



INVESTIGATION OF TREATMENT SATISFACTION AND HEALTH-RELATED QUALITY OF LIFE AFTER ADD-ON TO METFORMIN-BASED THERAPY IN PATIENTS WITH TYPE 2 DIABETES

P448

Yu-Wen Chang^{1,2}, Feng-Chin Shen³, Chung-Yu Chen²

1 Department of Pharmacy, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

2 School of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan

3 Division of Endocrinology and Metabolism, Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

INTRODUCTION

The complexity of oral antidiabetic drug (OAD) regimens has an impact on quality of life (QOL) and treatment satisfaction. There is limited data on the QOL of patients with Type 2 Diabetes Mellitus (T2DM) receiving metformin-based OADs treatment in Taiwan.

AIM

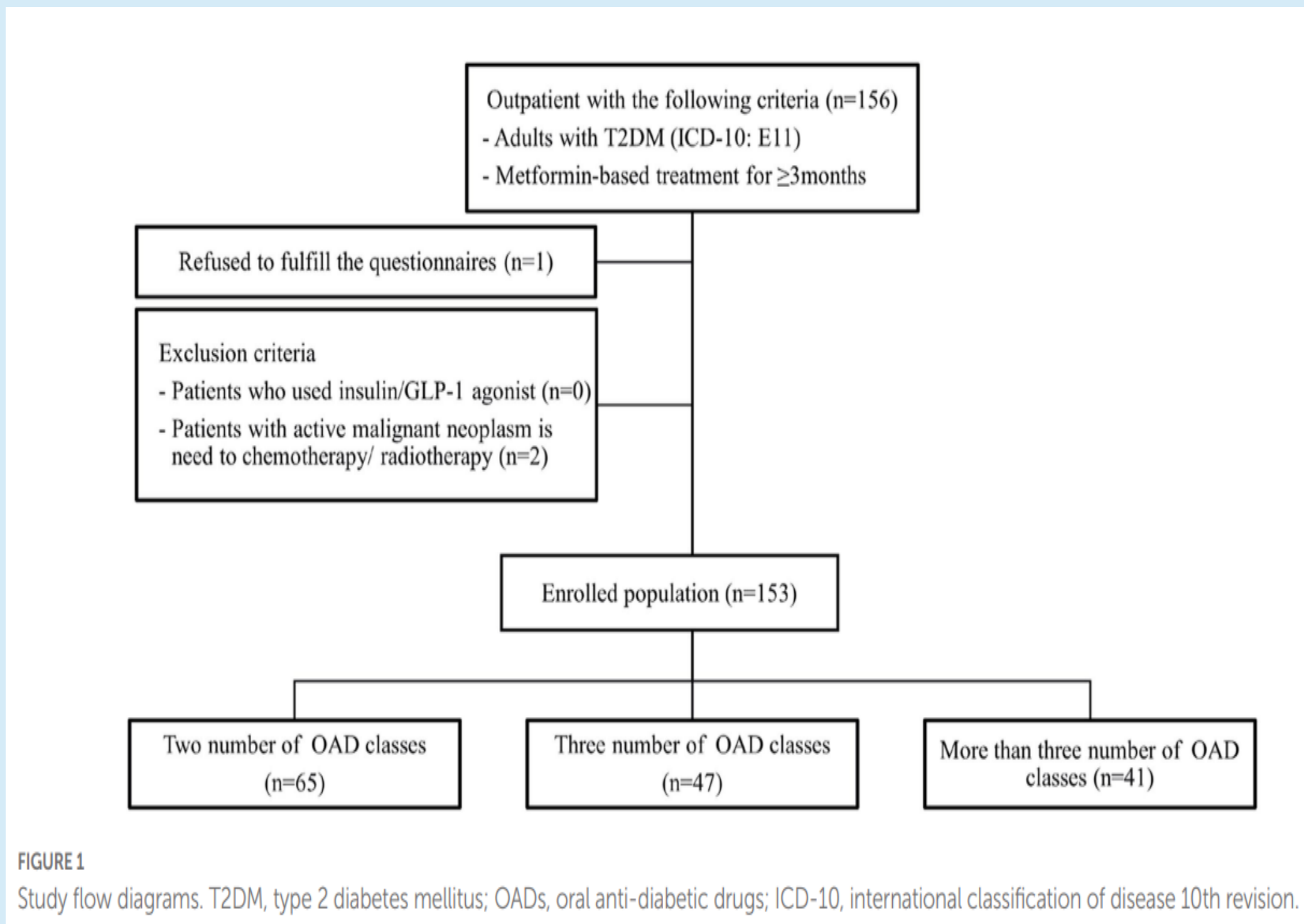
This study evaluated the QOL and treatment satisfaction and further explored the influencing factors and their correlations among patients with T2DM receiving metformin-based OADs.

