Postprint

This is the accepted version of a paper published in The Australian journal of rural health. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the original published paper (version of record):


Access to the published version may require subscription.

N.B. When citing this work, cite the original published paper.

Permanent link to this version:
http://urn.kb.se/resolve?urn=urn:nbn:se:lnu:diva-52899
“Is gestational diabetes a severe illness?” exploring beliefs and self-care behaviour among
women with gestational diabetes living in a rural area of the south east of China

Abstract

Objective: This study explores beliefs about illness and health and self-care behaviour among women
with gestational diabetes living in a rural area of the south east of China.

Design: A qualitative exploratory study using semi-structured interviews and qualitative content
analysis.

Setting: A hospital located in the outskirts of a city in the south east of China.

Participants: Seventeen women with gestational diabetes in 34-38th pregnant weeks.

Results: The beliefs about gestational diabetes among the women in the present study were found to
be bidirectional. Some of them feared the illness and its negative influence on health, while others
believed that it was not a severe illness and disbelieved the diagnosis of gestational diabetes. They
related their illness and health to the individual, social and natural factors. They mainly sought help
from the professional sector, but did not fully comply with the professionals’ advice. Diet control and
exercise were their main self-care measures, but none of them self-monitored their blood glucose.
They demonstrated their misunderstanding about diet control and self-monitoring of blood glucose.

Conclusions: This study highlighted the serious lack of knowledge, lower level of risk awareness and
poor self-care behaviour among women in this group. Health professionals were found to be the most
important source of knowledge about gestational diabetes for these women. The influence of Chinese
culture was demonstrated. Gestational diabetes among these women can most likely be improved by
training the health professionals and by health education involving individuals, families, and the rural
communities.

KEY WORDS: gestational diabetes, beliefs and behaviour, health education, rural, China.

What is already known on this subject:

- The prevalence of gestational diabetes is 4.3% and is increasing in China.
Some individual beliefs about illness and health may lead to inadequate self-care behaviour and thus fail to meet health targets.

Beliefs about illness and health among urban Chinese women with gestational diabetes could affect self-care behaviour, and thus influence health.

What this study adds:

- The beliefs about gestational diabetes among the women in the present study were found to be bidirectional. Some of them feared the illness and its negative influence on health, while others believed that it was not a severe illness and even disbelieved the diagnosis of gestational diabetes.
- This study highlighted the serious lack of knowledge, lower level of risk awareness and poor self-care behaviour among the women in this group.
- Gestational diabetes among these women can most likely be improved by training the health professionals and by health education involving individuals, families, and rural communities.

Introduction

The prevalence of gestational diabetes mellitus (GDM) is 4.3% and is increasing in China.\(^1\) GDM is independently associated with adverse pregnancy outcomes and between 30% to 70% of women manifesting GDM will go on to develop type 2 diabetes mellitus (T2DM).\(^2\) GDM can be adequately controlled with dietary modifications and increased physical activity\(^2\), which will change the lifestyles of women with GDM. A study showed that women’s ability to follow a healthy lifestyle was influenced by their beliefs and was embedded in the socio-cultural contexts of their lives.\(^3\)

The transition between illness and health exists in the fundamental life patterns of human being. Beliefs about illness and health are closely tied to beliefs about treatment and health-related behaviour\(^4\), which is a central cognitive structure of every health care system.\(^5\) A recent metasynthesis showed that women feared GDM and believed themselves to be likely develop T2DM over time, while others believed GDM to be temporary and were unaware of any future risk.\(^6\) Native Swedish women\(^7,8\) with the former beliefs more frequently searched help and advice from professionals and used medications against pregnancy-related complications than Middle-Eastern-born women\(^7\) and
African-born women\textsuperscript{8} living in Sweden with the latter beliefs. Chinese urban women feared the negative influence of GDM, but some of them believed in “letting nature take its course” and “living in the present”. They sought a balance between following professionals’ advice and avoiding practical difficulties.\textsuperscript{9}

In China, according to the division regulation of the urban and rural area used by National Bureau of Statistics, the rural area refers to the area out of the whole administrative area of city with district establishment, city without district establishment, town, and township,\textsuperscript{10} which is designated by the State Council of the People’s Republic of China.\textsuperscript{11} The health system development in rural areas has lagged behind that of urban areas nowadays.\textsuperscript{12} There are also deficiencies in the quality and quantity of the medical workforce in economically less developed areas, especially at the village level.\textsuperscript{13} Socioeconomic differences\textsuperscript{14} and differences in health care provider\textsuperscript{5} can influence patients’ beliefs and self-care behaviour. It could thus be hypothesised that the beliefs and self-care behaviour of women with GDM living in the rural areas are different from those of women living in the urban areas in China. However, to our knowledge, no previous study has explored those among women with GDM living in rural areas in China. The aim of this study was thus to explore beliefs about illness and health and self-care behaviour among women in this group.

