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FACTORS INFLUENCING POSTOPERATIVE FUNCTIONAL ABILITY OF NONCOMPLICATED PATIENTS WITH SIMPLE LOWER EXTREMITY FRACTURES

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Introduction

Injuries

- Threats to the health of people especially in low and middle-income countries.
- Contributed 10.1% of the global burden diseases.
- A major cause of disabilities in adults aged 15–49 years (Haagsma et al., 2016)



In Myanmar,

- **Injuries:** third leading cause of hospitalization around the country with a high magnitude of road traffic and farm injuries (Ministry of Health and Sport, 2017).
- **Lower Extremity Fractures (LEF):** top ten injury-related morbidities (Department of Public Health & Department of Medical Services, 2015)



Impacts of Traumatic LEF

- Physical
- Psychological
- Socioeconomic impacts on people and families
- Burden on families, healthcare settings, and the country



- With the aim of early restoration of pre-injury functional ability, simple LEF of working-age adults were surgically reconstructed.
- The earlier the restoration of the functional ability, the more likely the people regained independent and productive daily lives
- To return to work earlier and gain the best possible quality of life (Associates in Physical Medicine and



- The critical component for health and well-being of people with LEF undergoing surgery---ensuring optimal regaining of people's functional ability
- Even with the overwhelming success of orthopedic procedures-----**postoperative functional improvement varied widely due to many factors** (Ayers, Franklin & Ring, 2013).



Empirical evidence from international literature showed many **influencing factors on postoperative functional ability (POFA) of people with LEF**

- **educational status** (Feldman, Dong, Katz, Donnell-Fink, & Losina, 2015)
- **psychological distress** (Kellezi et al., 2017)
- **hospital setting** (American Academy of Orthopedic Surgeons, 2016)
- **quality of discharge teaching** (Mayich et al., 2013)
- **Pain** (Hida et al., 2018)
- **satisfaction with care** (Baumann et al., 2011)



- **Few published studies** have highlighted this issue among **Myanmar**.
- This study aimed to identify **influencing factors on the POFA of Myanmar with LEF**.



The guided framework: Donabedian model

(Donabedian, 1966)

- Information about care service and care quality could be identified from **three associated domains**.
- Good **structure** should promote good **process** and good process should in turn promote good **outcome**.



- **Incorporating patient characteristics into the Donabedian model** provides better understanding of functional ability among people undergoing orthopedic surgery (Coyle & Battles, 1999)
- Structure, process, **and immediate outcome factors influenced on targeted outcomes** (Bosse et al., 2013; Moore, Lavoie, Bourgeois & Lapointe, 2015).



Methodology

- **Research Design:** A predictive correlational study
- **Sample:** Consecutively enrolled 178 working-age adults who were scheduled for undergoing surgery of simple LEF at three orthopedic care settings in Myanmar.



Inclusion criteria

- 18 and 59 years with unilateral, isolated LEF (femur or tibia, or both tibia and fibula)
- first experience of LEF and undergone one-step surgical fixation;
- able to perform ADL independently before injury;
- able to communicate with Myanmar language



Exclusion Criteria

- People with a history of psychological illness before the injury
- Pregnant
- LEF with intra-articular involvement
- Multiple trauma or head injury or spinal cord injury,
- Severe medical conditions that affect functional ability (Myocardial Infarction, Tuberculosis, AIDS, Arthritis)



Calculated by using G*Power program

- Effect size of .10
- Power of .80
- Alpha of .05
- 6 predictors
- The minimum sample needed ----- 143
- Being a prospective correlational study, a dropout rate of 25% was added-----178



Ethical Consideration

- **Approval**
 - Ethical Committee, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand (ID 11-60-84)
 - Ethics Review Committee, Department of Medical Research, Ministry of Health and Sports, Myanmar (Ethics/DMR/2018/005)



- **Informed** to the participants
 - Objectives and procedures and
 - Right to refuse to participate or withdraw at any time without detriment to the care and treatment
 - No harmful or life-threatening risks
- All the participants' identities ---**confidential**
- **Consent**



Instruments:

- Patient Data Record Form
- Impact of Event Scale-Revised (Weiss & Marmar, 1997)
- Quality of Discharge Teaching Scale (Weiss et al., 2007)
- Numeric Rating Scale-Pain
- Patient Satisfaction with Nursing Care Quality Questionnaire (Laschinger, Hall, Pedersen & Almost, 2005)
- Lower Extremity Measure (Jaglal, Lakhani & Schatzker,



- **Permission** from the owner of five instruments
- **Translation** (WHO instrument translation and adaptation process) (WHO, n.d)



Data Collection: An interview method and data extraction from medical record

Interview:

- When consented----PDRF and IES-R
- At discharge ---QDTS, NRS-P and PSNCQQ
- Six weeks after surgery LEM.



