

# BMJ Open 'Better to save one life than build a seven-storied pagoda': a qualitative study of health education for patients with acute coronary syndrome and type 2 diabetes mellitus in Shanghai, China

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## ABSTRACT

**Objective** To describe, from the perspectives of health professionals, the health education currently being provided from hospital admission to discharge to home to patients who present with acute coronary syndrome who also have type 2 diabetes mellitus (T2DM).

**Methods** A qualitative study using semistructured interviews was undertaken in the coronary care unit (CCU) of a major hospital in Shanghai, China. Fifteen health professionals (nine registered nurses and six physicians) from the CCU who delivered health education to patients with acute coronary syndrome and T2DM participated. Participants also completed an Education Content Checklist containing topics consistent with existing national guidelines.

**Findings** Major themes identified included: health education is an essential embedded component of treatment; health education comprises varied strategies to facilitate behavioural change; and barriers and required resources to deliver effective health education.

**Conclusions** Surviving the initial symptoms and providing immediate treatment is the first step in recovery for patients with acute coronary syndrome and T2DM. Health education is an essential component of the management of these patients, and content and focus that is responsive to the recovery stage of the patient is required. Teaching and supporting strategies appropriate for the inpatient phase prior to discharging to the community phase are required.

## INTRODUCTION

Health education is the provision of learning and teaching experiences, designed to help people maintain or enhance their health or manage chronic conditions,<sup>1</sup> often undertaken through interactions between health professionals and patients.<sup>2</sup> The central premise of health education interventions is that educating patients will enhance functionality, relieve symptoms, reduce physiological and psychological complications

## Strengths and limitations of this study

- This is the first qualitative study to examine how health education is delivered to patients in China presenting with acute coronary syndrome who also have type 2 diabetes mellitus.
- The roles of health professionals, the delivered content and the teaching strategies used are defined and compared with international literature and key local and international guidelines for both conditions of acute coronary syndrome and type 2 diabetes mellitus.
- This exploratory study used an appropriate design, recruiting health professionals with varying roles and levels of experience to ensure a broad understanding of how education is provided.
- The semistructured questions, interviewing processes and coding approaches were verified by three of the investigators (two were bilingual in English and Chinese languages).
- This study has included nurses and physicians from one major hospital in Shanghai, China. Further research focusing on the patients' perceptions of the health education received and required is necessary to obtain a comprehensive understanding of this issue.

and improve quality of life,<sup>3</sup> through long-term behavioural and lifestyle changes.<sup>4</sup> The challenge of delivering health education is particularly difficult when patients are experiencing two or more health conditions that may be synergistic or antagonistic in their effects. This study examines how health education is delivered to patients presenting with acute coronary syndrome (ACS) who are also experiencing type 2 diabetes mellitus (T2DM), conditions with similar risk factors and where poorly controlled glucose contributes to coronary heart disease (CHD).

Health education has been recognised as an essential component of disease management for patients with CHD<sup>5</sup> and diabetes.<sup>6</sup> Inpatient education, following an acute episode of CHD, is critical.<sup>7</sup> The inpatient period after an ACS event is recognised as a 'teachable moment' for education programmes,<sup>8</sup> as patients are more motivated to change their lifestyle after a critical cardiac event.<sup>9</sup> Health education for patients with ACS has the potential to address lack of knowledge, increase patients' awareness of the threat or risk factors, promoting lifestyle changes and attention to taking medications.<sup>2</sup>

However, knowledge itself does not always result in behavioural change.<sup>10</sup> The focus on behavioural change has resulted in a plethora of health behaviour theories to extend the value of health education beyond knowledge acquisition.<sup>4</sup> Many health behavioural theories have been applied to enhance the potential impact of health education programmes to improve health status by encouraging compliance with treatment regimens and promoting behavioural changes.<sup>4,11</sup> The self-efficacy model, within Social Cognitive Theory (SCT), is one of the most frequently applied theoretical frameworks in patient education.<sup>12</sup> The significant overlap between different theories or models, however, makes it difficult for health professionals to select the appropriate framework, although many of these theories or models have been applied with considerable success.<sup>4,11</sup>

A systematic review exploring the effectiveness of self-management programmes for patients with T2DM after an ACS event (the focus of this study) included four trials.<sup>13</sup> The cardiac-diabetes self-management programme (CDSMP) employed in three of the four included studies was developed according to the self-efficacy model that aimed to enhance patients' confidence level in managing these conditions within their daily life.<sup>14-16</sup> The CDSMP used four approaches—mastery, social modelling, verbal persuasion, self-appraisal—to improve patients' confidence level and self-management skills.<sup>9,14-16</sup> The fourth study used behavioural strategies such as goal setting—optimal HbA1C level, blood sugar level, lipid level, blood pressure, as well as optimal level of daily physical activity and psychological capacity.<sup>17</sup>

