

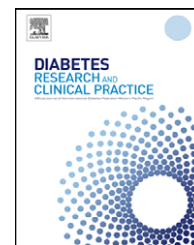


Contents lists available at ScienceDirect

Diabetes Research and Clinical Practice

journal homepage: www.elsevier.com/locate/diabres

International Diabetes Federation



The influence of Thai culture on diabetes perceptions and management

Napaporn Sowattanangoon^a, Naipinich Kotchabhakdi^b, Keith J. Petrie^{c,*}

^a ASEAN Institute for Health Development, Mahidol University, Salaya, Nakornpathom, Thailand

^b Neuro- and Behavioural Biology Center, Institute of Science and Technology for Research and Development, Mahidol University, Salaya, Nakornpathom, Thailand

^c Department of Psychological Medicine, Faculty of Medical and Health Sciences, The University of Auckland, Private Bag 92019, Auckland, New Zealand

ARTICLE INFO

Article history:

Received 20 July 2008

Received in revised form

21 December 2008

Accepted 9 February 2009

Published on line 13 March 2009

Keywords:

Diabetes

Management

Thai culture

Buddhism

ABSTRACT

Objective: To explore the way Thai patients perceive and manage their diabetes.

Research design and methods: Using a focused ethnographic approach, face-to-face interviews were conducted at two public hospitals in Bangkok. All interviews ($n = 27$) were audio-taped and transcribed verbatim. Analysis of the interview transcripts was completed thematically.

Results: The findings showed that Thai patients manage their diabetes according to their beliefs about diabetes. These beliefs are constructed using both modern and traditional knowledge. For example, some patients explained the cause of their illness as being due to biomedical factors such as genetics, and also cultural factors such as karma from either previous or current lifetimes. The analysis also revealed that some aspects of Thai life facilitate diabetes self-management while other aspects hamper good control of the illness. For example, Buddhist values of moderation contribute positively to dietary change, while, on the other hand, the importance of rice in the Thai diet can impede successful self-management strategies.

Conclusion: The results of this research indicate that Thai culture influences diabetes perceptions and management. Culturally appropriate treatment guidelines should be established for diabetes management that give special consideration to the significance and meaning of food and to Buddhist beliefs.

© 2009 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Type 2 diabetes and its complications are a major health concern in Thailand, where the prevalence of the illness has recently increased dramatically. In 2003, it was estimated that about 9.6% of Thai adults (2.4 million people) had diabetes, although approximately half had not been formally diagnosed [1]. The study also indicated that the incidence of diabetes did not significantly differ between genders but was higher in

urban than rural areas. Potential complications caused by diabetes include blindness, amputation, renal failure, and heart disease, which result in decreased quality of life and life expectancy. A 5-year follow-up study indicated that coronary heart disease was one of the leading causes of death among Thai patients with diabetes [2].

Limiting diabetes complications depends on maintaining satisfactory glycaemic control. Several studies have illustrated how culture might affect the interpretation and experience of

* Corresponding author. Tel.: +64 9 373 7599x86564.

E-mail address: kj.petrie@auckland.ac.nz (K.J. Petrie).

0168-8227/\$ – see front matter © 2009 Elsevier Ireland Ltd. All rights reserved.

doi:10.1016/j.diabres.2009.02.011

diabetes along with self-management of the illness [3–7]. For example, Chinese people believe that diabetes is caused by an imbalance of a hot/cold energy within the body and the aim of the treatment is to re-establish equilibrium by taking specific foods, herbs or medication [3]. These cross-cultural studies highlight the need to recognise cultural views of diabetes in developing effective self-management strategies.

Thais' perceptions of illness are a unique mix of Indian and Chinese medicine, as well as spiritual beliefs and practices. Up until now, the effect of Thai culture on diabetes has been hard to determine, because there has been very limited data on diabetes perceptions and behaviours among Thai patients. The purpose of the present research was to explore how Thai patients perceive their diabetes and how they relate these understandings to their self-management. Research and understanding of the impact of Thai culture on diabetes perceptions and adaptation may provide and improve self-management for Thai patients with diabetes.

