

Qualitative Study On Mother's Experiences For Self-Management Of *Gestational Diabetes Mellitus*

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Abstract: Background: *Gestational diabetes mellitus (GDM) becomes common cases over the globe. GDM prevalence is counted as 1-3% out of all pregnancies in the west and 90% of them are complicated by diabetes. GDM is related with the increasing of maternal risk and short-time or long-term perinatal complication. GDM incidents in Indonesia are identified around 1,9-3,6% and around 40-60% women, who ever experienced with GDM, on the further observation after laboring will have diabetes mellitus or glucose tolerance disorder. This research is aimed to identify the mother's experience in GDM self-management.*

Methods: *This research is a qualitative research with phenomenology approach. This research was conducted on October 2018 – June 2019. The data were collected by employing interview that supported by documentation study over 8 mothers who had GDM interview and 3 midwives in charge at the KIA poly service. The data were analyzed by using thematic analysis.*

Results: *Qualitative analysis resulted five themes that cover nutrition management, education, glucose monitoring, sports and medication. The results showed that pregnancy mother tried to control the eating pattern as suggested by the health-workers. The mothers should conduct routine glucose controlling, perform physical activity, such as regular walk, perform house works or pregnancy workout. The appropriate medication during the pregnancy involves insulin.*

Conclusion: *This research reveals mothers' experiences in GDM self-management in terms of lifestyle. The result of the research could be a valuable guidance in developing comprehensive self-management service, by considering more on mother's self-management. The necessities of more effective GDM counseling is required to ensure clear understanding about principal self-management for pregnant mothers, hence it could help mother in enhancing adaptation and ability in dealing with GDM. Besides, it could increase the alert towards the risks on pregnancy with diabetes mellitus. Hence screening examination on diabetes mellitus.*

Keywords: *diabetes mellitus, pregnancy, self-management, pregnant mother, qualitative*

1. INTRODUCTION

Non-contagious disease is the biggest cause of disease on pregnancy mother in Indonesia. DM is type of non-contagious disease that cause 60% of death and 40% of pain in all over the globe (WHO, 2014). DM cases are raised throughout the year, including on the pregnancy. It has serious impact on mother and the baby if it is not managed optimally. GDM prevalence is estimated to reach 9,3-25,5% in all over the world. (Xu *et al.*, 2017). Particularly in Indonesia, the numbers of DM patients reach 1,9-3,6% (Sugianto, 2016).

Diabetes mellitus on pregnancy, or widely known as Gestational diabetes mellitus (GDM) is glucose intolerance that triggers higher level of glucose identified firstly during pregnancy and returned to normal after laboring (Parsons *et al.*, 2018). Several factors have been related with the risk escalation on GDM development. It includes aging mother, family history on diabetes mellitus, previous history by having macrosomic baby, history of GDM, obesity, overweight during pregnancy, particularly for obesity person (Alfadhli *et al.*, 2015). Besides, the lack of information and consideration about GDM also related with the high GDM prevalence (Alharthi *et al.*, 2018).

Gestational diabetes mellitus has been related to many short-term and long-term health issues for mother and the baby. Early diagnose for GDM is crucial to reduce the morbidity of mother and baby and enable the next step to prevent or postpone diabetes type 2. Main way to cure GDM is lifestyle changing that involves diet, sport and checking the glucose level in blood.

One of the efforts from health-workers to prevent or screening diabetes melitus on the pregnancy is to utilize government program, which is mother-child health program/*kesehatan ibu dan anak* (KIA). KIA includes integrated examination of antenatal care (ANC). ANC examination is expected to provide many information and health counseling to mothers, with expectation of early screening to complicated disease and comorbidities on pregnant women (Risksedas, 2013).

The implementation of ANC service has been reinforced by the policy from Minister of Health in the article 6 verse 1 Permenkes No. 25 in 2014 about the efforts on child's health. It is stated that fetus health service in the uterus is served by antenatal service towards pregnant mother in regularly as standard, at least 4 (four) times during the pregnancy (K1-K4). Types of integrated ANC service include general check-uo, body's temperature, blood pressure, body weight, LILA, TFU, fetal presentation, DJJ, Hb, blood type, protein level in urine, blood sugar/reduction, malaria blood, BTA, syphilis blood, HIV serology and USG (Permenkes, 2014).

Initial screening that could be done on DM case is blood sugar observation. All pregnant women must conduct the examination of blood sugar, the control of body mass index (BMI), life-style alteration and diet suggestion during pregnancy. Besides, test of oral glucose tolerance/OGTT is required. It is recommended to conduct GDM screening within 24-28 pregnancy. Particularly for women with high risk, screening must be performed on the first prenatal visit. International recommendation for GDM management also emphasizes the importance of follow up the postpartum nurturing, including OGTT from 6 to 12 postpartum weeks and further supports for life-style changes (ADA, 2015).

