

## Multimedia Appendix 1. In-clinic user flow of mHealth group.

Diabetes Clinic Environment

### Redefining the In-Clinic Experience

07

#### In-Clinic User Flow

##### 0/ Pre-Register in YuTang App

Patients will be notified in app when their revisit date is approaching and they can easily make an appointment through the app.

##### 1/ Sign In

When patients enter the space, they will be welcomed by the front desk to complete their appointment paper work. They will also receive a handout guiding them through the rest of the process.

##### 2/ Physical Exam

The first step is for patients to complete their height, weight, and blood pressure measurement, which is located right next to the front desk.

##### 3/ Blood Test

The second step is to take the blood test located right behind the front desk in Room 1. The result will be ready for the doctor to review within two to three hours.

##### 4/ App Assistant

Before the results come out, an app assistant will interact with patients at the waiting area to answer questions and assist with app usage. He also collects feedbacks and reports them back to the product design team.

##### 5/ Doctor Consultation

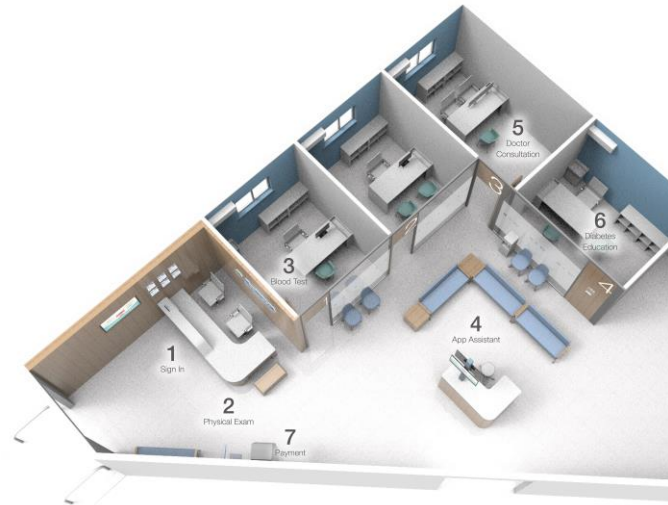
When the results come out, patients will be called accordingly to the consultation room, Room 3. This room is located at the corner and designed to be more discrete to give a sense of privacy to the patients. Doctor can use YuTang web platform to see patients' self-monitored blood glucose data together with lab results and physical measurements done in the clinic. The rich data can assist doctor to give more accurate and personalized treatment plan.

##### 6/ Diabetes Education

After the consultation, doctor will mark specific topics that the diabetes educator/dietitian should teach. The topics can be food, drink, exercise, lifestyle, medication, mental.