To place this research in perspective it is necessary first to provide a brief overview of Thai culture. Theravada Buddhism is central to modern Thai identity and belief and is practised by 94.6% of the population [8]. Buddhism is not only the dominant religion of Thailand but it is also a principal philosophy for most Thais [9]. Buddhist values have a strong influence on Thai health beliefs and practices [10,11]. In this research we investigate how Buddhism is reflected in Thais' perceptions and management of diabetes. Food plays a very large role in Thai daily life. In other words, Thais love to eat. Redmond commented that: "Thais would prefer to leave the world with a full stomach." [12]. Thai food requires an intricate preparation, which involves presentation as well as balance of the five fundamental flavours (sweet, spicy, sour, salty, and bitter) into a harmonious blend. A typical Thai meal involves many complementary dishes, which are served together with rice. Rice is so important that one of the most common greetings is "kin khaao reuu yang" (Have you consumed rice yet?) [13]. The restriction of carbohydrates such as rice is a necessary part of diabetes management and this creates a complicated challenge for Thai patients.

In this study we investigated the role of Thai culture on the diagnosis and management of diabetes in a sample of Thai patients with type 2 diabetes using a focused ethnography qualitative methodology [14].

2. Methods

2.1. Participants

Following approval by the Ethics Committee of Faculty of Medicine, Siriraj Hospital, Mahidol University, Thailand (SiEC 220/2547), 27 participants were purposively selected from two hospitals: Royal Thai Air Force Hospital ($n = 17$) and Siriraj Hospital ($n = 10$) in Bangkok. The inclusion criteria for eligible participants were that they were of Thai ethnicity, spoke the Thai language, were aged between 20 and 75 years, had been diagnosed with diabetes for at least 6 months, that they had either insulin-treated or non-insulin-treated diabetes, and were willing to talk about their illness experiences. Two participants were excluded because they had cancer. The

Table 1 – Socio-demographic and clinical characteristics of participants with diabetes, Bangkok, Thailand, 2004.

Characteristics	Participants ($n = 27$)
Mean age (range) (years)	56 (20–75)
Gender	
Female	13
Male	14
Religion	
Buddhist	25
Hindu-Buddhist	1
Unspecified	1
Marital status	
Single	2
Married	22
Widowed	3
Education	
<Primary school	2
Primary school, 4 years	4
Primary school, 6 years	6
Secondary school	4
Bachelor degree	8
Postgraduate	1
Missing data	2
Employment	
Employed	12
Unemployed	5
Housewife	2
Pensioner	8
Living arrangement	
Living with spouse and children	16
Living with spouse only	5
Living with children only	3
Living with spouse and parent	1
Living with siblings	1
Living alone	1
Mean years (range) diagnosed with diabetes	8 (10 months–26 years)

summary of participants' socio-demographic characteristics is illustrated in Table 1.

2.2. Procedure

Data were collected through a semi-structured individual face-to-face interview, which was focused on the patient's perceptions, attitudes and experience with diabetes. Examples of interview questions were as follows: How did you find out you had diabetes? How did you feel after being diagnosed? Please tell me how you responded to your diabetes after being diagnosed. Subsequent questions were posed depending on the individual participants. All participants were interviewed once in a private setting while waiting for the consultation with a doctor. All interviews were conducted by the first author, an indigenous Thai, and ranged from 40 to 80 min in length. The interviews were audio-taped and transcribed verbatim.

Data analysis consisted of two parallel phases. First, a line-by-line analysis of the original Thai transcripts of the semi-structured interview was performed. Emerging themes were

then coded using a general inductive approach, which allows the researcher to form a comprehensive picture of the information that is inherent in the raw data without the restraints imposed by structured methodologies [15]. Additionally, all Thai transcripts were translated into English by two professional translators. All the authors independently reviewed the English transcripts, discussed participants' underlying reasoning, and reached agreement on the themes. The key themes that emerged were the lay views of sugar, perceived causes of diabetes, importance of food and Buddhism.