The initial study found that the numbers of pernant mothers in Yogyakarta city in 2018, who have been examined their blood sugar were 1.590 persons. From that numbers, 22 pregnant mothers are detected with GDM (Health profile of Yogyakarta City, 2018). Puskesmas Umbulharjo I, Kraton and Wirobrajan are Puskesmas which have 8 cases of labouring mother with GDM history. Based on above fact, the researcher interested to carry out a research about "Qualitative Study on Mother's Experience for *Gestational Diabetes Mellitus* Self-Management at Yogyakarta City.

2. MATERIAL AND METHODS

Methodology design that used in qualitative research is phenomenology approach. 8 mothers with GDM history participate as samples, as well as 3 midwives that perform service in KIA poly. Total 11 respondents were involved. Purposive sampling with criterion sampling strategy is applied as sampling technique. The research was conducted from October 2018 to June 2019. It was performed in working area of di Puskesmas Umbulharjo I, Puskesmas Kraton and Puskesmas Wirobrajan.

Data collecting instrument employed semi-structured interview guidance, audio record and writing tools. It was focused on one variable, which was mother's obstacles in managing GDM. Thematic analysis was employed as data analysis.

3. RESULTS

Respondents' characteristics

Participants' characteristics was divided into two; main participants are 8 mothers with gestational diabetes mellitus (GDM) history. Supporting participants are determined as 3 midwives that serve in KIA poly. Characteristics of main participants are presented in Table 1, as follows:

Table 1. Characteristics of Main Participants

Code	Age	Education	Occupation	Child's Age
PU1	26 yrs	SMA	IRT	2,5 months
PU2	35 yrs	S1	IRT	7 months
PU3	38 yrs	SMA	KS	9 months
PU4	39 yrs	SMP	IRT	10 months
PU5	32 yrs	DIII	KS	2 months
PU6	28 yrs	SMA	KS	11 months
PU7	30 yrs	S1	IRT	12 months
PU8	25 thn	SMA	IRT	11 months

Source: Primary Data 2019

Description: PU = Main Participant, KS =Private Employee, IRT = Housewife

While, the characteristics of additional participants are presented in table 2:

Table 2 Characteristics of Supporting Participants

Code	Age	Education	Work Duration
PP1	34 yrs old	DIII	+ 7 years
PP2	34 yrs old	DIII	+ 8 years
PP3	43 yrs old	DIII	+ 14 years

Source : Primary Data 2019

Description: PP = Supporting participants

The Data Analysis Result

The data result of research conducted in Puskesmas Yogyakarta city were analysed by using thematic analysis by identifying patterned themes that existed in a phenomenon.

Entire research’s results are compared continuously until conclusion is resumed. The result of data analysis generated several themes as presented in Table 3:

Table 3 The Result of Thematic Analysis

Coding Label	Theme
Mother tries to control the eating pattern as suggested by health-workers	Nutrition Management
Mother tries to avoid food and beverage that are not recommended by health-workers	
Mother is accommodated with eating pattern counseling by nutritional experts	Education
Mother is provided with general health counselling	
The existence of GDM examination on the first visit	
Mother don’t have the GDM counseling	
Mother conducts blood sugar control during pregnancy	Glucose Monitoring
Mother conducts blood sugar control after labouring	
The blood sugar checking is performed after the baby born	
Mother performs light exercises by walking	Physical Exercises
Mother performs pregnancy workout and yoga	
Mother uses insulin during pregnancy	
Mother understands how to use insulin	Medication
Mother performs DM medication after labouring	
Insulin is stopped after labouring	

The research’s result ends up with five themes, which are nutrition management, education, glucose observation, physical exercise and GDM medication.

1) Diet management

All participants try to control eating pattern during pregnancy as suggested by health-workers. They also provide suggestion about GDM management, as below excerpts:

”I prefer vegetables, for rice I prefer red rice. I tend to maintain my eating habit, no sweet stuffs. I drink water. If I want rice, I will eat red rice. I prefer vegetables” P2

“I eat in proper porsion, reduced portion, still 3 times a day. Only reducing the portion. The rice is reduced, while the vegetables are added. It still allowed to eat sweet food, not too sweet and not too much. Should be maintained” P3

2) Education

Several participants stated to have GDM counseling, regarding to the danger of GDM or diet pattern in controlling the GDM. The health-workers stated that the education for pregnant mothers with GDM is existed at integrated ANC. These are described by following excerpts:

“For education, integrated ANC is the most suitable for mother, there will be further diet consultation to nutrition department and to the psychologist. Later, the doctor will also provide explanation” P2

3) Glucose Monitoring

The glucose observation can be seen from the effort to control blood glucose during pregnancy and to control baby's blood sugar, as stated by below excerpts:

