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CHALLENGES OF PHYSIOTHERAPIST DURING PROSTHESIS REHABILITATION IN MALAYSIA

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KEYWORDS

Prosthesis Rehabilitation

Quality of life (QOL)

Mortality Rate

Challenges

ABSTRACT

The present study reported the challenges faced by the physiotherapist during prosthesis rehabilitation in Malaysia. Mortality due to lower limb amputation is a concern in recent days that can be improved by providing proper rehabilitation. However, challenges faced by the physiotherapist during rehabilitation are expected to affect the effectiveness of the rehabilitation. Hence, it is important to identify the possible challenges faced by the physiotherapist during prosthesis rehabilitation to take the necessary precautions for better outcomes. A total of 200 Malaysian physiotherapists who have experience in rehabilitating amputees were selected to participate in this online survey. The participants were requested to complete a self-administered electronic questionnaire containing 20 questions. The present study reported a few challenges faced by the physiotherapists in Malaysia during prosthesis rehabilitation such as “encountering patient that refuse to perform exercises is common” (77%), encountered high physical demand (81.5%), encountering language barriers (48.5%), patients often encounter difficulty in assessing health service (63.5%) and encountering prosthesis problems (67%). The barriers were inconsistent and complex, including patient factors, healthcare provider’s factors, environmental factors, other factors. The study has highlighted challenges faced by the physiotherapists during prosthesis rehabilitation to raise awareness among physiotherapists and at the same time create ideas for specific health care practitioners to overcome the barriers, therefore shortening the length of rehabilitation and enhancing the effectiveness of the rehabilitation to lower the mortality.

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1 Introduction

WHO estimated that the number of disabled people in a developing country who need a prosthetic and orthotic device is 0.5% of the total population. The prediction also suggested that around 160,000 Malaysian need prosthetics and orthotic devices (Arifin et al., 2017; Karim & Ming, 2020). Based on the study of Craig D. Murray, prosthesis usage is shown to have much deep personal meaning for amputees.

Therefore, it is suggested that health professionals play a very important role in preserving amputees' valued identities and allow them to manage their disability status (Murray, 2009). Mortality rates after lower limb amputation are respectively high according to Fortington et al. (2013) however; the mortality rate could be lowered by providing proper rehabilitation services. Studies indicated patients with amputation showed better survival rate, greater success with prosthesis fitting, more often return home, improvement in physical function, increased vitality, and reduction in body pain after numbers of inpatient rehabilitation (Pezzin et al., 2000; Christiansen et al., 2015; Ruth & Bphty, 2019). Besides, the quality of life of persons with lower-limb amputation is reported to be maintained or improved through inpatient rehabilitation (Zidarov et al., 2009). Exercises to improve balance and coordination, range of motion, gait, cardiovascular endurance, strength, and prosthetic fit education are important for prosthetic rehabilitation (Imamphd et al., 2019).

However, the challenges faced by the physiotherapist during rehabilitation might affect the effectiveness of the rehabilitation (Afzal, 2017). Lower limb amputees fall incidence is the common challenge faced by the physiotherapist during prosthetic rehabilitation (Steinberg et al., 2019).

Whereby, effective prosthetic rehabilitation is vital in maintaining or improving the quality of life and the physical function of an amputated patient. Hence, it is important to find out the challenges faced by the physiotherapist during prosthesis rehabilitation to enhance the effectiveness of the rehabilitation. Numerous studies reported challenges faced by different health care providers in different areas (Litchfield & MacDougall, 2002; Barber et al., 2015; Ennion & Rhoda, 2016; Afzal, 2017).

However, there is very limited data shows the challenges faced by the physiotherapist during prosthesis rehabilitation. Steward et al. (1999) as well as Parnell & Urton (2020) proposed the importance of identifying the possible challenges faced by therapists during rehabilitation to overcome future challenges. Hence, this study is to investigate the challenges faced by physiotherapists during prosthesis rehabilitation.

Also, the results may be used to raise awareness and create ideas among physiotherapists to overcome the barriers, thus enhancing the effectiveness of rehabilitation and lower the mortality rate (Fortington et al., 2013).