3. Results

Quotations, drawn from the interview transcripts, are used to illustrate each theme and category. In brackets after each quote, the letters and figures represent the identification number of each participant as well as their gender and age. A summary of the emergent themes and categories is presented in Table 2.

3.1. Lay views of sugar

The diagnosis of participants' diabetes was made by both lay persons and healthcare professionals. Traditionally, the name of diabetes or *bao waan* (meaning sweet urine) plays an important role in the initial diagnostic stage. When patients experienced unusual symptoms such as frequent urination, they self-diagnosed suspected diabetes. Generally, diabetes is perceived as a sugar-and-urine related illness which does not directly cause death.

3.1.1. Diagnosis (sweet urine)

Diabetes Mellitus is called in Thai *bao waan*—literally, 'sweet urine.' Many patients in this study suspected they had diabetes as there were ants walking around their urine.

"I suspected I was diabetic as many black ants swarmed all around my urine. One time, I slightly dipped my finger in my own urine and tasted it. Well...it's not sweet but slightly salty. It would be sweet if I drank it." [ID03, M, 72]

The meaning of diabetes as sweet urine was widely acknowledged by both patients and family members. A patient's family member told the patient he was diabetic before he received a clinical diagnosis.

"My son knew that I was diabetic before I did. One morning, after he went to the toilet, he said: Dad, there are ants around the toilet. It means that you are diabetic." [ID12, M, 70]

3.1.2. Reducing sugar

Throughout the interviews, it was evident that 'sugar' and '*bao waan*' were used interchangeably and meant the patient's blood sugar level. For example, a patient, [ID01], stated that "Doctor said my *bao waan* was up to 400 mg/dl." The definition of diabetes as a sugar-related illness influenced the way patients reacted to their illness. Their objective in diabetes management thus became decreasing sugar consumption in order to lower their sugar level.

"I used to add sugar into my noodles. Now I no longer add it." [ID11, M, 46]

3.2. Causes of diabetes

Patients' understanding of the causes of diabetes came from biopsychosocial viewpoints. In order to live with diabetes, most patients made sense of the illness by searching for information about the cause of diabetes.

3.2.1. Biological and cultural factors

The understanding of the causes of diabetes comes from biopsychosocial viewpoints. Biological factors, notably heredity and advanced age, were commonly attributed as the cause of the illness. Some patients felt unconcerned after being diagnosed with diabetes, as it is a common illness when getting older. A number of them were shocked, scared, anxious, or even sad because they felt it was too soon for them (under 40 years old) to be diabetic. Regardless of their emotions, all of the patients accepted the diagnosis.

"I was very frightened when I was told about my diabetes. Then, I accepted it. It's genetics. My mother had it." [ID20, M, 50]

"I think...people who are over 40...may get diabetes..." [ID23, M, 67]

The awareness of increasing risk of diabetes with aging is consistent with Buddhist principles. Buddhists think that illness and aging are natural parts of the birth-and-death life cycle. Illness is primarily regarded as the result of an individual's past karma (or action) in either a past or current life [16,17]. The Law of Karma or Cause and Effect means that there are inescapable results of one's own actions. Thus, much of what one experiences is the result of one's own previous karma. As a result of karma in a past life, several patients believed that diabetes is a karma illness (*rohk waehn karm*: *roh* means illness and *waehn karm* refers to previous bad action). A possible underlying reason for holding these Buddhist beliefs in the context of diabetes is that it may benefit their

Table 2 – A summary of the emergent themes and categories.

Themes	Categories
Lay views of sugar	Diagnosis (sweet urine) Reducing sugar
Causes of diabetes	Biomedical and cultural factors (Law of Cause and effect)
Importance of food	Rice Tropical fruits Sweet fruits Non-sweet fruits Moderation
Buddhism	Acceptance (<i>Thahm Jai</i>) and letting go (<i>Plong</i>) Buddhist practices

psychological well-being and enhance acceptance and contentment.

