



## The Confusion of Mothers with Gestational Diabetes Mellitus due to the Multidimensionality of Healthcare and Therapeutic Care: A Serious Threat to Mother and Fetus's Health

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### Abstract

**Background:** Gestational diabetes mellitus (GDM) is a challenge of the 21<sup>st</sup> century. The management of the diseases confronts numerous issues which lead to undesirable results of care consequences. The aim of this study is to explain factors involved in the confusion of mothers with GDM due to the multidimensionality of healthcare and therapeutic care.

**Methods:** The present study was carried out in 2014 with a qualitative method. Purposive sampling was employed to select 17 pregnant women with GDM who had referred to health centers affiliated with Tehran University of Medical Sciences. The data were collected through face-to-face deep interviews using half-structured and field note questions. In order to analyze the data, conventional content analysis was used according to Graneheim and Lundman method.

**Findings:** Based on the results of the study, factors such as inefficient health centers, Challenging situation behavioral inconsistencies of mothers with GDM towards the fetus, adopting a one-dimensional approach to a multidimensional treatment for diabetes, and living in fear and obscurity are directly involved in the confusion of mothers with GDM.

**Conclusion:** The results of this study can help staff providing health services and health system policy makers to identify factors preventing this group of patients from observing the multidimensional regimen and through strategic health planning take decisive and constant measures such that the economy of community health is boosted and undesirable consequences of GDM are avoided in third world countries.

### Keywords

Gestational Diabetes mellitus, Adherence, Qualitative study

In terms of having GDM, Iranian women face a greater risk such that 1 out of 20 pregnant women will have GDM and its complications [6]. There is great concern about GDM and its effect on the health of mothers, infants and the whole society [4]. Women with GDM face the risk of gestational diabetes, prediabetes, and type 2 diabetes [7,8] and GDM relapse [9-11] and unfortunately, their infants will also encounter macrosomia, trauma during birth, perinatal mortality, prematurity, low blood sugar, respiratory distress syndrome and jaundice [12].

GDM during the perinatal period yields high mortality rate for both the mother and the fetus. This problem necessitates the need for special care in this period [13,14]. Due to the prevalence of GDM and undesirable consequences caused by poor control of the disease, effective management of diabetes during pregnancy and taking suitable measures for education and preventive counseling are public health priorities [15-17]. Researchers have reported that decreasing child mortality and improving the quality of life for both the mother and the fetus is only possible by providing high quality healthcare [18-21]. The noteworthy point is that although patients dedicate a lot of time and energy to the diagnosis of the diseases, many of them ignore or abandon the recommended regimen [22]. Furthermore, studies indicate most of these patients' difficulties in following self-care advice and abandoning the healthy lifestyle [23,24].

Women with GDM are concerned about the effect of diabetes on their fetus, their inability to follow the advised regimen and the numerous necessary activities in this period. Compared with non-diabetic pregnant women, they are very anxious, worried and volatile [25], they are also at risk of low self-confidence, uncertainty [26] and disappointment with the future [27]. Not only do these women face psychological, emotional and physical pressures due to pregnancy, they also have to confront numerous problems caused by a lack of continuous control system and the absence of an effective management in the form of the absence of strategic planning for preventive healthcare and advised regimen [28]. Today, the patients' presence in the health care team and their participation in self-care programs with a focus on weight control, self-administered of insulin and timely visits are well recognized and since everybody's function

### Background

GDM is one the challenges of the 21<sup>st</sup> century and refers to the intolerance of carbohydrates with different degrees which specifically begins or is diagnosed during pregnancy. The prevalence of GDM has been on the rise during the past 20 years [1-4]. Such that it is estimated that it afflicts 7-18% of pregnancies in the USA [5].

is shaped with regard to social structures, cultural beliefs and personal feelings, obviously, without proper knowledge about the experiences, feelings and beliefs about self-care, it is impossible to establish a good relationship with women with GDM [29,30]. Thus, a practical and preventive protocol has to be adopted to be able to provide a high quality and multidimensional healthcare in order to support this group of pregnant women and their fetuses.