Nurses and physicians play a central role in health education, although tensions exist in fulfilling this role.<sup>18</sup> Nurses can identify patients' learning needs and styles, select specific content, choose teaching strategies and evaluate patients' learning.<sup>19</sup> Nurses potentially can play a lead role in health education, but this is rarely achieved in practice.<sup>20</sup> An exploratory study reported that patient education in acute care settings was minimal, and many available chances for patient education were missed due to nurses' busyness and lack of time.<sup>21</sup> Physicians also have a crucial role in educating patients and patients informed by their physicians are reported to be more satisfied with their care.<sup>22</sup> Similarly, multidisciplinary teams (including dietitians, pharmacists, psychologists, occupation therapist and social workers)<sup>3</sup> have an important role to play in health education,<sup>3,23</sup> with researchers noting that

multidisciplinary teams provide more knowledge and experience as a collaborative and integrated team with each discipline taking an active role in the education process.<sup>24,25</sup>

The acute inpatient period is an important time for patients with ACS-T2DM from China to receive health education. In China, the health system is centralised to the acute hospital setting with a small primary care health sector.<sup>26</sup> Human resources for healthcare in China are distributed predominantly to hospitals that focus on inpatient care and treatment.<sup>27</sup> The service utilisation of primary care facilities in China is very low compared with the acute hospitals.<sup>28</sup> Patients are expected to gain essential knowledge and skills to manage their health prior to returning to home. Limited research has studied the experiences of health professionals in China providing health education for patients with ACS-T2DM.

### Aim

The aim of this study is to describe, from the perspectives of health professionals from Shanghai, the health education currently being provided from admission to discharge to home to patients who present with ACS who also have T2DM.

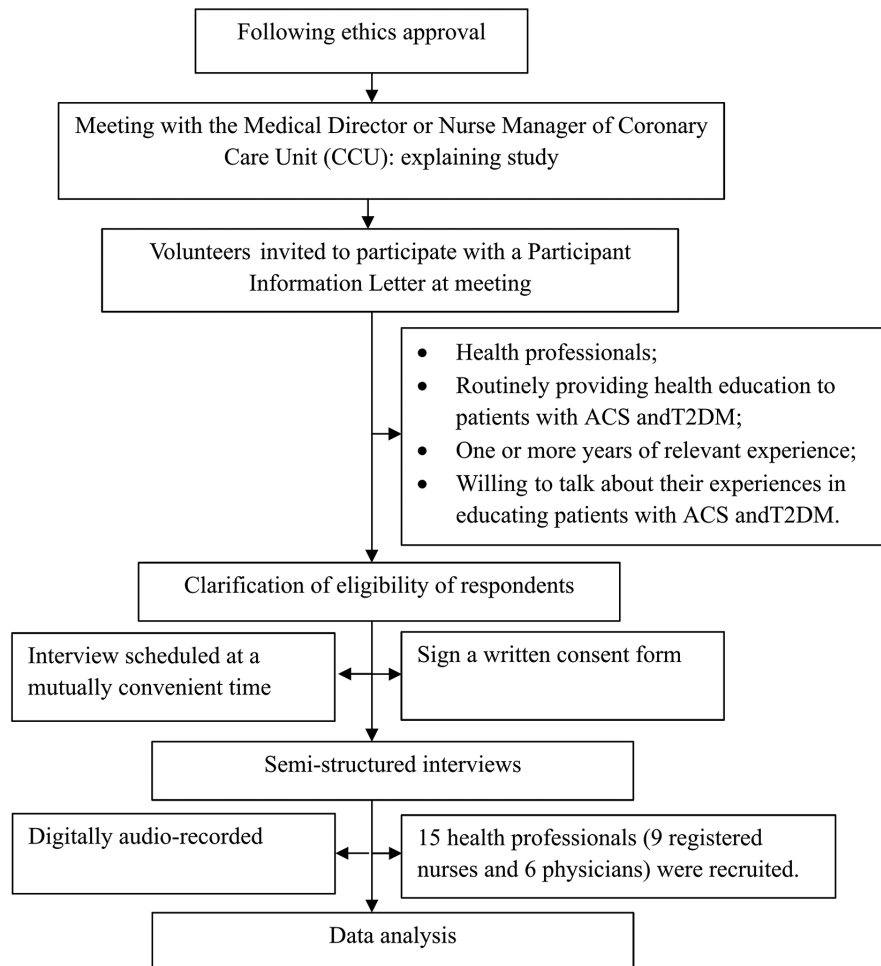
### METHODS

The qualitative approach in this study can best be described as 'fundamental qualitative description',<sup>29</sup> appropriate for exploratory research where little is known about a research topic and where it is important to gain an understanding from the perspectives of those involved. Qualitative description is an interpretive approach that takes a naturalistic approach to the phenomenon under study, summarises events and phenomena as perceived and described by the participants and offers a comprehensive summary in the everyday context of those events.<sup>29-31</sup>