“People say diabetes is *rohk waehn karm*. Thinking in this way makes me feel comfortable. I heard a story. In a previous life, a diabetic patient enjoyed raising animals but hardly fed them when they were hungry... something like that. I don't know whether or not it relates to diabetes... probably not. But it makes me happy to think like this.” [ID22, M, 35]

Some patients identified diabetes as the consequence of their irrational behaviour in this current lifetime but discounted the impact of their previous lives.

“In the past, I ate everything without thinking... The effect of *karma* in previous life is very little. *Karma* starts with actions from child to adult. The results of our actions gradually accumulate in the body.” [ID04, M, 58]

3.3. Importance of food

3.3.1. Rice

Khaao, meaning rice, is the mainstay of the typical Thai diet and is generally served with every meal except when replaced by noodles. There are two kinds of rice: short and long grain. The short grain or glutinous rice, more commonly known as sticky rice, is the favoured staple of the northern and north-eastern diet and often the main ingredient in Thai desserts. The long grain rice, mainly white in colour, is the most common used throughout Thailand. There is also brown, long grain rice, a more complex carbohydrate which has become popular more recently as it is perceived to be healthier than white rice. Rice is considered a principal food, without which life would be incomplete, and is usually eaten at every meal. The dietary advice given to diabetics to eat ‘less rice’ seems to be a major problem, as rice is the chief component of all Thai meals.

“Avoid rice ... Thai people can't avoid rice. I eat rice everyday. *Khaao* is life. We must eat ... everyday Thais must eat rice.” [ID24, F, 47]

After being diagnosed with diabetes, all patients realised that it was their responsibility to modify their eating habits as recommended by their doctor or nurse. Initially, patients reduced their portion of rice intake and had different strategies to cut down the quantity of rice consumption. Some ate other kinds of food or drank more water and soy milk to fill up their stomach either before or during meals. The concept of replacing rice with low energy food or more complex carbohydrates, such as wild or brown rice, did facilitate altering eating habits among these patients, although it could be idiosyncratic.

“The doctor just told me to try and control my diet first. He gave me some informative leaflets telling me not to have more than two meals a day and not more than two servings of rice per meal. I eat only a small amount of rice, and only eat a small amount of sugar. I used to eat two or three platefuls of rice per meal, because it's delicious (laugh) ... I

tried to eat less rice. I eat other things instead. Eat lots of fruit instead ... so I don't get hungry. Sometimes I eat vegetarian food, and try to avoid eating white rice, I eat brown rice instead.” [ID13, F, 56]

3.3.2. Tropical fruits

3.3.2.1. *Sweet fruits*. Fruit is eaten extensively among Thais as it is considered to help digestion and cleanse the intestines. A wide selection of fruit is available and most meals are finished with fresh fruit. Most tropical fruits are sweet and high in natural sugar, which can increase blood sugar level. Examples of popular Thai fruits are durian, ripened mango, longan (a sweet fruit similar to lychee), lychee, orange (mandarin), banana, grapes, pineapple, rambutan (hairy lychee), pomelo, and tamarind. The availability of fruit is dependent on the season.

“I like every kind of fruits. ... No, I don't eat durian, *lamyay* (longan). I avoid fruits with high sugar. The doctor told me that I can eat an orange a day. I used to have some fruits but every time I had them, my sugar level increased.” [ID19, F, 53]

Durian is an extremely popular fruit in Thailand and it has a strong odour and distinct flavour. Based on indigenous knowledge, no more than two pieces of durian can be eaten a day because its calorie content poses a threat to people with diabetes and heart conditions. In the popular press reports of senior citizens being addicted to durian and dying from over eating the fruit appear every now and then. It has been suggested that the mean blood sugar level following eating durian is the highest of readily available tropical fruits [18]. Roongpisuthipong and colleagues further demonstrated that durian caused the highest rise in plasma insulin compared to the other fruits.