## Method

### Design

In this study, a qualitative plan has been employed with a content analysis approach in order to explain factors involved in the confusion of mothers with GDM in the face of the multidimensionality of healthcare.

### Data collection

The present study was conducted in 2014. We used purposive sampling to select 27 pregnant women in their week 28 to week 38 of their pregnancy who had referred to health centers of Tehran University of Medical Sciences. Inclusion criteria were the following:

- Pregnant women with gestational diabetes mellitus, the ability to express their experiences, and the desire to participate in the study.
- The only exclusion criterion was unwillingness to continue the study.
- The data were collected through face-to-face deep interviews.

In this study, a semi-structured questionnaire was used to collect data with items such as:

1. Please tell me about concurrence of your diabetes mellitus with pregnancy.
2. What comes to your mind when talking about diet therapy?
3. What's your perception and experience about adhering to diet?
4. How do you adhere to your diet?
5. Based on your personal experience, which factors have influenced your adherence to diet?

Interviews were performed in hospitals and health centers in Tehran. The researcher attended these centers and explained the research objective to pregnant women, and those who were willing to participate in the study signed the written consent form. Interviews were conducted in one session considering environmental and time factors and participants' conditions, tolerance, and willingness. Interviews lasted between 40 and 55 minutes, and were recorded by an MP3 player. Interviews were conducted individually in quiet and comfortable rooms like head nurse's room or training room. Recorded audio files and transcripts were kept in a safe place up to 9 months. Data were collected until saturation, i.e. no new data emerged. A total of 17 interviews were conducted.

### Data analysis

In order to analyze the data, conventional content analysis was employed according to Graneheim and Lundman's method [31].

Data analysis was performed according to Graneheim and Lundman's method:

1. Transcribing all interviews
2. Reading the entire text to have a general concept of its content
3. Determining meaning units and initial codes
4. Classifying similar initial codes to more comprehensive categories
5. Determining the main theme of categories

Each interview audio file was transcribed verbatim immediately

after the interview, and read several times to achieve an overall impression, to become familiar with the data, and evaluate them accurately. Field notes were also used simultaneously to interpret initial relationships between concepts obtained from participants' expression. Then every keyword or phrase was given a code. In this part, the first-stage coding process was performed by identifying and developing codes. A total of 500 initial codes were obtained. Then, similar initial codes were merged to form primary categories. Then, subcategories were formed to create more homogeneity among codes. The similar sub categories were merged by continuous comparison and eventually main categories or themes were extracted.

### Rigor

To increase the rigor and trustworthiness of the data, Lincoln and Guba's Criteria were used in the study [29]. In addition to the fact that the researchers became involved in data collection and analysis, peer debriefing and participant reviewing were also used to make the research more credible. To achieve reliability and objectivity of the data, research evaluation (inquiry audit), and to increase transmissibility, full introduction of the research plan were employed. Maximum variability in terms of age, number of pregnancies (gravity), family history and GDM history were observed in data collection.

### Ethical approval

Ethical issues such as getting a permission from the university's ethics committee, explaining the aims of the research to the participants and receiving a written consent from them, assuring them about the confidentiality of their information, retaining their anonymity in all research documents, their being allowed to opt out of the research at any stage, and being entitled to access the results were considered. This article is a part of a study which has been done in Tehran's University of Medical Sciences nursing and midwifery care research center with the approved certificate no. 91/250/4039. The researchers hereby thank all the nursing managers who shared their experiences with them.

## Results

### Participant characteristics

The mean age of women with GDM was  $26 \pm 8$  years. Other personal information is presented in table 1.

### Qualitative results

In the majority of cases, the first care for pregnant women with GDM is an appropriate diet. If no desirable result (normal blood sugar) is achieved, insulin will be injected. This regimen is accompanied with complementary methods such as self-monitoring of blood sugar, exercise and regular visits. Sometimes, the multidimensionality of the treatment leads to their confusion, and their advancement in any of the care dimensions will slow or stop.