Using semistructured interviews, we sought to both identify the main components of health education delivered to patients with ACS and T2DM and understand the perceptions of health professionals delivering the education. The use of semistructured interviews ensured that understanding of the health education context was gained.<sup>32</sup> In addition to the interviews, participants completed an Educational Content Checklist (ECC).

### Setting and sample

Participants included purposively selected health professionals from the coronary care unit (CCU) of a major hospital in Shanghai, China. Health professionals (physicians and registered nurses) in the CCU, who routinely provided health education to patients with ACS-T2DM, having one or more years of relevant experiences and willing to talk about their experiences in educating patients with ACS-T2DM, were invited to participate. The investigator formally described the study to CCU staff and distributed participant information letters. Those interested in participating in this study were asked to contact



**Figure 1** Flow chart of the study process. ACS, acute coronary syndrome; T2DM, type 2 diabetes mellitus.

the researcher. Interviews were scheduled at a mutually convenient time and location to both the participant and researcher (see [figure 1](#)).

### Interviews

Establishing rapport with the staff was important prior to conducting the interviews.<sup>33</sup> The lead author also spent considerable time (about 4 hours per day for 10 days) in the CCU, interacting with the unit staff, prior to conducting the interviews. Semistructured interviews included specific questions (see Interview Schedule, online supplementary appendix) and prompts to obtain more information, to clarify the points being made or for participants to add additional information.<sup>34</sup> The items within the interview schedule were derived from an umbrella review conducted by the research team,<sup>35</sup> with some modification following three initial interviews.

The interviews ranged from 16 min to 47 min in length. Interviews were conducted until ‘data saturation’ (where no new themes or ideas were identified) was achieved.<sup>36</sup>

### Educational Content Checklist

Topics on the ECC were based on national<sup>37 38</sup> and international guidelines,<sup>39–41</sup> with the potential for up to 14 topics associated with routine health education for

patients with ACS or T2DM to be identified. Participants completed the ECC before the interview. The use of ECC prior to interview was to assist participants to consider the scope of educational content delivered to patients with ACS and T2DM.

### Data analysis

With the permission of participants, interviews were digitally audio-recorded. The first five interviews were transcribed in full into Chinese and English by the researcher, and coding, interviewing techniques, questions and coding tree were checked by all four authors. Two researchers were bilingual (Chinese and English (X-LL and C-JW)). The remaining interviews were transcribed into Chinese and coded by the author (X-LL) and checked by another bilingual author (C-JW). Participants were asked to review their transcripts where there was a lack of clarity about what was said in the interview. Further transcription into English of a subset of five nurses and five physicians was undertaken by a bilingual physician–researcher independent of the health service or researchers. Minor corrections in English interpretation were clarified.

Transcripts were organised using NVivo V.11 (QSR International).<sup>42</sup> Interview data were coded initially using an open coding process with codes entered into NVivo V.11. Data analysis adopted both deductive and inductive approaches to coding.<sup>43</sup> With some content preset by the ECC, it was appropriate to draw on this as the framework for coding the health education content described by participants. Content analysis using the frequency of the use of a specific code (medications, diet and exercise) and the proportion of text relating to specific codes were measured.<sup>44</sup>

In addition, content analysis of the overall extent of content focused on specific diseases such as cardiac education was conducted. Comparisons between specific health professionals (nurse or physician) were enabled using this feature in NVivo V.11.<sup>42</sup> The inductive aspects of the analysis were derived from the narrative data from the health professionals' perceptions about health education using a thematic analysis approach.<sup>45</sup> Open codes were defined as significant statements indicating the content of the health education programme and how participants experienced their educational approach.<sup>46</sup> Following the open coding process, provisional categories were tagged, relationships between them investigated and themes identified.

### Patient and public involvement

The researcher (X-LL) will send the published paper to the health professional participants by email once the research findings are published (where participants have requested). Patients and/or the public were not involved in the study design or conduct. This study was related to health professionals only.