"It always done once a month, for DM patient, occasionally we experience heavy pressure at the neck, usually we will independently check the condition to the drugstore, which usually serves us with blood sugar checking, at least once a month I will visit the doctor" P1

I will visit the Internist once a week or once every two weeks. Sugar controlling is conducted every month" P2

All participants will perform blood checking after giving birth. They revealed below statements:

" Indeed, there will be another checking after giving birth" P3

"Yes, after giving birth, me and my baby will be re-examined (for blood sugar level)" P6

Besides, all participants revealed that a blood sugar control was executed on the baby after the laboring, as below excerpts:

"Yes, the baby was directly checked for blood test. Alhamdulillah, everything normal. The doctor stated that it only happened during pregnancy, after giving birth, the test was negative". P8

"It was low at the beginning, after treatment, the blood sugar was raised up to normal, we were allowed to come home after the condition was decided as healthy" P3

4) Physical Exercise

Physical exercises include walking, house works, or pregnancy workouts. Walking activities were described as following excerpts:

"Sometimes I did the walking, mopping and sweeping (doing the houseworks), yes I did it every day. For walking, if I could wake up early, I did the early walking" P3

Walking, I did it in the morning" P7

Besides, participants revealed that the exercises conducted were pregnancy workouts and yoga. These were described from participant's excerpts:

" Yes, I did workouts and yoga, the pregnancy workouts 4 times and 3 times yoga" P8

5) GDM Medication

The medication could be the utilization of insulin or drugs that might control mother's blood sugar. Some said to use insulin in controlling their blood sugar level, as illustrated by following excerpts:

"During the pregnancy, I used insulin. As far as I concern that insulin is preferable for pregnancy, that has no effect to the baby. So, insulin it was" P1

The internist cured me with insulin, the internist said the insulin injection is the safest medication for pregnant mothers" P2

Some participants stated that medication by using insulin will be terminated once the mother has given birth, since the blood sugar was considered as normal. Participants stated that, as follows:

"After labouring assessment, it was determined as normal, so no more insulin as well as drugs. There were twice of observations. It was stated as normal and no insulin required" P1

"Hmm, two months after giving birth, I stopped using insulin as my blood sugar level was back to normal" P2

While, some participants keep using the medication to control DM after giving birth, the statements are resumed as follows:

“Until recently, I still use insulin, before eating (the utilization of insulin), now, metformin also being consumed, only twice a day, the drugs are prescribed after giving birth” P3

” Yes, I still use insulin, because of breastfeeding, plus certain drug after giving birth, first insulin, next a drug called metmorfin, twice a day, should be consumed after eating (insulin before eating and metformin after eating)” P6

4. DISCUSSION

The researchers have identified five types of themes that describe mother’s experience in *gestational diabetes mellitus* self-management, which cover nutrition management, education, glucose monitoring, physical exercises and GDM medication.

The result of research indicated that some of pregnant mothers try to control the eating pattern as suggested by health-workers. They also try to avoid food and beverages that could possibly raise the blood sugar level, such as sweet food and drinks, soda and rice. The mothers also conduct regular checking on glucose level. Furthermore, physical activities are also performed, such as walking, doing the houseworks or pregnancy workouts. Daily physical activities and regular physical workouts (3-4 times a week for approximately 30 minutes) are considered as pillar in managing DM. Physical exercise could maintain the body fitness and reduce the weight and maintain the insulin sensitivity, to restore the control of blood glucose (Sigal 2006). The suggested physical activities are walking, cycling, jogging and swimming. The exercises should be adjusted with age and physical fitness status (Perkeni 2011).

Less physical activities or moving as it needs will cause bad impact to body and lead to obesity as well as less-sensitive insulin receptor. This is reinforced by results of the research stated that obesity is the influenced factor in GDM as well as DM type 2 in the future time (Hod et al. 2015). Based on the DM self-management principals, sports or physical activities are required to improve the insulin sensitivity as well as to help the glucose entrance through the cell, to lower the blood sugar level (Wang et al. 2013).

For pregnant mother that experiencing second and third semester, the body weight will continue to raise, due to bigger fetus and the raise of metabolism activity during pregnancy. It will lead to obesity that ignored by mother. Hence, it takes proper lifestyle management (Hod et al. 2015). Therefore, routine physical activities needed to be performed, such as pregnancy workouts twice a week, for healthy body, the muscle necessities and eventually will effect to better metabolism, the blood glucose break out, good blood circulation, well-functioned heart, and healthy mother that has enough energy for cell regeneration and fetus forming (Lumadi dan Sulaiman, 2017). This is supported by research conducted by Marcherya *et al.* (2018) revealed many ways could be tried to overcome and decrease the GDM cases, one among others, physical workouts such as pregnancy workouts. Besides as a media to ignore the stress and anxiety for pregnant mothers, pregnancy workouts are believed as a method to prevent gestational diabetes melitus to pregnant mother.

