The Impact of Medication Therapy Management Intervention on Patient-Reported Outcome (PRO) Measures in Patients with Myocardial Infarction (MI)

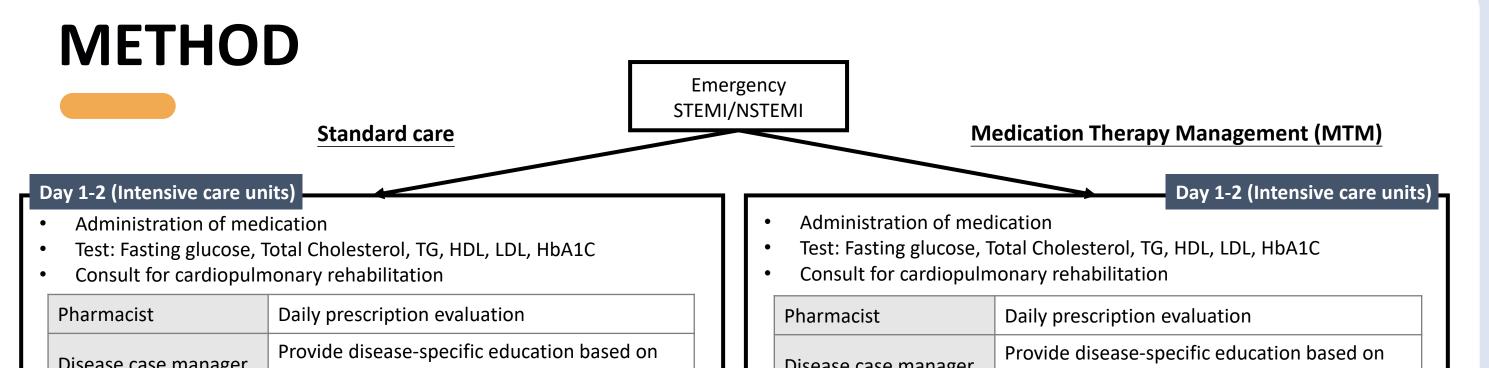
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BACKGROUND

Myocardial infarction significantly impacts patients' health and well-being worldwide. Each year, nearly 3 million people experience MI,¹ with a prevalence of 50.7 per 100,000 persons in Taiwan.² Effective post-MI management hinges on appropriate medication use and adherence. MTM interventions, designed to optimize medication therapy and improve patient outcomes, have shown promise in enhancing clinical outcomes, including better control of modifiable risk factors³ and improved medication adherence.^{4,5}

While these clinical benefits are significant, understanding patients' subjective experiences, as captured by patient-reported outcomes (PROs), is equally essential for providing comprehensive post-MI care in today's patient-centered healthcare environment. Despite the demonstrated effectiveness of MTM in improving clinical outcomes, the impact of MTM on the subjective experiences of MI patients remains unexplored. The Seattle Angina Questionnaire (SAQ) is a validated tool for assessing clinical outcomes and quality of life in patients with coronary artery disease.⁶ The SAQ comprises five domains: physical limitation, angina stability, angina frequency, treatment satisfaction, and quality of life. While the SAQ is valuable for capturing PROs, the specific effects of MTM interventions on these outcomes in MI patients remain unclear.





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OBJECTIVE

This study aimed to investigate the effectiveness of MTM interventions in improving clinical and qualityof-life outcomes among patients with MI.

METHOD

Study Setting

- Department of Cardiology, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan
- It has a total of 1,718 beds, including both acute and intensive care beds, providing comprehensive clinical care to a wide range of patients. It is one of the most representative hospitals in southern Taiwan.
- In 2021, this hospital received Clinical Care Program Certification Acute Myocardial Infarction (CCPC-AMI) certified by JCI (Joint Commission International)