## FINDINGS

### Participant characteristics

Participants comprised 12 females and 3 males ranging in age from 23 years to 45 years old. [Table 1](#) provides relevant characteristics of the participants.

### Health education for patients with ACS and T2DM

#### Health education content

Educational content derived from the ECC completed by health professionals was linked to excerpts from health professionals' interview transcripts as illustrated in [table 2](#). All participants noted the importance of other professionals (such as dietitians) in teaching topics such as the diabetes disease process, and nutrition and diet.

The interviews revealed that three conditions were considered for health education and that these were interconnected: ACS, T2DM and hypertension. Physicians described these diseases, including CHD, T2DM and hypertension, as coming from 'common soil' (physician F) or arising from common risk factors. Most text related to cardiac education (59.4%), followed by diabetes education (28.6%), and to a much lesser extent both cardiac and diabetes (6.1%), hypertension education (4.0%) and

**Table 1** Demographic characteristics of participants (n=15)

Participants' number	Gender	Health professional type	Length of time delivering education (years)*
Physician A	Female	Physician	10
Nurse A	Female	Registered nurse	15
Nurse B	Female	Registered nurse	10
Physician B	Male	Physician	8
Nurse C	Female	Registered nurse	6
Nurse D	Female	Registered nurse	4
Physician C	Male	Physician	10
Physician D	Female	Physician	4
Nurse E	Female	Registered nurse	4
Nurse F	Female	Registered nurse	17
Nurse G	Female	Registered nurse	1
Nurse H	Female	Registered nurse	14
Nurse I	Female	Registered nurse	6
Physician E	Female	Physician	10
Physician F	Male	Physician	22

\*Education relating to acute coronary syndrome and type 2 diabetes mellitus.

both cardiac and hypertension (1.8%). Further exploration of the content highlighted differences between health professionals in the delivery of health education (see [table 3](#)).

### Interview thematic analysis: health professionals' perceptions of health education

Three major themes and six subthemes were identified (see [table 4](#)).

#### Theme 1: health education is an essential embedded component of treatment

A key finding was that health education is integral to the acute care experience from admission to discharge into the community. Within this theme, two subthemes were evident.

##### Subtheme 1: priorities of care in the acute phase and long-term management

Participants were initially concerned with supporting the patient to survive the acute episode of ACS that had necessitated their hospital admission. The need to focus on the immediate rather than the long-term is encapsulated by one physician who stated:

There is a saying in Buddhism that 'better to save one life than build a seven-storied pagoda'. (Physician B)

For physicians, the first step was to provide the interventions necessary (such as percutaneous coronary intervention (PCIs), intracoronary stents or coronary artery