**Table 1:** Demographic characteristics of pregnant women with GDM participating in the study.

Code	Age	Level of education	Number of pregnancies	Family history of diabetes	History of GDM
1	20	High school diploma	1	Negative	Negative
2	27	Associate's degree	2	Negative	Positive
3	31	Bachelor's degree	2	Positive	Negative
4	23	High school diploma	1	Negative	Negative
5	18	High school diploma	1	Negative	Negative
6	25	High school diploma	1	Negative	Negative
7	34	High school diploma	3	Negative	Negative
10	21	High school diploma	1	Negative	Negative
12	19	High school diploma	1	Negative	Negative
13	33	Bachelor's degree	2	Positive	Negative
14	29	High school diploma	1	Negative	Negative
16	24	Bachelor's degree	2	Negative	Negative
17	32	High school diploma	2	Positive	Negative

## Inefficient health centers

Health centers are unable to meet care needs of pregnant women with gestational diabetes due to the lack of staff and equipment; as a result, the quality of care is reduced.

Quantitative and qualitative weakness in the presentation of comprehensive services through health centers and the large number of patients in these centers may cost pregnant women with GDM a lot of energy and time as they try to find high quality health centers and empty beds for hospitalization. In these circumstances, the mother is extremely concerned about her own health and that of the fetus and faces physical, emotional and psychological pressures. The patient also needs to spend several hours a week to see the doctor and pay a considerable amount of money for the specialist's visit and so on while she may not be able to afford it. This is exhausting and may threaten the patient's therapeutic care.

*"My doctor told me I needed to be hospitalized but I could find an empty bed in a state-run hospital only after three days. My husband and I were going from this hospital to that hospital in the meantime".* (NO 12)

*"Believe me! I can't afford to pay for the doctor's visit. Sometimes, instead of going to the doctor's every two weeks, I go there every two months".* (NO 1)

In addition to a lack of high quality health centers and the spending of a lot of money by women with GDM, these patients face the problem of not receiving necessary and sufficient education and counseling from healthcare providers about how to observe the multidimensional regimen and how to take care of themselves correctly. These are the most important factors involved in the confusion of these patients.

*"When I went to health centers, I only received complementary medicine. Now, they say they don't have it. Nothing else is done for me. Even if there is any education, it is very brief and confuses me more".* (NO 4)

In this regard, other factors adding to the problems of the patients are the healthcare providers' inappropriate relationships and their indifference to the patients in terms of meeting the patients' educational, counseling, and therapeutic needs and failing to provide psychological support for these patients. In some cases, the patient's facing with unskilled and irresponsible care teams has severely endangered the physical, mental and psychological well-being of the mother.

*"The physician only tells me to exercise but s/he doesn't tell me how long I should exercise or what exercise I should do or until what stage of pregnancy I should continue exercising".* (NO 13)

*"My nurse comes and injects me with insulin, and then she goes. She has repeatedly seen me sad and anxious or crying, but she goes past me indifferently".* (NO 15)

## The behavioral inconsistencies of mothers with GDM toward their fetuses

What is obvious in this study is the fact that all mothers, the Maternal- fetal attachment, were ready to eat less than their appetite, have less delicious meals, monitor their blood sugar and inject insulin for the sake of the fetus's welfare and keeping it. Unfortunately, financial problems and lack of access to free healthcare which themselves are a consequence of no supportive strategic policy making has lead pregnant women with GDM to consider pregnancy coupled with diabetes a very challenging situation and deem the child's existence the cause of their confusion and unpleasant stressful conditions. This combines with mood changes such as prolonged anxiety and depression. Pregnant women consider their sudden and unexpected GDM experience, positive family history of diabetes, unwanted pregnancy, and complications of pregnancy such as preeclampsia, eclampsia or depression the cause of their unpleasant situation.

*"If I weren't pregnant, I didn't have to endure this misery. I'm fed up. There's a new problem each day. On the other hand, when I think about it, I say to myself that I'm a mother. What about my responsibilities?"* (NO 16)

Pregnancy under the pressure of the roles of wife, mother for the fetus and mother for other children and roles which emerge due to medical needs put the mother in a tense situation. On the one hand, the mother has to do her tasks as a parent and a spouse; on the other hand, she must take part in care and therapeutic methods and take charge of disease management.