\textbf{Methods}

A qualitative exploratory study was conducted with semi-structured individual interviews. The study was approved by the Ethics Committee of a university in the south east of China, and was conducted according to the Declaration of Helsinki.\textsuperscript{15} The interviews were carried out at a hospital located in the outskirts of a provincial capital city in the south east of China. Women with GDM from rural areas were in the catchment areas of the obstetric clinic or ward at this hospital.

The study used purposeful sampling\textsuperscript{16} seeking women from high, medium and low educational backgrounds.\textsuperscript{17} Inclusion criteria were age $\geq$ 16 years, diagnosis of GDM\textsuperscript{18}, 34-38th gestational weeks, living in a rural area, and speaking Mandarin Chinese without speech impediment. Seventeen participants accepted the invitation and were interviewed whose median age was 27.5 (range 21-37)
years, comprising six women with a high educational level, five with a middle educational level and six with a low educational level (Table 1).

---INSERT TABLE 1 HERE---

Data were collected between April and July of 2013 by using an interview guide that had been used in a previous study9 (Table 2). The first author (a native female Chinese who is a teacher of maternal care with bilingual skills) interviewed these women in a room at the hospital after the written informed consents were obtained. The interviewer was not involved in the work of the obstetric clinic and ward. Each interview lasted between 40~60 minutes and was documented with a digital audio recorder, and then was transcribed verbatim in Chinese and translated from Chinese to English by the first author.

---INSERT TABLE 2 HERE---

Data were analyzed by using qualitative content analysis19, which includes inductive category development and deductive category application. Firstly, during the process of inductive category development, each sentence of the text was read several times. Categories were formulated and then were condensed into main categories by combining similar meanings. The main categories were summarized in order to gain a holistic picture. Secondly, the categories from the lay theories of illness causation4 and the model for care-seeking behaviour5 were used as the categories of the text analysis during the process of deductive category application (See examples in Table 3 and Table 4). The analysis process and the cultural issues were discussed between authors.

---INSERT TABLE 3 and 4 HERE---

Results

Beliefs about illness and health

In the present study, some women felt fear when they received the GDM diagnosis, and especially concerning the potentially negative influence of the illness on the health of their babies such as abnormalities, large babies, neonatal hypoglycemia. A woman cried when she was interviewed because she felt stigmatized from her family because of GDM: “My mother-in-law phoned relatives and told the villagers that my baby was not healthy because I had GDM…” However, some of them doubted the diagnosis because they did not have any symptoms and they and their babies were
“normal” after conventional prenatal checks. They said that GDM was not a severe illness.

I discussed with my colleagues who’d been pregnant after I came back from hospital. All of them felt the illness wasn’t severe, and so I took it easy and didn’t ask the doctor until the next visit for antenatal care…. My sister-in-law had GDM, but she and her baby didn’t have any problems after she gave birth, so I’m not feeling tense.

The women believed that the causes of GDM emanated from the individual world (IW), such as incorrect dietary habits and heredity, while some also believed that stress (social world, SoW) and medications (natural world, NW) were among the causes (Table 3). Most of the women did not have any knowledge about the pathogenesis of GDM, while a few women spoke of limited knowledge about hormones, insulin and blood glucose.

In prognostic terms, almost all women thought that they would recover after delivery, but more than half of them thought that they would suffer from T2DM in the future. On the other hand some spoke of not knowing about any future influence of GDM. Some did not expect their future health to be affected by GDM, while others did not think about it because they let nature take its course or tried to live in the present.

In terms of the beliefs of health, these women attributed health to the IW and SoW, such as “money” and well-being (IW), as well as quality of life and “having energy to work and taking care of family” (SoW). These women generally believed that diet control, exercise and having a good mood (IW) were good for their health, and the NW in terms of a clean and quiet environment as well. They also believed in the negative factors for health such as high blood glucose and unhappy mood (IW), as well as the NW in terms of the polluted environment and food.

**Self-care behaviour**

All the women in the present study believed in the importance of the health professionals for their GDM and mainly sought help from the professional sector - obstetricians. Their care-seeking behavior varied between the professional sectors and the popular sectors such as colleagues. None of the
women sought help from the folk sector such as a folk healer (Table 4).  