**Table 2** Educational content derived from checklist from health professionals and excerpts from interviews

Topics from education content checklist	Interview data
Heart disease	<p><i>Nurses:</i> 'We need to talk about this disease [ACS] to this patient in my ward during our daily work, what's the situation of their disease'. (Nurse F)</p> <p><i>Physicians:</i> 'First part is patients should understand the condition [ACS].... is to let the patient correctly understand this condition [ACS]'. (Physician D)</p>
Diabetes disease process	<p><i>Nurses:</i> 'If the patients also have diabetes, we need to pay more attention to those patients, we would give them more knowledge about diabetes, and more specific education than other patients [without diabetes]'. (Nurse C)</p> <p><i>Physicians:</i> 'We tell the patients that diabetes has a quite high morbidity and its complications are controllable with treatment'. (Physician D)</p>
Risk factors	<p><i>Nurses:</i> 'The [education] content, one is the risk factors of ACS, then the symptoms of ACS, as well as medication education....' (Nurse G)</p> <p><i>Physicians:</i> 'Some risk factors are avoidable, such as smoking, sedentary lifestyle and staying up late. In other words, there is something you can change...'. (Physician D)</p>
Symptoms and their management	<p><i>Nurses:</i> 'For ACS patient, they firstly need to know their symptoms such as chest pain or chest tightness....' (Nurse H)</p> <p><i>Physicians:</i> 'If the patients have some symptoms, they need to come to the hospital immediately, such as having chest pain...'. (Physician A)</p>
Medications	<p><i>Nurses:</i> 'Firstly regarding medications, ACS patients usually need to take some oral medications. Our education includes which oral anticoagulants are required, how long for them to be continued and what's the best time to take them'. (Nurse E)</p> <p><i>Physicians:</i> 'Then they need to take medications regularly'. (Physician D)</p>
Blood pressure management strategies	<p><i>Nurses:</i> 'Also for patients with hypertension, which is very common among ACS patients, they might think it is alright to adjust their own medications as changing dose or ceasing it by themselves. We must reinforce the long-term medication use, the importance of maintaining blood pressure stability by taking medications regularly and managing their own lifestyle'. (Nurse H)</p> <p><i>Physicians:</i> 'For patients with hypertension, blood pressure control is mainly not too low or not too high, less than 90 mmHg/140 mmHg or give patients a range'. (Physician B)</p>
Blood sugar levels monitoring	<p><i>Nurses:</i> 'Diabetes patients need to monitor blood sugar level regularly by themselves. They need to know what to do when they have symptoms of low sugar level and have to visit doctors to adjust the medications if blood sugar level is too high [at home]'. (Nurse H)</p> <p><i>Physicians:</i> 'We need to check their glycosylated hemoglobin at least every three months to six months. And fasting and after meal blood glucose levels needs to be recorded'. (Physician D)</p>
Nutrition and diet	<p><i>Nurses:</i> 'Then regarding diet [for ACS patients], we need to tell patients to maintain light diet due to the vascular obstruction... And then [for diabetes patients] we also need to educate patients some information about diet. Are they allowed to take sugar-containing food? Now we tell these patients they can have diet with sugar but it must be in a certain limited amount'. (Nurse E)</p> <p><i>Physicians:</i> 'Regarding diet, a general brochure contains the content of food pyramid. We can't make it too complicated for our patients. I used to tell them about calories and calculations, which is appropriate in our wards and can be carried out by nutritionists. However I found it impossible to do the same thing in outpatient clinic. So later we looked into some research and oversea experience and decided to use the simple diet pyramid'. (Physician B)</p>
Smoking cessation	<p><i>Nurses:</i> 'For example, there is a patient, yesterday I gave a brochure to him who is a long-term smoker, I told him many times that smoking needs to quit and for sure, smoking cessation was going to be a long and painful process, because the patient has smoked for decades'. (Nurse G)</p> <p><i>Physicians:</i> 'The second point is no smoking or to quit smoking'. (Physician D)</p>
Physical activity/exercise	<p><i>Nurses:</i> 'We need according to the patients' specific conditions and the previous history of exercise. The amount of exercise, do not let them be breathing hard, chest tightness and something like that. There is a need to properly manage the intensity of exercise'. (Nurse I)</p> <p><i>Physicians:</i> 'The patients need to have aerobic exercise rather than strenuous exercise'. (Physician D)</p>
Return to work	<p><i>Nurses:</i> '... avoid long-term tiring work, but work appropriately'. (Nurse G)</p>
Psychosocial issues	<p><i>Nurses:</i> 'Because there are a lot of patients were really struggling and contradictory in their mind. [For example], one patient paid lots of attention to his health condition. He felt like he wasn't going to make it this time so he needed to make a will. You need to tell him to follow what I say. Things would get at least gradually better day by day. I need to encourage and assist him with building up his confidence'. (Nurse H)</p> <p><i>Physicians:</i> 'We want to encourage and assist them with building up their confidence because some patients become depressed knowing that they need to take medications for life long'. (Physician B)</p>
Stress management	<p><i>Nurses:</i> 'He would be in a lot of stress if he knows he has had another (third) disease since he is diagnosed with ACS and T2DM, which would be more stressful if he can't accept the disease'. (Nurse H)</p> <p><i>Physicians:</i> 'One of the aspects is the stress. The person needs to relieve his or her own stress'. (Physician D)</p>
Acute and chronic complications	<p><i>Nurses:</i> 'Diabetes is a risk factor of ACS, So how to control blood sugar level is essential for the treatment of ACS. If your blood sugar level control is not good, it would lead to arteriosclerosis of coronary arteries, and may even cause relogging after stent surgery'. (Nurse E)</p> <p><i>Physicians:</i> 'Because diabetes is a chronic condition affecting vessels in the long term, which endocrinologist call it memory impairment. Actually, it is a chronic process. When complicated with other issues such as lipid dysfunction and high blood pressure, these risk factors can worsen status of arterial sclerosis and then trigger events like acute rupture of atherosclerotic plaques or thrombosis'. (Physician B)</p>

ACS, acute coronary syndrome; T2DM, type 2 diabetes mellitus.

