Original Research Paper

Volume - 11 | Issue - 03 | March - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Obstetrics And Gynecology

UPTAKE OF GDM SCREENING IN PUBLIC HEALTH FACILITY OF CENTRAL INDIA: THE CHALLENGES

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ABSTRACT Hyperglycemia in pregnancy well known for its poor perinatal outcome is also implicated in long term sequelae in children. In India, the reported prevalence of GDM varies widely (4.5% to 18.9%) and may be the consequence of population screened, the method used for screening and wide socio-cultural beliefs. A cross-sectional, observational study conducted at public health facility of central india. Antenatal records from February 2020 to Dec 2020 were studied. Descriptive statistical methods applied for data analysis. Total 10,275 antenatal records studied, 4482 were new registration (54% in 3rd, 31% in 2nd and 15% in 1st trimester). Of 4482 only1732 (39%) completed the DIPSI test and 83 (4.8%) tested screen positive and received MNT counselling. Average blood sugar was 105.9mg%. while average age for all was 23.75 yrs. At second visit, 269 women received testing and 12(4.5%) came positive. Late antenatal registration, poor motivation of antenatal women, inadequate staff, patient overload, lack of dedicated DIP clinic were factors for poor GDM screening uptake.

KEYWORDS : Gestational diabetes, pregnancy, India, hyperglycemia in pregnancy

INTRODUCTION

Diabetes has emerged as a global public health emergency over the past few years. As per reports from International Diabetes Federation, 463 million people in the age group of 20-79 years were living with diabetes in 2019 which is projected to rise to 700 million by 2045.[1]These large increments in prevalence of diabetes have been majorly related to the increasing longevity and overall rise in obesity across the world. Of much greater concern is the fact that about 80% total world diabetic adults are living in low- and middle-income countries.[2] India already the "diabetic capital of world "is close to reaching 79.4 million diabetic population across the country by 2025.[3,4] With rise is diabetic population as a whole, there is a parallel rise in the prevalence of diabetes during pregnancy. It is estimated that more than 20 million live births in world (1 in 6 live births) are affected by diabetes in pregnancy, 90% of which are gestational diabetes.[1] There is enough evidence to date to state that hyperglycemia in pregnancy not only adversely affects the perinatal outcome of ongoing pregnancy but also has serios long term sequalae on reproductive health of women and future generations born to these women. Early identification and correction of hyperglycemia thus have major overall health implications.

In Indian settings, HIP is one of commonest non-communicable disease associated with pregnancy with reported prevalence from 3.8% to 21% in different studies. [5,6,7,8] Diabetes in pregnancy study group of India (DIPSI) recommends one step universal screening for all pregnant women with 2hr blood sample post 75gm oral glucose challenge irrespective of the fasting status of the women.[9] DIPSI criteria, though simple, economical and practical finds challenges in implementation especially in rural settings. The current study was undertaken to investigate and explore various challenges and obstacles faced in GDM screening in a public health facility of central India.

METHODS

This was an observational, cross- sectional study conducted at public health facility from February 2020 to December 2020 by the Department of Obstetrics and Gynaecology. Antenatal records of above duration related to HIP screening were studied and data were recorded. All incomplete records were excluded out of the study. Descriptive statistical methods were used for data analysis.

As per the National guidelines of Ministry of health and family welfare and Diabetes in pregnancy study group of India, the DIPSI test was being carried out at the centre for HIP screening.[9] The national guidelines recommend initial screening at booking preferably first trimester and repeat testing at 24-28 weeks of gestation if first screen is negative. Any blood sugar value above 140 mg% is considered screen positive and labelled as GDM (sugar values > 140mg%) or overt diabetes (sugar values > 200 mg%).

RESULTS

A total of 10,275 antenatal records of 11 months duration were studied. Of the total, 4482 (44%) were new antenatal registrations and the rest 5793(56%) were antenatal follow up cases.

