



Contents lists available at ScienceDirect

Diabetes & Metabolic Syndrome: Clinical Research & Reviews

journal homepage: www.elsevier.com/locate/dsx

Original Article

Barriers for detection and management of gestational diabetes mellitus in southern Ethiopia: A qualitative study

Eskinder Wolka Woticha ^{a, *}, Wakgari Deressa ^b, Ahmed Reja ^c^a School of Public Health, College of Health Sciences and Medicine, Wolaita Sodo University, Wolaita Sodo, Ethiopia^b Department of Preventive Medicine, School of Public Health, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia^c School of Medicine, College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia

ARTICLE INFO

Article history:

Received 13 March 2019

Accepted 11 April 2019

Keywords:

Detection of GDM

Barriers

Southern Ethiopia

ABSTRACT

Background: Gestational diabetes mellitus (GDM) complicates the health of mother and child not only in the short term but also in the long term basis. Addressing GDM through early detection and proper management is vital to improve maternal and child health. Identifying existing barriers for detection and management is important for policy improvement. This study aims to explore barriers for detection and management of GDM in Wolaita Zone, Southern Ethiopia.

Methods: A qualitative study was conducted. Health professionals working in antenatal clinic, delivery, and other maternal health services were selected purposively. A total of 18 in-depth interviews were done. The transcripts were imported into NVIVO version 12 software packages. A qualitative thematic analysis approach was used to analyze the data.

Results: Screening of women for GDM was done based on the risk factor assessment within 24–28 weeks of gestational age. The participants mentioned that they made diagnosis of GDM based on the World Health organization criteria. Barriers for detection and management of GDM include; lack of standard guidelines and protocols, lack of awareness among mid-level health care providers on GDM, inadequate trained health care providers, shortage of supplies and equipment and late antenatal care visits.

Conclusions: Policy makers and health care leadership need to address challenges by availing standard guidelines and protocols, providing on job training for health care providers, fulfilling supplies and consumables and working on early antenatal visits of pregnant mothers.

© 2019 Diabetes India. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Gestational diabetes mellitus (GDM) affects the health of mother and child not only in the short term but also in the long term basis. Women with GDM have increased risk of developing obstetric complications [1,2]. The occurrence of type II diabetes mellitus in future life among mother with GDM is higher [3,4].

Newborns of mothers with GDM are at higher risk of different complications like being delivered preterm, being macrosomic or suffering from hypoglycemia, jaundice or respiratory distress. Maternal complications of hypertension, obstructed labour, post-partum hemorrhage and caesarean section delivery are more likely to happen because of GDM [5].

Evidences indicated that controlling blood glucose level with

lifestyle modifications and/or drug treatment like insulin during pregnancy considerably reduces the risk of adverse pregnancy outcomes. It is common to have normal glucose level among women with GDM after giving birth, but short term and long term complications that can happen in both mother and child can worsen the condition. Detection and management of mothers with this problem has opportunities and challenges [6,7].

Management of GDM like appropriate antenatal screening and diagnosis, early initiation of treatment options, and follow-up after child birth and preventive care are essential. It is suggested to use consistently valid simple screening and diagnostic criteria for detection of GDM [8].

In some countries with poor obstetric service and lack of appropriate newborn care, GDM may have particularly severe consequences for the health and well-being of the mother and child. GDM therefore accounts an unrecognized challenge to maternal and neonatal health in low and middle income countries. Tackling the problem related to GDM by timely detection and

* Corresponding author.

E-mail address: wolkaeskinder@gmail.com (E.W. Woticha).

suitable management therefore could have good opportunity to improve maternal and child health.

To be able to plan appropriate strategies to address these issues will require better understanding of the existing gaps in detection and treatment of GDM.

This study aims to explore detection and management modalities of GDM in Wolaita Zone, Southern Ethiopia.

2. Methods

2.1. Study setting

The Southern Nations, Nationalities, Peoples Region (SNNPR) is one of the nine regions in Ethiopia and it consists of many different languages and ethnic groups within own diverse culture. The area of the region covers 10% of the national landmass and its boundary shows there is Kenya to the south, Sudan to the southwest, Gambela regional state to the west and Oromia regional state to the north and North-East. The region is composed of 13 zones and 104 Districts, of which Wolaita Zone is the one and situated in the south central part of the region 385 km distance from Addis Ababa and 165 km south west of the regional capital, Hawassa. The population of the zone is estimated to be 2 million (51% were females) (Population for census 2007). Wolaita zone is one of the most densely populated areas in the country with an average of 640 people living per square kilometer.