**Table 3** Proportion of text describing specific educational topics within conditions for the health professionals

	Nurses	Physicians
Cardiac education	Lightly seasoned (low salt), not greasy (low fat) diet, 19%. Medications (such as anticoagulants), 17%. Progressive increase in exercise, 16%. Preinterventional and postinterventional care as needed, 7%. Psychological burden (such as anxiety), 6%.	Medications (such as anticoagulants), 17%. Lightly seasoned (low salt), not greasy (low fat) diet, 13%. Progressive increase in exercise, 11%. Lifestyle changes, 11%. Basic knowledge of ACS (including patients' health status), 9%.
Diabetes education	Skill acquisition in relation blood glucose monitoring, 31%. Diet, 30%. Medications (by injection or orally), 20%. Appropriate exercise, 10%. Lifestyle changes, 7%.	Importance of blood glucose regulation (rather than skill acquisition), 27%. Medications (by injection or orally), 24%. Diet regulation, 23%. Appropriate exercise, 10%. Diabetes complications, 6%.

Note: content analysis using NVivo was conducted. The proportion of text coded related to each content area for each specific condition is presented.

bypass graft (CABGs)) to save the patient's life in the acute phase of ACS.

However, health education that would support the patient's return to the community was also viewed as integral to acute care. For example, one physician emphasised the importance of long-term care after the acute phase:

Secondary prevention should be carried out after properly [being] treated in [the] acute phase. Long-term clinical experience tells us that I can only save a patient for the time being rather than forever. So the problem is to reduce the number of patients especially in long term [care]. (Physician B)

#### Subtheme 2: ordering and sequencing of education content relative to recovery

Participants described the organisation of considerable content, being delivered relative to the stage of recovery of the patient from acute episode to returning to the community. Health education initially focused on preinterventional and post-interventional care (intracoronary stents, PCIs or CABGs) and medications with the

dialogue commencing with health professionals in CCU. For example, nurse H said:

For patients undergoing percutaneous coronary intervention (PCI) and electrocardiogram (ECG) procedures, we would hand out these related brochures for them, particularly patients receiving PCI. (Nurse H)

As patients entered the subacute phase, physicians and nurses introduced disease knowledge related to ACS and T2DM. The use of a metaphor of streams supports the theme of inherent ordering of health education: '*Health education was] from upstream to downstream*' (physician C). Both physicians and nurses focused on the ACS and considered the patients' comorbidities, such as hypertension. Therefore, the health education needed for patients with ACS-T2DM was comprehensive as described by a physician:

A comprehensive treatment for chronic disease is necessary. So management is a good word in this circumstance. What we try to do is not only purely cure

**Table 4** Themes and subthemes

Themes	Subthemes
Health education is an essential embedded component of treatment.	Priorities of care in the acute phase and long-term management. Ordering and sequencing of education content relative to recovery.
Health education comprises varied strategies to facilitate behavioural change.	Teaching approaches during acute care and community follow-up. Behavioural strategies and psychological support tailored to educational content.
Barriers and required resources to deliver effective health education.	Time constraints. Available resources at hospital, community and national level.

the disease but also comprehensive [disease] management. (Physician B)

## Theme 2: health education comprises varied strategies to facilitate behavioural change

Participants viewed health education and changing behaviour as complex, and a series of approaches and strategies were described. Within this theme, two subthemes were identified.

### Subtheme 1: teaching approaches during acute care and community follow-up

#### Acute care

Teaching approaches and the format of inpatient education for patients with ACS–T2DM involved directly communicating with patients during the daily ward round as the most commonly used approach for the physicians (ward round education). One physician stated that:

We teach the patients related knowledge during teaching ward rounds with medical students. Our patients can also ask questions during these ward rounds. (Physician B)

Nurses described providing routinised, face-to-face education on discharge: ‘*Our guidance for care after discharge is generally given before discharge*’ (nurse E). However, education was also described as integral throughout the whole process of acute care. Strategies such as Powerpoint presentations (PPTs) and education manuals were described as assisting new nurses when providing education for patients with ACS–T2DM. Participants also described the use of WeChat, a very popular mobile application (app) used to provide education and ongoing support. Two nurses described the use of these educational tools to deliver consistent and comprehensive education:

We have a ‘touch [PAD]’, like a small computer, including the nurse station system and PPT to assist the new nurses to deliver health education if they do not know how to do it. (Nurse F)

Finally we have a WeChat account. We will ask them to scan our QR [Quick Response] code of our hospital. There is a lot of health knowledge in there, including some specialist outpatient service. (Nurse E)

#### Community follow-up

Nurses described the telephone-based follow-up call by CCU nurses to all patients 2 weeks after discharge. This telephone support focuses on the patient’s condition at home and answering any questions raised by the patient. One nurse described the process:

About five minutes (telephone follow up). We need [to] control the time. We don’t have enough time if it takes too long. Five-minute follow up is able to give us a rough idea [about how the patient is]. We might prolong a little if the patient shows some confusion on the phone. I would give him [or her] some advice

if I can solve their problems, patients younger than 60 years old and post percutaneous coronary intervention (PCI). We’ll follow up twice. (Nurse E)

There were also examples of tools used to assist patients to regulate dietary intake after discharge. Participants referred to the Shanghai government public health measure of providing a spoon to measure and control sodium intake as a helpful tool for patients to achieve the optimal salt intake.