*"I'm sort of baffled by all these tasks. I don't know what to do. I'm tired. I can neither abandon my young kids nor forget about the one inside me."*

## Adopting a one-dimensional approach to the multidimensional treatment of diabetes

The multidimensional care approach should be educating about the disease and what is standard of care i.e. medical nutrition therapy, exercise and monitoring of the pregnancy for complications. Additional anti-diabetic treatment is given if medical nutrition therapy does not achieve optimal glucose levels. When a pregnant woman with GDM is in an unpleasant financial situation, she has no way but to use nonstandard care. In emergency situations, they discontinue some dimensions of the treatment or prioritize some of them. They may select and continue a less expensive care method or one which seems the most important to them.

*"Instead of monitoring my blood sugar three times a day, I sometimes do it once a day or in some cases every two days. The kits are expensive and I can't afford them."* (NO 6)

## Living in fear and obscurity

The patient's having GDM, her facing a complicated regimen, financial problems as well as not having access to comprehensive social services like insurances and efficient health centers replace trust and security with a sense of insecurity and fear. The most prominent fear among these women is fear of the future and the obscure situation of themselves and their fetuses which may lead to unpleasant prospects, such as the death of the fetus or mother and the development of type II diabetes, and lead to their prolonged anxiety.

*"I have no idea what's gonna happen to me and my kid. Anxiety is killing me. What's going to happen finally? What's waiting for me after delivery?"* (NO 7)

Among other causes of the patients' fear, one can mention a lack of knowledge of how to manage the disease. Since the patients do not receive sufficient and necessary education from health carers, moving in any of the self-care directions is accompanied by confusion.

*"I received only an instruction sheet about allowed foods from my doctor. In fact, I saw a list of foods about which I received little information from the doctor. . . I was mixed up. I didn't exactly know what was good for me and what was bad for me."* (NO 9)

In fact, the patients' lives pass with a sense of uncertainty about the consequences they would face in the future due to the complexity of the dimensions of the treatment.

*"One doctor told me that I would be cured after delivery and another doctor told me there was no cure. . . I just realized what horrible disease I had. I totally freaked out. I was so devastated that I didn't dare to taste food. I just had bread and cheese for a couple of days. Still, I don't eat much out of fear."* (NO 2)

## Discussion

A background of the health care delivery would help the reader understand what the problem is, looks like there is a greater need for better communication rather than facilities and expertise .The inefficiency of health centers is one of the most important factors contributing to the confusion of women with GDM. The absence

of high quality health centers and a care team that is responsible for meeting the educational and counseling needs of the patients in taking care of themselves is the most crucial factor leading to the confusion of these patients. Abdoli et al. (2009) have claimed that the inefficient health centers put more emphasis on the presentation of routine clinical care because of a shortage of specialists and do not dedicate any program to the education and counseling of patients [32]. Etu-Seppala (2001) have asserted that in third world countries the policy makers lack of support for policy making for the education and counseling of people is a common phenomenon [33] It should be noted that GDM is an invaluable opportunity to prevent maternal and fetus complications [34,35]. Healthcare providers, especially community health nurses who cover a wide range of activities in terms of education, counseling, correct diagnosis and timely referral of patients can help this group of pregnant women substantially by teaching them a healthy lifestyle to prevent further complications of GDM [36,37].

Among important factors contributing to the confusion of mothers with GDM is the multidimensionality of the treatment of "pregnancy". Studies in this regard demonstrate that uncertainty and confusion in this period and the sharp distinction between positive and negative feelings toward the fetus harm the mother and the fetus seriously and damage the maternal-fetal attachment. The maternal-fetal attachment is the key factor in behaviors improving the mother and fetus's health [38,39].

Another factor involved in the confusion of this group of patients is the conflict between the numerous roles of this period. As a result of numerous mental and psychological pressures, the patient does not have the endurance and independence necessary for taking charge of her own health and that of the fetus by following the multidimensional treatment and significantly abandons her role and transfers it to others [40].