##### 7/ Make a Payment

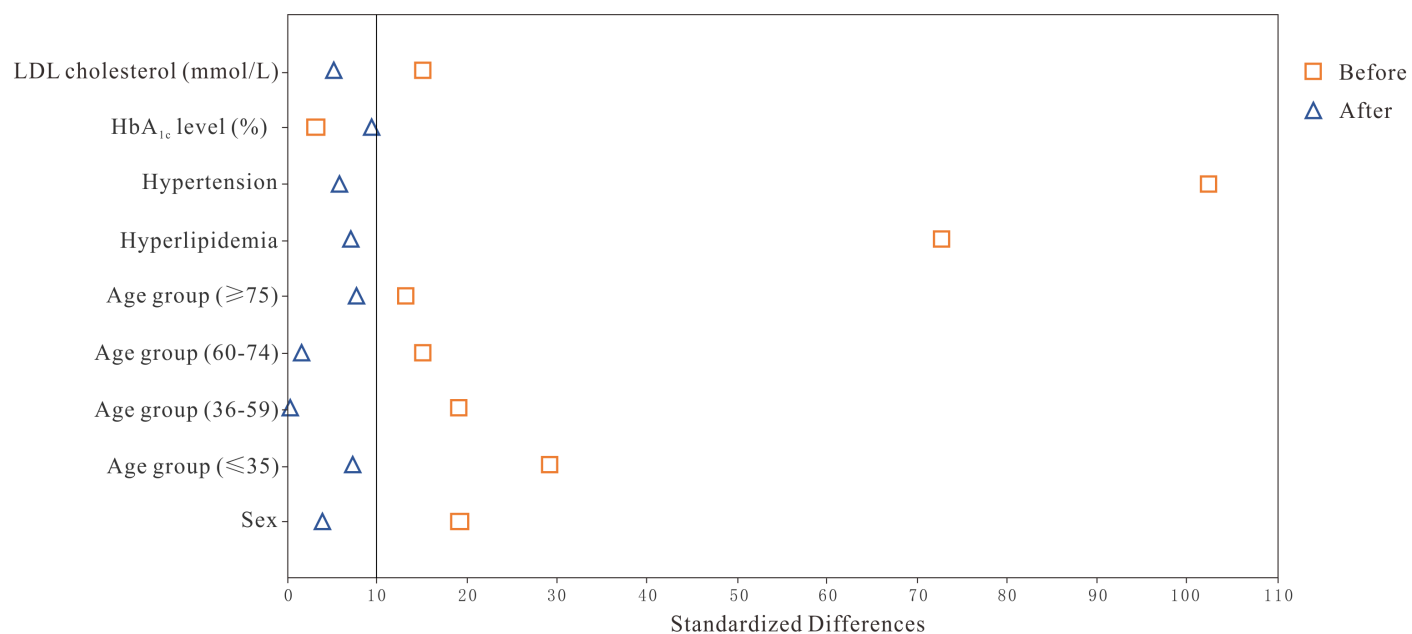
Payment process is simplified. The clinic is now using the payment machine that can take cash, cards, as well as Alipay and WeChat Pay. Patients can pay after their education session and before going to the pharmacy.