Physicians described organising some health lectures and health clubs for ACS patients, but these activities were not often, some being only ‘once a month’. The health lectures and health clubs were based on patients’ need as described by one physician:

... [S]mall lectures run by me in our clinic are held about once a month. Some lectures are comprehensive while others are for small topics. Actually many patients are familiar with my topics, such as blood lipid, blood sugar, blood pressure, medication, exercise and diet. I will talk about them based on different patients’ demand. (Physician B)

### Subtheme 2: behavioural strategies and psychological support tailored to educational content

Education also comprising behavioural strategies, such as goal setting and psychological support were emphasised by both nurses and physicians in this study.

#### Goal setting to achieve optimal clinical targets

Effective regulation of blood glucose was one of the goals for disease management of patients with ACS–T2DM. One physician described the need for patient awareness of the specific goals (and targets) to be achieved by patients with ACS–T2DM:

They know the exact goals for blood sugar, HbA1c, cholesterol level... After they fully understand the goals, we can keep monitoring and it has shown great improvement in our analysis. (Physician B)

Using signs and symptoms of behavioural change that patients could easily understand and implement was prioritised by participants. They described how patients after experiencing ACS recover gradually and gradually increase physical activity. Thus, providing simple measures such as not ‘breathing hard’ to control the intensity of physical activity or exercise was useful. Indicative of this approach is nurse G’s statement:

According to the classification of the heart function, if you exercise and then rest but cannot alleviate the uncomfortableness, then this exercise or work should not be done. (Nurse G)

#### Acknowledging and supporting psychological recovery

Psychosocial factors such as depression can worsen the prognosis of ACS. Participants described that patients, after experiencing a cardiac event, have psychological

issues such as hopelessness, feelings of fatigue or depression when admitted to the critical care environment or after invasive interventions. One nurse discussed her role in relation to this:

Because there are a lot of patients.... really struggling in their mind.... one patient who cares so much about his health.... he felt like he wasn't going to make it this time so he needed to make a will. You need to tell him to follow what I say. Things would get at least gradually better day by day. I need to restore his confidence. (Nurse H)

### Family inclusion

For patients with limited ability to receive health information, health professionals identified family members who could receive the information and help patients to manage their conditions. For example, one nurse and one physician described providing educational materials or tools to patients' family members.

... [U]nder special circumstances, we will give the brochures to the family members to promote the health education. (Nurse G)

We also attracted a lot of the patient's family members, and then he [the family member] comes here, sometimes also send a small medicine box to the family members.... (Physician B)

### Theme 3: barriers and required resources to deliver effective health education

Participants identified time constraints and the lack of resources at hospital, community and national levels as barriers that reduce the effectiveness of health education in the acute care setting.

#### Time constraints

While participants identified time as the most critical component of health education delivery, they also described being very busy with insufficient time for health education for patients. While physicians described providing some health information in the outpatient department, the need to see between 100 and 200 patients per morning limited the time available. One physician described the role conflicts that occur in this setting:

Doctors are way too busy with teaching, scientific research and personal issues in spare time... We tertiary doctors can only use our spare time because we are very busy in work with surgery, rescue, ICU, ward work and teaching. (Physician B)

#### Available resources at hospital, community and national levels

Participants also described a lack of infrastructure, arguing that ongoing support and funding required more community resources and greater national investment. Participants also described a lack of available educational resources. As indicated by nurse B and nurse E, these ranged from basic information brochures: 'We do have [a]

limited number of these pamphlets' (nurse E) to equipment such as TVs '... what I need urgently now is a TV set of at least 42 inches' (nurse B).

Participants also described a lack of community resources in China. The relationship between the community physicians and the acute hospital physicians was identified as problematic with physicians noting differing opinions on care: 'What patients are told by community doctors is different from what they are told in hospital' (physician B). The lack of a national approach was identified as contributing to the problem: 'Different opinions by different doctors might be a little related to personal understanding, but mostly because we don't have a unified guideline in China' (physician B).

