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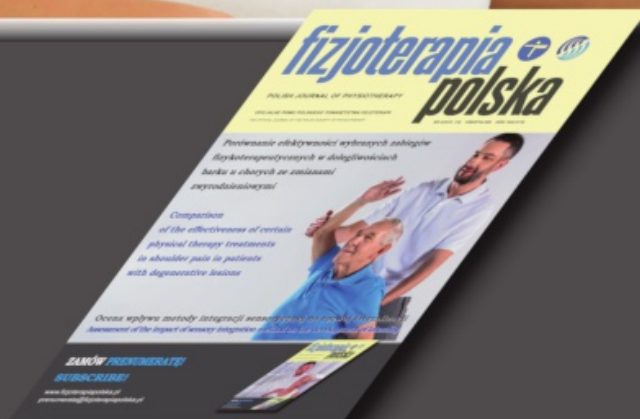
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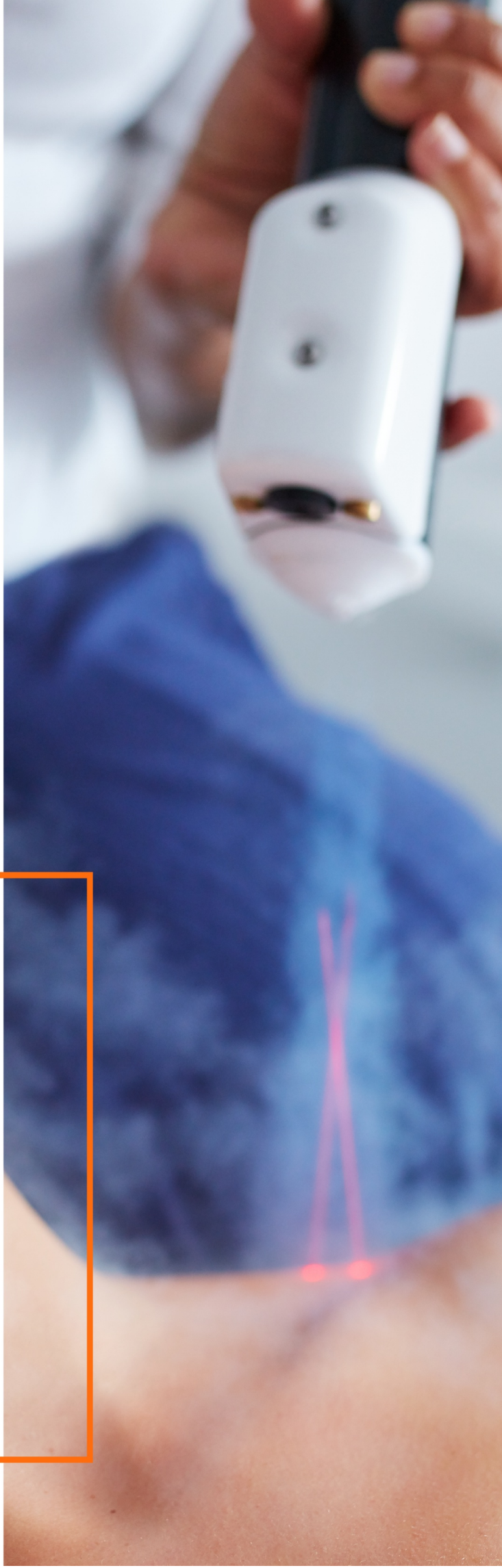
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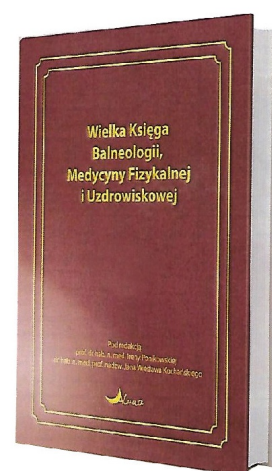
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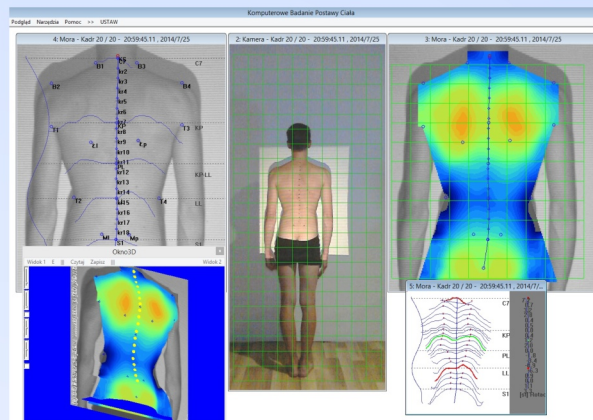
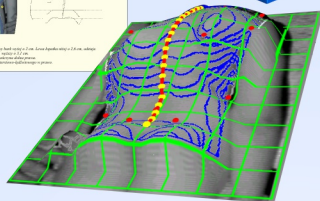