Study Design

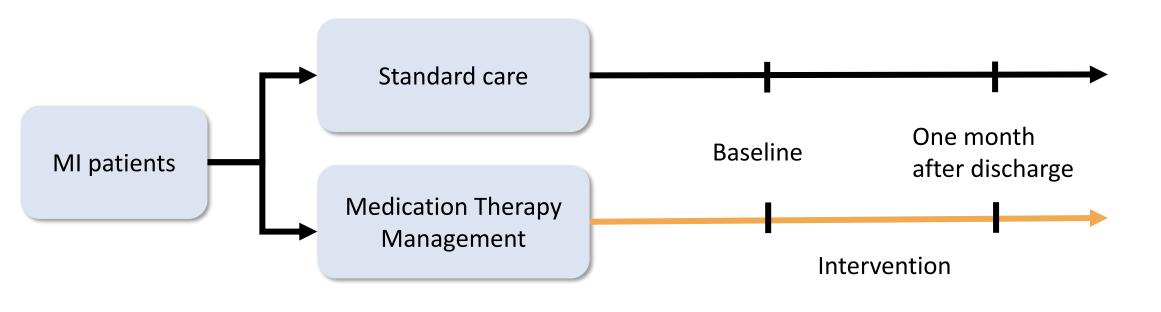
• A two-group, comparative study design was employed

Disease case	manager	patient condition and issue the booklet		Diseas
Dietitian		Proactive visits if malnutrition screening (ICU score ≥ 3)		Dietitia
Smoking ces counselor	sation	Smokers who are willing to participate the program		Smokir counse
Respiratory	therapist	If needed		Respira
Social worke	r	If needed		Social
Psychiatry		If the total score of items 1-5 on the Brief Symptom Rating Scale (BSRS-5) is ≥ 10, or item 6 "suicidal thoughts" is ≥ 2		Psychia

patient condition and issue the booklet				
Proactive visits if malnutrition screening (ICU score ≥ 3)				
Smokers who are willing to participate the program				
If needed				
If needed				
If the total score of items 1-5 on the Brief Symptom Rating Scale (BSRS-5) is \ge 10, or item 6 "suicidal thoughts" is \ge 2				

	ay 3-6 (Intensive care un	its/General ward)	ч г		Day 3-6 (Intensive care units/General ward)				
EchocardiographyContinued cardiac rehabilitation				EchocardiographyContinued cardiac rehabilitation					
	Pharmacist	Evidence-based medication evaluation			Evidence-based medication evaluation + Medication Therapy Management				
	Disease case manager	Provide disease-specific education based on patient condition and issue the booklet		Pharmacist	Pharmacist discharge consultation for special formulations or NOAC + antiplatelet medications				
	Dietitian	Proactive if malnutrition screening (ICU: score ≥ 3 /general ward: score ≥ 4) or consult if patients in need		Disease case manager	Provide disease-specific education based on patient condition and issue the booklet				
	Smoking cessation counselor	Smokers who are willing to participate the program		Dietitian	Proactive if malnutrition screening (ICU: score ≥ 3 /general ward: score ≥ 4) or consult if patients in need				
	Respiratory therapist	If needed		Smoking cessation	Smokers who are willing to participate the				
	Discharge case	If discharge preparation service screening for scores ≥ 5		counselor	program				
	manager	scores 2 5		Respiratory therapist	If needed				
				Discharge case manager	If discharge preparation service screening for scores ≥ 5				
	Discharge day		л – 1 Г		Discharge day				
•	Discharge instructions			Discharge instructions					
•		t with Department of Cardiology nent or Smoking cessation counselor if needed		 Follow-up appointment with Department of Cardiology Rehabilitation Department or Smoking cessation counselor if needed 					
V	Vithin Seven days after d	lischarge	 1 [Within Seven days after discharge				
•	Disease case manager:	on, Smoking cessation counselor if needed Reminder for follow-up appointment, Disease counseling, or referral to specialists	 Follow-up appointment with Department of Cardiology Rehabilitation Department or Smoking cessation counselor if needed 						

1-2 months after discharge



▲ Figure 1. Flowchart of the study design

- Group 1: Standard care
- Group 2: Medication Therapy Management (MTM)

Study Subjects

- Inclusion Criteria:
 - 1. Age \geq 20 years
 - Completion of cardiac catheterization intervention
 - Diagnosed with acute myocardial infarction (ICD-10-CM code: I21)
 - Agree with the service content of this team's care plan
- **Exclusion Criteria:** •
 - Occurrence of major events, such as loss of consciousness, lack of self-care ability, and no rehabilitation potential
 - 2. Have previously completed this team's care plan

Statistical Analysis

- Descriptive analysis
- Analysis of Covariance (ANCOVA) was used to compare changes in SAQ scores between the MTM and control groups, adjusting for baseline SAQ scores.