2 Materials & Methods

This observational study use data of self-administered validated questionnaire to investigate the challenges faced by the physiotherapist during prosthesis rehabilitation in Malaysia. The online questionnaire consists of two sections. In the first section, demographic data included physiotherapists' gender; the level of certification; and working experiences with the year of service were displayed and the respondents were asked to select the responses from the list. In the second section, 20 questions regarding the challenges physiotherapists faced during prosthesis rehabilitation were listed and the respondents were instructed to rate the Likert scale based on their own direct experience. Score 1 and 2 on the Likert scale was considered as disagreeable and was categorized as 1, score 3 on the Likert scale was considered as neutral and was categorized as 2, score more than 3 on the Likert scale was considered as agreeable and was categorized as 3.

These 20 questions were categorized into 5 factors: patient factors, healthcare provider factors, cultural factors, environmental factors, and other factors. There are seven questions for patient factors, eight questions for healthcare provider factors, one question for cultural factors, and two questions for environmental factors and other factors respectively.

The physiotherapists working in Malaysia with at least a diploma level of certification and registered under the Malaysian Physiotherapy Association was considered as inclusion criteria. However, physiotherapists with working experience of fewer than 6 months were excluded. The minimum sample size of 377 was fixed based on the estimated population of therapists in Malaysia, approximately 19000, by using the Raosoft sample size calculator. The online questionnaire was posted on the Malaysian physiotherapy Facebook page for a month from February until March 2020 after approval by the admin of the group. The research purpose was explained to every participant and informed consent was taken from respective participants before participation as shown in Figure 1. The study was approved by the research committee. IBM SPSS Statistics Version 21 was used to analyze the collected data. All descriptive information such as demographic data (name, age, gender, and qualification), working experience, and challenges that the physiotherapist faced during prosthesis rehabilitation were analyzed using central measures of tendency such as frequency, distribution, mean, and standard deviation.

Table 1 Respondent characteristics

Characteristics	Demographic
Gender	n (%)
Male	61 (30.5%)
Female	139 (69.5%)
Educational level	
Diploma	78 (39.0%)
Degree	110 (55.0%)
Master	12 (6.0%)

Table 2 Challenges of physiotherapists presented in mean and standard deviation

Mean	SD	Challenges
		Patient's factors
2.22	.814	Encountering patient with strong beliefs
2.05	.813	Encounter patient with racial preference/ stereotype
2.40	.777	Encounter patient with mental illness
2.36	.808	Patients view physiotherapist without a specific professional identity
2.69	.613	Encountering patient that refuse to perform exercises
2.55	.700	Patient with obesity is more difficult to train when compared to the patient that is not obese
2.66	.587	Patient's adherence to exercise is poor
		Healthcare providers factors
2.38	.799	No coordination/ communication of efforts between multidisciplinary team
2.41	.745	Lack of job structure
2.51	.695	Lack of practice for prosthesis rehabilitation
2.38	.805	Workload during prosthetic rehabilitation is high
2.10	.868	Prevent fall incidence during prosthesis rehabilitation is difficult
2.19	.811	Feeling the burden of transdisciplinary
2.31	.822	Emotional stress is commonly faced by therapists
2.77	.530	Encountered high physical demand
		Environmental factors
2.67	.584	Encounter with bigger gaps between follow-ups
2.57	.623	Patients often encounter difficulty in assessing health service
		Cultural factor
2.25	.808	Encountering language barriers
		Other factors
2.63	.612	Limited fund and resources
2.64	.551	Encountering prosthesis problems