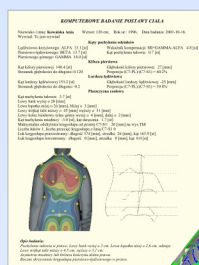
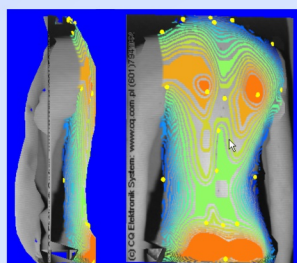
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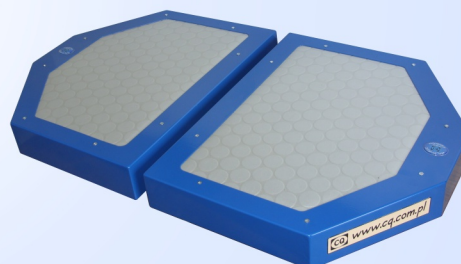
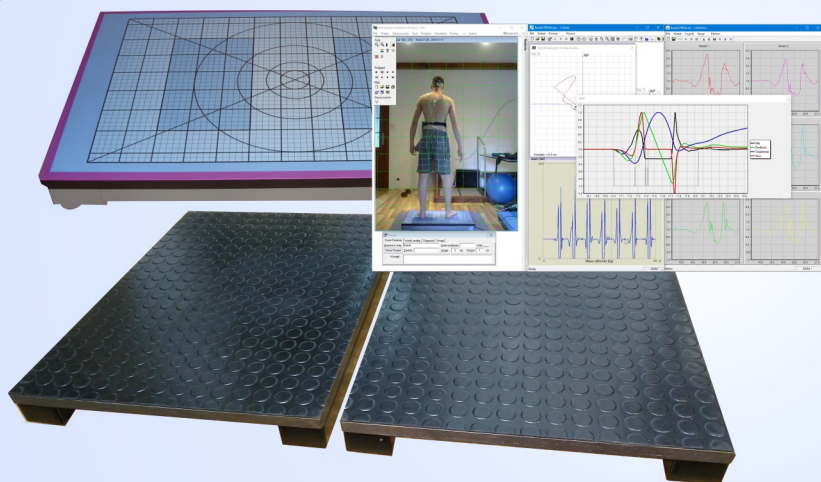
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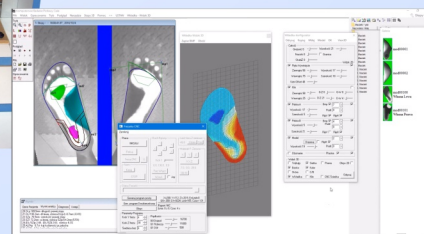
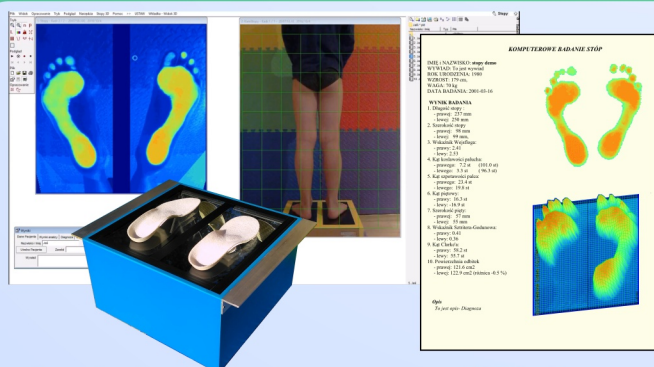
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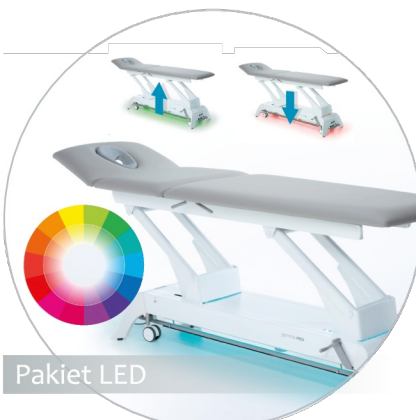