CONCLUSIONS

This study provides preliminary evidence for the potential benefits of MTM interventions in improving

- Telephone or face-to-face follow-up
- Assessing illness self-care
- Strength counseling or referral to specialists
- Evaluate quality of life and patient experience

1-2 months after dischar

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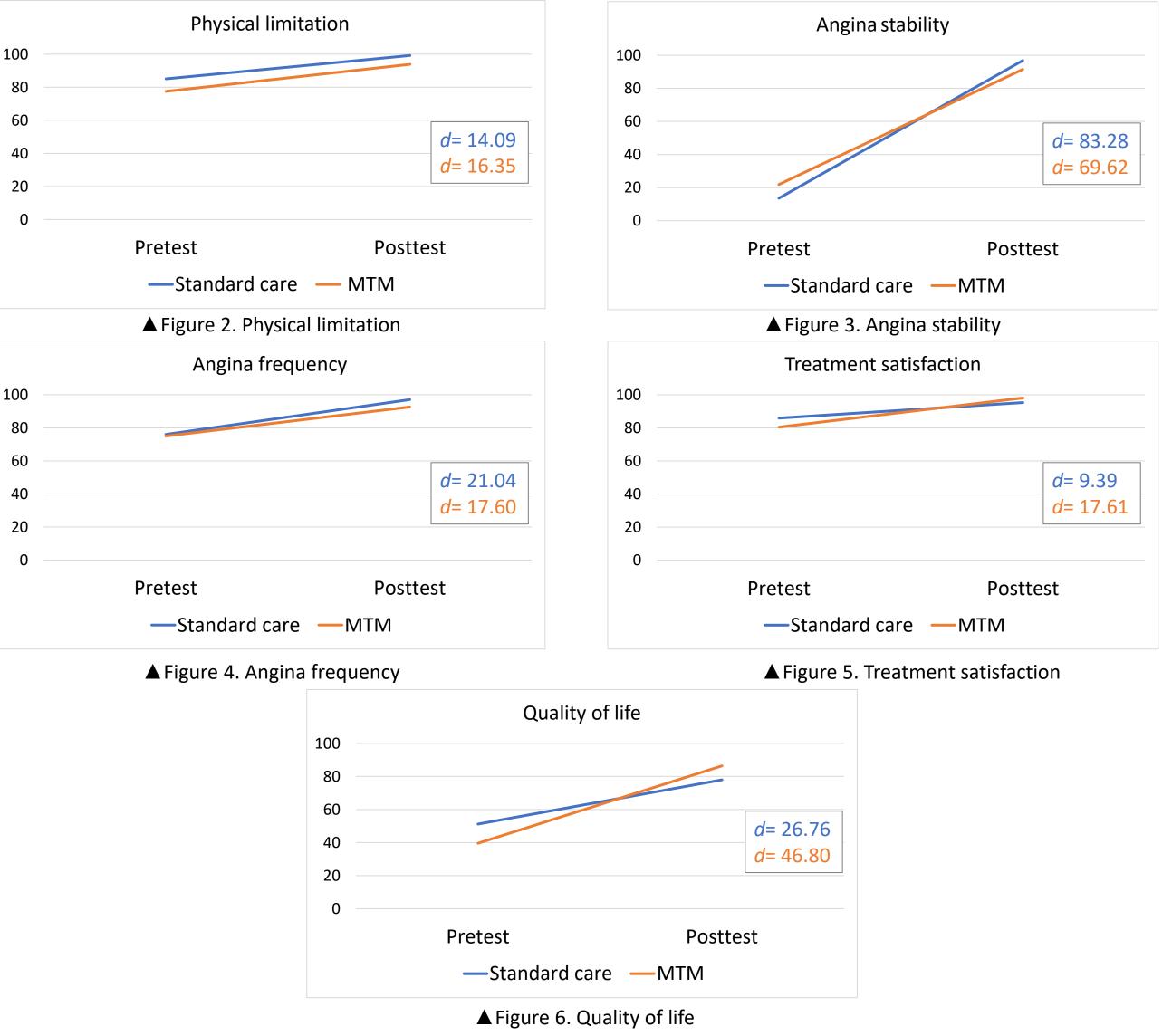
RESULTS