## DISCUSSION

Both nurses and physicians were perceived as suitable educators for all topics, although the inclusion of dietitians in topics relating to diet and nutrition was proposed, although not currently practised. Participants selected specific content and teaching strategies according to patients' health conditions and reflected patients' progressive recovery. This finding is consistent with earlier studies<sup>18 19 22 47</sup> where nurses and physicians play a central role in health education.

### Delivering content reflective of patient recovery

Participants described the organisation of considerable content, being delivered relative to the stage of recovery of the patient from acute episode to returning to the community. This was best described with the 'upstream-downstream' metaphor (acute vs long term) model. Most participants believed that the inpatient period after a cardiac event is a 'teachable moment' for ACS patients with T2DM and education should commence during the acute phase. Inpatient education is recommended to begin after invasive intervention (where required) such as angioplasty or bypass surgery.<sup>48</sup> The provision of the majority of education within the acute inpatient phase was pronounced in this setting, potentially due to limited outpatient or primary care facilities.<sup>49</sup>

### Scope and range of content meeting guideline requirements

The extent of education content described by participants reflects most of the topics described in guidelines in China<sup>37 38</sup> and from other western countries (Australia and USA).<sup>39-41</sup> However, education for patients with ACS-T2DM in this study was lacking in relation to sexual counselling as it was not mentioned by participants. There is a high prevalence of sexual dysfunction among patients with ACS and in one study only 17.3% of patients with CHDs received sexual information before discharge.<sup>50</sup> The possible reasons for this include: impaired communication between patients and clinicians, cultural factors and lack of privacy.<sup>50</sup>

### Behavioural theories and teaching approaches

The content of the health education was largely delivered in an unstructured manner, although nurses



did refer to using educational support tools (such as PPTs (Microsoft) and education manuals) when they were less experienced with these conditions. An umbrella review confirmed the benefits of a theoretical framework and recommended the Health Belief Model (HBM), SCT and empowerment theories<sup>36</sup> should be applied to health education programmes. There was no evidence of the use of theoretical frameworks to direct health education; however, a series of behavioural and psychological strategies were described in these interviews, such as goal setting strategies. One aspect of strategy referred to by the participants was the use of a spoon to measure and restrict salt intake. The action relates to the national 'limit-salt-spoons campaign' introduced in 2007 promoting the use of a small spoon to help Chinese residents to reduce salt in their diets to prevent hypertension,<sup>51</sup> and the use of a teaspoon is also recommended by WHO for salt intake control.<sup>52</sup>

### Barriers to delivering effective health education

The most common barrier discussed was *constraints of time* to provide health education for patients with ACS-T2DM. This is consistent with other studies<sup>53</sup> where participants have described being too busy and rushed to provide health education for patients. Lack of resources at hospital, community and national level was the second barrier in this study. Community resources are inadequate, and the articulation of services between the hospital and community remains limited in China.<sup>54</sup> The need for national consensus guidelines was identified as a possible solution to improving consistency in information dissemination to patients across the sectors.

### Limitations

This study included 15 nurses and physicians from one major hospital in Shanghai, China, and the findings may not be representative of other health professionals or other CCUs within China. Further trials with defined health educational interventions should be conducted, with continuous evaluation, to determine the effectiveness of specific teaching strategies, on disease and risk factor knowledge, clinical outcomes (blood glucose and HbA1C), modifiable risk factors (blood pressure and lipid levels), self-management, psychosocial indicators (such as self-efficacy), as well as restenosis, readmission and mortality rates in Chinese populations with ACS-T2DM. Further research should examine the perceptions of patients of the health education they receive or require.

### Practice implications and future directions

This study has provided key insights into the current delivery of health education to patients with ACS and T2DM in China. The scope of the content currently being delivered was appropriate with some select limitations such as sexual function. The educational content should be tailored to patients' specific disease status

and responsive to the stage of recovery of the patient from acute illness to returning to the community. The use of a structured format, with prescribed teaching strategies, designed with the use of behavioural theories such as the SCT and HBM, is recommended. National consensus guidelines for health education for patients with ACS and T2DM are needed to deliver consistent information and guide practice from the acute to primary care health sectors.

### CONCLUSIONS

Health professionals provided immediate treatment and were concerned with supporting the patient to survive the initial acute episode for patients with ACS and T2DM. Health education is a core part of the management of patients with more than one health condition, and the content and focus should be responsive to the phase of recovery of the patient. Educational teaching methods and support strategies should be tailored for the admission or community follow-up phase. Further research capturing the patients' perspectives on health education is needed.

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