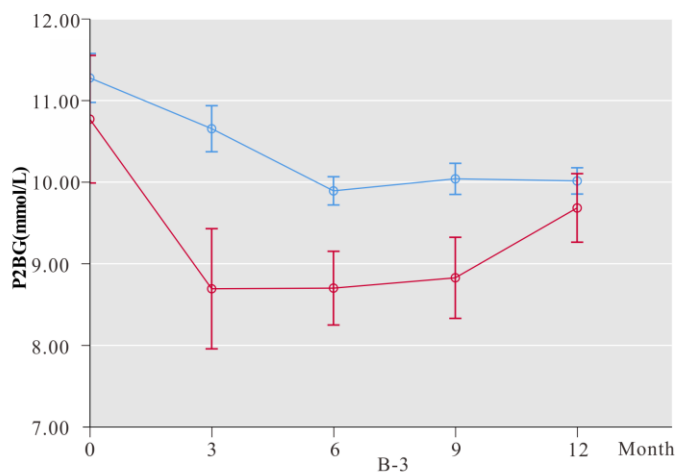
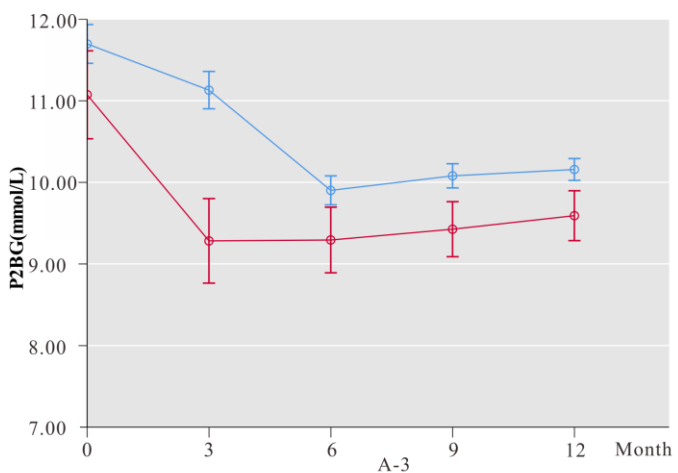
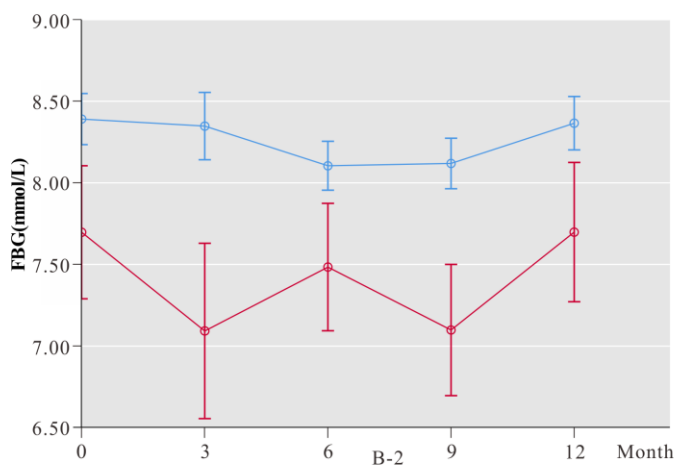
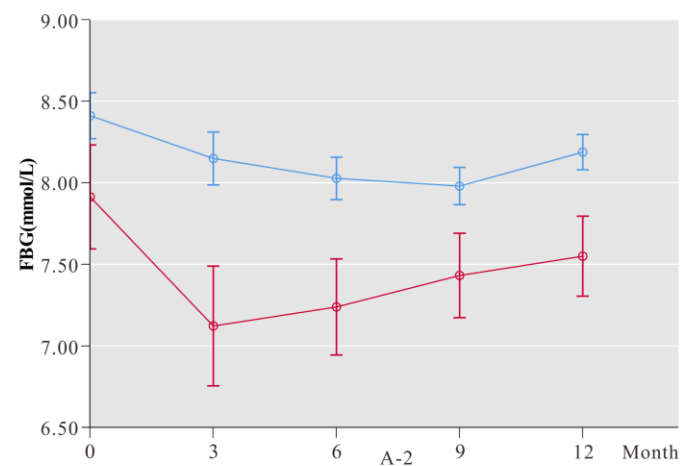
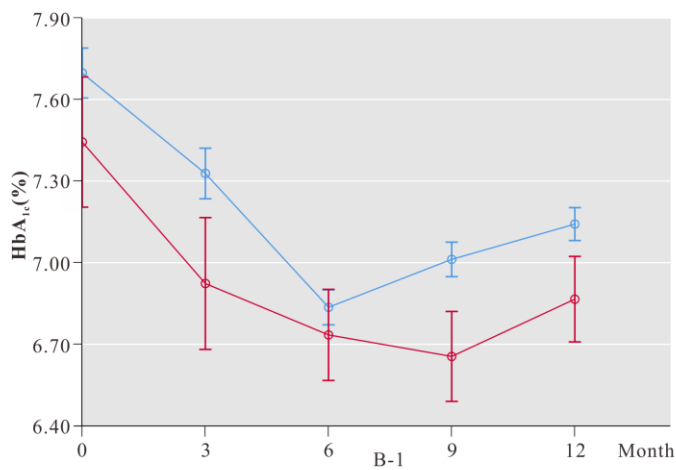
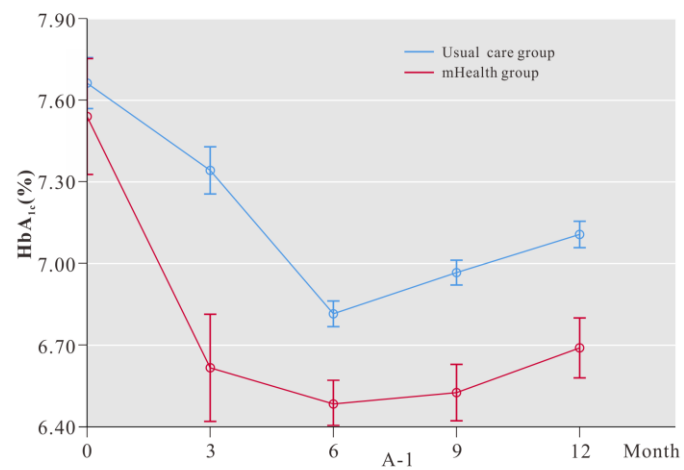
Patients will be notified in the app when their revisit date is approaching and they can easily make an appointment through the app. When patients enter the clinic, they will be welcomed by the front desk to complete their appointment paper work. They will also receive a handout guiding them through the rest of the process. The first step is for patient to complete their height, weight, and blood pressure measurement, which is located right next to the front desk. The second step is to take the blood test located right behind the front desk in one room. The result will be ready for the doctor to review within two to three hours. Before the results come out, an app assistant will interact with patients at the waiting area to answer questions and assist with app usage. When the results come out, patients will be called accordingly to be the consultation room. Doctor can use YuTang web platform to see patients' self-monitored glycemic data together with lab results and physical measurements done in the clinic. These data can assist doctor to give more

