

Knowledge and Self-care Practice in Women with Gestational Diabetes Mellitus at B. P. Koirala Institute of Health Science, Dharan, Nepal

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Abstract: *Gestational Diabetes Mellitus is a public health concern and one of the causes of maternal and fetal mortality and morbidity. Awareness of the condition among antenatal women will translate into adoption of a healthy lifestyle, better health-seeking pattern, better self-care practice, which prevent acute complications and reduce the risk of long-term complications and promote pregnancy outcome. The study was aimed to assess the knowledge and self-care practice among the antenatal women attending antenatal ward and OPD of BP Koirala Institute of Health Sciences, Dharan. A descriptive cross-sectional study was conducted among 60 antenatal women who had diagnosed Gestational Diabetes Mellitus by using purposive sampling method. Data was collected by interview method and analyzed using descriptive and inferential statistics at level of significance 0.05. The study findings revealed that 36.7% of the respondents were in the age group of less than 25 years and 64.2% had completed secondary level education. The overall knowledge on Gestational Diabetes Mellitus had good in 33.3%, average in 40% and poor in 26.7%, whereas regarding self-care practice only 11.7% had good, majority of 80% had average and 8.3% had poor self-care practice. There was a positive correlation between knowledge and self-care practice and statistically significant.*

Keywords: Gestational Diabetes Mellitus, Knowledge, Self-care Practice and Pregnancy

1. Introduction

Pregnancy is a unique period that entails substantial physiological and psychological adjustment for the mother. During pregnancy lots of metabolic and hormonal changes takes place. Although pregnancy is not a disease, but a normal physiological state, it is associated with certain risks to health and survival both for the women and for the fetus [1]. Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both [2]. Gestational Diabetes Mellitus (GDM), a subtype of diabetes defined as any degree of glucose intolerance with onset or first recognition during pregnancy and may or may not be persist after childbirth [3].

The prevalence of (GDM) has been increasing globally that develops in one in 25 pregnancies worldwide. Approximately 7% of all pregnancies, ranging from 1 to 14%, depending on the population studied and the diagnostic tests employed, are complicated by GDM. One in seven births is affected by gestational diabetes [4]. Multi-ethnic studies have highlighted the increased risk of GDM among the different Asian populations. Prevalence of gestational diabetes in Asian countries varies according to the diagnostic criteria applied, and ranges from 1% to 20%, with evidence of an increasing trend over recent years. South-East Asia Region has the highest prevalence of 25% compared with between 7%-18% of pregnancies in the United States. In 2015, there were an estimated 1995 million women with diabetes. By 2030, this number is expected to rise to 3133 million. International Diabetes Federation has estimated that 20.9 million or 16.2% of live births to women in had some form of hyperglycaemia in pregnancy [4-6]. Gestational diabetes is likely to be a

significant factor contributing to the epidemic of diabetes. Pregnant women with gestational diabetes are about 7 times more likely to develop type II diabetes after birth than women without the condition. These women have a 35-60% chance of developing diabetes in the 5-10 years following birth. Women with gestational diabetes can also have higher rates of complications during pregnancy [7-8]. Ongoing patient self-management education and support are critical to preventing acute complications and reducing the risk of long-term complications and promote pregnancy outcome [4].

2. Methodology

Descriptive cross-sectional study design was adopted for the study that was conducted in antenatal ward and outpatient department of Obstetrics and Gynaecology department of B.P. Koirala Institute of Health Science, Dharan, Nepal. A total 60 eligible pregnant women who were diagnosed as gestational diabetes mellitus, were enrolled for the study by adopting purposive sampling. Pregnant women with gestational age > 28 weeks, who had at least a visit after the diagnosis of gestational diabetes mellitus, were included in the study and pregnant women with known diabetes and other medical complications for example cardiac disease, hemolytic disease, hypertension, anemia and multiple pregnancies were excluded from the study. Ethical approval was obtained from the Institutional Review Committee, BPKIHS and authorization was taken from college of Nursing to conduct the study. After taking written permission from concerned authority as well as written consent from each respondent, data were collected during 4 weeks using pre-tested self-developed Nepali version of questionnaire by researcher her-self by using interview

technique in a separate room, which took approximately 20-30 minutes to each interviewee. The data obtained thereof analyzed by the use of Statistical Package for Social Scientists (SPSS) program. Descriptive statistics i.e. frequency, percentage, mean, standard deviation were used to describe the socio-demographic characteristics of the respondents. For inferential statistics, one-way ANOVA test and independent t-test were used. In addition, Pearson correlation was computed for relationship between knowledge and self-care practice considering P Value at ≤ 0.05 as level of significant. Research Instrument was developed on the basis of objectives of the research. This consisted of three parts; Part-I: socio-demographic information of respondents.

