



Research Article

ASSESSMENT OF PHYSICAL THERAPISTS AND OCCUPATIONAL THERAPISTS' COMPLIANCE TO EARLY MOBILITY FOR POST-SURGICAL PATIENTS IN MULTICENTERS

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ABSTRACT

Introduction: Early Mobility (EM) is considered as an important element of post-surgical care which implemented after the patient go under operation within 24 to 48 hours as an average. It has been approved that early mobility has a lot of benefits such as increase circulation, reduce back pain, reduce length of stay, reduce pressure ulcers, and improve pulmonary function. Because of the importance of early mobility, this study aims to measure physical therapists and occupational therapists' compliance to early mobility for hospitalized post-surgical patients in National Guard Health Affairs (NGHA). Also, to find out the background information and difficulties regarding implementing early mobility.

Methodology: Observational, qualitative, and survey based study conducted at five medical cities in Riyadh, Jeddah, Alahsa, Dammam and Almadinah under National Guard Health Affairs in Saudi Arabia. The questionnaires were sent through e-mails to 70 therapists after obtaining the inform consent. The study includes licensed physical and occupational therapists, and excludes interns who work under supervision. The collected data is interred in EXCEL and analyzed in SPSS (version 22)

Results: Out of 70 therapists, 63 are compliant to implement early mobility, however, only 7 of them sometimes implement EM. 92% of the respondents confirmed that early mobility is proposed as a part of standard of practice. Regarding the therapists' knowledge, most of them agreed that early mobility is applied as soon as the patient is medically stable. With respect to early mobility barriers, hemodynamic instability is the most selected options of the patient barriers. For institution barriers, no written guidelines or protocols is the most chosen option. Limited staffing, and safety concern are the highest selected options of provider barriers.

Conclusion: The majority of physical therapists and occupational therapists are compliance to early mobility for post surgical patients in all medical cities under National Guard of Health Affairs.

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INTRODUCTION

Post-surgical care (PSC) is the care that starts directly after surgery and can be resumed after the patient is discharged from hospital¹. Assessment, diagnosis, planning, intervention, and the evaluation of outcomes are the components of PSC. Determining the appropriate care depends on the patient's health status and types of surgeries that has been done. One-day surgery is one of the common surgery types that causes adverse effects as the patient is discharged to home immediately one day after the surgery without having PSC.

If any adverse effects occur, the patient will be referred to the hospital to be provided with the optimal care². Post-surgical care includes pain control, wound care, monitoring, and early mobilization, which will be discussed further in more details.

Post-surgical immobilization and mobilization are considered to be types of care provided to the patients. Post-surgical immobilization care (rehabilitation), such as using splinting, casting on a target limb, or total body positioning are used to prevent further complications that can be caused by body movement³. In addition, in a conversation with N. Alsulaiman, (February 25, 2016) it has been observed that people with general health problems, chronic diseases, and post-operation are at a higher risk of complications caused by immobilization. The result of immobilizing these people may lead to an extended duration of hospitalization and therefore the costs spent on hospitalization. Also, it can contribute to a poor

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quality of life^{4,5}. Thus, mobilization is extremely important in order to prevent post-surgical complications⁶. It has been suggested that after surgery, the patient needs to be mobilized or actively mobile at least 24 to 48 hours of post-surgical day (4). Early mobilization care includes passive range of motion, active range of motion, sitting out of the bed, and walking. Clinical evidences have indicated the importance of certain types of Early Mobility (EM) after specific surgeries. Earlier studies found that early ambulation was applied within 24h after total knee replacement surgery to 97 out of 193 patients, and the possibility of having deep venous thromboembolism (DVE) was minimal for those with early ambulation⁷. Moreover, in another research, it has been shown that hospital-acquired pneumonia (HAP) is significantly decreased with patients to whom early mobility is applied⁸. Also, less back pain is experienced with experimental group (EG) to whom EM is implemented after four hours of bed rest following cardiac cauterization surgery compared to those who were mobilized after 24 h of the surgery⁹. In another study done to test the fast-track intervention program (early education, early ambulation, early diet) for patients after laparoscopic colorectal surgery found that the EG (n=100) have a decreased length of hospital stay from 4-5 days compared to the control group (CG) (n=100)¹⁰. In addition, decreased rehabilitation time by an average of 15 days with 24 surgically corrected foot-drop patients who underwent EM with active motion was observed¹¹. Moreover, in nursing textbook, the benefits of early mobility include the stimulation of circulation, increased muscle tone, increased independence and improved pulmonary function^{9,12}. These evidences support the importance and the benefits of implementing EM to post-surgical patients, yet OTs and PTs role in applying EM is not clear.