accurate and personalized treatment plan. After the consultation, doctor will mark specific topics that the diabetes educator/dietitian should teach. The topics can be food, drink, exercise, lifestyle, medication, and mental. The last step is for patient to pay after their education session and before going to the pharmacy.

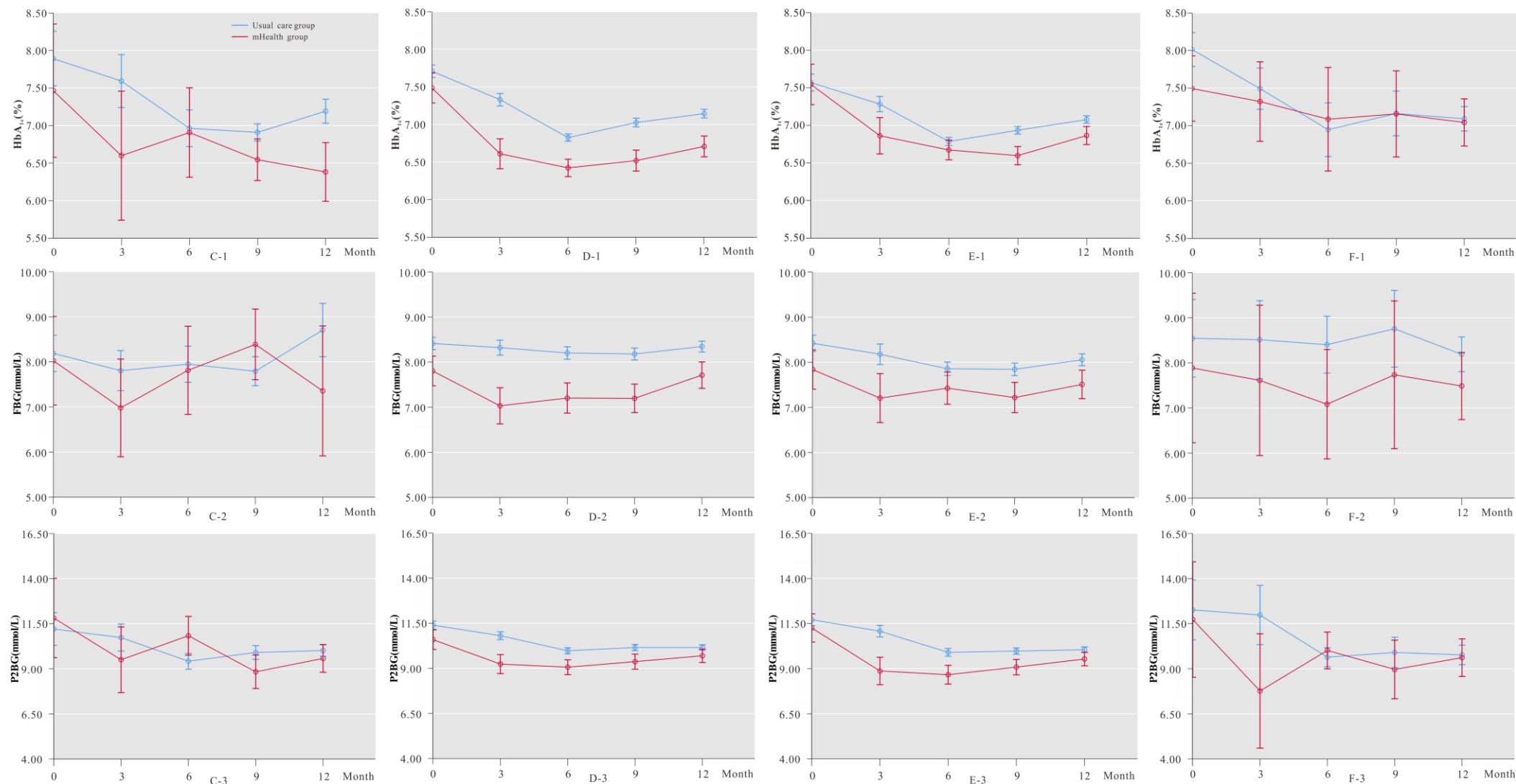
The sharing of patient health data is the basis. With the help of YuTang cloud, patients' data from all aspects (in hospital and outside of hospital) can now be consolidated. Medical professionals in the tertiary specialty hospital for diabetes, YuTang service support team, as well as doctors at the community hospitals can utilize this information to give individualized advice to patients.



