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 of 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 Rehabilitation. (n.d.)
• 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

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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 \( F_{\text{change}} \)) \( (F_{\text{change}} (2, 170) = 2.66, p = .073) \)
• **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.
Discussion
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
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
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.
References


Thank You Very Much