Although there are several benefits of early mobilization for hospitalized post-surgical patients, therapists may encounter barriers that prevent them from applying this post-surgical care. A survey done about early mobilization in Canadian ICU for acute rehabilitation patients found that the barriers are divided into institutional, provider, and related-patient's barriers^{13,14}. The Absence of guidelines and inadequate tools are considered institutional barriers which prevent these therapists to implement EM. On the other hand, provider barriers focus on limited staffing and insufficient EM training staff⁵. However, most PT's have believed that medical instability is considered as an important patient-related barrier, and agreed that even obesity played a major role^{14,16}.

METHODOLOGY

The study is an observational, qualitative, and survey base conducted at the rehabilitation areas of multi-medical cities under National Guard Health Affairs in Kingdom of Saudi Arabia namely Riyadh, Jeddah, Alahsa, Dammam, and Almadinah.

This study include physical therapists, occupational therapists, physical therapists' assistants and occupational therapists' assistants of both genders who are licensed and work in National Guard Health Affairs in the five cities at in-patient rehabilitation services. On the other hand, the study excluded the physical and occupational therapists who work at out-patients, and interns work under supervision or under training. With a population of 80 physical therapists and occupational therapists working under NGHHA, the sample size was fixed as 70 after considering a margin of error of 5% and

confidence level of 95%. The selection of the participants was done through using simple random sampling. Suitably standardized questionnaire was used to collect the data.

The questionnaires were sent to participants' E-mail by the rehabilitation supervisors for each medical city in order to allow them to take their time to answer it. However, in Riyadh, the questionnaires were distributed manually by one therapist to the other therapists. Data with respect to close ended questions of demography, compliance to early mobilization, background information about early mobilization, and the barriers that therapists encounter have been also collected. The informed consent is provided prior to each questionnaire. Pre-testing method was used to check whether the questionnaire was clear and understandable, and to check for the wordings. We distributed the questionnaire to be tested for 10 respondents, and we asked them about their feedback to be considered.

For data collection, firstly, we sent the questionnaires to all medical cities' rehabilitation supervisors. Since this type of data collection is well-known to have low response rate, we had to send the questionnaires four times in some cities before we got their responses, therefore we were able to collect all questionnaire after one month and two weeks of sending the emails. From Riyadh, there were 35 respondents, Jeddah 23 respondents, Alahsa 5 respondents, Dammam 5 respondents and from Almadinah 2 respondents.

Collected data was entered to EXCEL after obtaining every questionnaire, and the analysis was done using SPSS (version 22) after the cleaning and organizing of the data. Data are presented in seven tables and two figures. Frequencies and percentages were used for categorical variables. Continuous variables were described as mean and standard deviation (SD).

RESULT

Demographical data are represented with respect of male and female. Chi square test and P value are calculated for each section. There were 27 therapists aged between 21-30 years, 31 therapists aged between 31-40, and 12 therapists aged between 41-50. For education, there were four sub categories of diploma, undergraduate, post graduate diploma and post graduate.

Figure 2 shows the number of therapists in regard to work areas of Burn Rehabilitation, Cardiac Rehabilitation, Acute Neuro Rehabilitation, Acute Orthopedic Rehabilitation, Acute Medical cases, ICU, PICU and others. The majority of the respondent (51.4%) are working in Acute Orthopedic rehabilitation, and (42.9%) of the respondents work in Acute Neurological Rehabilitation. Whereas only (10%) of the respondents work in cardiac rehabilitation. Other sections include respondents from Musculoskeletal Unit, Pediatric Unit, Trauma and Stroke Unit.

Specialty of work and Educational status of respondents

In table 2 the numbers are shown to represent the specialty of therapists in relation to educational status of the respondents. Most of the therapists (32 therapists out of 43) who work in rehabilitation centers are with undergraduate degree, 7 therapists out of 43 working in rehabilitation centers have post graduate degree. Also, in regarding to the whole sample size, 54 therapists have undergraduate degrees. On the other hand,

there are two therapists who have undergraduate degree working in intensive care unit.