Multimedia Appendix 2. Standardized differences before and after match.



Multimedia Appendix 3. Variation trends of HbA<sub>1c</sub>, FBG, and P2BG means. (A) male; (B) female.



Multimedia Appendix 4. Variation trends of HbA<sub>1c</sub>, FBG, and P2BG means. (C)  $\leq 35$  years old; (D) 36-59 years old; (E) 60-74 years old; (F)  $\geq 75$  years old.

Multimedia Appendix 5. Subgroup analysis of HbA<sub>1c</sub> (%) between usual care and mHealth groups.

Characteristic	3 months			6 months			9 months			12 months		
	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value
Sex, Mean (SD)												
Male	6.62 (0.78)	7.34 (1.20)	<.001	6.48 (0.77)	6.82 (0.58)	<.001	6.53 (0.78)	6.97 (0.56)	<.001	6.70 (0.78)	7.11 (0.61)	<.001
Female	6.92 (0.90)	7.33 (1.07)	<.001	6.73 (0.70)	6.84 (0.73)	<.001	6.66 (0.73)	7.01 (0.71)	<.001	6.87 (0.70)	7.14 (0.68)	<.001
Age group (years), Mean (SD)												
≤ 35	6.60 (1.01)	7.59 (1.76)	<.001	6.91 (1.22)	6.96 (1.15)	<.001	6.54 (0.81)	6.91 (0.49)	<.001	6.38 (0.64)	7.19 (0.78)	<.001
36-59	6.61 (0.87)	7.33 (1.06)	<.001	6.42 (0.71)	6.83 (0.59)	<.001	6.52 (0.83)	7.03 (0.71)	<.001	6.71 (0.82)	7.14 (0.71)	<.001
60-74	6.86 (0.72)	7.28 (1.11)	<.001	6.67 (0.61)	6.79 (0.57)	<.001	6.60 (0.66)	6.93 (0.51)	<.001	6.87 (0.65)	7.08 (0.50)	.001
≥ 75	7.32 (0.65)	7.49 (0.70)	.002	7.09 (1.12)	6.95 (0.83)	.023	7.16 (0.41)	7.16 (0.80)	.126	7.04 (0.89)	7.09 (0.12)	.916
Comorbidity, Mean (SD)												
Hyperlipidemia	6.76 (0.70)	7.45 (1.25)	<.001	6.61 (0.72)	6.81 (0.58)	<.001	6.61 (0.68)	6.98 (0.62)	<.001	6.75 (0.68)	7.12 (0.63)	<.001
Hypertension	6.70 (0.80)	7.24 (1.08)	<.001	6.60 (0.81)	6.79 (0.52)	<.001	6.60 (0.74)	6.99 (0.63)	<.001	6.77 (0.72)	7.06 (0.48)	<.001

Multimedia Appendix 6. Subgroup analysis of FBG (mmol/L) between usual care and mHealth groups.

