Predicting 6-month Reversion to Normoglycemia in a Digital Diabetes Prevention Program Targeting Adults with Obesity and Pre-diabetes in Hong Kong

Dominique J.C. RONG [1], Mandy HO [1], Renee CHU [1]

[1] School of Nursing, LKS Faculty of Medicine, the University of Hong Kong, Hong Kong, SAR, China

Poster 29

Introduction

- **Type 2 diabetes mellitus (T2DM)** is a global public health concern.
- **Pre-diabetes**, an intermediate state between normoglycemia and T2DM, represents a high-risk stage for T2DM.
- **Lifestyle modification** is the first-line intervention for T2DM prevention.
- However, the response to lifestyle intervention varies across individuals with pre-diabetes.

Aim

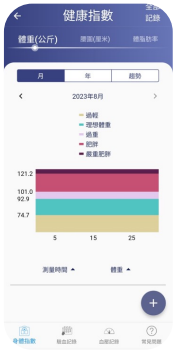
- To explore the predicting effect of baseline participant characteristics on 6-month reversion to normoglycemia in a digital lifestyle intervention for adults with obesity and pre-diabetes

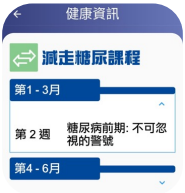
Methods

Data Source: A 6-month structured smartphone-based digital diabetes prevention program with an quasi-experimental design in Hong Kong.

Intervention Content

- A weekly online video on nutrition, exercise, weight management and diabetes prevention
- Used the smartphone App to set goals and action plans for weight loss and behavior change and to self-monitor the progress





Eligibility criteria:

- Aged 40-60 years
- Obesity (BMI >25kg/m2)
- Pre-diabetes

Potential predictors

- Demographics, Anthropometry, Clinical Variables

Statistical Analysis

- Univariate and multivariate logistic regression

Results

A total of 252 participants completed the 6-month blood test (mean [SD] age = 53.33 [6.09] years; 33.7% males; mean [SD] BMI=28.14 [3.46] kg/m^2; mean [SD] HbA1c=5.95 [0.20] %)

Figure 1 Glycemic status at 6 months

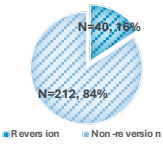


Table 1 Logistic regression for 6-month reversion to normoglycemia

	OR (95% CI)	p-value
Univariate		
Demographic		
Age, ages	0.93 (0.88, 0.98)	**0.010**
Sex		
Female	Ref	
Male	0.94 (0.47, 1.94)	0.853
Education		
Lower than higher school	Ref	
High school or equivalent	1.06 (0.36, 3.86)	0.923
College or higher	1.49 (0.48, 5.61)	0.515
Anthropometric		
Body mass index, kg/m^2	1.00 (0.90, 1.09)	0.948
Waist circumference, cm	1.00 (0.96, 1.04)	0.840
Body fat percentage, %	0.99 (0.95, 1.03)	0.539
Clinical		
Fasting plasma glucose, mmol/dL	0.60 (0.30, 1.14)	0.138
2hour plasma glucose, mmol/dL	0.81 (0.67, 0.97)	**0.030**
Triglyceride, mmol/dL	0.84 (0.51, 1.24)	0.448
LDL, mmol/dL	1.13 (0.75, 1.69)	0.556
HDL, mmol/dL	0.85 (0.29, 2.38)	0.754
Total cholesterol, mmol/dL	1.02 (0.72, 1.46)	0.897
SBP, mmHg	0.95 (0.92, 0.97)	**<0.001**
DBP, mmHg	0.94 (0.90, 0.97)	**<0.001**
Family history of diabetes		
No	Ref	
Yes	1.82 (0.90, 3.57)	0.091
Multivariate		
Age, ages	0.93 (0.88, 0.99)	**0.016**
2hour plasma glucose, mmol/dL	0.83 (0.68, 1.00)	0.062
SBP, mmHg	0.95 [0.92, 0.98]	**<0.001**

Conclusions

- Participants with **younger age, lower 2h-PG,** and **lower systolic and diastolic blood pressure** were more likely to revert to normoglycemia in the digital diabetes prevention program.

Contact Details

Presenting Author
Dominique Jincheng RONG
Email: u3010481@connect.hku.hk

Project Principal Investigator
Mandy HO
Email: mandyho1@hku.hk

HKU Med
LKS Faculty of Medicine School of Nursing
香港大學護理學院

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