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Association between the Functional Health Literacy in Diabetes Mellitus and Glycemic Control in Thai Patients with Type2 Diabetes Mellitus

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Objectives: The present study aims to investigate the association between functional health literacy in diabetes mellitus and HbA1c.

Methods: This study employed a cross-sectional analytical study by using the interview from the totaled 544 Thai patients with T2DM who were followed up at 3 public hospitals under the Ministry of public health, Thailand, and HbA1c was collected via medical records. Multiple linear regression was used to investigate the association between functional health literacy in diabetes mellitus and HbA1c.

Results: Among the total of 544 T2DM patients, 81.0% had adequate functional health literacy in diabetes mellitus and 73.0 % had HbA1c level ≥ 7 mg %. After adjusting for covariates, we found that adequate functional health literacy in diabetes mellitus was the significantly association with HbA1c (adjusted mean difference = -0.63; 95%CI = -1.04 to -0.23; p= 0.010). In terms of other covariates, age, body mass index, health insurance scheme, and duration of diabetes were also strongly associated with HbA1c.

Conclusions: Functional health literacy in diabetes and age, body mass index, health insurance scheme, and duration of diabetes are the most importance factors associated with HbA1c in patients with T2DM. Therefore, the public health intervention should be addressing functional health literacy in diabetes to improve glycemic outcomes in T2DM patients.

Bivariate associated between functional health literacy in DM and HbA1c

Table 1 Bivariate associated between functional health literacy in DM and HbA1c (n= 544)

Functional health literacy in DM and other factors	Mean of HbA1c (mg %)	Mean difference	95% CI	p
Functional health literacy in DM				
Inadequate (6-40 scores)	8.86	0		
Marginal (41-76 scores)	8.40	-0.46	-1.15 to 0.24	.280
Adequate (77-101 scores)	8.27	-0.59	-0.99 to -0.18	.018
Age (Years)				
<40	9.84	0		
40-49	8.45	-1.39	-2.15 to -0.63	.003
50-59	8.23	-1.61	-2.35 to -0.87	<.001
≥60	8.38	-1.46	-2.22 to -0.71	.001
BMI (Kg./m^2)				
<18.5	10.23	0		
18.5 to 22.9	8.43	-1.81	-2.92 to -0.70	.008
23.0 to 27.4	8.18	-2.05	-3.14 to -0.96	.002
≥ 27.5	8.44	-1.79	-2.89 to -0.70	.007
Health insurance scheme				
Universal coverage	8.43	0		
Social security	8.07	-0.36	-1.14 to 0.41	.437
Government	7.88	-0.56	-1.04 to -0.07	.058
Duration of diabetes (Years)				
<5	8.20	0		
5-9	8.63	0.44	0.11 to 0.76	.028
≥10	9.31	1.12	-0.72 to -0.16	.001
Hypertension				
No	8.63	0		
Yes	8.19	-0.44	-0.72 to -0.16	.009
Treatment of DM				
No drug	7.95	0		
Oral hyperglycemic used	8.07	0.12	-0.79 to 1.03	.825
Insulin sensitizer	9.37	1.42	0.40 to 2.45	0.023
Both oral drug & insulin	9.16	1.21	0.26 to 2.16	0.037

Note: M = Mean; SD. = Standard deviation; Min = Minimum; Max = Maximum; BMI = Body Mass Index; DM= Diabetes mellitus

Multivariate associated between functional health literacy in DM and HbA1c

Table 2 Multivariate associated between functional health literacy in DM and HbA1c (n= 544)

Functional health literacy in DM and other factors	Mean of HbA1c (mg %)	Mean difference	Adjusted mean difference	95% CI	p
Functional health literacy in DM					
Inadequate (6-40 scores)	8.86	0	0		
Marginal (41-76 scores)	8.40	-0.46	-0.75	-1.43 to -0.07	.070
Adequate (77-101 scores)	8.27	-0.59	-0.63	-1.04 to -0.23	.010
Age (Years)					
<40	9.84	0	0		
40-49	8.45	-1.39	-1.57	-2.35 to -0.79	.001
50-59	8.23	-1.61	-1.78	-2.55 to -1.02	<.001
≥60	8.38	-1.46	-1.70	-2.49 to -0.92	<.001
BMI (Kg./m^2)					
<18.5	10.23	0	0		
18.5 to 22.9	8.43	-1.81	-1.87	-3.00 to -0.74	.007
23.0 to 27.4	8.18	-2.05	-1.98	-3.09 to -0.87	.003
≥ 27.5	8.44	-1.79	-1.77	-2.89 to -0.66	.009
Health insurance scheme					
Universal coverage	8.43	0	0		
Social security	8.07	-0.36	-0.63	-1.41 to 0.15	.184
Government	7.88	-0.56	-0.59	-1.08 to -0.11	.045
Duration of diabetes (Years)					
<5	8.20	0	0		
5-9	8.63	0.44	0.56	0.23 to 0.88	.005
≥10	9.31	1.12	1.24	0.66 to 1.82	<.001
Hypertension					
No	8.63	0	0		
Yes	8.19	-0.44	-0.29	-0.57 to -0.01	.037

Note: M = Mean; SD. = Standard deviation; Min = Minimum; Max = Maximum; BMI = Body Mass Index; DM= Diabetes mellitus