Specialty	Education				Total
	Diploma	Undergraduate	Postgraduate diploma	Post graduate	
Rehabilitation Centers	3 (75.0)	32 (59.3)	1 (100)	7 (63.6)	43 (61.4)
Acutemedical cases	0 (0.0)	1 (1.9)	0 (0.0)	1 (9.1)	2 (2.9)
ICU	0 (0.0)	2 (3.7)	0 (0.0)	0 (0.0)	2 (2.9)
>1 area	1 (25.0)	14 (25.9)	0 (0.0)	1 (9.1)	16 (22.9)
Others	0 (0.0)	5 (9.3)	0 (0.0)	2 (18.2)	7 (10.0)
Total	4 (100.0)	54 (100.0)	1 (100)	11 (100)	70 (100.0)

Compliance of therapists to Post Surgical Early Mobility

In table 3, the results show compliance of the therapists to EM, number of patients mobilized per therapists, and weather the EM. Regarding compliance of the therapists to EM, 90% of the therapists answered that they are compliant with EM, and only 10% of the whole sample size answered with sometimes. Moreover, there are 25 therapists mobilize 1-3 patients per day, 24 mobilize 4-6 patients per day and 21 mobilize more than 6 patients per day. The relationship between therapists and number of patients mobilized per day is statistically significant at P=0.001 and chi squares as 13.61. 92.8% of the respondents confirm that the EM is proposed as a part of standard ofpractice, whereas only 7.15% of them stated it is not.

Particulars	Therapists (n= 70)		Total	X2	P value
	OT (n= 19) No.	PT (n= 51) No.			
Post surgical patients were mobilized early				0.97	0.324
• Yes	16 (25.4)	47 (74.6)	63 (100)		
• No	-	-	-		
• Sometimes	3 (42.9)	4 (57.1)	7 (100)		
The number of Post surgical patients mobilized per day:				13.61	0.001*
• 1-3	13 (52.0)	12(48.0)	25(100)		
• 4-6	5 (20.8)	19(79.2)	24(100)		
• >6	1 (4.8)	20(95.2)	21(100)		
Early mobility is proposed as a part of standard of practice:				0.14	0.709
• Yes	18 (27.7)	47 (72.3)	65 (100)		
• No	1 (20.0)	4 (80.0)	5 (100)		

Knowledge of therapists with respect to early mobility and its benefits

In table4, knowledge of application of early mobility and benefits of early mobility are represented in regards to occupational therapists and physical therapists. With respect to the knowledge of application of early mobility, 67% of the answers were selected to be as soon as the patients is medically stable, whereas, only 2.8% of the answers are selected to be as soon as the patient is extubated.

About the benefits of early mobility, 81% of the therapists selected all of above option and that include reduce complications, decrease back pain, minimized deep vein thrombosis increase blood circulation, decrease rehabilitation time, decrease length of stay, and support functional status of the patients. However, only 1.4% answered with decrease back pain and minimize deep vein thrombosis.

Particulars	Therapists (n= 70)		Total
	OT (n= 19)	PT(n= 51)	
Knowledge of application of early mobility*			
1 As soon as the patient's cardio-respiratory status has stabilized	3(15.8)	20 (39.2)	23 (33)
2 As soon as the patient is extubated	-	2 (3.9)	2 (2.9)
3 As soon as the patient is medically stable	16 (84.2)	31(60.8)	47 (57)
Benefits of early mobility*			
1 Reduce complications	3 (15.8)	4 (7.8)	7 (10)
2 Decrease back pain	-	1 (2)	1 (1.4)
3Minimized deep vein thrombosis	1(5.3)	-	1 (1.4)
4 Increase blood circulations	1(5.3)	1 (2)	2 (2.9)
5 Decrease rehabilitation time	2 (10.5)	2 (3.9)	4 (5.7)
6 Decrease length of hospital stay	2 (10.5)	4 (7.8)	6 (8.6)
7 Support functional status of the patient	3 (15.8)	2 (3.9)	5 (7.1)
8 all of the above	15 (78.9)	42 (82)	57 (81)
Others	-	1 (2)	1 (1.4)

Different types of patients mobilized by therapists

Table 5,and Fig1:show the Different types of medical conditions mobilized by therapists. the numbers describe the different types of patients mobilized by therapists. Knee replacement patients were the most type of patients frequently mobilized by 57 % of the therapists. Stroke patients serve as the second most type of patients frequently mobilized by16% of the therapists. On the other hand, foot-drop patients serve as the least type of patients frequently mobilized by 3.9% of the therapists. Other types of patients frequently mobilized by the therapists include hip replacement patients (16%), deep vein thrombosis (5.9%), cardiac catheterizationpatients (7.8%), burn patients (5.9%), thoracio-lumbar spinal injury (5.9%), laparoscopic colorectal patients (7.8%), and cervical spinal injury(3.9%).

