged that home-based exercise interventions may be preferable to facility-based exercise due to their relative ease of integration into daily practice, reduced need for programmatic overhead, and removal of common barriers to participation in routine activities such as access, transportation, and cost. Hence, home-based exercise training is an essential aspect of the rehabilitation process. Home-based exercise can be defined as the exercise of physical activity (excluding activity in daily living) undertaken inside within the immediate vicinity of the home including the garden and driveway (Denton et al., 2021). The home-based exercise program consists of several exercises tailored to each patient, which should be performed independently during rehabilitation and at home for at least three months (Bachmann et al., 2018). However, the benefits of a home-based exercise program can only be achieved when patients adhere to the prescribed program, and it has been shown that patients who adhere to prescribed exercise achieve a more significant increase in physical function when compared with poor adherence (Essery et al., 2017).

Exercise adherence is necessary for program effectiveness and prevention of recurrent, persistent and disabling problems (Fransen et al., 2015). The World Health Organization (WHO) defines adherence as “the extent to which a person’s behaviour corresponds with recommendations from a healthcare professional”. The problem of non-adherence to treatment concerns not only the rehabilitation session with the physiotherapist at the facilities but also home-based; the major problem is the poor adherence to therapy (Bachmann et al., 2018). Besides, despite the advantages of home-based rehabilitation, adherence to home-based exercise in rehabilitation is a major issue, with estimates of non-adherence as high as 50%, which could negatively impact clinical outcomes (Argent et al., 2018). If patients fail to complete the specified number of repetitions, approved exercise length, recommended exercise frequency, or occasionally a combination of these, they are considered non-adherent to home-based exercise programmes (Essery et al., 2017, Argent et al., 2018). A previous study stated that up to 71% of patients are either non-adherent or partially adherent to their home programmes, with approximately 17% failing to complete their prescribed physiotherapy course (Bonnechère et al., 2016). For general musculoskeletal conditions, non-adherence to the home-based exercise program is as high as 50-65% (Basset, 2003), while in the low back pain patient also, the non-adherence to home-based exercises is shown to be as high as 50-70% (Beinart et al., 2013).

One of the reasons is that many patients are given exercises to undertake unsupervised at home following an injury to aid their rehabilitation (Argent et al., 2018). However, with the unsupervised protocol at home, patients did not have any guidance if they forgot or did not know how to perform the particular exercises. Furthermore, 36% of all participants undergoing stroke therapy reported lack of time as a barrier to adherence (Jurkiewicz et al., 2011), and 15% of non-adherences to home-based exercise believe it may lower the risk of falls (Spink et al., 2011). Besides, according to two studies, women with the symptoms of urine incontinence reported having trouble remembering to perform their exercises and were likely to be non-adherence in performing the exercises (Borello-France et al., 2010; Borello-France et al., 2013). As a result, non-adherence to the home-based exercise program may lead to patients’ delayed recovery and poor clinical outcomes (Odebiyi et al., 2020) and may increase the risk of recurrent injury or flare-ups with less positive long-term outcomes (Jack et al., 2010). Not only that, but non-adherence to home-based exercises also may impact the physiotherapist, believing that their current treatment is not practical for the patients (Wright et al., 2014).

Therefore, it is crucial to ensure that patients adhere to the prescribed home-based exercises to enhance their effectiveness and facilitate positive outcomes. Moreover, patients who adhere to the exercise may have a lower risk of developing recurrent, persistent or disabling problems (Holden et al., 2014). Unfortunately, there is still a lack of evidence on the percentage of patients adhering to treatment and exercise, especially the number of exercises that the patients perform. Therefore, this paper aims to determine patients’ adherence levels to the exercises prescribed at home, understand factors that

influence the laxity of adherence to the prescribed exercises, and identify the solution to improve patients' motivation and participation.