All new registrations (4482) were counselled and offered HIP screening. However, only 1732 (39% of new registrants) women completed the GDM screening by giving two-hour blood samples and rest 2750 (61%) could not complete the screening. Of the total 1732 women who completed the screening, only 259 (15%) reported in first trimester, 536 (31%) in second trimester and more than half i.e.,937 (54%) women reported in 3rd trimester. (table 1)

It was observed that among those who completed the screening (1732), majority of women were young with more than half (926) belonged to the age group of 20-25 years, about one-fourth (449) belonged to 25-30 year and another one-fifth (313) were less than 20 years old.(table 2)

Among women who completed the screening at first visit (1732), it was observed that on DIPSI test high sugar values (> 140 mg%) were found in 83 (4.8 %) women, of with three women had sugar values above 200mg%. Majority (65%) had glucose values in the normal range (less than 120mg%). However, about one-third (30%) women belonged to the impaired gestational glucose tolerance group (120-139 mg%). (table 3) All women who belonged to the GDM group were counselled for medical nutrition therapy (MNT)and were advised follow up as per guidelines.

Among 1732 new antenatal registrations, over all 83 (4.8%) tested screen positive however only11(13%) of these reported prior to 12 weeks and rest later than 12 weeks. On the other hand, a total of 269 women received screening at 2nd visit (24-28 weeks) out of which 12(4.5%) tested positive on DIPSI test. About 95 women in total from all trimesters received MNT counselling while none was started on metformin or insulin therapy as lost to follow up was common phenomenon.

Table 1: Showing Distribution Of Women According To Gestational Age

Gestational age	Number of patients	Percentage (%)
<12 weeks	259	15%
12-28 weeks	536	31%
>28 weeks to term	937	54%
Total	1732	

Table 2: Showing Age-wise Distribution Of Antenatal Women

Age group	Number of patients	Percentage (%)
<20 years	313	18%

20-25 years	926	53.5%
25-30 years	449	26%
30-40 years	45	2.5%
Total	1732	

Table 3: Showing Distribution Of Blood Sugar Values On DIPSI Test (n = 1732)

Plasma glucose level	Number of patients	Percentage (%)
<120 mg%	1125	65%
120-139 mg%	524	30%
140 – 200 mg%	-80	4.5%
>200 mg %	3	0.3%

DISCUSSION

The emerging wave of hyperglycemia in pregnancy has raised public health alarms in developing countries. For many years considered to be a disease of affluent and developed nations, diabetes now has its roots widely spread in low- and middle-income countries as well.[2] The association of GDM with increased risks of short and long term adverse feto-maternal and neonatal outcomes is well established in different studies. Thus, with 4 million pregnancies affected with GDM in India, there are great number of women at risk of developing adverse perinatal outcome.[10] As per theory of fetal origin of adult diseases, many diseases and conditions of children born to such mothers have been linked to in utero environment during pregnancy.[11]One study suggested that cumulative risk of offspring developing type 2 DM was 30% at the age 24 yrs.[12,13]

It is estimated that by virtue of their genetic and sociodemographic characteristics Indian women are at 11-fold increased risk of developing diabetes as compared to the women of the western world.[14,15] In a study conducted by Swami et al, authors were of opinion that that Indian pregnant women are at risk of gestational hyperglycaemia at much younger ages and at much lower BMI compared to the white Caucasians.[16] In our study also majority (80%) of women were between 20-30 years age and about one fifth (18%) were less than 20 years of age.