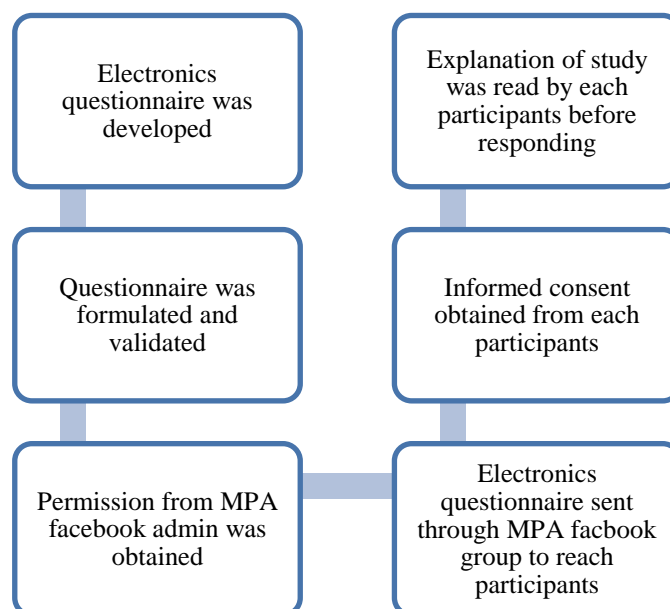


Figure 1 Flow chart for the process of data collection

Table 3 Patient factors presented in frequency, mean and standard deviation

Patient factors	Frequency (n)	Disagreeable	Neutral	Agreeable
Challenges	Mean (SD)		n (%)	
Strong Beliefs	2.22 (.814)	49 (24.5%)	59 (29.5%)	92 (46.0%)
Stereotype	2.05 (.813)	61 (30.5%)	68 (34.0%)	71 (35.5%)
Mental illness	2.40 (.777)	36 (18.0%)	48 (24.0%)	116 (58.0%)
No professional identity	2.36 (.808)	42 (21.0%)	45 (22.5%)	113 (56.5%)
Refuse to exercise	2.69 (.613)	16 (8.0%)	30 (15.0%)	154 (77.0%)
Obese patient	2.55 (.700)	24 (12.0%)	42 (21.0%)	134 (67.0%)
Poor exercise adherence	2.66 (.587)	12 (6.0%)	43 (21.5%)	145 (72.5%)

3 Results

3.1 Respondent Characteristics

In total, only 225 physiotherapists responded to the electronic questionnaire and 25 responses were excluded based on exclusion criteria. Finally, 200 (n=200) responses were included for data analysis; the response rate was 88.89% among the respondents. Among 200 respondents, 30.5% were male and 69.5% were female, 39% were diploma graduates, 55% were degree graduates and only 6% were master graduates as shown in Table 1.

3.2 Challenges faced by physiotherapists during prosthesis rehabilitation

The mean and standard deviation were calculated individually for 20 challenges as shown in Table 2. Mean score out of 3.0 was calculated based on the scoring from the Likert scale (Beglar & Nemoto, 2014). The challenges are categorized into patient factors, healthcare provider's factors, cultural factors, environmental

factors, and other factors. Based on the data, it is evident that the majority of the physiotherapists in Malaysia have faced the challenges stated in the questionnaire.

3.2.1 Patient factors

Table 3 shows the frequency, mean and standard deviation for patient factors. All challenges under this category scored mean more than 2.0 hence, all of the challenges were considered as agreeable. The second challenge, encounter patients with racial preference/ stereotype is common, (eg: either prefer same race or vice versa) reported the lowest mean score. Among the attended respondents, 30.5% (n=61) voted for disagreeable, 34.0% (n=68) for neutral, and 35.5% (n=71) for agreeable.

Further, the fifth challenge, encountering patient that refuse to perform exercises is common, reported the next higher mean score. In this challenge, 8.0% (n=16) of the respondents voted for disagreeable, 15.0% (n=30) for neutral, and 77.0% (n=154) for agreeable.

Table 4 Healthcare providers factors presented in frequency, mean and standard deviation

Healthcare providers factors	Frequency (n)	Disagreeable	Neutral	Agreeable
Challenges	Mean (SD)	n (%)		
No coordination between MDT	2.38 (.799)	40 (20.0%)	44 (22.0%)	116 (58.0%)
Lack of job structure	2.41 (.745)	31 (15.5%)	55 (27.5%)	114 (57.0%)
Lack of practice	2.51 (.695)	23 (11.5%)	54 (27.0%)	123 (61.5%)
High workload	2.38 (.805)	38 (19.0%)	51 (25.5%)	111 (55.5%)
Fall prevention	2.10 (.868)	66 (33.0%)	48 (24.0%)	86 (43.0%)
Burden of MDT	2.19 (.811)	50 (25.0%)	62 (31.0%)	88 (44.0%)
Emotional stress	2.31 (.822)	46 (23.0%)	47 (23.5%)	107 (53.5%)
High physical demand	2.77 (.530)	10 (5.0%)	27 (13.5%)	163 (81.5%)

Table 5 Cultural factors presented in frequency, mean and standard deviation

Cultural factor	Frequency (n)	Disagreeable	Neutral	Agreeable
Challenges	Mean (SD)	n (%)		
Language barrier	2.25 (.808)	46 (23.0%)	57 (28.5%)	97 (48.5%)

Table 6 Environmental factors presented in frequency, mean and standard deviation

Environmental factors	Frequency (n)	Disagreeable	Neutral	Agreeable
Challenges	Mean (SD)	n (%)		
Larger follow-up gaps	2.67 (.584)	12 (6.0%)	41 (20.5%)	147 (73.5%)
Difficulty in assessing	2.57 (.623)	14 (7.0%)	59 (29.5%)	127 (63.5%)