MATERIALS AND METHODS

Population

A hundred volunteers attending physiotherapy sessions were eligible to participate in this study. Since the questionnaire was distributed through Google Forms, participants must be able to answer it online. The incomplete answers were excluded. The ethics were obtained from Research Ethical Committee, Universiti Pendidikan Sultan Idris, Malaysia. Informed consent was given virtually after reading the consent sentence by a tick in the accept box. The data collection was conducted for about one month from 1st to 30th June 2022.

Questionnaire

The questionnaire varied from the original self-created questions from Bonnechère et al (2016). It has been used to identify the adherence level, reasons to omit exercises and possible solutions to overcome the problems. It consisted of 3 categories: general information, rehabilitation habits, and motivation.

The general information included primary self-data age, state and gender. Meanwhile, habits during rehabilitation proposed to identify the patient's adherence to provided exercises at home. On the other hand, motivation attempts to recognise the reasons for not adhering to exercise and how to overcome the problem.

Statistical analysis

The data were analysed using SPSS 25.0. Adherence to exercises, reasons for not doing exercise and motivation were presented via percentage.

RESULTS

All results are presented in Table 1. Only orthopaedics cases are counted to be analysed. Regarding treatment adherence, the percentage of total adherence to the exercise was only 4%, while partially (performing exercise below 50%-90%) adherence was 83%. Surprisingly, 13% of the population did not perform the exercise at home. The factors that influence the laxity of the non-adherence to the prescribed exercises are unable to recall on how to perform the prescribed exercises at home (26%), due to lack of time (25%), 23% of them stated that they forgot to do the exercises while 13% of the participants respectively feel that the prescribed exercises were useless and too boring.

Table 1. Result of the survey

Questions	Answer	Percentage	
General information	Age	mean age: 26.26±5.42 years old	
	Country	100% Malaysian	
	Sex	Male	75%
		Female	25%
Speciality of physiotherapy	Orthopaedic	89%	
	Neurologic	2%	
	Urologic	0%	
	Obstetrical	0%	
	Other	9%	

Specific orthopaedic injury	Shoulder injury	21.3%
	Elbow injury	7.9%
	Wrist injury	7.9%
	Slipped disc	2.2%
	Hip injury	6.7%
	Knee injury	29.2%
	Ankle injury	24.7%
Prescription?	Yes	83%
	No	17%
Adherence?	Yes (100%)	4%
	Partially (50%-90%)	50%
	Partially (below 50%)	33%
	No (0%)	13%
Causes	Due to lack of time	25%
	I forgot to do the exercises	23%
	I felt there was no evolution (useless)	13%
	Exercises are too boring	13%
	I could not remember how to do the exercises myself at home	26%
Motivation	Monitoring by physiotherapist through online platform	45%
	Reminder (smartphone, email, calendar) with instructions	8%
	Reminder (smartphone, email, calendar) with video instructions on how to perform the exercises	27%
	Application showing how to perform exercises with live feedback	16%
	Others	4%

From this study, it has been identified that 45% of the participants suggested that monitoring during performing the prescribed exercises by physiotherapist through online platform is the solution to improve patients' motivation and participation. 27% of them suggested that physiotherapist have to provide a reminder using smartphone or email with video instructions on how to perform the exercises while 16% of them suggested to create an application showing how to perform exercises with live feedback. Thus, it can be concluded that majority of the participants are suggested on the medium of delivering exercise through online platform either in monitoring in real-time (video call, video conference or live video) or video record.

DISCUSSION

Although various benefits from exercises were well-known, however, the consistency towards exercise may be significantly affected the poor adherence to the program (Harwood et al., 2016). In addition, physiotherapy and manual therapy for both acute and chronic pain recommend the prescription of exercises to be performed at home (Jordan et al., 2010). The rate of poor adherence toward exercises that prescribed at home are consistent reported high in recent years (Argent et al., 2018; Beinart et al., 2013; Li et al., 2013). The results of adherence level in this study found comparable with previous studies and even greater (Bonnechère et al., 2016). This figure shows unpromising positive effect from the exercises provided, and furthermore initiate deterioration of the muscle's properties and eventually affecting the daily living activities.

