

Management of gestational diabetes mellitus at secondary health care level: a survey of ante-natal care givers' knowledge, attitude and practice

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Original Article

Abstract

Background: Gestational Diabetes Mellitus (GDM) account for the majority of cases of Diabetes complicating pregnancy. It is amenable to risk reduction measures and if properly managed, complications leading to poor pregnancy outcome can be prevented. However, this requires a good knowledge of the disease by the health professionals attending to pregnant women. This study assessed the knowledge, attitude and practice of ante-natal care givers in Oyo state through a questionnaire survey.

Methodology: The study is a cross-sectional survey conducted in the month of June 2012 at a workshop attended by Medical Doctors and Nurses attending to pregnant women at secondary healthcare level in Oyo State, South Western Nigeria. The questionnaire was developed locally, similar to diabetes attitude survey third version (DAS 3) 1, but adapted to local setting. It however assessed basic knowledge of the Medical officers and Nurses in the routine ANC practice about screening, diagnoses and attitudes to treatment of GDM at the secondary health care level.

Results: A total of 166 questionnaires were administered, 120 met the inclusion criteria and were analyzed. There were 46 Medical Doctors and 74 Nurses. Average age of Medical Doctors was 36±7.4 years, Nurses is 44±4.8 years. Except for risk factors and complications, both the Medical Doctors and Nurses have poor knowledge and practice concerning gestational diabetes mellitus. However, Medical Doctors demonstrated better attitudes compared to the Nurses and it was statistically significant (p value is <0.05).

Conclusion: Antenatal care givers at the secondary health care level demonstrated poor Knowledge, attitude and practice about the management of gestational diabetes mellitus. There is a need to bridge these gaps.

Key words: Diabetes Mellitus, Knowledge, Attitude, Prenatal, Practice.

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Gestion du diabète gestationnel sucré de soins de santé secondaires Niveau: une enquête de ante-natal gardiennes des connaissances, attitudes et pratiques

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L'article d'origine

Résumé

Contexte et objectif: Le diabète sucré de la grossesse (DSG) est le plus grand groupe de cas de diabète compliquant la grossesse. GDM se prête à des mesures de réduction des risques et si elle est correctement gérée, complications conduisant à un mauvais résultat de grossesse peut être évité. Toutefois, cela nécessite une bonne connaissance de la maladie par les professionnels de la santé pour assister les femmes enceintes. Cette étude vise à évaluer les connaissances, attitudes et pratiques des antenatal dispensateurs de soins dans l'état d'Oyo au moyen d'un questionnaire.

Méthodologie: Il s'agit d'une enquête transversale menée en juin 2012 à un atelier auquel ont participé des médecins et des infirmières pour assister les femmes enceintes au niveau secondaire niveau des soins de santé dans l'État d'Oyo, dans le sud-ouest du Nigeria. Le questionnaire a été administré au point localement, semblable au diabète attitude sondage troisième version (DAS 3) mais adaptée aux conditions locales. Ils ont été évalués connaissances de base des agents médicaux et infirmiers dans la routine CNA pratique au sujet du dépistage, les diagnostics et les attitudes de traitement de GDM dans le secondaire niveau des soins de santé.

Résultats: Un total de 166 questionnaires ont été administrés, 120 ont satisfait aux critères d'inclusion et ont été analysés. Il y avait 46 médecins et 74 infirmières. Âge moyen des médecins était de $36 \pm 7,4$ ans, les infirmières est de $44 \pm 4,8$ ans. Exception faite des facteurs de risque et les complications, les médecins et les infirmières ont une mauvaise connaissance et pratique concernant le diabète sucré. Toutefois, les médecins ont démontré une meilleure attitude par rapport aux infirmières et il était statistiquement significatif (valeur $p < 0,05$).

Conclusion: Les soins prénatals dispensateurs de soins au niveau de l'enseignement secondaire niveau des soins de santé ont démontré un manque de connaissance, les attitudes et les pratiques concernant la gestion du diabète gestationnel sucré. Il est nécessaire de combler ces lacunes.

Mots clés: Le diabète sucré, les connaissances, les attitudes, les soins prénatals, la pratique.

