



Supplementary Materials

Supplementary Text S1. Interview guide.

Interview Guide

1. Can you share some information about diabetes you live with and problems you have in managing your condition(s)?

[Probe]

- a. DM specific medical management (symptom control, medication, treatment follow-up)
- b. Role management (work, family, function, daily life issues)
- c. Emotional management (stress, frustration, fear of starting on insulin)
- d. Other issues (financial, cultural)

2. What is your overall goal with diabetes management? What do you wish to achieve?

2-1. What is your idea of ideal diabetes management?

[Probe]

- a. Symptom (e.g., relieving certain symptoms)
- b. Function (e.g., improving daily function, quality of life)
- c. Physical consequences (e.g., avoid amputation, glaucoma...explore misconception)
- d. Others (e.g., not to spend money on medication or dialysis)

2.2. How confident are you in your ability to achieve your goals with diabetes management? What made you think so?

[Probe]

- a. Knowledge and Skills
- b. Perseverance (goal-specific)

4. What are some ways you have tried to take good control of your conditions to meet your goal(s) mentioned just now?

**Discuss the following components separately*

- *Physical activity*
- *Diet*
- *Medication*
- *Sleep*
- *Others*

[Probes]

- a. What prompted those attempts?
- b. What have been helpful?

- c. What influences how to take care of your condition each day?
- d. What are some things that could help you to self-manage your condition? (e.g. family support, use of technological device, support from healthcare providers)

4. Tell me about things you tried but were unsuccessful.

[Probes]

- a. What problems did you have?
- b. What types of barriers have you experienced?
- c. For how long have you been aware of these barriers?
- d. Have you tried addressing these barriers before? If yes, how? If not, why?

5. How important is it for you to take good control of your conditions? And why?

** take the level of knowledge of participants into consideration.*

[Probes]

- a. Competing priorities: how important is it to take good control of your conditions compared to other areas in your life (e.g., taking care of children, job requirements)?
- b. What would help you to stay motivated to follow a lifestyle that can manage your conditions?
- c. Are you aware of the recommended standards to manage your conditions (e.g., minimum of 150 minutes of moderate-vigorous physical activity per week)?
- d. To what extent are you motivated to meet these standards?

6. Let's talk about your experience with the health care system and health care providers related to your conditions.

[Probe]

- a. Overall, how do you feel about health care systems and providers when it comes to managing your chronic conditions?
- b. What would you say about your healthcare providers in terms of motivating you to manage and take good control of your conditions? To what extent they have influenced life-style change and effective diabetes self-management and care?
- c. What are your current healthcare needs and issues?
- d. Which one(s) are more important than others and why?
- e. How do you think such needs could be met?

7. What is your experience of using mobile applications and fitness trackers to manage your conditions?

**Selected visual materials are used to facilitate the discussion*

[Probe]

(For those who have used before/continue to use or stopped using it)

- a. Which app or trackers have you used?
- b. How did you learn about the app/trackers? Where did you learn it from? (e.g. family, peers, provider, online articles, online reviews, etc.)
- c. For how long and how often have you been using the app/tracker?
- d. To what extent are you dependent on the app/trackers?
- e. What aspects of app/trackers worked well (or helped better manage your conditions) or did not work well? (e.g., self-monitoring, tailoring goals, dealing with complications, reminders, incentives, default options, etc)
- f. Why did you stop using an app? How long have you used? When did you last use the app/tracker?
- g. What can help you continue to use the app?

(For those who have not used)

What were the reasons for your decision not to use such apps or trackers?

8. We are aiming to develop a mobile app that can provide you with automated personalised coaching and reminders in a timely manner to help manage your conditions. If such app is available, how likely you will use it? If yes, why? If not, what are some of the things that keep you from using it?

**Discuss specifically under different dimensions*

Operational

Psychological/emotional

Others

[Probe]

- a. What sort of features would be useful and relevant to you?
[Internal, for facilitator]
 - Linked to electronic medical records
 - Ability to review blood test results
 - Clinic appointment schedule and reminder
 - Online support groups
 - Virtual Chat
 - Video Conferencing
 - Medical report on your health status/progress
 - Blood glucose/blood pressure readings
 - Others
- b. Given your schedule, what is the kind of reminders and timing of the reminders that will work best for you?
- c. How can the app 'motivate' one to improve his/her diabetic conditions? Which aspect is more important to you and why?
[Internal, for facilitator]
 - Gamifications
 - Rewards / Incentives
 - Framing
 - Feedback

- Prompting / Reminders
- Self-education/information videos & readings
- Problem solving
- Setting Defaults
- Walkthroughs
- Chatbot

8.1. Revisiting to your overall goals for the diabetes management earlier, in what ways the new app (e.g., features) can help you to overcome potential short-term obstacles (e.g. making an effort to find time to exercise, temptation to eat unhealthy foods) to achieve your long-term goals mentioned above?

9. Is there anything else you would like to add on the topics we have discussed today?

Thanks for your participation. Your comments will be very helpful to us and the mobile app we are planning to develop for people with diabetes.