One more factor contributing to the confusion of women with GDM is taking a one-dimensional approach to the multidimensional treatment of diabetes, such that in most cases, the thoughts and care performance of the patient is directed to just one dimension of self-care in an irregular and discontinuous way, whereas the quality of the multidimensional treatment of the patient relies on the correct and comprehensive application of the regimen. Inattention to the multidimensional nature of care in this period makes disease management seriously challenging for the patient [41,42]. Also, the data of the present study showed that a bad financial status and insecure and insufficient income serve as additional pressures and jeopardize the shaky lives of these patients. Because of financial problems, these people cannot access the required equipment from reliable brands during this risky period. Lack of access to reliable equipment or using unreliable equipment may lead to the patients' lives becoming unhealthy and endanger their care and treatment seriously in countries like Iran [43].

The results of the study showed that other factors which play a role in the confusion of women with GDM are excessive ambiguity and fear that are caused by a lack of education and specialized counseling and governmental support for the management of the diseases to prevent irreparable consequences in third world countries. Furthermore, the patients' financial problems are among the most prominent sources of fear of the care and treatment process and lead them to be afraid of an uncertain future. In Hirst's study (2012), the major cause of the patients' fear is related to the possible complications of diabetes and transfer of diabetes to the child through breast milk after delivery [37].

The results of the study showed that fear of inability to manage the disease correctly due to a lack of knowledge and awareness are among other challenges facing pregnant women with GDM. Since GDM is accompanied by numerous maternal and fetal complications, paying attention to self-management is of great significance [41]. To be able to accomplish self-management, the patient needs to reach a level of understanding of the disease and its complications as well as a level of

skillfulness to manage the disease through education and counseling [44,45]. At the same time, health and treatment cares in the third world should take action to eliminate the numerous problems of the most vulnerable social class. This way, they may help prevent the mothers from losing their confidence, self-efficacy and motivation and cease the mother's dependence on others and her feeling of being a burden on others' shoulders. In third world countries, the patients' most important challenge is that they pass their lifetimes without proper support from their governments [32,46].

## Conclusion

It can be concluded that not receiving comprehensive health services, financial problems, and the patients' health illiteracy are among factors involved in the confusion of pregnant women with GDM in a multidimensional regimen. The observance of the multidimensional regimen of these people can be improved by increasing the number of high quality health centers, providing specialized manpower, establishing good relationships with the patients, educating and giving them counseling and improving their health literacy. The findings of this study can help the specialized and responsible care team in Iran and the health system policy makers to identify factors preventing this group of patients from following the multidimensional regimen, such that through strategic health planning, they can take decisive action to avoid the unpleasant consequences of GDM for mothers and their fetuses in third world countries and boost the economy of community health.

## Ethical Considerations

After approaching the research units, explaining the objectives of the study, and obtaining written consent of the participants, data were collected. Ethical principles such as autonomy of the participants, confidentiality, and anonymity were upheld. Letters of recommendation were obtained from the Research Deputy of the University for locations being studied. Ethical approval was obtained from the Ethics Committee of Tehran University of Medical Sciences.

## Acknowledgment

Authors would like to acknowledge all those who cooperated to the research project & also, our thanks go to Tehran University of medical sciences for their coordination and financial support.