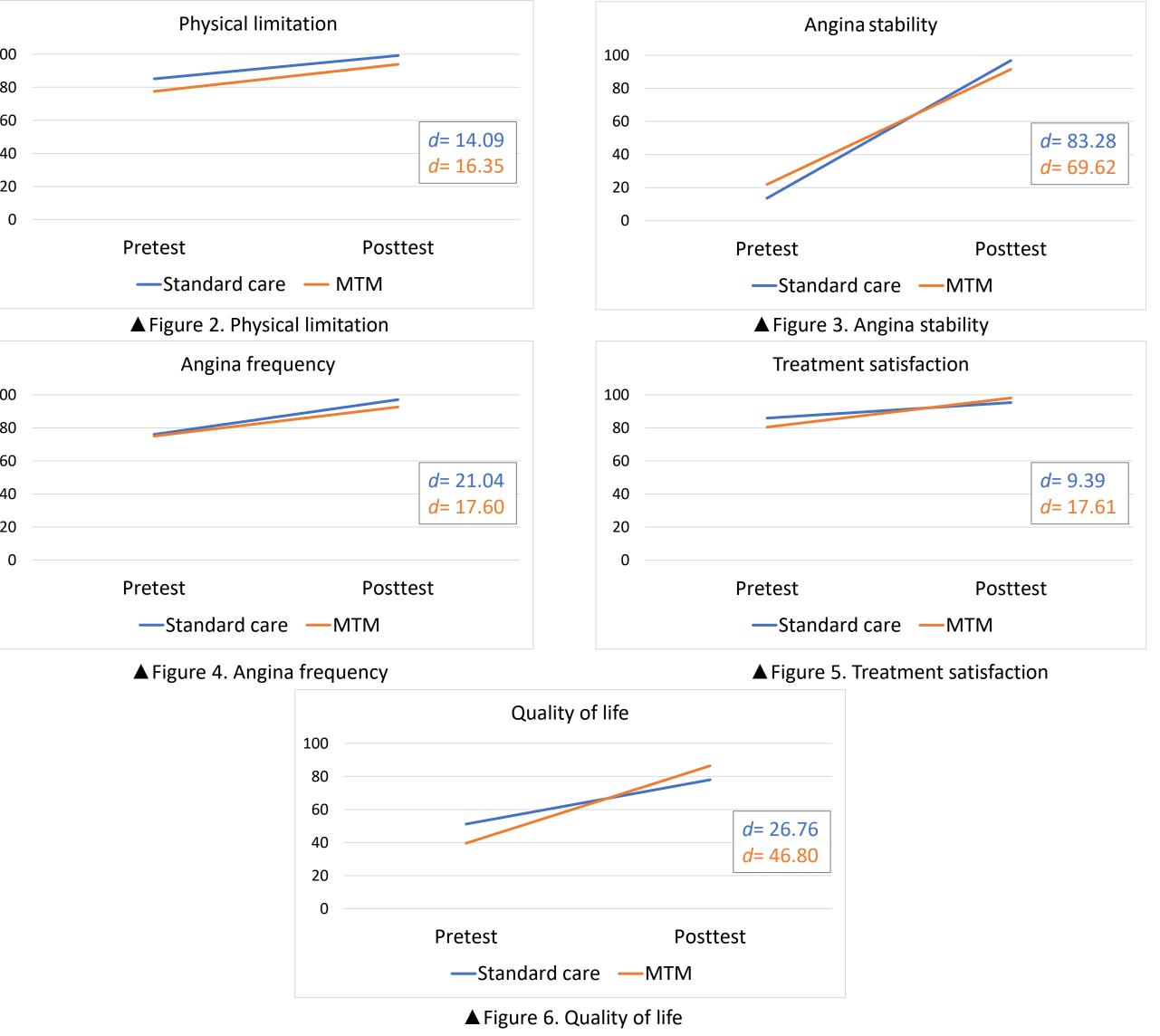
The descriptive analyses showed that patients in the MTM group demonstrated noticeable improvement in all SAQ domain scores compared to the control group after one month. However, the results from ANCOVA revealed that only one SAQ domain (Physical Function) had a statistically significant difference (p = 0.031) in the change between groups.