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INTRODUCTION

Gestational Diabetes Mellitus (GDM) complicates up to 18% of pregnancies in developed world (2-5). The prevalence in developing countries is put at 1.7% (6) while the prevalence in Nigeria is about 3 /1000 (7). Prevalence of gestational diabetes is determined primarily by that of diabetes in the general population (8). There is increasing prevalence of GDM in advanced countries probably due to overweight and obesity (9,10). Obesity has become a public health issue in West African nations including Nigeria and women are more affected (11). Increase in the pre-diabetes in the population is another factor contributing to the rise in GDM (12).

The Implication of GDM can be detrimental to the mother, foetus and the newborn. The foetus tends to be Macrosomic and large for gestational age (LGA), due to excess glucose transfer from maternal hyperglycaemia leading to foetal hyperinsulinemia which convert excess glucose and nutrients into energy and also produce organomegaly especially of the pancreas and the liver. During delivery the baby is at risk of birth trauma due to complication of shoulder dystocia and cephalopelvic disproportion (CPD). Delivery may be followed by early neonatal hypoglycaemia, all leading to increase perinatal mortality (7,10).

Maternal risks include prolonged and difficult labour, that often ended in operative delivery (13,14). The woman also has increased risk of developing type 2 diabetes mellitus later in life (15,16).

In view of the adverse effects of GDM on pregnant women and her baby, attention had been focused on its screening, diagnosis and management in developed world (17). Even though there is no uniform approach yet, there are recommendations for practice, such as World Health Organization (WHO) approach of a single step screening and diagnoses using 75g oral glucose tolerance test (OGTT) (18). In the United State of America ACOG recommends two step approach, initial 50g oral glucose

challenge test (GCT) for all pregnant women, those who have elevated blood glucose of 170mg/dl and above at 1hour are further subjected to 100g OGTT (19). However in the United Kingdom, National Institute for Health and Clinical Excellence (NICE) recommendation is adopted (20). There is no such position of practice in most developing Nations including Nigeria.

In Nigeria each center adopts its own practice based on human capacity, infrastructure and equipments' availability. The secondary health care is at a disadvantage, as only few Specialist health workers are available, in addition to challenges in infrastructure and equipments availability confronting this level of health care.

This study seeks to determine the knowledge, attitude and practice of antenatal care givers at secondary health care level, with a view to determine deficiencies needing intervention. This is necessary in other to improve outcome of pregnancy complicated by gestational diabetes mellitus, thereby contributing to reducing perinatal mortality and improving maternal health as contained in Millennium Development Goals (MDG) 5 and 6.

METHODOLOGY

This is a cross-sectional survey conducted at Ibadan during a 3-day workshop, from 12th to 14th of June 2012. In attendance were Medical Officers and Nurses, attending to pregnant women at secondary health care level in Oyo State, South Western Nigeria.

The Questionnaire was developed locally, appropriate to local setting but similar to diabetes attitude score version 3 and it was pre tested at another location. The information sought was on socio-demographic characteristics, knowledge, attitude and practice concerning screening, diagnosis and treatment of gestational diabetes mellitus during prenatal care. On knowledge assessment, twelve questions were asked, four each on risk factors, diagnoses and complications. Concerning practice, four questions were asked covering screening and treatments, while, six

questions were asked on attitude to treatment and prevention. About knowledge and practice the scoring of the responses is such that the correct answers scored 1, incorrect answers scored 0. For the attitude, 3 options scale was used, the correct response scored 1 while wrong and I don't know each scored 0. The scores for each group of health care givers were weighted and compared and level of significance determined. The data generated was analyzed using descriptive statistics and test of significance as appropriate.

Consenting participants who filled the questionnaire completely and returning same were included in the study.

Ethical approval was obtained from the Ethical Review Committee of College of Health Sciences of Osun State University.

RESULTS

A total of 166 Questionnaires were distributed out of which 132 were filled and returned. Another 12 questionnaires were excluded due to incomplete filling, the remaining 120 were analyzed.