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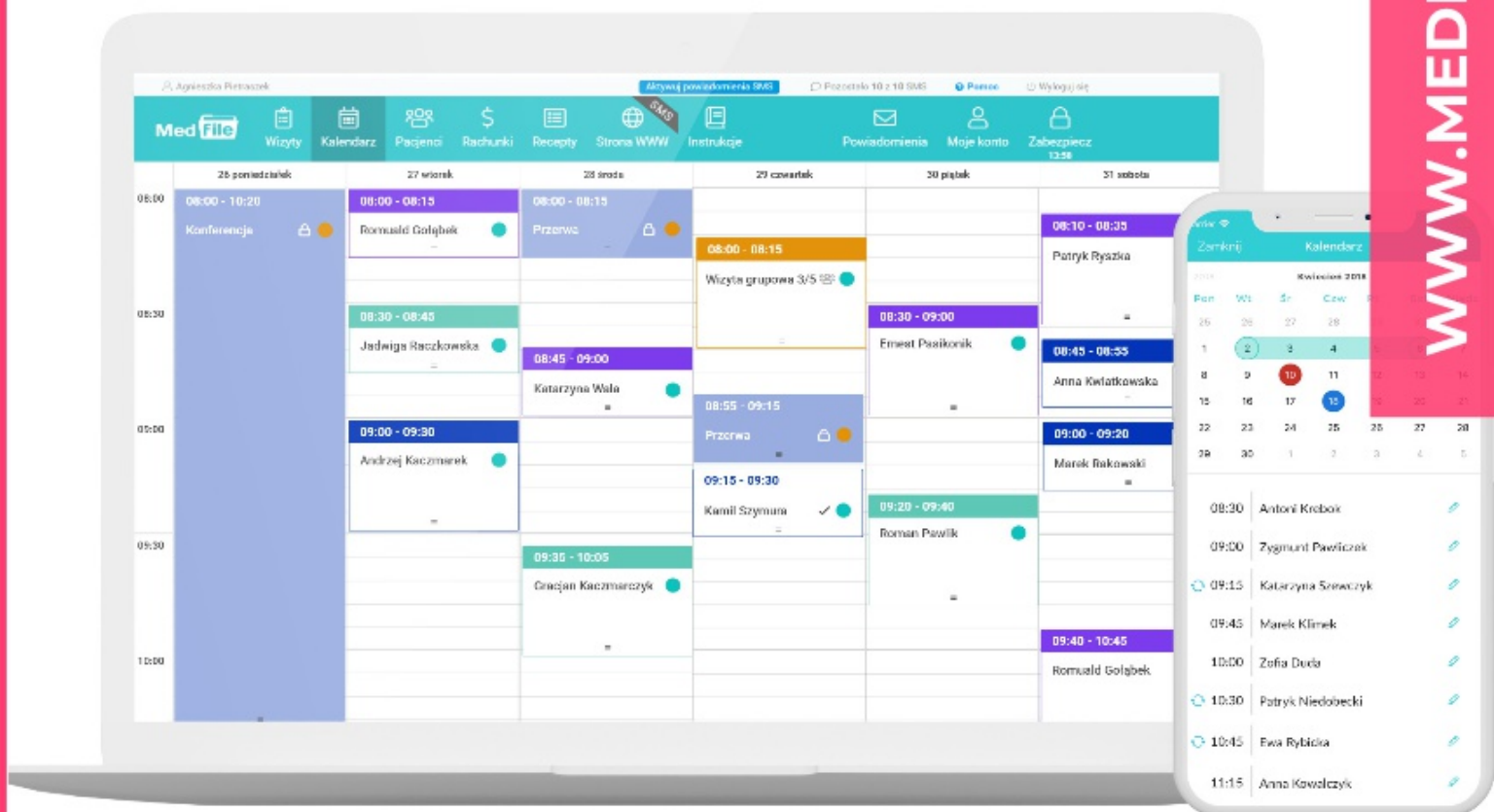
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Compliance to home exercise program (HEP) among subjects under physiotherapy care: Report of a qualitative study