Part-II: questions related to knowledge on Gestational Diabetes Mellitus, in which total 13 questionnaires including 10 single response and 3 multiple response questionnaire with total score 21. Each correct answer was scored one and each incorrect answer was scored zero.

Part-III: contained of questions related to self-care practices on gestational diabetes mellitus, which was assessed by self-developed checklist including 10 questions to answer on a Likert scale between zero and five, where they specified the extent to which each statement applies to them, according to

their self-care practice after diagnosis of gestational diabetes Mellitus [9-10]. Cut-off score was taken by percentage that was calculated on the basis of obtained score of the respondents. Knowledge and self-care practice was categorized and arranged as ($< 50\%$) poor, ($50-75\%$) average and ($>75\%$) good.

3. Results

Data has been analyzed and presented under various sections based on the objective of the study. Table 1 represents Socio-demographic characteristics of the respondents, which depicts that 36.7% of respondents were in the age group of <25 years with the mean age 28.10 and SD ± 5.251 . Likewise, 53.3% of respondents were multigravida and 46.7% had 2 to 4 weeks of duration of GDM. Maximum of the respondents (96.67%) belonged to Hindu religion, 71.7% of the respondents were from urban area, 61.7% had family history of diabetes and more than half 60.0% of respondents were homemaker by their occupation respectively. As well as, 46.7% of respondents had completed secondary level education and 63.30% of respondents have family incomes of about 15000-25000 rupees per month as shown in Figure 1&2.

Table 1: Socio-demographic Characteristics of the Respondents (n=60)

Characteristics	No. (%)
Age of women in year	
<25	22 (36.7)
26-30	19 (31.7)
>30	19 (31.7)
Mean age with Standard Deviation = 28.10\pm5.251	
Gravid	
Primigravida	28 (46.7)
Multigravida	32 (53.3)
Para	
Para Zero	28 (46.7)
Primipara	25 (41.6)
Multiparas	07 (11.7)
Residential Area	
Urban	37 (61.7)
Rural	23 (38.3)
Occupation	
Homemaker	43 (71.7)
Service	10 (16.7)
Business	07 (11.7)
Duration of GDM (in weeks)	
2-4	28 (46.7)
5-8	23 (38.3)
>8	09 (15.0)
Family History of Diabetes	
Yes	36 (60.0)
No	24 (40.0)
Religion of the respondent	
Hindu	58 (96.67)
Others	02 (03.33)

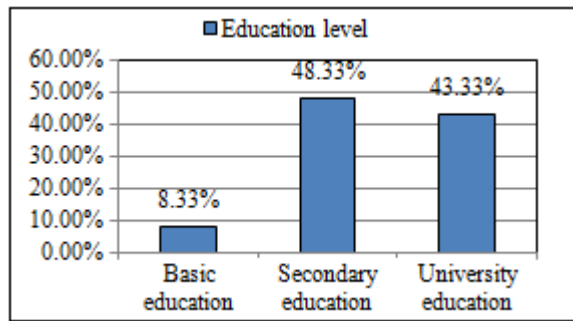


Figure 1: Education Level of Respondents (n=60)

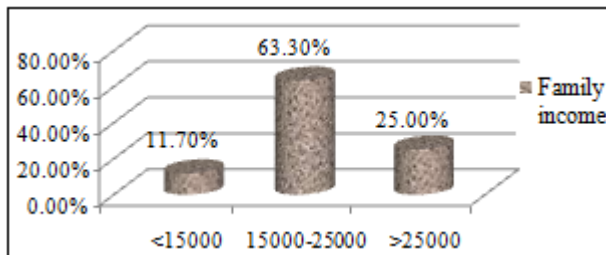


Figure 2: Family Income per Month (Rs.)

Knowledge on various aspects of GDM shows that majority of the respondents (73.3%) were aware about the meaning of GDM that occurs first time in pregnancy as well as 86.7% of respondents answered correctly on best method of glucose monitoring. Maximum (98.3%) gave correct answer that the foods that can be eaten without restriction, similarly 83.3% and 81.7% respondents answered correctly that family history of diabetes and pre-pregnancy overweight as risk factors respectively. Whereas majority of the respondents (75.0%) and 76.7% were not aware on history of previous still birth as risk factor and about preterm delivery as complication of GDM respectively (Table 2).