Type of patient	Therapists (n= 70)		Total
	OT (n= 19)	PT(n= 51)	
1 Knee Replacement patients	6 (31.6)	29 (56.9)	35 (57)
2 Hip replacement patients	4 (21.1)	8 (15.7)	12 (16)
3 Cardiac chatherisation patients	1 (5.3)	4 (7.8)	5 (7.8)
4 Laparoscopic colorectal patients	-	4 (7.8)	4 (7.8)
5 Foot-drop patients	1 (5.3)	2 (3.9)	3 (3.9)
6 Burn patients	2 (10.5)	3 (5.9)	5 (5.9)
7 Stroke patients	11 (57.9)	8 (15.7)	19 (16)
8Thoracio-lumbar spinal injur	2 (10.5)	3 (5.9)	5 (5.9)
9 Cervical spinal injury	2 (10.5)	2(3.9)	4 (3.9)
10 Deep vein thrombosis	4 (21.1)	3 (5.9)	7 (5.9)
Others	-	4 (7.8)	4 (7.8)

Various types of mobilizations used by the therapists

Table 6 and Fig2: shows the various types of mobilizations used by the therapists. The majority of the therapists (57%) have chosen the option "all of the above", then the ambulation serves as the second most chosen option regarding the type of mobilization used by the therapists. On the other, only one therapist (1.4%) has chosen the "others" option in which the physical therapist has mentioned (dynamic balance, electrotherapy). Other types of mobilization used by the

therapists include active range of motion exercise AROM (11%), passive range of motion exercises PROM (10%), sitting out of the bed (8.6%), standing (2.9%), and bed position (5.7%).

Type of mobilization	Therapists (n= 70)		Total
	OT (n=19)	PT(n= 51)	
1 Ambulation	4 (21.1)	11(22)	15 (21)
2 Active range of motion exercise AROM	6 (31.6)	2 (3.9)	8 (11)
3 Passive range of motion exercises PROM	6 (31.6)	1(2)	7 (10)
4 Sitting out of the bed	6 (31.6)	-	6 (8.6)
5 Standing	1 (5.26)	1 (2)	2(2.9)
6 Bed position	3 (15.8)	1 (2)	4 (5.7)
7 all of the above	8 (42.1)	32 (63)	40(57)
Others	-	1 (2)	1(1.4)

Patients barriers in providing early mobility

In table 7, the distribution of numbers displays the different results regarding the type of barriers for providing early mobility which are divided into three categories including patient barriers, institutional barriers, and provider barriers. In the matter of patient barriers, the majority of the therapists (31%) have chosen hemodynamic instability as the problem they encounter when mobilizing the patients, the second most chosen option regarding patient barriers is refused consent (30%) as the table shows, whereas the least chosen option is attachment dislodgement as only one therapist has chosen this option.

Serial No.	Barriers	No. (n=70)
1	Refused consent	21 (30)
2	Impending procedure	4 (5.7)
3	Attachment dislodgement	1 (1.4)
4	Weight/size	13 (19)
5	Respiratory instability	14 (20)
6	Hemodynamic instability	22 (31)
7	Agitation	15 (21)
8	Reduced LOC	13 (19)
9	Level of sedation	10 (14)
10	Medical orders	6 (8.6)

Institutional barriers in providing early mobility

Concerning the institutional barriers, the majority of the therapists (34%) have chosen the "no written guidelines or protocols" option, the second most chosen option by the therapists is "physician orders required prior to mobilization" (30%), whereas only 2.9% of the therapists have chosen the "No clinician champion/advocate " option.

Serial No.	Barriers	No. (n=70)
1	No written guidelines or protocols	24 (34)
2	Insufficient equipment for early mobilization	11 (16)
3	Physician orders required prior to Mobilization	21 (30)
4	No clinician champion/advocate	2 (2.9)
5	Not enough physical space	7 (10)
6	Routine bed rest orders on ICU admission	3 (4.3)
7	Perceived to be an expensive intervention	-
8	Others	9 (13)

Provider barriers in providing early mobility

Finally, regarding the provider barriers, limited staffing (manpower) and safety concerns were the most chosen options by the therapists in which they have the same results of 30% as the table shows. The second most chosen option is poor

general communication (14%), and the least two chosen options are EM priority but not supported and slow to recognize since both of them have the same results (1.4%)

Serial No.	Provider barriers	No.(n=70)
1	Limited staffing (manpower)	21 (30)
2	EM is supported but not priority	2 (2.9)
3	EM priority but not supported	1 (1.4)
4	Poor communication handover	3 (4.3)
5	Poor general communication	10 (14)
6	Lack of coordination	6 (8.6)
7	Slow to recognize	1 (1.4)
8	Lack of decision making power	2 (2.9)
9	Conflicting perceptions	4 (5.7)
10	Safety concerns	21 (30)
11	Inadequate training	7 (10)