There are 46 males and 74 females. There were 37 Medical Doctors and 63 Nurses with Medical Doctor to Nurses ratio of 1:1.7. Age distribution showed 75% of Nurses and 25% of Medical Doctors were older than forty years of age. Also, on age structures, there was no Nurse who was less than thirty years, while only two Doctors were in this age group. A higher proportion of the Nurses have worked for over 10 years compared to Medical Doctors as shown in Table 1.

Table 2 reported the knowledge of both Medical Doctors and Nurses. On the definition of GDM, all the Medical Doctors and seventy percent of the Nurses answered correctly. About Gestational age at diagnosis, only 30% of Medical Doctors and 16% of Nurses answered correctly. About symptoms of GDM, most Medical Doctors and 29% of Nurses answered correctly. About Diagnostic investigations, only 13% of Medical Doctors and 10% of Nurses answered correctly.

On risk factors for GDM, almost all the Medical Doctors, but less than half of

Nurses knew that positive family history is a risk factor. Age over 25years as a risk factor was recognized by only half of Medical Doctors and only a quarter of Nurses. Majority of both Medical Doctors and Nurses recognized obesity as a risk factor.

About complication of GDM, majority of both Medical Doctors and Nurses recognized big baby as a complication, a similar number of respondents in both groups recognized GDM as a risk to developing type 2 diabetes mellitus later in life. More Medical Doctors than Nurses recognized increase perinatal mortality as a complication of GDM. However, more Nurses than Medical Doctors recognized operative delivery as a possible complication of GDM.

Table 3 reported the practice of ANC care givers, 34 (73.91%) and 60 (81.08%) of Medical Doctors and Nurses respectively carry out routine screening for GDM. However, only 4 (8.69%) of the Medical Doctors and 16 (21.62%) of the Nurses do the screening between 20 to 28 weeks of gestation. The screening investigation of choice was OGTT in 20 (43.47%) of the Medical Doctors and 18 (16.21%) of Nurses. Treatment modality assessment showed that 30 (65.21%) and 24 (32.43%) of Medical Doctors and Nurses respectively, used diet in the treatment of GDM. Nine (19.57) and 8 (10.81) of Medical Doctors and Nurses respectively used Oral hypoglycaemic agent in GDM treatment.

Table 4 showed assessment of attitudes of ANC givers. Fifty-nine percent of Nurses and 73% of Medical Doctors have positive disposition towards self glucose monitoring in managing GDM. Also, 65% of Medical Doctors and 35% of Nurses showed positive disposition towards early referral of GDM patients to higher level of Health care.

Only 13% of Medical Doctors and 16% of Nurses showed positive attitude to the use of Oral hypoglycaemic agents. However, more than half of both Medical Doctors and Nurses have positive attitude to post-natal follow-up care for GDM women. Majority of Medical Doctors and Nurses agreed that weight reduction can prevent GDM. However, only 18% of Nurses as

against 70% of Medical Doctors have positive attitude towards family planning to reduce GDM.

Table 5 reported that the Knowledge, Practice and Attitude were scored as either good or poor depending on percentage score of the correct response. The difference between both groups was significant only in the attitude.

DISCUSSION

There is a dearth of studies on GDM especially the aspect of Knowledge, Attitude and Practice (KAP) of Ante natal care Professionals (Medical Doctors and Nurses) in this environment. This study showed varying level of KAP of Medical Officers, and Nurses attending to pregnant women in General Hospitals and Comprehensive Health Centers in the area studied.

On the definition of GDM all Medical Officers and most Nurses have correct understanding of GDM as it is currently understood (21). However, concerning appropriate gestational age to make the diagnosis of GDM both groups demonstrated poor knowledge even though more Medical Officers than the Nurses answered correctly but this was not statistically significant p value is 0.07.

Similarly, on appropriate diagnostic investigations and clinical presentation of GDM, both the Medical Officers and Nurses respondents demonstrated varied but poor knowledge and there was no statistical significant difference between the groups. However, more Medical officers than Nurses recognized positive family history as a risk factor and that GDM predisposes to the development of type 2 Diabetes Mellitus later in life and this finding was statistically significant. P values are 0.001 and 0.04 respectively. A similar knowledge variation was found amongst different groups of health care professionals in a study in U.S.A. (22). Since, making correct diagnosis is critical to any disease management, the poor knowledge shown by these ANC givers may lead to misdiagnosis, and poor management outcome as reported by Alebiosu et al in a survey on Hypertension and Diabetes care

(23).