Table 7 Other factors presented in frequency, mean and standard deviation

Other factors	Frequency (n)	Disagreeable	Neutral	Agreeable
Challenges	Mean (SD)	n (%)		
Limited funds and resources	2.63 (.612)	14 (7.0%)	46 (23.0%)	140 (70.0%)
Prosthesis problems	2.64 (.551)	7 (3.5%)	59 (29.5%)	134 (67.0%)

3.2.2 Healthcare provider factors

Table 4 shows the frequency, mean and standard deviation for healthcare providers factors. All challenges under this category scored mean more than 2.0 hence, all of the challenges were considered as agreeable. The twelfth challenge, prevent fall incidence during prosthesis rehabilitation is difficult, gained the lowest mean score. 33.0% (n=66) of the respondents voted for disagreeable, 24.0% (n=48) for neutral, and 43.0% (n=86) for agreeable. Whereas, the fifteenth challenge encountered high physical demand, scored the highest mean score as 5.0% of the respondents (n=10) voted for disagreeable, 13.5% (n=27) for neutral, and 81.5% (n=163) for agreeable.

3.2.3 Cultural factor

Table 5 shows the frequency, mean and standard deviation for the cultural factor. Encountering language barriers is common; this challenge was considered agreeable as the mean reported score was more than 2.0. On this, 23.0% (n=46) of respondents voted for disagreeable, 28.5% (n=57) for neutral, and the rest 48.5% (n=97) for agreeable.

3.2.4 Environmental factors

Table 6 shows the frequency, mean and standard deviation for environmental factors. All challenges under this

category scored mean more than 2 hence, all of the challenges were considered as agreeable. Encounter with bigger gaps between follow-ups (>2 weeks) due to unforeseen circumstances is common; this challenge reported the third-highest mean score among all of the challenges. Among 200 respondents, 73.5% (n=147) voted for agreeable.

The eighteenth challenge, patients often encounter difficulty in assessing health service, 7.0% (n=14) of the respondents voted for disagreeable, 29.5% (n=59) for neutral, and 63.5% (n=127) for agreeable.

3.2.5 Other factors

Table 7 shows the frequency, mean and standard deviation for other factors. Limited funds and resources, this challenge is considered as agreeable as the mean score was more than 2.0. Among 200 respondents, 7.0% (n=14) of the respondents voted for disagreeable, 23.0% (n=46) for neutral, and 70.0% (n=140) for agreeable. The twentieth challenge, encountering prosthesis problems are common, this challenge was considered as agreeable as well and among the replied respondents, 3.5% (n=7) of the respondents voted for disagreeable, 29.5% (n=59) for neutral, and 67.0% (n=134) for agreeable.

4 Discussion

The purpose of this study was to investigate the challenges faced during prosthesis rehabilitation from the perspective of physiotherapists. The challenges identified can be categorized into five categories: patient factors, healthcare provider's factors, cultural factors, environmental factors, and other factors.

This study was unique in its use of quantitative research principles to investigate the barrier during prosthesis rehabilitation in Malaysia. There were several qualitative studies have explored the barriers faced by different groups of healthcare providers from different areas, however, few studies have explored physiotherapists' perceptions related to prosthesis rehabilitation in Malaysia. Therefore, the present study results provide an exceptional insight into prosthesis rehabilitation to complement the current literature.

4.1 Patient factors

In this study, 46.0% of the respondents experienced treating a patient with strong belief during prosthesis rehabilitation (Table 3). External evidence in support of this finding is available from a recent study in South Africa (Ennion & Rhoda, 2016). According to this, traditional healers were recognized as part of the multidisciplinary team (MDT) and to work closely with the hospitals. The amputation and mortality rate could be lowered if traditional healers are to be recognized as part of the MDT and trained to refer the patients to hospitals. However, many patients chose to believe that illness was related to bewitchment and sought help from traditional healers to appease their ancestors and remove the "curse". This greatly reduces their trust and adherence to western medicine and rehabilitation (Ennion & Rhoda, 2016). Among the replied respondents, 35.5% of the respondents voted agreeable for the statement "racial preference/ stereotype" as shown in Table 3, this indicated that physiotherapists involved in prosthesis rehabilitation in Malaysia did experience treating patients with racial preference or stereotype. This finding is also supported by the study done in South Africa regarding prosthesis rehabilitation (Ennion & Rhoda, 2016), however, most of the physiotherapists in Malaysia is from local instead of the foreign country. Furthermore, the Malaysian concept is to strengthen relationships and cooperation among the multi-ethnic people in this country. According to Prime Minister, One Malaysia concept "we stand, we think, and we act as Malaysians and we take actions based on the needs of all ethnic groups in our country" (Zainal & Salleh, 2010). Hence, this might not be a big challenge for prosthesis rehabilitation.