“When it is tamarind season, I eat a lot of tamarind (*makarm waan*) and my blood sugar increases. Also durian, it also makes my blood sugar rise, so I eat less. (laugh) ... I used to eat about a kilo of tamarind and durian, but I don't eat too much of it now. I used to have quite a lot of durian. I try not to eat it at all, but if I really want to eat it, I eat a little bit (laugh).” [ID13, F, 56]

3.3.2.2. *Non-sweet fruits*. The availability of non-sweet fruits is very limited in Thailand. Fruits recommended by doctors and nurses include guava, rose apple, unripened mango, and all kinds of melon (particularly bitter melon). Both guava and unripened mango are high in total dietary fibre which modulates glycaemia [19]. There is also evidence from in vivo and in vitro experiments suggesting that bitter melon can be used in treating diabetes because it possesses a hypoglycaemic action, although the mechanism of its activity is not known [20]. However, some patients do not like these fruits due to either the hard texture or taste. Rose apple is tasteless while unripened mango is sour. Patients will frequently eat these two kinds of fruit with sweet dips.

“I eat a lot of fruits such as guava. I don't eat ripened but unripened mango. I can eat 3-4 kilogram ... dipping with sugar, chilli, and salt.” [ID24, F, 47]

3.3.3. Moderation

The wide assortment of foods available in Thailand is an enormous obstacle to diet adherence in patients with diabetes. However, most patients were aware of having to overcome these obstacles to maintain their health. The key to adherence is moderation, not excessive eating. Some patients acknowledged the Thai proverb “*kin pheuua yuu, mai dai yuu pheuua kin*” (eat to live, not live to eat).

“Be moderate in eating. Eat to live, not live to eat.” [ID23, M, 67]

In contrast, a few patients were less aware of moderating their eating habits. They suggested that it is better for a person to suffer stomachache than to abstain from food. The main reason these patients were unconcerned about their health was related to their view of aging. Elderly Thai citizens customarily perceive aging as the end of life’s journey and see that this time of life should be pleasurable. They see food as an enjoyable part of life and they therefore find it difficult to follow strict dietary recommendations.

“They [doctors] forbid me to eat everything. Why forbid me to eat? I have reached this age. It doesn’t matter if I die tomorrow so long as I can eat today.” [ID02, F, 67]

3.4. Buddhism

In the current study, 26 of the 27 patients identified themselves as Buddhists. These patients can be divided into two clusters comprising actively practicing Buddhists and nominal Buddhists. Actively practicing Buddhists were defined as those who meditate on a regular basis. In the sample there were five patients who fell into this category. These patients tended to have greater adherence to treatment recommendations and were aware of diabetes as the cause of physical and psychological suffering. These patients saw adopting habits of healthy living as a way to eliminate suffering and to cultivate a greater sense of well-being. These patients accepted the reality of being diagnosed with diabetes and adhered to its treatments in order to sustain their quality of life in the long run.

“When time is available, I meditate at home. It helps to calm my mind. If I think or worry too much, my blood sugar will rise up.” [ID06, F, 41]

In contrast, nominal Buddhists are patients who perceive Buddhism as an ideology of living. Nominal Buddhist patients were less likely to practise mindfulness meditation, but nevertheless, they engaged in other kinds of Buddhist practices such as making good merit (bestowing charity or offering food to Monks), chanting, or listening to Dharma tapes (Buddhist discourse about the reality of life). Twenty-one of the sample were classified as nominal Buddhists. They believed that Buddhism promotes psychological well-being and a better life if they followed Buddhist principles. Nominal Buddhist patients considered these Buddhist practices as ethical behaviours and leading to a good life. These ideas of Buddhism were helpful to diabetes management because this

group of patients accepted their diabetes diagnosis and tried to adhere to healthy behaviour.

“I sometimes make merit. I chant in the morning and evening. I do all of these at home if I can’t go to temple. This makes me *sabaay jai* (happy).” [ID05, F, 75]

“Someone suggested that I should say prayers before going to bed. They said that it can ease my mind and make me become more peaceful, I tried doing it, and I felt at ease.” [ID15, F, 20]

There was only one patient who did not specify his religion. However, the patient discussed meditation as a potential approach to stress reduction, which is useful in managing diabetes, and considered practising it. Like other Buddhist patients, the patient accepted being diagnosed with diabetes and mentioned the use of a balanced, compromising lifestyle to help manage his diabetes. The concepts of acceptance and balance are consistent with the tenets of Buddhism.