Knowledge of risk factors was higher amongst Medical Doctors than Nurses. The knowledge of risk factors is important in the management of diseases, gestational diabetes mellitus inclusive, as it serves as first line and cheap screening tool to arrive at diagnosis (13,24). This is more important in a country like Nigeria, where there is no management protocol for GDM and low per capital spending on health care services. The use of risk factors will select only high risk women for biochemical investigations thereby reducing cost.

The respondents in both groups showed high level of knowledge of complication of GDM. However, many Medical Doctors did not know that operative deliveries are common in pregnancy complicated by GDM. This may be a reflection of limited exposure to management of labour in GDM patient by these Medical Doctors, this is corroborated by the fact that many Medical Officers in this study have practiced for shorter period compared to the Nurses..

Attitude of health care givers is an important determinant of quality of care provided, which in turn impact on the outcome of disease management (25).

The Medical Doctors demonstrated positive attitude to the five of the six attitudinal questions, while Nurses showed positive attitude in respect of only three of the six questions, but the difference between groups was not statistically significant. However, when the responses were scored, a significant number in both groups showed poor attitude. Similar finding was reported by Peimani et al. (26). The attitude change should be targeted in Continuing Professional Education intervention on the management of GDM in this environment.

Responses to Practice showed that majority of respondents in both groups do carry out screening for GDM in the ante-natal clinic, however, the investigations employed for diagnoses and gestational age when screening were done are not appropriate and not consistent with best clinical practices (17). This was also demonstrated by poor

score in the practice scoring, which showed a substandard of care and may be a reflection of poor knowledge as demonstrated in this study. Similar finding was documented by Rubin et al. (27) in an American study.

CONCLUSION

The study demonstrated knowledge gap, poor practice and attitude by the antenatal care givers in the management of gestational diabetes mellitus in this environment. There is need for Continuing Professional Education intervention to achieve satisfactory level of care of patients presenting with gestational diabetes mellitus.

Conflict of interest

There is no grant or support to declare and none of the authors declare any conflict of interest.

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Table I: Socio-demographic characteristics of antenatal caregivers

Characteristics	Medical Officers (%)	Nurses (%)	* χ^2 ; p value
Age group (years)			
< 40	34 (74)	18 (24.3)	28.407; 0.001
≥ 40	12 (26)	56 (75.7)	
Gender			
Male	34 (73.9)	12 (16.2)	39.947; 0.001
Female	12 (26.1)	62 (83.8)	
Marital status			
Married	40 (87)	68 (91.9)	0.768; 0.581
Not married	6 (13)	6 (8.1)	
Duration of practice			
less than 10 yrs	22 (47.8)	14 (18.9)	11.288; 0.001
10 yrs and above	24 (52.2)	60 (81.1)	

*chi-square statistic

Table 2: Knowledge of antenatal caregivers about gestational diabetes mellitus (GDM)

Aspects of Gestational Diabetes Mellitus.	Medical Officer (%)	Nurses (%)	χ^2 ; p value
First diagnosed in index pregnancy			
Correct	44 (95.7)	52 (70.2)	11.422;
Not correct	2 (4.3)	22 (29.8)	0.001
Diagnosis is made in the 2 nd and 3 rd Trimesters.			
Correct	14 (30.4)	12 (16.2)	3.379;
Not correct	32 (69.6)	62 (83.8)	0.066
Investigation of choice for diagnosis is OGTT.			
Correct	6 (13)	8 (10.8)	0.137;
Not correct	40 (87)	66 (89.2)	0.711
Symptoms of GDM is always severe			
Correct	26 (56.5)	22 (29.7)	8.484;
Not correct	20 (43.5)	52 (70.3)	0.004
Positive family history is a risk factor			
Correct	44 (95.7)	36 (48.6)	28.202;
Not correct	2 (4.3)	38 (51.4)	0.001
Age greater than 25 yrs is a risk factor			
Correct	23 (50)	20 (27)	6.511;0.011
Not correct	23 (50)	54 (73)	
Over weight and obesity constitute risk factors			
Correct	36 (78.3)	44 (59.5)	4.512;
Not correct	10 (21.7)	30 (40.5)	0.034
Previous delivery of a baby with congenital defect			
Correct	32 (69.5)	28 (37.8)	11.422;
Not correct	14 (30.5)	46 (62.2)	0.001
GDM Predisposes to type 2 diabetes			
Correct	38 (82.6)	60 (81.1)	0.044;
Not correct	8 (17.4)	14 (18.9)	0.833
Delivery of big baby is a complication			
Correct	42 (91.3)	68 (91.9)	0.013;
Not correct	4 (8.7)	6 (8.1)	1.000
Operative delivery is common in GDM			
Correct	24 (52.2)	60 (81.1)	11.288;
Not correct	22 (47.8)	14 (18.9)	0.001
Increase prenatal death occurred in untreated GDM			
Correct	30 (65.2)	42 (56.8)	0.846;
Not correct	16 (34.8)	32 (43.2)	0.358