Prior to overcome the complications, the understanding of the factors that contributed to poor and non-adherence are crucial. The factors such as lack of time, forget to do and unable to recall exercise provided to them are predominate the way to get rid from prescribed exercises. Bonnechere et al (2016) also boldly stated that no time and forgot to do are among the top reasons. The non-adherence towards exercises is genuinely due to unsupervised at home (Argent et al., 2018). Based on this reason, the therapist cannot be sure that patients are performing the exercises at home and that patients are not sure if they are performing the exercises correctly. In addition, if patients do not complete the exercises correctly, such as with the wrong posture, an adverse effect can even be achieved (Bonnechère et al., 2016).

A solution for the patients that will allow them to receive guidance on how to realise the exercises appropriately and remind them when and how much they have to perform them should be explored. Few of the participants want a reminder in either a smartphone, email or calendar with a text instruction and also a reminder either with a smartphone, email or calendar but with video instructions on how to perform the exercises. Furthermore, there are participants that requested a solution to build an application that could show them how to perform exercises with live feedback. However, majority of the patients involved in this survey study requested a therapist to monitor them performing the exercises through the online platform.

Indeed, in this era of globalisation, along with the development of technology, one way to monitor and measure exercises that might help patients access rehabilitation may be through technological innovation, such as remote rehabilitation by the therapist. Remote rehabilitation is one way of digitalising services and is referred to by many different terms, such as net therapy, telerehabilitation, virtual rehabilitation or mobile rehabilitation (Esquivel et al., 2018). Through the use of digital technology, the implementation of telerehabilitation in physiotherapy enables the remote delivery of personalised assessment and treatment intervention, providing the advantages of treatment accessibility and cost reduction for patients living in areas far from rehabilitation facilities (Brennan et al., 2009). Along with technological developments, telerehabilitation has increased, and previous studies have shown the potential of telerehabilitation as an alternative to hospital-based rehabilitation (An et al., 2021).

Supervised exercises at home were found to be more effective than unsupervised home-based exercises (Aitken et al., 2015). Monitoring patients performing the exercises may increase exercise adherence and the accuracy of the exercise performance, for example, the extent to which patients perform the exercises correctly and in the right way. Telerehabilitation appears to be an effective method of supervising patients, especially for their quality of exercise delivery (An et al., 2021). In addition, it may improve patients' treatment adherence by real-time monitoring of exercises through an online platform (Bettger et al., 2020). However, exercises prescribed at home remain an issue in physiotherapy, and clinicians need to be aware of the low participation of the patients (WHO, 2003). Indeed, the noncompliance with home rehabilitation in the musculoskeletal cohort is between 30% and 50% (Argent et al., 2018; Li et al., 2013). However, at-home exercises are a vital piece of physical rehabilitation.

Nevertheless, the problem is ensuring that patients complete their exercises correctly. Although, as technology advances, specific systems are being created to monitor patients at home and offer them live feedback during rehabilitation exercises, this device appears to be highly received by users. This could be a method to reassure patients by correcting exercise realisation and therapist who can control what the patients are doing at home.

CONCLUSION

In rehabilitation, home exercise adherence is a key issue. The causes of this are complex and include psychological and situational aspects that are specific to each individual and must be taken into account by therapists when creating individualised exercise programmes. Throughout this study, the participants' adherence to exercises at home was relatively low. The findings showed the most responses to the factors that influence the laxity of adherence to the prescribed exercises are unable to remember

on how to do the prescribed exercises, having lack of time and forget to do the exercises. Besides, the findings found out two most selected solution to improve patients' motivation and participation to the prescribed exercises at home are monitoring by physiotherapist through online platform and create a reminder with video instruction on how to perform the exercises. Therefore, since continuing exercises at home are essential, a specific solution must be developed to increase patient motivation and improve the quality of treatment and care.

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✉ Mohd Azrul Anuar Zolkafi
Fakulti Sains Sukan dan Kejurulatihan,
Universiti Pendidikan Sultan Idris,
35900 Tanjong Malim, Perak, MALAYSIA
azrulanuar@fsskj.upsi.edu.my