Data Analysis

SPSS for Windows version 18 (Software License Download @ Mahidol).

- Descriptive statistics
- Kolmogorov-Smirnov test
- Spearman's correlation analysis
- Assumptions: normality, linearity, multicollinearity and autocorrelation
- Hierarchical regression analysis



Dummy coding variable

- Hospital setting (to represent three groups of people with LEF from the three hospitals in a single regression equation, and to be meaningfully interpreted its prediction on POFA)
- Reference category: Hospital setting C (lowest number of people with acute traumatic LEF was admitted there and mainly focused on people with cold and degenerative orthopedic conditions)



- Psychological distress and pain with activity had a negative correlation with POFA ($r = -.330, p < .01$; $r = -.153, p < .05$, respectively).
- Hospital setting B and quality of discharge teaching had positive correlations with POFA ($r = .518, p < .01$; $r = .263, p < .01$, respectively).



Four-steps hierarchical multiple regression

- **First:** Patient characteristics (educational status and psychological distress)
- **Second:** organizational characteristic (hospital setting) was regressed after controlling patient characteristics



- **Third:** process of care (quality of discharge teaching) was regressed after controlling patient characteristics and organizational characteristic.
- **Fourth:** immediate outcomes (pain with activity and satisfaction with care) were regressed after controlling patient characteristics, organizational characteristic, and process of care



- **All four models were significant (the final model demonstrated insignificant F_{change})**
($F_{\text{change}}(2, 170) = 2.66, p = .073$)



- **Model 1** explained 13.1% of variance in POFA.
psychological distress---- a significant predictor
- **Model 2** explained additional 23% of variance in POFA
hospital setting ----a significant predictor
- **Model 3** explained additional 1.4% of the variance in
POFA
quality of discharge teaching --- a significant predictor



Model 4, explained additional 1.9 % of the variance in POFA

pain with activity----a significant predictor

All predictors explained 39.4% of the variance in POFA

Educational status and satisfaction with care -----
insignificant predictors in the models.



The findings supported Donabedian model

- improvement in the structure should lead to good process, and in turn good outcomes
- incorporating patient characteristics gave more understanding of the linkage between process and outcome



This study added the finding

- immediate outcomes significantly correlated and predicted targeted outcome, POFA.



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Discussion



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Structure



- **Patient characteristics:** psychological distress showed significant predictability on POFA, while educational status was insignificant predictor.
- Psychological distress caused fear of re-injury and avoiding activities. Psychological distress also caused a negative mood to the people that may disturb functioning.



- **Organizational characteristic:** Hospital setting significantly predicted POFA.
- Hospital B showed the most robust prediction in POFA.

Hospital B

- Exercised the close collaboration between orthopedic surgeons and nurses in the daily management of patients.
- Nurses in Hospital B were motivated strongly by research activities.
- Patient care --more evidence-based



- The larger the hospital, the more delay to response patients' health care needs ----- largely affected patient satisfaction and functional ability



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Process of care



- **Quality of discharge teaching** was a significant predictor.
- Because the people undergoing orthopedic surgery received discharge information from the nurses and/or other healthcare providers with/without an instruction
- patients had better understanding in performing rehabilitation exercises and daily activities
- lead to positive results in reinstating physical function



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Immediate Outcome



- Pain with activity was a significant predictor.
- When people with LEF performed lower extremity function and experienced pain-----intentionally restrict activities.
- Early functional ability rehabilitation -----hinder
- Functional ability improvement -----slower.



- **The findings of this study supported**
- good structure → good process → good outcomes
- incorporating patient characteristics gave more understanding of the linkage between process and outcome.
- **This study added the findings** that immediate outcomes significantly correlated and predicted targeted outcome, POFA.



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Thank You Very Much