The study area in general has 12 administrative districts and three town administrations. Likewise this area share 3 Hospitals, 70 health centers and 380 health posts, among these 12 Health Centers and all three hospitals provide diagnostic and management care for pregnant women with diabetes mellitus. Total number of pregnant women in the zone is 66,646 [9]. Data were collected in two months period from January to February 2018.

2.2. Study design

A qualitative study with descriptive approach was used. This approach involves trying to understand the essence of issue by examining the experience of health care providers and leadership who have been involving in maternal and child care.

2.3. Participant selection and sample size

All study participants were selected purposively. Health professionals working in antenatal care, delivery, and other maternal health services were included. Those working in the area of health care leadership were also included in the study. Total of 18 in-depth interviews were conducted with health care providers and leadership.

2.4. Data collection

Conducting in-depth interview was chosen as the data collection method to capture practices and experiences related to detection and management of gestational diabetes. This method elicits candid responses in a private setting regarding professional topics of discussion. It is useful to have each participant has more time and opportunity to share feelings, perspectives, and experiences concerning the problem. The interviewers had plenty of time to probe and obtain in-depth responses since respondents tend to express themselves more freely.

Again this method is appropriate for this study since we are interviewing someone with specific knowledge and experience concerning the issue and it is better suited to sitting down one-on-one. It also allows considerable opportunity to probe answers and

for intensive investigation of individual experiences and thoughts. Semi structured check list was used to collect data. Data collectors with past experience were trained in (on study overview, objectives, participant selection, detailed tool review, interview approach, and role play of interview skills). Supervision was conducted throughout data collection time. The interview was audio-recorded by using digital recorder. Transcriptions and translations were spot-checked for accuracy by supervisors.

2.5. Data analysis

Prior to analyzing the data, in-depth interviews were transcribed and translated into English. A qualitative thematic analysis approach was used to analyze the data. The transcripts were transferred into NVIVO version 12 software packages. Data coding was done in each categories by using the software. Once coding was complete, code reports were produced for each code, cleaned and prepared for synthesis. During synthesis and write up meaning units were identified in relation to the aim of the study. Emerging meaning units that were extracted from each topic of the analysis coded and then combined together to form categories depending on their differences and similarities.

2.6. Ethical considerations

Ethical clearance was obtained from Institutional Review Board of College of health Sciences, Addis Ababa University. Permission was obtained from Wolaita Zone Health Department and respective health facilities. All participants were informed about the purpose and advantage of the study, being the anonymity and the right to refuse at any stage of the interview and procedure. Confidentiality of the responses was assured, and verbal consent was obtained prior to data collection.

3. Results

3.1. Background of participants

This qualitative analysis was made using the transcripts of 18 in-depth interview participants. The participants were physicians, nurses and midwives who were involved in providing maternal and child health services in Wolaita Zone, Southern Ethiopia. All participants told us their socio-demographic information. Accordingly, all informants 6 of the participants were females and the rest were males with in age range 26–48. Regarding their profession, obstetricians [6], general practitioners [4], midwives [3], and clinical nurses [3] and health officers [2] were involved and their experience ranged from 4years to 16 years.

3.2. Detection of GDM

Participants were asked about detection method of GDM in their respective health facilities. All participants mentioned that screening of women for GDM based on the risk factor assessment known as selective screening. According to participants, health care provider screen pregnant mothers with one or more risk factors within 24–28 weeks of gestational age. The participants also mentioned that they made diagnosis of GDM based on WHO criteria. The participant from Wolaita Sodo University teaching referral hospital indicated detection method of GDM as follows;

“Here in our hospital we use selective screening method to detect GDM. We understand that GDM has negative consequences both for mother and fetus if not detected early. We screen selectively by asking past history of having big baby, family history of diabetes

and obesity. We will focus our screening from 24–28 weeks of gestational age. Physicians working in antenatal care screen mothers by testing blood sugar level” (Male physician, aged 36)

The reason for selecting selective screening was explored in the interviews. The main reason given by the respondents as to why selective screening was preferred and used was the issue of cost-effectiveness, but some participants strongly suggest universal screening of all pregnant mothers during antenatal by considering the seriousness of the problem.