METHOD

This cross-sectional study was conducted endocrinology and metabolism outpatient clinics between April 2020 and June 2021 at Kaohsiung Chang Gung Memorial Hospital. The inclusion criteria were T2D patients who had been using metformin-based therapy for at least 12 weeks and who were receiving add-on therapy during the outpatient visit (index date). Patients who received injection therapy, had received chemotherapy within six months before the index date were excluded.

The recruited patients were asked to complete the Chinese version of the Audit of Diabetes-Dependent Quality of Life (ADDQoL) for Taiwan and the Chinese version of the Satisfaction Oral Anti-Diabetic Agent Scale (C- SOADAS).

The primary outcome was the ADDQoL and C-SOADAS questionnaire scores analyzed by group and stratified based on use of 2, 3, and more than 3 OADs. The secondary outcome was ascertained to assess the convergent validity of the questionnaire correlations for ADDQoL and C-SOADAS using the Spearman's rank correlation coefficient.



RESULTS

A total of 153 metformin-using patients with T2D were included in this study. Given the participant classification, the mean duration of T2D was 7.3(4.9) years for the two OADs, 10.2(6.4) years for the three OADs, and 11.1(5.3) years for the more than three OADs-using group. The results showed a significant difference among the three groups ($p<0.01$).

The mean and overall QOL scores were 0.9 (0.8) and 0.9(0.9) for the group with two OADs, 0.8(0.8) for the group with three OADs, and 0.9(0.9) for the group with more than 3 OADs. There was no significant difference in the overall QOL among the three groups ($p=0.727$). The mean scores of the impact of diabetes on specific life aspects was -1.7(0.7) in all patients and -1.5(0.7) for the group with two OADs, -1.9(0.7) for the group with three OADs, and -1.7(0.7) for the group with more than three OADs. AWI scores in the total participant population were -2.1(1.1), and in the three groups, they were -2.1 (1.1), -2.1 (0.9) and -2.2 (1.3) respectively, with no significant differences between the three groups.

The C- SOADAS questionnaire and total scores for each OADs group showed a significant difference among the three groups (21.4 [1.9] vs. 20.4 [2.1] vs. 19.0 [2.2], $p<0.01$). Among the two overview items of ADDQoL, the impact of overall quality of life was positively correlated with the total C-SOADAS score, while the impact of diabetes on specific aspects of life was negatively correlated, but neither reached a statistically significant difference.

Table 1. Characteristics of all patients and stratified by the different oral anti-diabetic drug groups