“being in moderation . . . avoid being stressful. One thing that I have never tried is meditation. I think I would like to try. I just think that it can make my mind peaceful and I maybe less stressful. I noticed that my younger sister has become calmer and less stressed since practising meditation. So I think that it will be good for me.” [ID24, F, 47]

3.4.1. Acceptance (*Thahm Jai*) and letting go (*Plong*)

Acceptance and ‘letting go,’ meaning to see things clearly and let them be as they actually are, are two fundamental Buddhist principles. The values of *thahm jai* and *plong* are Buddhist means of reconciling life’s sufferings or illnesses. They refer to being stoic and preparing one’s mind for possible misfortune. Buddhism emphasises the inevitability of old age, illness, and death. A number of the patients thus accepted being diabetic immediately after receiving the diagnosis: however, there were a few patients who took time to fully accept the illness.

“*thahm jai* . . . what will happen, will happen. If I am ill, I will see my doctor and take medication. If the illness gets worse and is no longer curable, I die. We all die sooner or later.” [ID17, M, 61]

When patients accepted being diabetic, the management of the illness became a lot easier. By intentionally cultivating acceptance, several patients were creating a self-reliance process of managing diabetes. They asserted that “each makes one’s gateway.” It means they needed to accept full responsibility for whatever happened to them.

“I think no one can really do anything else to help me . . . if my blood sugar is still increasing, I have to be very strict about what I eat.” [ID08, F, 60]

3.4.2. Buddhist practices

Two advanced forms of Buddhist practice are mindfulness meditation and insight (*vipassana*) meditation. The five active Buddhists were inclined to commit themselves to these practices, either to a formal course or to a prolonged training

program. Some of them meditated daily in their homes. Among these patients, mindfulness meditation was done while sitting and walking. These Buddhist practices appear to have increased patients' awareness of their thoughts, feelings, and behaviour patterns. Sitting practice effectively enhanced a sense of peacefulness. On the other hand, walking practice helped relieve body pain and increase physical activity.

"I like the Buddhist way. Sometimes if I go to the temple for *phratibut dharma* (a retreat), vipassana meditation, I'll only have two meals per day . . . just eat enough to survive. When I meditate, I feel satisfied with myself and I am not hungry. Walking meditation also helps to relieve knee pain. . . it's more like an exercise." [ID13, F, 56]

4. Discussion and conclusion

4.1. Discussion

The findings of the current study indicate that Thais' diabetes perceptions and management are the synthesis of their biomedical knowledge and socio-cultural values. Throughout all interviews, it was evident that both Western biomedicine and Thai culture influence the way patients perceived the cause of their illness, and also how they lived with their diabetes. Regarding the meaning of diabetes or *baowaan* as sweet urine, patients suspected that diabetic urine had to be sweet because it attracted ants. The views of diabetes as a sugar-related illness led to the conclusion that diabetic patients would need to consume fewer carbohydrates and eat a less sweet diet to reduce the body's sugar level.

Biological risks, especially heredity and old age, were attributed as the primary causes of diabetes. However, several patients also viewed diabetes as the result of karma, either from the current or previous lifetime. Most importantly, having the view of inescapable consequences of behaviour in this current life seemed to increase patient adherence in diabetes management. Beliefs about the cause of diabetes were consistent with the findings from previous investigations. Ratanasuwan et al. reported that the diabetic patients in Northern Thailand widely thought that modern lifestyles (e.g., obesity, lack of exercise, and stress) and spiritual factors caused their diabetes [21]. The suggestion that beliefs of causality influence illness management is congruent with a Chinese-American study discussing the importance of re-establishing yin and yang balance to manage diabetes [3].

Thais' eating patterns are influenced by both individual and cultural factors. Cultural contexts include the convenience and abundance of choices in tropical hyperglycaemic fruits. Individual contexts were characterised by responsiveness to the availability of preferred foods. Patients in this study attempted to eat healthfully to reduce sugar and cholesterol levels, but this was also influenced by traditions and the availability of foods.