▼ Table 1. Results of the pre-and post-tests of the two groups in the 5 domains of the SAQ

Group	Standa	ard care	Medication Therapy Management (MTM)							
	Ν	Pretest	Posttest	Difference	Ν	Pretest Mean (SE)	Posttest Mean (SE)	Difference	P value	
		Mean (SE)	Mean (SE)							
SAQ										
Physical limitation	35	85.09 (2.3)	99.18 (1.0)	14.09	8	77.5 (5.5)	93.85 (2.1)	16.35	0.031*	
Angina stability	34	13.57 (2.8)	96.85 (2.5)	83.28	8	21.88 (7.4)	91.50 (5.2)	69.62	0.363	
Angina frequency	34	76.00 (2.2)	97.04 (1.4)	21.04	8	75.00 (4.6)	92.60 (3.0)	17.60	0.189	
Treatment satisfaction	34	85.92 (1.5)	95.31 (1.7)	9.39	8	80.48 (4.9)	98.09 (3.5)	17.61	0.486	
Quality of Life	34	51.19 (3.8)	77.95 (2.9)	26.76	8	39.59 (8.3)	86.39 (6.1)	46.80	0.224	

*: p<0.05





physical functioning, a key aspect of SAQ, in MI patients. Further research is warranted to confirm these findings, explore the impact on other SAQ domains, and investigate the long-term effects and costeffectiveness of MTM in this patient population. Such knowledge can inform the development of comprehensive strategies for optimizing medication management and improving the quality of life for MI patients.

REFERENCES

- 1. Mechanic OJ, Gavin M, Grossman SA. Acute Myocardial Infarction. [Internet]. StatPearls [Internet]. 2024 [cited 2024 Oct 11]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459269/
- 2. Lee CH, Fang CC, Tsai LM, Gan ST, Lin SH, Li YH. Patterns of Acute Myocardial Infarction in Taiwan from 2009 to 2015. Am J Cardiol. 2018;122(12):1996-2004.
- Chiou CC, Tsai TH, Lee CH, Lin CJ, Chung WJ, Hsuch SK, et al. Impact of Pharmacist Interventions on the Long-Term Clinical Outcomes in Patients with 3. Myocardial Infarction. Acta Cardiol Sin. 2019;35(3):290-300.
- 4. Santo K, Kirkendall S, Laba TL, Thakkar J, Webster R, Chalmers J, et al. Interventions to improve medication adherence in coronary disease patients: A systematic review and meta-analysis of randomised controlled trials. Eur J Prev Cardiol. 2016;23(10):1065-1076.
- 5. Nguyen T, Nguyen TH, Nguyen PT, Tran HT, Nguyen NV, Nguyen HQ, et al. Pharmacist-Led Intervention to Enhance Medication Adherence in Patients With Acute Coronary Syndrome in Vietnam: A Randomized Controlled Trial. Front Pharmacol. 2018;9:656.
- 6. Thomas M, Jones PG, Arnold SV, Spertus JA. Interpretation of the Seattle Angina Questionnaire as an Outcome Measure in Clinical Trials and Clinical Care: A Review. JAMA Cardiol. 2021;6(5):593-599.

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Conflicts of Interest: All authors certify that they have no any financial interest and conflict relevant to this project.