The reported prevalence of HIP in India varies from 3.8 to 21%. [5,6,7,8]It is said that this reported variation has major implications to the population screened, method used for screening and practices of health care providers. In a community-based study conducted by Seshiah V et al in Tamil Nadu, the reported prevalence in three different settings were as 17.8% in urban, 13.8% in semi-urban, and 9.9% in rural areas. [6] Other authors similarly observed much higher prevalence of GDM in urban populations than rural ones. [6,17,18] However, Babu GR reported GDM prevalence as <1% in their study on public health facilities of Bangalore.[19] Similarly, in a state of Madhya Pradesh, with strict implementation of national guidelines, the prevalence of GDM was found as 11% in urban and 8% in rural areas with 84% (21358 antenatal women) coverage.[20]In our study, at initial screening 4.8% women were screen positive and on repeat screening in second trimester 4.5% tested screen positive. G.R.babu pointed out that inadequate knowledge among doctors, lack of standard protocols for screening , lack of staff and varied access to health care systems were common reasons for varied reported prevalence in different studies.[19] The district level health survey- 4 (2012–2013) stated that only 59% of government health services were being utilized in Bangalore for providing complete antenatal check-up and thus could be responsible for significant underestimation of GDM prevalence in government facilities.[21]

Of greater importance is the fact that if not all, majority of these complications of GDM are preventable and risk reducible by timely detection and early correction of altered sugars in pregnancy, thus making screening and early treatment of HIP, a matter of paramount significance. GOI in 2014, identified GDM as emerging health concern of great significance and made universal screening of all pregnant women mandatory. [9] DIPSI test considered to be simple, feasible, economical and getting endorsed by GOI had challenges at operational aspects especially in remote public settings. To address these issues related to logistics, GOI revised the operational guidelines in 2018 on GDM diagnosis and management.[19]

In our study out of total new registrants (4482) only 39% (1732) could complete the DIPSI testing while almost two-third (61%) could not complete the test. The common reported reasons for not completing the screening were vomiting following the glucose ingestion, overcrowding with long waiting ques, ignorance and poor motivation towards GDM screening, distance from the facility, responsibility towards family and other children at home. More than 80% of pregnant women experience some discomfort mostly due to rapid ingestion glucose in short span done in most public health facilities.[19] G.R.Babu stated that blood samples drawn in pregnant women in sitting position could also trigger giddiness, fainting and nausea.[19] Although DIPSI test is not associated with significant side effects but rapid ingestion of glucose over 5 min and withdrawal of blood sample often makes women discomfortable, sweaty and nauseating posing a challenge to carry out test in all women.

Late antenatal registrations and poor follow up also pose challenge to GDM screening. Late antenatal reporting to the facility and late antenatal registrations was commonly observed in our study with more than half (54%) reporting in third trimester and only 15% reporting in first trimester. The distance from the facility, lack of family support, socio-cultural beliefs and attitude, ignorance and illiteracy were common factors for the late antenatal registrations. In a study by Babu G.R. only 40% ANC got registered in 1st trimester while about 28% of GDM women turned for follow up.[19] In our study, similarly 269 (16%) women underwent second screening at 24-28 weeks. Kayal A et al in their study opined that maternity picnics and other village ceremonies at PHC levels may be used for group counselling and promoting awareness about GDM screening at community levels. [7]Similarly, vertical integration of L1 facilities with higher level of health care systems, inclusion of technology to improve recording and follow-ups, promotion of facilities of first contact points for postnatal follow-ups are other propositions to ensure early registration and continued follow up.

Knowledge, attitude, practices and commitment of health care providers towards GDM screening lays foundation for successful implementation of GDM screening. Babu G R reported that gestational diabetes mellitus (GDM)screening was done in nearly all the health centers (96%). However, only 12% of the doctors could provide all the components of GDM diagnosis and management correctly and 46% would diagnose by using a random blood glucose test. Re-orientation trainings of the doctors, incentives to promote motivation and regular performance assessments may be undertaken to improve overall uptake of GDM screening.

CONCLUSIONS

Poor antenatal registrations, late antenatal reporting, distance from the facility, ignorance, poor motivation, long waiting hours in public health facilities with overcrowding of patients still prevail in public health facilities. Lack of adequate human resources, poor attitude of medical officers towards GDM screening and lack of dedicated Dipsi Clinics are other factors which warrant urgent addressal to improve the uptake of GDM screening. Regular trainings and audits may also be conducted for strict adherence and implementation of national guidelines.

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