More than half of these women were satisfied with the professionals’ advice, and thought that this was the most important source of knowledge to help them reduce their blood glucose. Almost all women used diet control and exercise in order to attain glycemic control. Some thought, however, that the advice was too elementary and not sufficient. Half of them could not fully comply with the professionals’ advice due to such as the customary diet habit and the thoughts of “GDM was not a severe illness”. Some women feared that the diet control would lead to a nutrition deficiency for the fetus, and thus influence the growth and development of the fetus. One woman talked about her diet control, “I only eat cooked rice and vegetables”.  

None of the participants conducted self-monitoring of blood glucose, and most of the women said that the obstetricians had not mentioned it at all. All of the women checked their blood glucose only when they received conventional antenatal care. One woman demonstrated her thoughts about self-monitoring of blood glucose:

I don’t dare to do self-monitoring of blood glucose. I don’t have enough knowledge about it…I test my blood glucose in the hospital. The measurement by drawing blood from a vein is more accurate than when pricking a finger. …The result of the blood glucose monitor is not correct because it is an electronic thing.

Furthermore, some women used individual measures to maintain health such as maintaining a relaxed mood. Some spoke of using spiritual measures such as prayers, burning incense and worshipping Buddha. While some used natural cures such as nutritional supplements and traditional Chinese medicine. A few used household remedies such as chrysanthemum tea, soups based on plant roots or some special foods.

Discussion

The present study added new knowledge that was the bidirectional beliefs about GDM among the women with GDM living in a rural area in China. Some of them feared the illness and its negative
influence on health, while others believed that it was not a severe illness and even disbelieved the
diagnosis of gestational diabetes. The study also highlighted the serious lack of knowledge, lower
level of risk awareness and poor self-care behaviour among women in this group. They attributed
illness and health to the individual, social and natural factors. They believed that the professionals
were the important resources for their health and mainly sought help from the professionals, but they
did not fully comply with the professionals’ advice. Diet control and exercise were their main self-care
measures, but none of the women used self-monitoring of blood glucose. They demonstrated their
misunderstanding about diet control and self-monitoring of blood glucose. The influence of Chinese
culture was demonstrated.

In the present study, women feared GDM and its negative influence on their own and their babies’
health. The result was similar to other studies, for example, north American indigenous women with
GDM had significant fear and anxiety surrounding the health and well-being of the unborn child and
the use of insulin injections. The women in the present study attributed illness and health to the
individual factors such as wrong dietary habits, which demonstrated a belief in their own
responsibility for their illness and health. This implied that it was possible for these women to take
the responsibility for controlling their GDM. They also related their illness and health to the social
factors, especially the well-being of their babies and families. A study carried out in contemporary
China showed that family collectivism and mutual dependence were preferred to individualism and
continued to be the dominating family values. Another systematic review study showed that
husbands, partners and families play a vital role in facilitating GDM self-management. These women
in the present study also attributed illness and health to the natural factors such as the polluted food
and environment. It showed that it is necessary to provide information about how to reduce the
negative influence from the natural factors to these women during GDM education.

A study in Sweden showed that the stigma from GDM resulted in women hiding their condition and
even carrying out unhealthy behaviour in order not to attract other people’s attention. One woman in
the present study also experienced stigma from GDM. Health education about GDM in rural
communities might thus be necessary to make people understand women with GDM and provide
support rather than generating feelings of being stigmatized.
However, some women in this study doubted the diagnosis of GDM they had received and thought that GDM was not a severe illness even after being informed by professionals about the harm to themselves and to their babies. The reasons for this were that they did not perceive that they had any symptoms, that they and their babies were “normal” after being checked in hospital, and that they had seen other women with GDM and whose neonates did not have any problems generated by GDM. Some similar views were also found in a study about the experiences of Australian women with GDM, where the women’s disbelief regarding their diagnosis and the uncertainty in their perception of the serious nature of GDM were described. A lower level of risk awareness about GDM have been found to be related to limited knowledge about the body and GDM, which was perhaps the reason why these women in the present study believed that GDM was not a severe illness and even disbelieved the GDM diagnosis.

All the women in the study believed that the professionals were the important resources for their health and most of the women mainly sought help from the professionals. The need for the professionals’ support among women with GDM was also highlighted in a systematic review article. However, some women in the present study thought the advice from the professionals was not sufficient, and most of women had not been informed about self-monitoring of blood glucose by the professionals. A study showed that lower levels of health literacy and risk awareness of GDM might relate to a risk for poorer self-management of GDM. A similar finding could be seen in the present study. For example, some women in this study lacked knowledge about GDM and thus believed that diet control for GDM would affected their health and resulted in a nutrition deficiency in their babies, so they did not well control their diet; some women controlled their diet by only eating cooked rice and vegetables.