Table 2: Knowledge on Various Aspects of GDM (n=60)

Category of Knowledge	Correct answer
Basic information of GDM	
GDM occurs first time during pregnancy	44 (73.3)
Blood sugar level in uncontrolled GDM	44 (73.3)
Best preferred method for testing glucose	52 (86.7)
The normal value of fasting blood glucose	32 (53.3)
Risk factors of GDM	
Family history of Diabetes Mellitus	50 (83.3)
Pre-pregnancy overweight	49 (81.7)
History of stillbirths	15 (25.0)
Past history of Gestational Diabetes Mellitus	32 (53.3)
Management	
Food should be avoided	47 (78.3)
Food that can be eaten without restriction	59 (98.3)
Management of hypoglycemia	43 (71.7)
Symptoms of hyperglycemia	
Excessive hunger	28 (46.7)
Excessive thirst	35 (58.3)
Excessive urination	35 (58.3)
Complications and outcome	
In uncontrolled GDM baby may be large	24 (40.0)
Preterm delivery	14 (23.3)
Chance of developing Diabetes in later life	32 (53.3)
Adverse affect to baby and mother	45 (75.0)

Association of Socio-demographic variables with Knowledge of GDM reveals that the total mean knowledge

score and standard deviation was 13.03±3.89. The highest mean score 15.80 with 2.833 SD was found in respondents who had more than Rs. 25000 income per month where as least mean score 7.00 with 2.380 SD in respondents who had less than Rs. 15000 family income. Similarly the age, residential area, education level, occupation of respondents had significantly associated with knowledge Where P value <0.05 as depicted in Table 3.

Table 3: Association of Socio-demographic variables with Knowledge of GDM

Variable	Practice (32.33±5.157) Mean±SD	P value
Age of women in year		
<25	32.27±4.33	0.046**
26-30	34.42±5.32	
>30	30.32±5.15	
Gravid		
Primigravida	32.64±6.23	0.514*
Multigravida	32.06±4.07	
Para		
Primipara	32.56±4.184	0.196**
Multiparas	30.29±3.302	
Residential Area		
Urban	33.84±4.781	0.003*
Rural	29.91±4.898	
Education Status		
Basic Education	28.20±4.604	0.004**
Secondary Education	31.00±4.551	
University Education	34.62±5.029	
Occupation		
Homemaker	31.14±4.868	0.011**
Service	36.10±5.425	
Business	34.29±3.638	
Religion		
Hindu	32.41±5.174	0.520*
Others	30.00±5.657	
Duration of GDM (week)		
<4	30.57±4.307	0.032**
5-8	33.43±6.244	
>8	35.00±2.000	
Family History of Diabetes		
Yes	32.58±5.332	0.762*
No	32.17±5.107	
Monthly income per month (Rs)		
15000	27.00±5.196	0.007**
15000-25000	32.61±4.451	
>25000	34.13±5.502	

The association of Socio-demographics with practice that the total mean self-care practice score and standard deviation was 32.33±5.157. The respondents who were working or service by their occupation had seen high self-care practice with total mean and SD 36.10±5.425 where as lowest self-care practice with mean 27.00 and 5.196 SD was found in respondent who had less family income. The relation between self-care practice was found significantly associated with selected socio-demographic variables as age, education, occupation, residential area and income level where P value <0.05 as shown in Table 4. The result reveals that there is a positive correlation between Knowledge and Practice and statistically significant at the < 0.01 level. (Table-5)

Table 4: Association of Socio-demographics with practice of GDM (n=60)

Variable	Practice (32.33±5.157) Mean±SD	P value
Age of women in year		
<25	32.27±4.33	0.046**
26-30	34.42±5.32	
>30	30.32±5.15	
Gravid		
Primigravida	32.64±6.23	0.514*
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15000-25000	32.61±4.451	
>25000	34.13±5.502	

Independent t-test* one-way ANOVA**

Table 5: Correlation between Knowledge and Practice of GDM

Category	Knowledge	Practice	P-Value
	No (%)	No (%)	
Poor (< 50%)	16(26.7)	5(8.3)	0.003*
Average (50-75%)	24(40.0)	48(80)	
Good (> 75%)	20(33.3)	7(11.7)	

*Pearson correlation

4. Discussion

This study revealed that overall Knowledge regarding GDM was good in 33.3%, average in 40%, and poor in 26.7%. This finding is consistent to a study done by Meera George, in India, in which 48.67% women had fair, 34% had good and 17.33% women had poor Knowledge about GDM [11]. Whereas the finding is in contrast with the finding, by Vanishree Shriram, in India which showed that overall, 17.5% women had good knowledge, 56.7% had fair knowledge, and 25.8% women had poor knowledge about GDM [12]. Similarly is in contrast to another by Vineeta Dhyani that indicated better result than present study in which majority of the women, that is, 57.6% of the women had an average knowledge about GDM while 21.8% of the women had good knowledge, 1.6% had excellent, and 19% had poor knowledge [13].