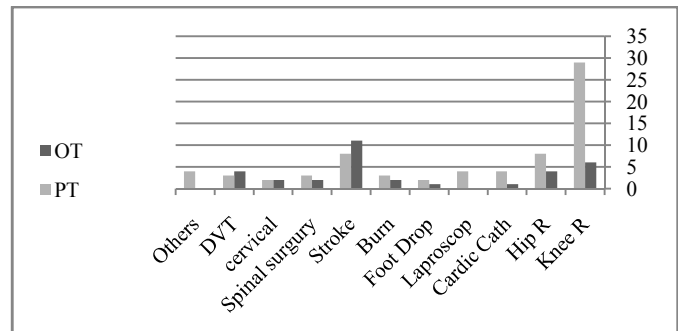


Fig 1 Shows the Different types of mobilized medical conditions.

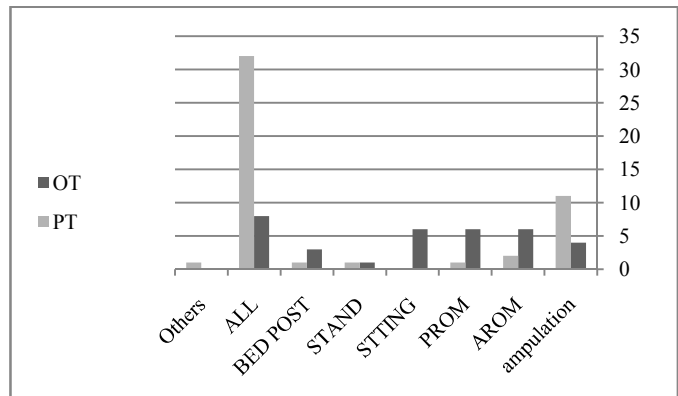


Fig 2 Various types of mobilizations used by the therapists

DISCUSSION

Due to the importance of early mobility for post surgical patients, physical and occupational therapists' compliance is crucial in order to get the full benefit. This study emphasizes the compliance of therapists to early mobility, knowledge of the therapists regarding early mobility and the barriers they encounter when implementing early mobility. After asking the therapists about whether they are compliant with early mobility, the majority of the therapists answered with yes, only few of them answered with sometimes, and none of them answered no. The positive responses of the therapists are result of the existence of early mobility implementation in the standard of practice. However, after calculating the p value for the question, the result was not statistically significant, and that can be due to the small sample size of the study.

Knowledge of the Therapists to Early Mobility

Regarding the number of patients mobilized per day in respect to physical and occupational therapists, the (p value) was significant, so there is a strong relationship between the number of therapists and the number of patients being

mobilize. After testing the knowledge of the therapists regarding early mobility, most of the therapists showed a high level of knowledge regarding the benefits of the early mobility. Most respondents believed that it should be implemented as soon as the patients are medically stable. On the other hand, a research conducted in Canadian Intensive Care Unit¹⁴ regarding implementing acute rehabilitation, which includes early mobility, clinicians believed they should start acute rehabilitation as soon as the cardio-pulmonary status is stable. Moreover, regarding the type of patients being mobilized, knee replacement patients were the highest, and that can be due to the high number of therapists who work in orthopedic rehabilitation which is 51.4%.

Barriers of Implementing Early Mobility

The research also highlights the difficulties encountered by therapists when implementing EM. The major patient's barriers for the therapists are hemodynamic instability and refused consent. Whereas, Koo (2012)¹⁷ found that the most chosen patient's barriers are hemodynamic instability, obesity and level of sedation in regard to physical therapists' answers. No written guidelines, physician orders required prior to mobilization are the greatest institution barriers that have been noticed, which are similar to the results obtained from the research conducted in Canadian ICU. Lastly, limited staffing and safety concerns are considered as main provider barriers. Despite the Canadian survey, the results were limited staffing, lack of coordination and lack of communication between the providers. Due to the small sample size of the respondents, the main results of the research are not statically significance.

limitation of the study was the small sample size due to the small population of 80 therapists in all five cities which may contributed to the insignificant results, and since there are not enough studies investigating in the compliance of occupational and physical therapists to early mobility, further research could be done with a larger sample size. Another limitation was because of the far distance and different working areas of the therapists, the contacting was via emails and due to the confidential responses, we could not track the missing data.

CONCLUSION

This study shows that early mobility is performed by nearly all occupational and physical therapists in all five National Guard medical cities, and they show a high knowledge of implementing EM. The main barriers by the therapists regarding the patient, institution, and provider barriers are hemodynamic instability, refused consent, no written guidelines, physician orders required to mobilization, limited staffing, and safety concerns. In further studies, the compliance of implementing EM can be assessed by interviewing the patients or involving both therapists and patients into the sample size.

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