Variable	Total (n=153)	2 OADs (n=65)	3 OADs (n=47)	>3 OADs (n=41)	p value
DM duration	9.22 (5.70)	7.32 (4.86)	10.17 (6.43)	11.07 (5.29)	0.002
Age(years)	60.39 (10.14)	61.32 (9.46)	58.72 (11.41)	60.84 (9.52)	0.388
Male	88 (57.52)	30 (46.15)	29 (67.70)	29 (70.73)	0.035
DM family history					0.870
No	42 (27.45)	18 (27.69)	14 (29.79)	10 (24.39)	
Yes	99 (64.71)	43 (66.15)	28 (59.57)	28 (68.29)	
Smoke					0.036
Current	15 (9.80)	2 (3.08)	4 (8.51)	9 (21.95)	
Past	13 (8.50)	5 (7.69)	5 (10.64)	3 (7.32)	
Never	125 (81.70)	58 (89.23)	38 (80.85)	29 (70.73)	
Body mass index					0.021
Normal	34 (22.22)	18 (27.69)	14 (29.79)	2 (4.88)	
Overweight	47 (30.72)	21 (32.81)	10 (21.28)	16 (39.02)	
Obese	70 (45.75)	24 (36.92)	23 (48.94)	23 (56.10)	
Fixed-dose combination OADs					<0.0001
Yes	109 (71.24)	25 (38.46)	45 (95.74)	39 (95.12)	
No	44 (28.76)	40 (61.54)	2 (4.26)	2 (4.88)	
DM related disease					0.027
Hypertension	79 (51.63)	27 (41.54)	24 (51.06)	28 (68.29)	
Dyslipidemia	137 (89.54)	57 (87.69)	41 (87.23)	39 (95.12)	0.393
Cerebra/cardiovascular disease	10 (6.54)	4(6.15)	2(4.26)	4 (9.76)	0.649
Peripheral vascular disease	2 (1.31)	1 (1.54)	0 (0.00)	1 (2.44)	0.737
Neuropathy	14 (9.15)	3 (4.62)	6 (12.77)	5 (12.20)	0.218
Retinopathy	2 (1.31)	0 (0.00)	2 (4.26)	0 (0.00)	0.164
Nephropathy	60 (39.22)	20 (30.77)	19 (40.43)	21 (51.22)	0.108
HbA1c (%)					0.012
<7%	54 (35.29)	26 (40.00)	21 (44.68)	7 (17.07)	
≥7%	99 (64.71)	39 (60.00)	26 (55.32)	34 (82.93)	

Values are displayed as n (%), mean±standard deviation. DM, diabetes mellitus; HbA1c, glycated hemoglobin A1c; OADs, oral anti-diabetic drugs.

Table 2. ADDQoL score in different oral anti-diabetic drug groups

Item	2 OADs (n=65)	3 OADs (n=47)	>3 OADs (n=41)	p value
Overview questions				
Present QoL	0.88 (0.86)	0.79 (0.75)	0.92 (0.91)	0.727
Diabetes-dependent QoL score	-1.54 (0.73)	-1.87 (0.71)	-1.68 (0.69)	0.053
AWI	-2.05 (1.08)	-2.10 (0.90)	-2.23 (1.27)	0.716

Value is displayed as mean±standard deviation. ADDQoL, Audit of Diabetes-Dependent Quality of Life; OAD, oral anti-diabetic drug; QoL, quality of life; AWI, Average weighted impact score; *, $p<0.05$.

Table 3. C-SOADAS in different oral anti-diabetic drug groups

Item	2 OADs (n=65)	3 OADs (n=47)	>3 OADs (n=41)	p value
Q1: Ability to control blood sugar	4.44 (0.56)	4.09(0.75)	3.93(±0.93)	0.001
Q2: Effect of weight	3.98 (0.67)	3.91(0.50)	3.73(0.67)	0.127
Q3: Tolerability of the side effect	4.43(0.50)	4.25(0.49)	4.10(0.58)	0.006
Q4: Convenience of drug taking	4.11(0.59)	3.96(0.66)	3.34(0.85)	<0.0001
Q5: Overall satisfaction	4.45(0.53)	4.21(0.46)	3.90(0.62)	<0.0001
Total C-SOADAS score	21.42(1.98)	20.43(2.09)	19.00(2.24)	<0.0001

Value is displayed as mean±standard deviation. C-SOADAS, Chinese version of the Satisfaction with Oral Anti-Diabetic drugs; OADs, oral antidiabetic drugs; Q, question.

CONCLUSIONS

This study evaluated the HRQoL and treatment satisfaction of patients with T2DM undergoing metformin-based treatment in combination with other OADs using the ADDQoL and C-SOADAS questionnaire in Taiwan.

The results showed a significantly greater positive effect of fewer OAD classes on treatment satisfaction. Further studies with a larger sample size are needed to provide clinical healthcare providers with a more comprehensive understanding of the QOL and treatment satisfaction of patients with T2DM in Taiwan and worldwide.

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CONTACT INFORMATION

Corresponding author: Chung-Yu Chen

School of Pharmacy, Kaohsiung Medical University, Kaohsiung, Taiwan

No. 100, Shihcyuan 1st Rd., Sanmin District, Kaohsiung City 80708, Taiwan (ROC)

E-mail: jk2975525@hotmail.com