The participant from Sodo Christian Hospital noted that;

“We do screening selectively, by considering history of still birth, having big baby, age greater than 35 and family history of type II diabetes. In general we follow selective screening technique because of cost but it is better to do universal screening for all pregnant mothers during antenatal care for better detection” (Female midwife, aged 28).

Another participant also reported that the problem is becoming common and including GDM screening as baseline investigation for all pregnant mothers is important. According to the participant, mothers are not screened consistently in the facility like other investigations and he said;

“This case is very common in our health facility; we commonly detect GDM during ANC care. But screening is not routine and consistent, not assessed as base line. We screen mothers when there is complication and high level of suspicion, otherwise we do not consider it as baseline assessment during ANC. It is better if we include it as baseline assessment for all antenatal attendants” (Male Obstetrician, aged 40).

Respondents were nearly unanimous that they screen the women at 24–28 weeks of gestation and they also emphasised that it is not always possible to screen the women in this period of pregnancy because of late antenatal visit.

“ According to the recommendation, we try to do screening at 24–28 weeks of gestational age but the problem most mothers are not visiting ANC clinic at early time, some may visit health facilities during late third trimester, this is also one challenge” (Male midwife, aged 32)

3.3. Barriers and challenges to early detection and management of GDM

Participants pointed some barriers and challenges for detection and management of GDM. These include; lack of standard guidelines and protocols, lack of trained health care providers, shortage of supplies and equipment and late antenatal care visits.

Participants were asked a series of questions about guidelines and clinical standards relevant to detection and management of GDM. Many of the respondents noted that lack of standard protocols and guidelines for detection and management of GDM is one barrier. They explained that in absence of standards, screening of women will take place based on subjective judgement of providers. One of the participants explained the issue as follows;

“In our hospital, we don't have guideline specific to GDM screening and management unlike other obstetric complications. No standard available regarding GDM, I hope the government will provide these things in future” (Female Midwife, aged 32)

Another participant from health center echoed that lack of standard protocol is challenge for detection and management of GDM, and he said;

“There is no standard or guideline for screening of GDM in our health centre. Low attention is given providers, it is not considered as serious problem; I think this is the reason why for lack of awareness creation activities, lack of guidelines and standards and so on” (Male Nurse, aged 27)

Lack of trained health care providers was mentioned as one problem for detection and management of GDM, according to the participants. They mentioned that there is lack of awareness among health care providers particularly mid-level providers in facility and the major reason for this was lack of on job training on detection and management of GDM. Training, seen as a critical component of strengthening detection and management of GDM was sorely lacking, and respondents called for training at all levels.

“Firstly, on job training is important on screening and management of GDM. There is different training in other area but training on GDM doesn't exist. Specially, training is necessary for mid-level workers since they encounter mothers during antenatal care, there should be awareness on GDM detection” (Male obstetrician, aged 34)

Another participants saw staff training as mandatory for service provision and specifically specialized training in detection and management of GDM including refresher training that did not currently exist; he said,

“There is shortage of trained providers here. The reason is, there is no special on job training concerning GDM detection and management, so it is better to provide on job training for health care workers, we are providing care from our knowledge of academic training; as to me refreshment training is necessary to all providers, we don't have training on GDM, for example there is continuous training on issues like PICT, HBV, VDRL but no training provided on detection and management of GDM” (Male general practitioner, aged 32)

Lack of supplies and equipment were also reported as challenges for screening and management of GDM. Shortage of supplies and infrastructures include space, laboratory reagents and glucose solutions were found to be challenges for detection and management of GDM.

“There is also shortage of supplies like oral glucose preparation. We prepare oral glucose solution, but it is better to access glucose solution for screening of GDM. Lack of space/room is another challenge to follow high risk mothers in separate room. So it better to fulfil supplies and equipment for better care and management” (Female general practitioner, aged 29).