Table 3 shows that 58.0% and 67.0% of the respondents agreed with treating patients with mental illness and obesity is difficult. Similarly, Potter et al. (2003) interviewed physiotherapists

working in the Perth metropolitan area, reported that patients with physical and psychological problems are hard to manage.

The reason behind the difficulty in treating an obese patient is owing to low levels of physical activity with poor adherence to exercise interventions as well as lack of motivation (You et al., 2012; Firth et al., 2016). Furthermore, Potter et al. (2003) highlighted that, physiotherapist skill and psychological skill training need to be trained and suggested that communication as well as behaviour modification strategies for improving and assisting the work for patients with difficulty. However, a study by Vivas et al. (2017) reported that obesity does not show a disadvantage with regards to validated outcomes, such as the 2-min walk test, L-test or SIGAM score at discharge after inpatient amputation rehabilitation, hence obesity should not be a barrier to offering inpatient rehabilitation for amputation patients.

In this study, 56.5% of the respondents agreed with patients' view of therapists without specific professional identity (Table 3). This finding is corroborated by a study done in the UK by Timmons and East regarding uniforms, status, and professional boundaries in hospitals (Timmons & East, 2011). This might result in a sense of loss and disempowerment by the therapist, hence reducing their commitment during rehabilitation. As shown in Table 3, 77.0% of the respondents and 72.5% of the respondents agreed for patients refuse to perform the exercise, and the patient's adherence to exercise is poor.

This finding is supported by a study done by Parry et al. (2017) regarding factors that affect the implementation of early rehabilitation into intensive care unit practice. The reason behind this might be owing to the patient's motivation and intake of sedative medications. To overcome this barrier, communication and education with patients and their families are very important; hence it is encouraged to involve patients and family in setting individualized patient goals.

4.2 Healthcare provider's factors

In this study, the majority of the respondents (44.0%) agree that there is a lack of coordinated effort among MDT (Table 4). Ennion & Rhoda, (2016) found that the members of the MDT might not know their roles. For instance, most health professionals do not include and recognize amputees as members of MDT; surgeons spend time only in performing surgery instead of discussing patient goals and rehabilitation outcomes; as well as barriers between prosthetists and physiotherapists. Team working is considered essential, as a wide range of knowledge and skills is required to diagnose and assess impairments; activity limitations, and participation restrictions; as well as select treatment options (Neumann et al., 2010). According to Neumann et al. (2010) and Clarke (2013), the lack of MDT approach might negatively affect

the outcome of rehabilitation and cause prosthesis problems due to inadequate rehabilitation for prosthetic fitting.

Among the respondents, 57.0% and 61.5% of the respondents agreed that there is a lack of job structure and lack of practice for prosthesis rehabilitation respectively as shown in Table 4. Afzal (2017) looked at the major challenges faced by the physiotherapy profession is expanding its role in health, prevention, and wellness service, and found a lack of job structure and lack of practice for prosthesis rehabilitation. The reason behind the lack of practice for prosthesis rehabilitation might be owing to different factors, a variety of levels of amputation as well as personal and environmental factors. A recent study regarding physiotherapy and rehabilitation approaches to lower-limb amputation by Ülger et al. (2007) suggested that the applications of various physiotherapy methods for prosthesis rehabilitation. Moreover, published evidence-based clinical guidelines for the physiotherapy management of adults with lower limb prosthesis which are readily accessed online can be used as a source of reference (Broomhead et al., 2012).

In this study, 43.0% of the respondents voted agreeable for prevention of fall are difficult (Table 4). This finding has not been reported widely in the literature. However, the study by Pauley et al. (2006) highlighted fall incidents among patients with lower limb amputation during inpatient rehabilitation is as high as 20% among all the amputees involved in the inpatient rehabilitation. Also, the same authors predict that older age, the greater number of comorbidities, cognitive impairment, and the use of a greater number of medications can increase the incidence of falls (Steinberg et al., 2019). Among the tested respondents, 44% of the respondents claimed that there is the burden of transdisciplinarity as shown in Table 4. This finding is also similar to the study carried out in South Africa on prosthesis rehabilitation.