Table 3: Practice of antenatal caregivers to management of GDM

Practice	Medical Office (%)	Nurses (%)	χ^2 ; p value
Do you routinely screening all pregnant women			0.859; 0.354
Yes	34 (73.9)	60 (81.1)	
No	12 (26.1)	14 (18.9)	
Do you Screening Pregnant women at 20 -28 week gestation			3.412; 0.080
Yes	4 (8.7)	16 (21.6)	
No	42 (91.3)	58 (78.4)	
Do you use OGTT for diagnosis			4.809; 0.028
Yes	20 (43.5)	18 (16.2)	
No	26 (56.5)	56 (83.8)	
Do you treat GDM with Diet			1.430; 0.489
Yes	32 (65.2)	24 (32.4)	
No	12(34.8)	50 (67.6)	
With Insulin			
Yes	41 (89.1)	49 (66.2)	
NO	5 (10.9)	25 (33.8)	
With Oral hypoglycemic agents			
Yes	9 (19.6)	8 (10.8)	
No	37 (79.4)	66 (89.2)	

Table 4: Attitude of antenatal caregivers to management of GDM

Attitude	Medical officer (%)	Nurses(%)	χ^2 ;p value
Self Glucose Monitoring is appropriate.			
Agree	34 (73.9)	44 (59.5)	15.225; 0.0002
Disagree	11 (23.9)	8 (10.8)	
Indifferent	1 (2.2)	22 (29.7)	
Oral hypoglycaemic agent is useful			
Agree	6 (13)	16 (21.6)	1.438; 0.487
Disagree	16 (34.8)	22 (29.7)	
Indifferent	24 (52.2)	36 (48.7)	
Weight reduction before pregnancy is good for prevention and treatments.			
Agree	42 (91.3)	59 (79.7)	5.443;0.0585
Disagree	0 (0)	8 (10.8)	
Indifferent	4 (8.7)	7 (9.5)	
Early referral for specialist care is recommended			
Agree	30 (65.2)	30 (40.5)	22.703; 0.0001
Disagree	16 (34.8)	16 (21.6)	
Indifferent	0 (0)	28 (37.9)	
Contraception may reduce GDM prevalence			
Agree	32 (69.6)	13 (17.6)	33.590; 0.0001
Disagree	2 (4.3)	18 (24.3)	
Indifferent	12 (26.1)	43 (58.1)	
Postnatal follow up is necessary			
Agree	36 (78.3)	36 (48.7)	11.778; 0.0022
Disagree	2 (4.3)	17 (23)	
Indifferent	8 (17.4)	21 (28.3)	

Table 5: Knowledge, practice and attitude scores of antenatal care givers about GDM

Variable scores	Medical officer (%)	Nurses (%)	χ^2 ;p value
Knowledge			
Good	30 (65)	38 (51)	2.221; 0.136
Poor	16 (35)	36 (49)	
Attitude			
Good	30 (65)	33 (45)	4.838; 0.028
Poor	16 (35)	41 (55)	
Practice			
Good	22 (48)	29 (40)	0.866; 0.352
Poor	24 (52)	45 (60)	