The research by Magro-Malosso *et al.*, (2017) suggested that aerobic during pregnancy, with or without diet intervension, could reduce the occurrences of GDM on women with overweight and obesity. They could safely carry out the aerobic for 30-60 minutes 3-7 times per week during pregnancy. Exercises during pregnancy is related with the risk decreasing of premature laboring. Aerobic for overweigh and obesity pregnant women is highly related with significant prevention of diabetes mellitus.

This is supported by a research conducted by Sanabria-Martínez *et al.*, (2015) indicated that structured sports during pregnancy could prevent GDM and prevent excessive weight

increasing. A research by Di Mascio *et al.*, (2016) showed that sports during pregnancy is not related to the increasing of premature birth. This research showed that sport is correlated with lower GDM incidents, cesarian procedures and hypertension disorder. Aerobic for 35-90 minutes 3–4 times per week during pregnancy could be safely carried out by women with normal weight, single pregnancy without complication. The practices are correlated with the rate of higher pervaginam laboring significantly if compared with lower rate of cesarian birth. Besides aerobic also related to lower gestasional diabetes mellitus and hypertension disorder. After considering on the importance of physical activity or sports, maintaining eating pattern and medication, the mother starts to feel the benefits to her health. These efforts are expected to inhibit the complication and to reduce pain while performing medication. Medication refers to utilization of insulin and other drugs that designated to control blood sugar.

A research by Carolan *et al.* (2012) stated that pregnant mothers believe that insulin utilization is the easiest option to control blood sugar. They state the the worries are reduced with insulin. They feel enthusiastic in maximizing the health of baby. The concern on the health of baby motivates mothers to initiate GDM management, though they still keep trying to adapt with GDM condition.

Besides, some mothers believe that DM disease will vanish after giving birth, which will happen if the mother could control her diet or blood sugar. If it is unmanageable, it will provide poor impact towards mother and baby's future health. It is in line with a research conducted by Lindmark *et al.* (2010) suggested that all mothers are well-informed that GDM will dissipate after giving birth. Yet, they realize the future risk on the development of diabetes mellitus type 2 (*Type 2 Diabetes Mellitus / T2DM*). They realize on things that must be done yet difficult to alter the lifestyle.

Some pregnant mothers realize on long-term risk of GDM. The pregnant mother who has GDM will have bigger risks on complication during pregnancy and after giving birth. The effects will probably emerge as the risk of pre-eclampsia and DM type 2. While on fetus, there will be the increasing risks of perinatal mortality, macrosomia, trauma on laboring, and neonatal hypoglycemia.

The result of the research indicated that there were two babies that born with macrosomia by cesarian procedure. The research by Collier *et al.* (2011) indicated that all pregnant mothers realize on macrosomia risk, and the risk of cesarian procedure for their labouring, for mothers with DM. Some mothers mentioned the risk of miscarriage, deform baby, and future possibilities for baby to have glucose disorder, if GDM cannot be maintained well. Besides, this research highlighted that the consideration on baby's health is the strong motivation factor for mother with DM. Pregnant mothers with DM or risked with DM should be provided with clear explanation that future baby's welfare is depended on blood sugar control and proper planning on pregnancy that will be the effective strategies to prevent birth defect and other disadvantages in terms of pregnancy.

The strength of this research is semi structured interview mode that implemented. It is considered as perfect method to answer the research questions related to expanded individual experiences. Besides, this research is a finding that could complete the information about mothers' self-management during pregnancy with DM, for further research preferences. The weaknesses of this research are the fact that the data were derived from past experiences that should be memorized, yet it is still any possibilities to forget the detail. This research is based on small size sample that insufficient to represent all pregnant mother with GDM.

5. CONCLUSION

Self-management that performed by pregnant mothers covers diet management by arranging eating pattern, routine monitoring on blood sugar level, physical exercises by walking and pregnancy workouts, education and medication on GDM. Therefore, the

researchers expected more effective education or counselling from health-workers, particularly midwife to ensure clear understanding about self-management principles on pregnancy mothers. The existence of KIE about GDM is expected to enhance mothers' knowledge and could help mothers in adaption and handling GDM on her next pregnancy. This KIE activities are executed at the pregnant mothers' classes and accommodate them with diet guidance about eating pattern and involve family members to deepen their knowledge on pregnancy management with diabetes mellitus. Besides, to improve the awareness on pregnancy with diabetes mellitus, it is required the screening examination on diabetes mellitus

Ethical Clearance

This research was previously approved by ethical committee before being studied.

Conflict Of Interest

The researchers stated that there is no conflict of interest in this research.

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Authors' Contribution

All researchers were contributed to entire processes in this research, preparation, reviews and manuscript approval.

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