理疗护理受试者中的家庭锻炼计划依从性：定型研究报告

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Abstract

This study examined the extent of compliance towards HEP among subjects undergoing physiotherapy sessions in selected clinical settings. The findings of this study would provide insights on the perceived enablers and barriers that influence compliance towards prescribed home exercises.

Methodology. This qualitative inquiry study interviewed twenty subjects - 12 males and 8 females under physiotherapy care at various outpatient musculoskeletal rehabilitation at selected private hospitals and physiotherapy clinics located in the states of Kuala Lumpur and Negeri Sembilan of Malaysia. Subjects' responses on the perceived opinions and experiences with prescribed home exercises were audio recorded through a semi-structured interview. The responses obtained were analysed further using keyword coding and content analysis.

Results and Analysis. Self-motivation, determination and commitments are the best-explored enablers for active involvement. Barriers that significantly lead to disengagement in home exercises among the participants of this study includes lack of time, work commitments, personal characteristics, disease nature or injury status and ineffective exercise prescriptions.

Conclusion. Content analysis of the recorded responses revealed that the predictors of compliance to home exercises is multifactorial. This study provides a baseline data for understanding the perceived enablers and barriers towards participation in home exercises; these findings will aid the health care professionals in implementing the measures to maximize compliance level among patients undergoing physiotherapy.

Highlights

- Compliance to home exercises are affected by various factors
- Lack of time, work commitments and injury status affect the home exercise compliance
- Self-motivation is the most important enabler for the compliance to HEP
- Nature of the disease affects compliance to HEP

Key words:

home exercise program, physiotherapy, musculoskeletal rehabilitation

摘要

该研究检查在选定的临床环境中接受物理治疗的受试者对家庭锻炼计划的依从程度。研究的调查结果将提供有关影响所规定家庭锻炼依从性的感知促成因素及障碍等方面的意见。

方法。该定性调查研究共采访了二十名受试者，包括 12 名男性及 8 名女性，它们在马来西亚的吉隆坡和森美兰州选定的私立医院和理疗诊所中接受各种门诊肌肉骨骼康复治疗。受试者对规定家庭锻炼的感知意见和经验的回答以半结构式访谈进行录音。所获得的回应经过关键词编码及内容分析进行分析。

结果和分析。自我激励、决心和承诺为积极参与的最佳推动因素，影响本试验中受试者脱离家庭锻炼的明显障碍包括缺乏时间、工作承担、个性、疾病性质或受伤状况及运动处方无效等。

结论。根据所记录回应的内容分析显示家庭锻炼依从性的预测结果为多因素，该试验提供了解参与家庭锻炼的感知促成因素和障碍的基本数据。这些调查结果将协助医疗保健专业人员实施措施，在最大限度上提高接受理疗患者的依从水平。

结论：

- 家庭锻炼的依从性受各种因素影响
- 缺乏时间、工作承担和受伤状况会影响家庭锻炼的依从性
- 自我激励为家庭锻炼依从性的最重要促成因素
- 疾病的性质会影响家庭锻炼的依从性

关键词：

家庭锻炼计划、物理治疗、肌肉骨骼康复

Introduction

Physiotherapists play an important role in the current healthcare system by focusing on improving the quality of movements in subjects with various impairments, activity limitations and participatory restrictions. Physiotherapists' roles are not only restricted to performing a thorough assessment and prescribing in-session therapies but it involves the prescription of tailored home exercises to maximize the outcomes. Home exercise program (HEP) is a set of take home exercise regime prescribed and educated by a physiotherapist to a patient based on individual health needs [1]. Active engagement of the clients in the rehabilitation is a corner stone in the success of any protocol [2]. Studies have identified that patients' non-compliance to health recommendations creates significant economic burden. O'Donohoe and colleague, reported that there have been no systematic reviews on rates of compliance in all World Health Organization protocols to date [3]. Thus, extent of compliance among patients undergoing physiotherapy remains questionable.