Table S1. Consolidated criteria for reporting qualitative research (COREQ): 32-item checklist.

Item Number	Guide Questions	Reported on
Domain 1: Research team and reflexivity		
<i>Personal Characteristics</i>		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	In Methods
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	PhD MPH
3. Occupation	What was their occupation at the time of the study?	Academic faculty in the University and staff at a medical research center
4. Gender	Was the researcher male or female?	Females
5. Experience and training	What experience or training did the researcher have?	Training in health services and public health
<i>Relationship with participants</i>		
6. Relationship established	Was a relationship established prior to study commencement?	No relationship was established prior to study commencement.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	Participants were aware of the primary purpose of the study (Methods)
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	Interviewers have experience in conducting qualitative interviews (in Methods).
Domain 2: study design		
<i>Theoretical framework</i>		

9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Inductive thematic analysis (in Data analysis)
<i>Participant selection</i>		
10. Sampling	How were participants selected? e.g. purposive, convenience, consecutive, snowball	Purposive sampling was employed (in Data collection)
11. Method of approach	How were participants approached? e.g. face-to-face, telephone, mail, email	Face-to-face (in Data collection)
12. Sample size	How many participants were in the study?	29 (in Results)
13. Non-participation	How many people refused to participate or dropped out? Reasons?	26 because they were busy or not interested (in Data collection)
<i>Setting</i>		
14. Setting of data collection	Where was the data collected? e.g. home, clinic, workplace	In person or via online video conferencing such as Zoom (data collection).
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No
16. Description of sample	What are the important characteristics of the sample? e.g. demographic data, date	Characteristics of the sample were described in Results and Table 1.
<i>Data collection</i>		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	In data collection and supplementary material
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Yes, in data collection
20. Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were made.
21. Duration	What was the duration of the interviews or focus group?	Between 45 – 60 min (in section 2.2).
22. Data saturation	Was data saturation discussed?	Yes (in data analysis)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	Transcripts were not returned to participants.
Domain 3: analysis and findings		
<i>Data analysis</i>		

24. Number of data coders	How many data coders coded the data?	2 (in data analysis).
25. Description of the coding tree	Did authors provide a description of the coding tree?	Yes, but not presented in the manuscript.
26. Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived from the data (in data analysis).
27. Software	What software, if applicable, was used to manage the data?	NVivo was used (in data analysis).
28. Participant checking	Did participants provide feedback on the findings?	Participants were not provided with the findings.
<i>Reporting</i>		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	Quotations were presented and participant number provided.
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Consistency was checked (data analysis).
31. Clarity of major themes	Were major themes clearly presented in the findings?	Major themes were clearly presented (results).
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Minor themes and diverse cases were described (results).

Table S2. Demographic details of respondents (N = 29).

Participant No	Gender	Age	Ethnicity	Highest Level of Education	Marital Status	Employment Status	FGD Session
01	Female	79	Chinese	Diploma/Professional Qualifications	Married	Retired	1
02	Male	69	Chinese	Secondary	Married	Retired	1
03	Male	63	Chinese	Diploma/Professional Qualifications	Single	Retired	1
04	Female	65	Chinese	Tertiary or above	Single	Employed	2
05	Female	56	Chinese	Primary or lower	Widowed	Employed	2
06	Male	74	Chinese	Tertiary or above	Married	Retired	2
07	Female	61	Chinese	Tertiary or above	Divorced	Employed	3
08	Female	55	Malay	Tertiary or above	Married	Employed	3
09	Male	50	Chinese	Tertiary or above	Married	Employed	3
10	Female	53	Chinese	Tertiary or above	Married	Unemployed	3
11	Male	62	Malay	Secondary	Married	Unemployed	4
12	Female	60	Malay	Secondary	Divorced	Employed	4
13	Male	68	Malay	Secondary	Married	Retired	4
14	Female	54	Malay	Secondary	Married	Unemployed	4
15	Male	63	Chinese	Tertiary or above	Married	Retired	4
16	Male	66	Chinese	Secondary	Single	Retired	4
17	Female	47	Chinese	Secondary	Married	Employed	5
18	Female	54	Indian	Tertiary or above	Married	Employed	5
19	Male	62	Chinese	Diploma/Professional Qualifications	Married	Retired	5
20	Female	60	Indian	Secondary	Married	Employed	6
21	Female	40	Chinese	Tertiary or above	Married	Employed	6
22	Female	41	Chinese	Tertiary or above	Married	Employed	7
23	Male	46	Chinese	Tertiary or above	Married	Employed	7
24	Female	45	Chinese	Diploma/Professional Qualifications	Married	Employed	8

25	Female	47	Indian	Tertiary or above	Married	Employed	8
26	Female	54	Indian	Diploma/Professional Qualifications	Married	Employed	9
27	Male	61	Chinese	Tertiary or above	Married	Retired	9
28	Male	60	Indian	Secondary	Married	Employed	IDI 01
29	Male	60	Indian	Secondary	Married	Employed	IDI 02