According to Ennion & Rhoda, younger inexperienced therapists might be confused about transdisciplinarity and feel the burden. For instance, crossing the boundaries of discipline-specific scopes of practice considered as illegal implications especially when an injury to the patient occurs (Ennion & Rhoda, 2016).

As shown in Table 4, more than half of the respondents voted agreeable for high workload and emotional stress. Furthermore, 81.5% of the respondents voted agreeable for high physical demand. According to Pavlakis et al. (2010), physiotherapist plays an important role during the rehabilitation process, therefore emotional stress is susceptible for a physiotherapist. This study also suggested that low salary, employment sector, age group, and job-related stress will lead to burnout syndrome and hence affect the effectiveness of the rehabilitation.

4.3 Cultural factor

Among the respondents, 48.5% experienced a language barrier during prosthesis rehabilitation in this study (Table 5). These results are in agreement with the findings of Ennion & Rhoda (2016), language barrier is also reported during prosthesis rehabilitation in South Africa. The reason behind this was owing to the majority of the healthcare professionals were English speaking, however, only patients from several areas can speak and understand English.

Patients who are older, less educated, low income, and underinsured are believed to be low English proficient (LEP) (Wilson et al., 2005). English proficient status patients negatively affected the rehabilitation team's ability to diagnose, counsel, educate, and provide quality rehabilitation service (Neumann et al., 2010; Clarke, 2013).

A study by Wilson et al, suggested that an increasing number of language-concordant physicians might reduce language barriers and improve the quality of care for LEP patients (Wilson et al., 2005).

4.4 Environmental factors

In this study, the majority of the respondents (73.5%, 63.5%) voted for agreeable to both bigger follow-up gaps and difficulties to assess healthcare service (Table 6). This finding is supported by a study conducted in South Africa as well. Patients often struggled to follow up for prosthesis rehabilitation after discharge from inpatient rehabilitation due to some unforeseen circumstances such as lack of transportation and bad weather. These circumstances require patients to make use of public transport or request somebody to send them to attend clinics or follow-up at the hospital, which the majority of the patients refused to do so to avoid troubling others (Ennion & Rhoda, 2016; Stuckey et al., 2020).

4.5 Other factors

Respondents (70.0%) in this study highlighted that there are limited funds and resources when providing prosthesis rehabilitation (Table 7). Previous studies have noted that there is a lack of sufficient prosthetists being trained to meet the growing demands of persons with lower limb amputation in developing countries (Pearlman et al., 2008; Sanders, 2020). Other than that, the study carried out in South Africa on prosthesis rehabilitation and the recent guidelines on "rural-proofing policy and resourcing for health in rural areas" also reported similar results (Rural-Proofing for Health: Guidelines, 2015; Ennion & Rhoda, 2016). Considering the increased demand for rehabilitation services in rural settings owing to the increased incidence of disabilities, however, few rehabilitation therapists were employed hence the

shortage of therapy staff is to be a concern (Wilson et al., 2009; Sanders, 2020). This problem is then leading to high workload (55.5%), emotional stress (53.5%), and high physical demand (81.5%) to the therapists in charge, where the majority of the respondents in this study were also agreed with the statement (Table 4). As a result of these stresses, the therapist in charge might be discouraged to continue to work in that setting or suffer burnout (Ennion & Rhoda, 2016). Among the respondents, 67.0% have experienced treating patients with prosthesis problems as shown in Table 7. External evidence in support of the present study finding is the study done in the Netherlands regarding the functional performance, participation, and autonomy after discharge from prosthetic rehabilitation are their autonomy outdoors and family role (Van Twillert et al., 2014). It is proved that the patients' satisfaction level towards their prosthetic limbs can affect rehabilitation interventions (Webster et al., 2012). To overcome this barrier, a study done in Australia proved that introduction of the interim prosthetic program (IPP) successfully reduced time to all primary rehabilitation (Hordacre et al., 2013).

Conclusion

Prosthesis rehabilitation was a vital process for amputees to lower the mortality rate and improve or maintain the general quality of life of the patient. There were several barriers faced by physiotherapists during prosthesis rehabilitation, which can be categorized into patient factors, healthcare provider's factors, cultural factors, environmental factors, as well as other factors. This study also created some ideas on modifications that could be done to facilitate prosthesis rehabilitation, including enhanced planning of a comprehensive amputation rehabilitation program, increased investment, improved planning and communication between medical units involved. Furthermore, recruiting different races and incorporating different languages in rehabilitation could be a viable option to address the identified challenges during prosthesis rehabilitation.

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