For the purpose of this study the researchers adopted word "Compliance" with the literal meaning of performing the exercises as prescribed by the therapist during patient education session. This could be justified by the culture of physiotherapy practice in Asian countries, where the patients are taught to follow the instructions strictly. The term adherence allows the patients to be flexible in doing exercise, which means they are allowed to deviate from the prescribed programme according to their convenience [4].

Previous review has identified that the determinants of exercise compliance is multifactorial. It could be influenced by various domains including believe and attitude, socio-demographics, features of prescribed HEP, characteristics of present illness and the quality of healthcare and patient-physiotherapist relationship [5].

A pilot study conducted in Malaysia, identified that 42.3% of subjects of the included subjects were adhered to exercise protocol, whereas majority of the participants did not follow the exercise prescription [6]. Since the authors of this used self-reported questionnaire, it was recommended to conduct in-depth studies in exploring the determinations of compliance. Future implementation of measures with an objective to maximize compliance to HEP among patients depends on the ability to explore the possible determinants – enablers and barriers of compliance.

Socio-demographics factors might influence the extent of compliance towards recommended exercises. The extent of compliance towards exercises declines as women reach their middle ages due to increasing life demands such as family commitments. However, lack of time and attaining menopause was not a significant barrier among women. Compliance rate was also lower in younger patients due to engagement in various external activities and poor understanding on the importance of exercises in recovery [7].

This contradicts with, stating that there is no significant relationship between compliance to low back pain exercise regimens and demographics including age, gender and educational background [8]. Patients with osteoarthritis of knee with previous history of active engagement in exercises were found to have higher rate of compliance in the prescribed knee specific exercise regimens [9].

Health Belief Model (HBM) was discovered earlier which helps to provide insights on the rate of compliance. Hypothesized that high self-efficacious individuals who perceive more benefits than barriers on health recommendations and who perceive greater severity of the disease or injury tend to have higher rates of compliance. The relationship between health locus of control and the compliance towards exercises is significantly positive when individuals understand the value of good health [10]. However, a recent study revealed that there is no significant correlation between locus of control and compliance towards exercise regimens [11, 12]. Patients tend to comply with home exercises when their symptoms limits involvement in working environment or activities of daily living (ADL) [11]. Compliance level is at a positive rate when the healthcare providers show empathy and take an effort to provide timely feedbacks on patients' progress [13].

This study explored the determinants of compliance towards HEP along with the perceived enablers and barriers that influences compliance. The perceived enablers and barriers were acknowledged to enable health professionals particularly physiotherapists to address the related issues to improve compliance level in the future. This paper would serve as a baseline reference for future in-depth studies involving home exercises.

Methodology

This study was a qualitative exploratory study focused on exploring subjects' personal point of views pertaining their experiences with prescribed HEP. The authors used semi-structured interview as an appropriate tool for data collection. A pilot study was conducted before the commencement of actual data collection to pre-test the formulated semi-structured questions. Three interviews were conducted to understand the strength of the interview questions formulated and to know the feasibility. University ethics committee approved this study.

The interview questions were developed and content validated by research experts prior to the actual data collection covering four major themes included, demographics and basic information on physiotherapy sessions, believes and attitude, perceived insights on HEP experiences and suggestions and recommendation for future implementation of measures. The interviewer used predetermined set of questions as a guide. The interviewer raised, further probing of questions whenever needed to provide in-depth insights. This method of data collection used by various researchers to understand phenomenon pertaining to focused issues.

Subjects under physiotherapy care, which included home exercise prescription, were recruited through purposive random sampling. Since the interview was conducted in English, subjects who were fluent with English were only included. All the included subjects were prescribed with home exercise at least for the duration of two weeks.

Detailed explanation was given to the recruited subjects pertaining the objectives of study and the procedures of data collection. All the participants filled a written informed consent prior to the commencement of the interview sessions. The entire Interview sessions were audio-recorded using a smartphone. The interviews took an average of 15 minutes. The

interviews were conducted casually in an informal style and subjects' comfort in sharing opinions was prioritized throughout.