Health care providers explained that most pregnant women do not attend antenatal care in the recommended gestational period for GDM screening; late antenatal visit is common and this is another challenge for early detection of GDM. They also noted that larger proportions of women attend antenatal visits at health posts and health centers and providers in these facilities have relatively lower experience of detection and management of GDM. One of the participants noted the issue as follows;

“Another big challenge is late antenatal visit; mothers attend antenatal care during late pregnancy and this is not ideal time of recommendation for screening. Some mothers visit health facilities during the time of delivery. Most ANC visit takes place at health centre and health centre is staffed with mid-level health care providers who have lower awareness of GDM screening” (Male Obstetrician, aged 38)

Another participant also noted that late antenatal visit is challenge to screen mothers for GDM and he said;

“For me detection rate of GDM is very low but the problem is common here. The other problem is there is no appropriate ANC follow up, our report might seem good concerning ANC follow up but in reality what I observe is there is huge gap and awareness problem among mothers on ANC. It is better to do awareness creation on community about the problem because the magnitude of the problem is increasing from time to time” (Male Obstetrician, aged 42).

4. Discussion

This study aimed to explore barriers for detection and management of GDM in health facilities of Wolaita Zone, Southern Ethiopia. The participants were physicians, nurses and midwives who were involved in providing maternal and child health services in the study area. The findings revealed that screening of women for GDM was done by based on the risk factor assessment or selective screening. Health care providers screen pregnant mothers with one or more risk factors within 24–28 weeks of gestational age. The participants also mentioned that they made diagnosis of GDM based on WHO criteria. The WHO diagnostic criteria are generally accepted in many countries in the world including many African countries [10,11]. In most developing nations where funds are limited, it is common to screen pregnant women for GDM based on availability of risk factors in selective manner during antenatal care [12,13].

Findings from this study showed that health care providers use dietary modification and exercise as first stage of treatment and they use insulin if is not possible to control blood glucose level by diet and exercise. Blood glucose level monitoring, life style modifications like exercise and nutritional advice are important part of recommended management protocols for mothers with GDM. Treatment starts with medical nutrition therapy, exercise, and glucose monitoring and insulin can be used if these methods fail to maintain normal glucose level [14].

Our study reveals that providers in health facilities face many challenges related to screening and management of GDM. Lack of standards and guidelines and inadequate on job training on GDM are among repeatedly mentioned obstacles. According to our participants, health facilities that provide maternity care should have standard protocol for detection and management of GDM. However, all the participants noted that there is no standard protocol to screen and manage pregnant mothers with GDM. According to the participants, it is possible to find undiagnosed and untreated mothers or late diagnosis with possible complications.

Guidelines are important for effective screening and management of GDM during pregnancy and this is helpful to ensure good pregnancy outcome. In addition, it is important to prevent long term complications of GDM like preventing future progression to type II diabetes [15,16].

In countries like Ethiopia, a lot should be done to reduce maternal and neonatal mortality to acceptable level; there should be continuous improvement to avail better access of obstetric care.

However, the situation is challenged by additional burden of non-communicable diseases worsening the health of mothers and newborns in low and middle income countries [17]. To increase awareness and improve detection of GDM in pregnancy, providing training for mid-level health care providers could be helpful and this has already been practiced in countries like India and screening is done by mid-level at first level care [18].

In addition, findings from this study also illustrate that health facilities have shortage of supplies, consumables and properly equipped laboratories and considered as barriers for early detection and management of GDM. So, health system planners and leadership should consider fulfilling essential supplies for screening of GDM.

The issue of pregnant women not attending antenatal care in the recommended gestational period for GDM screening was another challenge for early detection of GDM. According to participants the pregnant women do not always attend the antenatal care clinic in the optimal time for the GDM screening. World Health Organization (WHO) focused antenatal guideline recommends screening of mothers for GDM as baseline investigation for all mothers during antenatal visit [19].

5. Conclusion and recommendations

Selective screening based on one or more risk factors within 24–28 weeks of gestational age was used to detect GDM in study area. The diagnosis of GDM was made based on WHO criteria. Lack of awareness on treatment options of GDM among mid-level workers was reported. Providers face various challenges related to detection and management of GDM. Commonly reported challenged were lack of standard guidelines and protocols, lack of trained health care providers, shortage of supplies and equipment and late antenatal care visits. Policy makers and health care leadership need to address these challenges by strengthening the health care system by availing standard guidelines and protocols for detection and management of GDM, providing on job training for health care providers, fulfilling supplies and consumables and working on early antenatal visits of pregnant mothers.