Thai eating behaviour is a difficult barrier for patients attempting to manage their diabetes. However, making use of a traditional proverb, "eat to live, not live to eat" seemed to be a powerful strategy for modifying eating habits. The concept of moderation in eating is consistent with the Buddhist teaching

of the middle path, which underlines the reduction of harmful behaviours (e.g., overeating and drinking) and the promotion of helpful behaviours such as eating more vegetables [22]. Moderation in eating may improve patient adherence in dietary self-management and medical outcomes. Clearly, Buddhism played a significant role in diabetes management for patients in this study. The attitude of accepting the way diabetes really is sets the stage for appropriately and autonomously managing the illness, facilitating patients in not giving in to the temptation of foods and in strictly adhering to medication.

More effective self-management of diabetes was found to result from mindfulness training. Diabetic patients facing a life-long illness may reconsider the ways in which they have been living their lives and choose to refocus their priorities on mindful eating and living such as being aware of what they should or should not eat. Practising mindfulness meditation helps diabetic patients to turn away from all unhealthy behaviours, specifically overeating. In an experience-sampling study, although not related specifically to diabetes management, Brown and Ryan demonstrated that mindfulness practice resulted in an autonomous behavioural regulation [23]. The study also suggested that when acting mindfully, individuals were acting in a way that was concordant with their values and concerns. Supporting these findings, a randomized controlled trial has shown the benefit of acceptance and mindfulness skill on diabetes management and outcomes [24].

4.2. Limitations

Some limitations of the current study should be noted. The sample size is quite diverse with a wide age range and includes some patients using insulin. The patients used in this study were also attending hospital and, therefore, may also have less traditional views of diabetes. Thus, a large quantitative research in diverse settings is needed to support the emergent themes. In particular, more work is needed on what specific aspects of Buddhism may be helpful in improving diabetes self-management and how mindfulness strategies may be incorporated into treatment of Thai patients.

When analysing qualitative data with non-English transcripts, the use of translation becomes a critical issue as important information and cultural nuances can be lost. Translation is a complex task as there are often no true equivalent words between two languages. For example, *plong*, a Thai word, can be translated either as 'being stoic' or 'let go.'

4.3. Conclusion

Aspects of Thai culture influence the perception and management of diabetes. This research found that diabetes is perceived as a sugar-related illness, which is caused by either biological (e.g., genetic or old age) or cultural (result of previous Karma) factors. A major barrier to diabetes management is a wide variety of food and hyperglycaemic fruits. However, moderation in eating is a powerful strategy to modify eating habits. Buddhist values (acceptance) and practices (mindfulness meditation) may enhance better diabetes management. An appreciation of the cultural differences in Thai

patients' views of their illness may assist clinical management of these patients.

Conflict of interest

There are no conflicts of interest.

Acknowledgements

We are grateful to the 27 patients, Group Captain Supachoke Chitvanich, and Assistant Professor Nattachet Plengvidhya for their co-operation. We thank Dr Judith McCool and Dr Rachael Powell for their comments on the manuscript.