## References

1. Ferrara A (2007) Increasing prevalence of gestational diabetes mellitus a public health perspective. *Diabetes care* 30: S141-S146.
2. Metzger B (2006) The global increase in diabetes: unique issues for mothers and children. *International Journal of Diabetes in Developing Countries* 26: 57-62.
3. Anna V, van der Ploeg HP, Cheung NW, Huxley RR, Bauman AE (2008) Sociodemographic correlates of the increasing trend in prevalence of gestational diabetes mellitus in a large population of women between 1995 and 2005. *Diabetes care* 31: 2288-2293.
4. Metzger BE, Buchanan TA, Coustan DR, de Leiva A, Dunger DB, et al. (2007) Summary and recommendations of the fifth international workshop-conference on gestational diabetes mellitus. *Diabetes care* 30: S251-S260.
5. Pirisi A (2013) Universal screening for gestational diabetes? *The Lancet Diabetes & Endocrinology* 1: 13.
6. Alavinia SM, Koorosh Etemad, Alireza Mahdavi, Maryam Omidvar, Sara Imanpour, et al. (2012) Gestational diabetes mellitus in Iran—experience from the National Diabetes Program. *International Journal of Pharmaceutical and Healthcare Marketing* 6: 156-166.
7. Kim C, McEwen LN, Piette JD, Goewey J, Ferrara A, et al. (2007) Risk perception for diabetes among women with histories of gestational diabetes mellitus. *Diabetes care* 30: 2281-2286.
8. Bellamy L, Casas JP, Hingorani AD, Williams D (2009) Type 2 diabetes mellitus after gestational diabetes: a systematic review and meta-analysis. *The Lancet* 373: 1773-1779.
9. Mohammad-Beigi A, Tabatabaei SHR, Yazdani M, Mohammad-salehi N (2007) Gestational diabetes related unpleasant outcomes of pregnancy. *Spring* 11: 33-38.
10. MacNeill S, Linda Dodds, David C Hamilton, Anthony Armon B, VandenHof M (2001) Rates and risk factors for recurrence of gestational diabetes. *Diabetes care* 24: 659-662.