Authors' contributions

EW conceived and designed the study, involved in data collection, performed analysis and interpretation of data, and drafted the manuscript. WD and AR assisted with the study design, analysis and interpretation. All authors participated in critical appraisal and revision of the manuscript. All authors approved and read the final manuscript before submission.

Data availability

Data are available from corresponding author up on request.

Conflicts of interest

The authors declare that they have no competing interests.

Acknowledgements

The authors would like to thank data collectors, supervisors and officials of study health facilities for their cooperation.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dsx.2019.04.005>.

Funding

This study was partially supported by Addis Ababa University and Wolaita Sodo University, Ethiopia.

References

- [1] Black MH, Sacks DA, Xiang AH, Lawrence JM. Clinical outcomes of pregnancies complicated by mild gestational diabetes mellitus differ by combinations of abnormal oral glucose tolerance test values. *Diabetes Care* 2010;33(12):2524–30.
- [2] Metzger BE, Lowe LP, Dyer AR, Trimble ER, Chaovarindr U, Coustan DR, et al. Hyperglycemia and adverse pregnancy outcomes. *N Engl J Med* 2008;358(19):1991–2002.
- [3] Damm P. Future risk of diabetes in mother and child after gestational diabetes mellitus. *Int J Gynaecol Obstet* 2009;104(Suppl 1):S25–6.
- [4] Kim C, Newton KM, Knopp RH. Gestational diabetes and the incidence of type 2 diabetes: a systematic review. *Diabetes Care* 2002;25(10):1862–8.
- [5] Wang Z, Kanguru L, Hussein J, Fitzmaurice A, Ritchie K. Incidence of adverse outcomes associated with gestational diabetes mellitus in low-and middle-income countries. *Int J Gynaecol Obstet* 2013;121(1):14–9.
- [6] Crowther CA, Hiller JE, Moss JR, McPhee AJ, Jeffries WS, Robinson JS. Effect of treatment of gestational diabetes mellitus on pregnancy outcomes. *N Engl J Med* 2005;352(24):2477–86.
- [7] Landon MB, Spong CY, Thom E, Carpenter MW, Ramin SM, Casey B, et al. A multicenter, randomized trial of treatment for mild gestational diabetes. *N Engl J Med* 2009;361(14):1339–48.
- [8] Nielsen KK, De Courten M, Kapur A. The urgent need for universally applicable simple screening procedures and diagnostic criteria for gestational diabetes mellitus - lessons from projects funded by the World Diabetes Foundation. *Glob Health Action* 2012;5:17277.
- [9] Wolaita Zone Health Department. Annual report. 2016.
- [10] Macaulay S, Dunger DB, Norris SA. Gestational diabetes mellitus in Africa: a systematic review. *PLoS One* 2014;9(6):e97871.
- [11] Agarwal MM. Gestational diabetes mellitus: an update on the current international diagnostic criteria. *World J Diabetes* 2015;6(6):782.
- [12] Zhu Y, Zhang C. Prevalence of gestational diabetes and risk of progression to type 2 diabetes: a global perspective. *Curr Diabetes Rep* 2016;16(1):7.
- [13] Dabelea D, Snell-Bergeon JK, Hartsfield CL, Bischoff KJ, Hamman RF, McDuffie RS. Increasing prevalence of gestational diabetes mellitus (GDM) over time and by birth cohort. *Diabetes Care* 2005;28(3):579–84.
- [14] American Diabetes Association. Standards of Medical care in diabetes. 2017.
- [15] Peacock AS, Bogossian FE, Wilkinson SA, Gibbons KS, Kim C, McIntyre HD. A randomized controlled trial to delay or prevent type 2 diabetes after gestational diabetes: walking for exercise and nutrition to prevent diabetes for you. *Internet J Endocrinol* 2015;2015:423717.
- [16] Carolan M. Women's experiences of gestational diabetes self-management: a qualitative study. *Midwifery* 2013;29(6):637–45.
- [17] Ashwal E, Hadar E, Hod M. Diabetes in low-resourced countries. *Best Pract Res Clin Obstet Gynaecol* 2015;29(1):91–101.
- [18] MoHFW. National guidelines for diagnosis & management of gestational diabetes mellitus. New Delhi: Ministry of Health and Family Welfare India; 2014. <http://www.nrhmorissa.gov.in/writereaddata/Upload/Documents/>.
- [19] World Health organization. WHO recommendations on antenatal care for a positive pregnancy experience. 2016.