REFERENCES

- [1] W. Aekplakorn, R.P. Stolk, B. Neal, P. Suriyawongpaisal, V. Chongsuvivatwong, S. Cheepudomwit, et al., The prevalence and management of diabetes in Thai adults: the international collaborative study of cardiovascular disease in Asia, *Diab. Care* 26 (2003) 2758–2763.
- [2] R. Leeleewattana, C. Rattarasarn, A. Lim, S. Soonthornpun, W. Setasuban, Causes of death, incidence and risk factors of cardiovascular diseases in Thai type 2 diabetic patients: a 5 year follow-up study, *Diab. Res. Clin. Pract.* 60 (2003) 183–189.
- [3] K.M. Chun, C.A. Chesla, Cultural issues in disease management for Chinese Americans with type 2 diabetes, *Psychol. Health* 19 (2004) 767–785.
- [4] R. Daniulaitye, Making sense of diabetes: cultural models, gender and individual adjustment to type 2 diabetes in a Mexican community, *Soc. Sci. Med.* 59 (2004) 1899–1912.
- [5] W.A. Lai, C.Y. Lew-Ting, W.C. Chie, How diabetic patients think about and manage their illness in Taiwan, *Diabet. Med.* 22 (2005) 286–292.
- [6] M.C. Rosal, K.V. Goins, E.T. Carbone, D.E. Cortes, Views and preferences of low-literate Hispanics regarding diabetes education: results of formative research, *Health Educ. Behav.* 31 (2004) 388–405.
- [7] E.T. Carbone, M.C. Rosal, M.I. Torres, K.V. Goins, O.I. Bermudez, Diabetes self-management: perspectives of Latino patients and their health care providers, *Patients Educ. Couns.* 66 (2007) 202–210.
- [8] The National Statistical Office, Preliminary report: The 2000 population and housing census, Ministry of Information and Communication Technology, Bangkok, 2000.
- [9] N. Mulder, *Inside Thai Society*, Silkworm Books, Chiang Mai, 2000.
- [10] P. Burnard, W. Naiyapatana, Culture and communication in Thai nursing: a report of an ethnographic study, *Int. J. Nurs. Stud.* 41 (2004) 755–765.
- [11] P.C. Lundberg, K. Trichorb, Thai Buddhist patients with cancer undergoing radiation therapy: feeling, coping, and satisfaction with nurse-provided education and support, *Cancer Nurs.* 24 (2001) 469–475.
- [12] M. Redmond, *Wondering into Thai Culture*, Redmondian Insight Enterprises Co., Ltd., Bangkok, 2002.
- [13] R. Cooper, N. Cooper, *Culture Shock: A Survival Guide to Customs and Etiquette*, Marshall Cavendish International (Asia) Private Limited, Singapore, 2005.
- [14] J.M. Morse, P.A. Field, *Qualitative Research Methods for Health Professionals*, Sage, California, 1995.
- [15] A. Bryman, R.G. Burgess, *Analyzing Qualitative Data*, Routledge, London, 1994.
- [16] P. Ratanakul, Thailand: refining cultural values, *Hasting Center Report*, 20 (1990) 25–27.
- [17] N. Van Gorkom, *Buddhism in Daily Life*, Dhamma Study and Propagation Foundation, Bangkok, 1988.
- [18] C. Roongpisuthipong, S. Banphotkasem, S. Komindr, V. Tanphaichitr, Postprandial glucose and insulin responses to various tropical fruits of equivalent carbohydrate content in non-insulin-dependent diabetes mellitus, *Diab. Res. Clin. Pract.* 14 (1991) 123–131.
- [19] S. Nitihan, S. Komindr, A. Nichachotsalid, Phytate and fiber content in Thai fruits commonly consumed by diabetic patients, *J. Med. Assoc. Thai* 87 (2004) 1444–1446.
- [20] S.L. Sitasawad, Y. Shewade, R. Bhonde, Role of bittergourd fruit juice in stz-induced diabetic state in vivo and in vitro, *J. Ethnopharmacol.* 73 (2000) 71–79.
- [21] T. Ratanasuwan, S. Indharapakdi, R. Promrerk, T. Komolviphat, Y. Thanamai, Health belief model about diabetes mellitus in Thailand: the culture consensus analysis, *J. Med. Assoc. Thai* 88 (2005) 623–631.
- [22] K. Tanphaichitr, *Buddhism Answers Life*, Hor Ratachai Printing, Ltd., Bangkok, 2006.
- [23] K.W. Brown, R.M. Ryan, The benefits of being present: mindfulness and its role in psychological well-being, *J. Pers. Soc. Psychol.* 84 (2003) 822–848.
- [24] J.A. Gregg, G.M. Callaghan, S.C. Hayes, J.L. Glenn-Lawson, Improving diabetes self-management through acceptance, mindfulness, and values: a randomized controlled trial, *J. Consult. Clin. Psych.* 75 (2007) 336–343.