Impact of Pharmacist-Led Interventions on Health-Related Quality of Life in Diabetic Patients: Assessment Using EQ-5D Domains and Visual Analogue Scale

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INTRODUCTION

Type 2 diabetes compromises health-related quality of life (HRQoL). Pharmacist involvement through structured education and medication counseling can improve glycemic control and patient-reported outcomes. EQ-5D-5L and EQ-VAS are suitable tools to capture HRQoL changes.

OBJECTIVE

Evaluate the effect of a pharmacist-led educational intervention (via Malaysia's DMTAC program) on HRQoL (EQ-5D-5L domains and EQ-VAS) and HbA1c in adults with T2DM over 12 months.

METHODOLOGY

Design: Prospective, randomized controlled study at two tertiary hospitals in Kedah, Malaysia (July 2018–Nov 2019). Two follow-ups at ~6 months and ~12 months.

Participants: 400 adults with T2DM (HbA1c > 8.0%); after attrition, n=294 completed both follow-ups.

Arms:

- **Control (n=200 at baseline):** usual outpatient care per 2015 Malaysian CPG.
- **Intervention (n=200 at baseline):** usual care + pharmacist-led education (4 structured modules: diabetes basics/targets & self-monitoring, cardiovascular risk, lifestyle changes, and complications/foot care) with clinical review and pharmacist recommendations to physicians.

Outcomes: EQ-5D-5L domains (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and EQ-VAS (0–100); HbA1c at baseline, ~6 mo, ~12 mo.

Analysis: Descriptives; χ^2/Fisher's for categorical; t-tests/ANOVA for continuous; Games-Howell post-hoc; $p<0.05$ significant.

RESULTS

Table 1. Baseline EQ-5D-5L domain distributions in control vs intervention groups (N=400).

Dimension	Control Group N (%)	Intervention Group N (%)	p-value	Effect size
Mobility				
No problem at all	8 (5.7)	12 (7.8)	0.272*	-
Minor problems	15 (10.6)	14 (9.2)		
Medium problems	66 (46.8)	77 (50.3)		
Serious problems	44 (31.2)	34 (22.2)		
Incapable for walk about	8 (5.7)	16 (10.5)		
Self-care				
No problems	2 (1.4)	3 (2.0)	0.877**	-
Minor problems	11 (7.8)	8 (5.2)		
Medium problems	51 (36.2)	61 (39.9)		
Serious problems	39 (27.7)	40 (26.1)		
Incapable to wash or dress	38 (27.0)	41 (26.8)		
Usual activities				
No problem at all	31 (22.0)	39 (25.5)	0.625*	-
Minor problems	30 (21.3)	32 (20.9)		
Medium problems	23 (16.3)	18 (11.8)		
Serious problems	51 (36.2)	53 (36.6)		
Incapable to do usual activities	6 (4.3)	11 (7.2)		
Pain/discomfort				
No pain/discomfort	24 (17.0)	26 (17.0)	0.970*	-
Minor pain/discomfort	23 (16.3)	24 (15.7)		
Medium pain/discomfort	50 (35.5)	60 (39.2)		
Serious pain/discomfort	30 (21.3)	29 (19.0)		
Extremely painful/discomfort	14 (9.9)	14 (9.2)		
Anxiety/depression				
Not anxious/depressed	54 (38.3)	55 (35.9)	0.819**	-
Minor anxious/depressed	41 (29.1)	53 (34.6)		
Medium anxious/depressed	32 (22.7)	31 (20.3)		
Serious anxious/depressed	11 (7.8)	10 (6.5)		
Extremely distressed /depressed	3 (2.1)	4 (2.6)		

At baseline, both groups looked similar across all EQ-5D-5L domains, most patients reported moderate or serious problems, especially in mobility, self-care, usual activities, and pain/discomfort, confirming comparable starting HRQoL before the pharmacist-led intervention.

Table 2. Distribution of VAS with study subject's responses during follow ups

VAS score	mean ± SD	F statistics (df)	p-value
VAS At Baseline			
Control Group	55.89±7.52	2.26 (1, 292)	0.134
Intervention Group	54.45±8.81		
VAS At follow-up 1			
Control Group	59.96±6.77	19.79 (1, 292)	<0.001
Intervention Group	63.10±5.28		
VAS At follow-up 2			
Control Group	64.85±5.03	118.66 (1, 292)	<0.001
Intervention Group	72.22±6.40		

EQ-VAS improved more with pharmacist-led care at both follow-ups.

Table 3. Differences in the clinical outcomes in the control group (N = 143)

Outcome as HbA1c	Baseline	Follow-up after 6 months of baseline			Follow-up after 1 year of baseline		
		Mean ±SD	Mean Difference	p-value	Mean ±SD	Mean Difference	p-value
Control group	11.15±1.32	10.10±1.04	- 1.05	<0.001	9.72±1.02	- 0.38	0.003
Intervention group	11.69±1.50	9.94±0.92	- 1.75	<0.001	8.87±0.79	- 1.07	<0.001

Greater HbA1c reduction with pharmacist-led care across 12 months.

CONCLUSIONS

Pharmacist-led care produced clearly better outcomes than usual care: patients reported greater gains in health status on EQ-VAS at both ~6 and ~12 months, and they achieved a larger, clinically meaningful drop in HbA1c over 12 months. With similar baselines, these results support integrating structured pharmacist education and follow-up into routine diabetes management to improve both HRQoL and glycemic control.

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