The researchers transcribed the recorded data manually. Written data were then analyzed by means of qualitative content analysis and keyword coding by two investigators independently. Key themes identified from the interview transcripts were classified into domains and further interpreted, analyzed and discussed. The method adopted for data analysis was based on the thematic analysis, one of the researcher was trained in this method.

Results

Thirty-three (33) subjects were approached but only 20 (12 males and 8 females) fulfilled the inclusion criteria and were recruited for data collection. Subjects' age group ranged from 20 to 66 years old. The mean age of subjects recruited ($n = 20$) was 41.45 ± 13.95 .

Further interpretation of results was based on the three prime study objectives. Presentation of results on the determinants – enablers and barriers of compliance were classified into selected domains to ease the analysis.

Perceived Extent of Compliance

Subjects' perceived extent of compliance was classified into three categories (compliant, moderately compliant and non-compliant). Six subjects perceived as compliant (male, $n = 2$ and female, $n = 4$), 9 subjects perceived as moderately compliant (male, $n = 6$ and female, $n = 3$). Meanwhile, only five subjects perceived as non-compliant (male, $n = 4$ and female, $n = 1$). However, there were no significant gender or age differences in predicting the extent of compliance towards HEP.

Awareness and Knowledge

The term awareness used in the analysis of the data refers to whether the subjects were aware on the existence of HEP or home exercises. Meanwhile, the term knowledge refers to whether the subjects were able to comment on the perceived importance and benefits of HEP or home exercises.

Subjects perceived insights on the importance of home exercises:

"Yes, I think it is important because without those exercises at home, there wouldn't be improvement seen, that means when you do the home exercises, your improvement will be

faster. Because honestly how many times can you go to visit the physiotherapist."

"Yes, I think it is important. Other than the one hour here, I mean if I continue to do at home, I think it will help. It helps to relieve my pain. Yeah, it is part of the program because I can't just rely on the one hour here or the most two hours."

Hypothesize where awareness and knowledge is believed to influence compliance is false. This is because being equipped with adequate background knowledge on the importance and benefits of HEP did not guarantee positive compliance level among the recruited subjects.

Perceived Enablers

Two major domains of enablers emerged from the interview transcripts – 1) acute stage enablers and 2) chronic stage enablers. Key insights on the perceived enablers towards compliance were tabulated in Table 1.

Subjects' reported insights on enablers towards compliance:

"Being able to see my leg improving was the pusher."

"I want to get well again and walk normally like everybody else. I think everybody should be physically independent. Never let an injury or an illness make you go down where you have to be dependent on somebody else. To me, that is my motivation."

Perceived Barriers

Subjects perceived barriers towards compliance were classified into five major domains from the most significant to the least significant. Each domain was then further classified into sub-domains to provide room for thorough understanding. Perceived barriers were classified and tabulated in Table 2.

Subjects' reported barriers towards compliance:

"I am supposed to do it three times per day but I find three times a day consumes a lot of my time at home."

"Just being lazy and maybe the strength is not there. So, you get frustrated eventually."

"I would say home exercises are a bit boring because when come to physiotherapy, you actually get to do lots of variety of exercises. But basically, those home exercises are mainly stretches and there's not much of variations, so it gets boring if you keep doing it every day especially when you do it three times a day. It gets super boring because you keep doing that same set of exercises the whole day."

Table 1. Perceived Enablers identified through content analysis

Ability to see Improvement
Availability of Time
Symptom reductions
Previous experience with exercise
Therapists involvement
Family Support

Table 2. Perceived Barriers identified through content analysis

Socio- demographic factors	Lack of time Job commitments Lack of family support Environment Lack of facilities
Personnel factors	Lack of self-motivation Laziness Fear of Symptom aggravation Frustration
Exercise Prescription	Boring Exercises Lack of clarity in prescription

Discussion

This preliminary exploratory study provided important insights in regards to extent of compliance towards HEP and the perceived enablers and barriers influencing compliance. Even though this study found that awareness and knowledge do not significantly contribute to positive levels of compliance, physiotherapists must not neglect their role as physical educators. Physiotherapist must address the issues related to misconceptions on exercises; effective communications with the clients will help the clinicians to achieve this goal [14]. Physiotherapists are encouraged to thoroughly understand the barriers that limits compliance and take up measures to improve patients' active involvement. Patients should be educated that awareness and knowledge must go parallel with self-dedication, commitments and effort to ensure active engagement.