Characteristic	3 months			6 months			9 months			12 months		
	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value
Sex, Mean (SD)												
Male	7.12 (1.22)	8.15 (2.26)	<.001	7.24 (1.49)	8.03 (1.74)	<.001	7.43 (1.59)	7.98 (1.48)	<.001	7.55 (1.21)	8.19 (1.45)	<.001
Female	7.09 (1.39)	8.35 (2.43)	<.001	7.48 (1.58)	8.10 (1.70)	<.001	7.10 (1.16)	8.12 (1.81)	<.001	7.70 (0.98)	8.37 (1.94)	.027
Age group (years), Mean (SD)												
≤ 35	6.98 (1.39)	7.80 (2.21)	.063	7.81 (2.89)	7.95 (1.70)	.002	8.39 (2.44)	7.79 (1.33)	.344	7.36 (1.00)	8.71 (3.00)	.001
36-59	7.03 (1.29)	8.32 (2.20)	<.001	7.20 (1.21)	8.20 (1.82)	<.001	7.19 (1.13)	8.18 (1.73)	<.001	7.71 (1.17)	8.35 (1.58)	<.001
60-74	7.21 (1.25)	8.18 (2.52)	<.001	7.43 (1.51)	7.86 (1.57)	<.001	7.22 (1.53)	7.84 (1.46)	<.001	7.51 (1.10)	8.06 (1.43)	.005
≥ 75	7.61 (1.30)	8.51 (2.32)	.043	7.08 (1.95)	8.40 (1.47)	<.001	7.73 (1.83)	8.75 (2.19)	.033	7.49 (1.04)	8.19 (0.95)	.156
Comorbidity, Mean (SD)												
Hyperlipidemia	7.26 (1.23)	8.24 (2.38)	<.001	7.63 (1.46)	7.89 (1.54)	<.001	7.24 (1.08)	7.92 (1.52)	<.001	7.63 (0.87)	8.11 (1.45)	.002
Hypertension	7.05 (1.24)	8.20 (2.27)	<.001	7.19 (1.47)	7.91 (1.45)	<.001	7.25 (1.63)	7.98 (1.59)	<.001	7.49 (1.18)	8.16 (1.67)	.002

Multimedia Appendix 7. Subgroup analysis of P2BG (mmol/L) between usual care and mHealth groups.

Characteristic	3 months			6 months			9 months			12 months		
	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value	mHealth group	Usual care group	<i>P</i> value
Sex, Mean (SD)												
Male	9.28 (2.12)	11.13 (3.14)	<.001	9.29 (2.11)	9.90 (2.37)	<.001	9.42 (1.88)	10.08 (1.97)	<.001	9.59 (1.56)	10.16(1.80)	.002
Female	8.69 (2.40)	10.65 (3.28)	<.001	8.70 (1.75)	9.89 (1.98)	<.001	8.83 (1.80)	10.04 (2.19)	<.001	9.68 (1.37)	10.01(1.87)	.200
Age group (years), Mean (SD)												
≤ 35	9.51 (3.22)	10.73(3.61)	<.001	10.83 (4.41)	9.42 (1.41)	<.001	8.84 (1.60)	9.91 (1.84)	<.001	9.58 (1.29)	10.02(1.53)	.235
36-59	9.24 (1.94)	10.81(2.87)	<.001	9.07 (1.59)	9.98 (2.22)	<.001	9.37 (1.69)	10.16 (2.24)	<.001	9.70 (1.53)	10.16(2.00)	.092
60-74	8.87 (2.35)	11.07(3.48)	<.001	8.66 (1.58)	9.90 (2.37)	<.001	9.08 (2.08)	9.97 (1.83)	<.001	9.53 (1.53)	10.05(1.65)	.014
≥ 75	7.77 (2.53)	11.98(4.40)	<.001	10.02(1.77)	9.64 (1.19)	.002	8.96 (2.67)	9.90 (1.95)	.053	9.61 (0.94)	9.77 (1.43)	.449
Comorbidity, Mean (SD)												
Hyperlipidemia	9.17 (2.03)	11.12(3.36)	<.001	8.89 (1.62)	9.94 (1.93)	<.001	9.20 (1.93)	10.01(1.78)	<.001	9.73 (1.30)	10.14(1.93)	.055
Hypertension	9.03 (2.37)	10.94(3.08)	<.001	8.89 (1.42)	9.91 (1.83)	<.001	9.35 (2.04)	10.05 (1.69)	<.001	9.56 (1.34)	10.07(1.63)	.010