11. Nohira T, Kim S, Nakai H, Okabe K, Nohira T, et al. (2006) Recurrence of gestational diabetes mellitus: rates and risk factors from initial GDM and one abnormal GTT value. *Diabetes Res Clin Pract* 71: 75-81.
12. Crowther CA, Hiller JE, Moss JR, McPhee AJ, Jeffries WS, et al. (2005) Effect of treatment of gestational diabetes mellitus on pregnancy outcomes. *N Engl J Med* 352: 2477-2486.
13. Ford K, Paulette Hoyer, Linda Weglicki, Trace Kershaw, Cheryl Schram, et al. (2001) Effects of a prenatal care intervention on the self-concept and self-efficacy of adolescent mothers. *J Perinat Educ* 10: 15-22.
14. Tieu J, Middleton P, McPhee AJ, Crowther CA (2012) Screening and subsequent management for gestational diabetes for improving maternal and infant health. *Cochrane Database Syst Rev* 7: CD007222.
15. Dabelea D, Snell-Bergeon JK, Hartsfield CL, Bischoff KJ, Hamman RF, et al. (2005) Increasing Prevalence of Gestational Diabetes Mellitus (GDM) Over Time and by Birth Cohort Kaiser Permanente of Colorado GDM Screening Program. *Diabetes care* 28: 579-584.
16. Kim S (2002) Participative management and job satisfaction: Lessons for management leadership. *Public Administration Review* 62: 231-241.
17. Correa A, Gilboa SM, Besser LM, Botto LD, Moore CA, et al. (2008) Diabetes mellitus and birth defects. *Am J Obstet Gynecol* 199: 237.
18. Jovanovic L, Knopp RH, Kim H, Cefalu WT, Zhu XD, et al. (2005) Elevated pregnancy losses at high and low extremes of maternal glucose in early normal and diabetic pregnancy evidence for a protective adaptation in diabetes. *Diabetes care* 28: 1113-1117.
19. Ehrlich SF, Yvonne MC, Monique MH, Jeanne AD, Assiamira F, (2011) The risk of large for gestational age across increasing categories of pregnancy glycemia. *Am J Obstet Gynecol* 204: 240.
20. Landon MB, Catherine Y Spong, Elizabeth Thom, Marshall W Carpenter, Susan M Ramin, et al. (2009) A multicenter randomized trial of treatment for mild gestational diabetes. *N Engl J Med* 361: 1339-1348.
21. Metzger BE, Coustan DR (1998) Summary recommendations of the Fourth International Workshop-Conference on Gestational Diabetes Mellitus. The Organizing Committee. *Diabetes care* 21: B161.
22. Najmi B, AH, Delavar A, Hashemipoor M (2007) The Effectiveness of Multidimensional Psychological Treatment in Enhancing the Adherence to Medical Treatment in Adolescents with Type 1 Diabetes. *Journal of Research in Behavioural Sciences* 5: 127-137.
23. Mahmood K, Aamir A (2005) Glycemic control status in patients with type-2 diabetes. *J Coll Physicians Surg Pak* 15: 323-325.
24. Wood FG (2002) Ethnic differences in exercise among adults with diabetes. *West J Nurs Res* 24: 502-515.
25. Gray BA (2001) Women's subjective appraisal of pregnancy risk and the effects of uncertainty, perceived control, coping and emotions on maternal attachment. Case Western Reserve University, USA.
26. Gupton A, Heaman M, Cheung LWK (2001) Complicated and uncomplicated pregnancies: women's perception of risk. *J Obstet Gynecol Neonatal Nurs* 30: 192-201.
27. Heaman M, Beaton J, Gupton A, Sloan J (1992) A comparison of childbirth expectations in high-risk and low-risk pregnant women. *Clin Nurs Res* 1992, 1(3): 252-265.
28. Brooks LM (2002) Perceived Barriers to Treatment Adherence Among Pregnant African American Women with Diabetes. Case Western Reserve University.
29. Polit DF, Cheryl Tatano Beck (2013) *Essentials of nursing research: Appraising evidence for nursing practice*. Lippincott Williams & Wilkins.
30. Elo S, Kyngas H (2008) The qualitative content analysis process. *J Adv Nurs* 62: 107-115.
31. Graneheim UH, Lundman B (2004) Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 24: 105-112.
32. Abdoli S, Ashktorab T, Ahmadi F, Parvizi S (2009) Barriers to and Facilitators of Empowerment in People with Diabetes. *Iranian Journal of Endocrinology and Metabolism* 10: 455-464.
33. Etu-Seppala L (2001) Successful Self-Care: The Best Sign of Empowerment. *Diabetes Voice* 46.
34. Kalra S, Malik S, John M (2011) Gestational diabetes mellitus: A window of opportunity. *Indian J Endocrinol Metab* 15: 149-151.
35. Cianni GD, Ghio A, Resi V, Volpe L (2010) Gestational diabetes mellitus: an opportunity to prevent type 2 diabetes and cardiovascular disease in young women. *Womens Health (Lond Engl)* 6: 97-105.
36. Doran FM (2010) An exploratory study of physical activity and lifestyle change associated with pregnancy and gestational diabetes mellitus and the implications for health promotion interventions.
37. Hirst JE, Thach Son Tran, My An T Do, Forsyth Rowena, Jonathan M Morris, et al. (2012) Women with gestational diabetes in Vietnam: a qualitative study to determine attitudes and health behaviours. *BMC Pregnancy Childbirth* 12: 81.
38. Alhusen JL (2011) Maternal-fetal attachment and neonatal outcomes: The role of emotional health and intimate partner violence in a sample of low income African American women. The Johns Hopkins University.
39. Berg M, Sparud-Lundin C (2009) Experiences of professional support during pregnancy and childbirth—a qualitative study of women with type 1 diabetes. *BMC Pregnancy Childbirth* 9: 27.
40. Parsons J, Khalida Ismail, Stephanie Amiel, Angus Forbes (2014) Perceptions Among Women With Gestational Diabetes. *Qualitative health research* 24: 575-585.
41. Carolan MC, Gill G, Steele C (2012) Women's experiences of factors that facilitate or inhibit gestational diabetes self-management. *BMC Pregnancy and Childbirth* 12:99.
42. Hoffman L, Nolan C, Wilson JD, Oats JJ, Simmons D (1998) Gestational diabetes mellitus—management guidelines. *The Australasian Diabetes in Pregnancy Society. Med J Aust* 169: 93-97.
43. Association, ADE (2011) Self- Monitoring Blood Glucose in Non-insulin Treated Type 2 Diabetes: A review of the literature 2011.
44. Funnell MM, Anderson RM (2004) Empowerment and self-management of diabetes. *Clinical diabetes* 22: 123-127.
45. Heisler M (2005) Helping your patients with chronic disease: Effective physician approaches to support self-management. *Semin Med Pract* 8: 43-54.
46. Henderson S (1997) Knowing the patient and the impact on patient participation: a grounded theory study. *International journal of nursing practice* 3: 111-118.