Present study indicated that there was statistically significant relation between knowledge to selected socio-demographic variables- age, residential area, education level, occupation and family income of respondents where $P < 0.05$ whereas gravida, parity, duration of GDM and family history of DM were found not significant. Which is similar to the finding by Vineeta Dhyani which showed that statistically significant association was noted between knowledge about GDM with maternal age and educational status, religion, and occupation ($P < 0.050$), but the GDM knowledge was independent of that found between place of residence ($P = 0.715$) and family history of DM ($P = 0.661$) [13].

According to response in different categories, majority 73.3% respondents gave correct response about meaning that GDM can occur first time during pregnancy and 83.3% and 81.7% of respondents gave correct answer about risk factors that family history of diabetes and pre-pregnancy overweight respectively. Where as in contrast by a study done in main hospital of Samoa only 58% of patients were aware about meaning of GDM and 49% and 23% respondents identified that past history of GDM and pre-pregnancy obesity as the risk factors of Gestational Diabetes Mellitus respectively [14]. These findings were similar with findings of a study done in Malaysia indicated that majority respondents showed the highest knowledge about diet and food values [15].

Present study revealed that less mean knowledge was 10.91 ± 4.02 in women from rural residential area. Majority (75.0%) of respondents did not aware on risk factor as history of previous stillbirth and 76.7% about preterm delivery as complication of GDM. The finding is consistent to the finding of a study from India by Balaji Bhavadharini concluded that Knowledge about GDM was poor amongst pregnant women, especially in rural areas. Regarding risk factors of GDM, 48.8% of rural women were unaware of any risk factor. The mean knowledge score was significantly higher with respondents who had university education compared to respondents who had only basic education ($p = 0.001$). similar findings was observed in study south Tamil Nadu and Nepal show the mean composite score (per cent) in relation to education status. The mean composite score increased with higher education in both urban and rural areas with graduates scoring the highest [16]. In this study, occupation plays significant role on the level of knowledge where respondents from service had high mean composite knowledge score with SD was high 14.85 ± 3.44 . The finding is in contract to the finding from a study done by Thapa p. in Nepal, that occupation did not play any significant role on the level of knowledge [17].

The findings of this study revealed that the practice was found statistically significance ($p < 0.05$) between the age ($p = 0.046$), education level ($p = 0.004$), occupation ($p = 0.011$) and economic status ($p = 0.007$) of respondents. The finding is in contrast to the study from Iran by Talaat Khadivzadeh that indicated no statistically significant difference between self-care scores and demographics of the samples, including maternal education level ($P = 0.34$) occupational status of the spouse ($P = 0.24$), and income status ($P = 0.87$) [9]. The result of present study reveals that 33.3% of respondents had good knowledge where as only 11.7% of respondents had good

self-care practice regarding gestational diabetes mellitus. The finding is consistent with a descriptive study was conducted in Zabol's health centers, in Iran in 2014 by Marzieh Davoodi et al. reported that of the women participating in the study, 175 patients 58.3% had average awareness and 56% had good performance [18].

In this study the knowledge and self-care practice have positive relationship and which found statistical significance. The finding is similar to a study in India by D. Arulmozhi that Spearman correlation was used to find the relationship between knowledge and self care practices among experimental and control group of primi gravida with GDM. There was a positive correlation between knowledge and self care practices in experimental group of primigravida with GDM [19]. In this study most (80.0%) of the respondent had average level of self-care practice followed by 11.7% had good practice that reflects the need of further support. The finding is consistent to a study in Iran in which the results indicate that women with gestational diabetes have needs which were not fulfilled. Educational and support needs are two themes that were obtained and clarifying the needs of the mothers with gestational diabetes, leads to better and proper education planning and a program toward the improvement of health, self-care, and prevention of diabetes [9].

5. Conclusion

Study concludes that 40% respondent had average knowledge and 80% respondents had average self-care practice regarding Gestational Diabetes Mellitus. The knowledge and self-care practice have positive relationship and which found statistical significance. It indicates that respondents who had average knowledge that was reflected in their practices. However, the result 33.3% of respondents had good knowledge whereas only 11.7% of respondents had good self-care practice.

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