Based on the responses this study supports the previous findings that the barriers and enablers for compliance to HEP are multifactorial. Key necessity to ensure continuous positive level of compliance towards the prescribed home exercises include patient's determination towards recovery, awareness on consequences and most important of all is the consciousness on the importance of core health locus of control [10]. Two significantly identified barrier domains include socio-demographics and personal characteristics. Unavailability of time and work commitments are the major barrier among the working adults which was similar to the findings of other studies [14]. According to this study young adults perceived economic burden and lack of time as the most common barriers leading to non-compliance on prescribed exercises unlike older adults.

The implementation of measures to overcome the factors of work commitments and lack of time is difficult especially when patients believe that the external factors influence their health. The first step towards maximizing compliance level among working adults is to educate them on the importance of changing self-believe on health locus of control [10].

The barriers identified under the domain of personal characteristics includes laziness, forgetfulness, exhaustion, fear of aggravating symptoms and poor self-motivation. The awareness on internal health locus of control is crucial to overcome these personal factors to improve the compliance level in the future. This strengthens the thought that integrating exercise as part of daily routine might improve the compliance. It is

important to understand and prescribe exercises based on the patients' interest. This is because it is human nature to be consistent in performing tasks of interest rather than being forced. This study also identified disease or injury status and features of prescribed exercises as barriers to HEP compliance.

Subjects lack motivation to continue home exercises when the symptoms no longer limits their ADL. Physiotherapist must play the role of an educator to overcome this issue. Patients must be thoroughly educated on the purpose of home exercises for it will be the baseline to keep them active. When patients do not understand the purpose of exercises, the extent of compliance tend to decline over the coming weeks to months. Labrunée, et.al suggested to consider the implementation of educational strategies to maximize compliance level in a study conducted at identifying the effects of home exercise regime among obese subjects with type 2 diabetes mellitus [15]. Besides the lack of exercise variations, physiotherapist are to follow the rule of thumb in exercise prescription. It includes five primary methods by sequence – 1) education, 2) explanation of procedures, 3) demonstration, 4) review and 5) feedback. This strategy will be enhanced with a strong patient-therapist relationship. Building of rapport with the patients is very crucial to implement the rule of thumb of exercise prescription. Some of the respondents expressed improper exercise prescription by the attending therapist, when probed further it was understood that patients expect that handouts or pamphlets will be useful in continuing the exercises at home.

This study provided an opportunity to understand the possible perceived determinants of compliance, which might serve as a baseline reference for future implementation of measures with an objective to maximize compliance level. Besides, the findings of this study provide opportunities for the development of future high-scaled in-depth studies pertaining home exercises.

It is also important to understand the impact of health care delivery systems on compliance to any treatment protocol. Unlike developed countries, patients follow the instructions of the doctors rather allied health practitioners. Instructions by the medical practitioner might improve the compliance, this needs to be explored further. Some of the respondents even expressed that there were no physiotherapy sessions in the hospital.

As first of its kind through this study the researchers understood the importance considering the patients preference and expectations regarding home exercises. Developing simple

handouts based on the individual need of the patient might improve the compliance apart from client education. The researchers are committed to expand this research further. The authors of this study were based in a teaching institute attached with various clinical settings across peninsular Malaysia.

This study included the subjects from the private outpatient clinical settings. Thus, this study fails to explore the inputs among patients at the public hospital settings, which did not provide an opportunity to compare and contrast the study objectives among both private and governmental clinical organizations. This study included only the English-speaking subjects whereby majority of them were from good educational and career background. Enablers and barriers towards compliance may vary significantly according to the educational status; this study did not explore this difference.

Conclusion

This preliminary exploratory study revealed that determinants of home exercise compliance are multifactorial. Understanding the barriers and enablers to compliance would help the clinicians in designing and implementing a successful HEP.

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