Gestational diabetes among these women can most likely be improved by training these health professionals and by health education involving individuals, families, and rural communities. During the process of health education about GDM, some misunderstandings about GDM diet and self-monitoring of blood glucose need to be clarified; the information about how to reduce the negative influence from the polluted food and environment also needs to be provided.

The present study is unique in terms of providing a voice for the disadvantage populations in
maternal health in China, i.e. women living in a rural area who are probably in the shadow of the Chinese mainstream society. However, there are limitations in the study. The present qualitative study used small sample size, so the findings can only represent these women in this study, not all women living in rural areas in China. It is possible to transfer the findings to similar contexts, and to be served as a base for the further larger studies.

Conflicts of interest

The authors declare no conflict of interest.

References


http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385


22. Keygan J. The impact of gestational diabetes mellitus on the pregnant woman, her infant(s) and family, midwifery practice and the health care system. Nuritinga 2013; (12): 12-23.


### TABLE 1: Characteristics of the interviewed women with GDM (n=17)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median (range)</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (year)</strong></td>
<td>27.5 (21-37)</td>
<td>17</td>
</tr>
<tr>
<td><strong>Recurrence in GDM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>GDM symptoms such as thirstiness and urorrhagia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Present treatment for GDM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet+exercise</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Current medication such as</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multivitamin, minerals, protein power</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td><strong>Nulliparous</strong></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td><strong>Parous</strong></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Educational level†</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior Secondary Education (9 years)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Senior Secondary Education (12-13 years)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Higher Education (≥ 15 years)</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td><strong>Present working condition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Unemployed</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Sick leave</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Family circumstances</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Unmarried</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

†The classified standard of educational level is according to the education statistic data in 2012.
### TABLE 2: Questions in the interview guide

<table>
<thead>
<tr>
<th>Beliefs about illness</th>
<th>1. What did you think when you were informed about having GDM?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. What do you think has caused GDM?</td>
</tr>
<tr>
<td></td>
<td>3. What do you think about your own/your baby’s future health related to GDM?</td>
</tr>
<tr>
<td>Beliefs about health</td>
<td>4. What does health mean to you?</td>
</tr>
<tr>
<td></td>
<td>5. What factors are good for your health/your baby’s health being as you have GDM?</td>
</tr>
<tr>
<td></td>
<td>6. What are the negative factors for your health/your baby’s health being as you have GDM?</td>
</tr>
<tr>
<td>Health-related behavior</td>
<td>7. Who did you seek advice or care from?</td>
</tr>
<tr>
<td></td>
<td>5. What do you do for your health-related to GDM?</td>
</tr>
<tr>
<td></td>
<td>6. Do you follow the advice you get? If not, why?</td>
</tr>
</tbody>
</table>

*The same interview guide as Ge et al.*
TABLE 3: Beliefs of what causes GDM among Chinese women (n=17)

<table>
<thead>
<tr>
<th>Categories†</th>
<th>Definition†</th>
<th>Examples</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>The individual world (IW)</td>
<td>The origin of illness is mainly malfunctions within the body. The responsibility for the illness is mainly on the patients themselves.</td>
<td>Incorrect dietary habit</td>
<td>17</td>
</tr>
<tr>
<td>Heredity</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactivity</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pancreatic disease</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imbalance between Yin and Yang</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The social world (SoW)</td>
<td>The illness comes from interpersonal malevolence, or physical and psychological injuries.</td>
<td>Stress</td>
<td>7</td>
</tr>
<tr>
<td>The natural world (NW)</td>
<td>This includes aspects of the natural environment, both living and inanimate.</td>
<td>Medications</td>
<td>9</td>
</tr>
<tr>
<td>The supernatural world (SuW)</td>
<td>The illness is ascribed to the direct actions of supernatural entities, such as gods, spirits, or ancestral shades</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† In accordance with the lay theories of illness causation by Helman†
| Categories† | Definition† | Care-seeking behaviour among Chinese women (n=17) |
|------------|-------------|-------------------------------------------------
|            |             | At first time | At second time |
| Professional sector | This comprises the organized, legally sanctioned healing professions. It includes not only physicians of various types and specialties, but also the recognized paramedical professions such as nurses, midwives and physiotherapists. | Obstetrician (15 cases) | Obstetrician (1 case) |
| Popular sector | This is the lay, non-professional, non-specialist domain of society. It includes all therapeutic options that people use, without any payment and without consulting either folk healers or medical practitioners. | Colleague (1 case) | Friends (1 case) |
| Folk sector | Certain individuals specialize in forms of healing that are either sacred or secular, or a mixture of the two. These healers are not part of the official medical system, and occupy an intermediate position between the popular and professional sectors. | (0) | (0) |

† According to the model for care-seeking behaviour by Kleiman³