OPEN ACCESS ORIGINAL RESEARCH ARTICLE

FETO-MATERNAL OUTCOME OF EARLY DIAGNOSED GESTATIONAL DIABETES MELLITUS AT PEOPLE UNIVERSITY OF MEDICAL & HEALTH SCIENCES.

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ABSTRACT

BACKGROUND: Diabetes Mellitus is one of the most well-known clinical problems experienced alongside pregnancy. Clinical acknowledgment of it is significant in light of the fact that opportune mediation by dietary measures and additionally insulin can lessen the notable maternal and fetal difficulties related to it. **OBJECTIVE:** To determine the feto-maternal outcome of early diagnosed gestational diabetes mellitus at People's University of Medical & Health Sciences**. STUDY DESIGN:** descriptive cross sectional. **METHODOLOGY:** We conducted this study in the Department of Obstetrics & gynecology PUMHS Nawab Shah for a period of six months from July to December. The data on singleton pregnant women after 24 weeks was analyzed for gestational diabetes and its consequences on feto-maternal health. Demographic characteristics and complications related to gestational diabetes were recorded on structured proforma and analysis was done on SPSS version 25. **RESULTS:** This study shows that GDM seems to be more prevalent in un-booked patients and with a history of GDM (63.6%) in previous pregnancy. The mean age observed was 30.6 years ± 6.729 standard deviation, GDM was most prevalent in parity between 2-4 (47.3%), & in those who belong to urban, 58.2% had normal BMI & 23.6% had >30 BMI, 43.6% showed polyhydramnios on the scan. Among these patients, 43.6% underwent cesarean section while 36.4% delivered vaginally. 12.7% had placental insufficiency, around 50% delivered at term and 27.3% were postdated. 7.3% experience PPH, 3.6% develop septicemia & wound gap. 10.9% develop preeclampsia. 8 newborns needed NICU admission >24 hours, 3 had developmental defects, 7 had respiratory problems, 10 developed hypoglycemia, around 38 babies had weight between 2.5 to 4.5, 10 had >4.5 kg & 7 had < 2.5kg. out of 55, 48 babies were alive & healthy, 3 died in the first 7 days of life (2 with congenital anomaly), and 2 feti died in utero. **CONCLUSION:** After conducting a review, we found that the occurrence of GDM is 11% in PUMHS Pakistan. It is crucial to analyze and manage gestational diabetes (GDM) properly to prevent dangerous consequences. Policymakers should prioritize addressing this issue, and pregnant women should schedule regular antenatal visits.

KEYWORDS: Diabetes Mellitus, Insulinfeto-Maternal Outcome, Gestational Diabetes Mellitus, People's University Of Medical & Health Sciences.

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INTRODUCTION

Diabetes is an ongoing, weakening disease liable for a great many passings across the globe. The overall commonness of diabetes and glucose bigotry in grown-ups has been expanding over many years[1]. Individuals with diabetes have an expanded risk of fostering various perilous medical conditions resulting in higher clinical consideration costs, diminished personal satisfaction, and expanded mortality[2]. Gestational diabetes mellitus is related to unfavorable feto-maternal results to both the mother and her baby[3]. When analyzed for the initial time during pregnancy, is a general medical problem of alarm around the world.

The predominance of GDM is usually seen as 1-14% ascribed to various factors & confuses 7% of gestations that occur annually around the world[4].

In developing countries like Pakistan, the GDM was seen at 3.45% in 2014, and that recent increase to 10%[5]. When contrasted with later years, the overall frequency rate is expanded because of different elements like stoutness, actual latency, un-quality food rehearsals, and inactive way of life propensities[6].

DM does a huge job of causing hypertension, pre-eclampsia, and C-segment conveyances, with the future risk of cardiovascular diseases and Type II diabetes for mothers. GDM could result in , polyhydramnios, macrosomia, birth wounds, bone cracks, growth restriction, inherent irregularities, newborn hypoglycemia, LBW infants, RDS, etc[7].

The Overall Diabetes Association survey found that 16% of live births are affected by hyperglycemia in pregnancy.

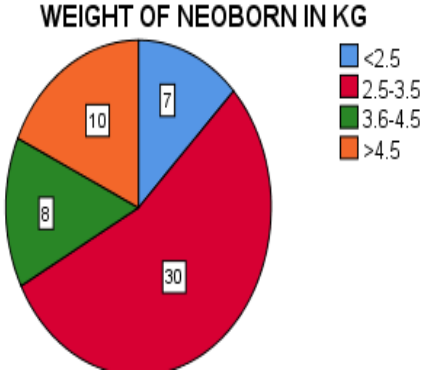
An opportune conclusion and the executives of GDM are the way to forestall feto-maternal complexities coming about because of this crippling ailment. In agricultural nations like Pakistan, various variables ruin opportune analysis and defer treatment choices[9]. Moms going to antenatal centers benefit from the opportunity for early recognition of pregnancy-related issues. Various indicative models are produced for diagnosing GDM[10]. In nations with low financial status, such as Pakistan, expanded mother and newborn-related bleakness and death rates are revealed because of GDM[11]. In this way, there is a need to assess the cases of GDM to stay away from dangerous outcomes. The reason for the current study is to evaluate the commonality of GDM and its effects on outcomes if diagnosed in early pregnancy in the PUMHS tertiary care center in Nawab Shah, Pakistan.

METHODOLOGY:

A distinct cross-sectional review was conducted at the PUMHS Nawab Shah from July 2023 to December 2023. Information was gathered at the Department of Obstetrics and Gynecology from 55 pregnant ladies, ages 18–43, going to the antenatal center. The sample size was determined based on prevalence at 95% confidence interval with a 0.5% margin of error. Consideration models of the review were pregnant ladies, with no history of diabetes in the ages of 18-45 years with a pregnancy of <20 weeks with practically no chronic diseases.

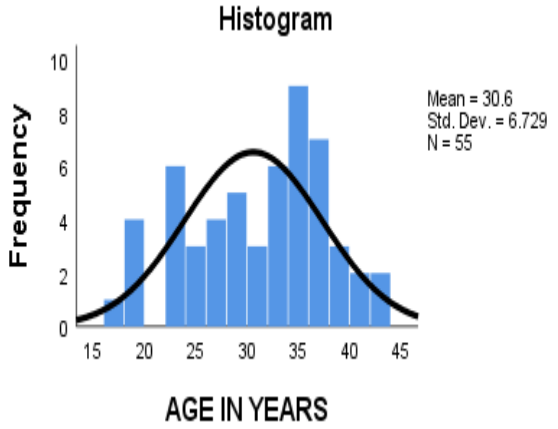
The moral endorsement was acquired from IRB of establishment previously information assortment. The privacy of the members was maintained. Informed consent was obtained from all the review members. A definite history of all the review members was accumulated. furthermore, an oral glucose resistance test (OGTT) was performed (American Diabetes Association rules) OGTT was thought of standard with BSF < 95mg/dl, following 1 hour less than 180mg/dl, following two hours <155 mg/dl & < 140 mg/dl following 3 hours. Patients with abnormal values in any two qualities were distinguished as GDM. Information was examined under SPSS version 25. Distinct insights like frequencies and rates were determined to evaluate the commonality of GDM.

RESULT:



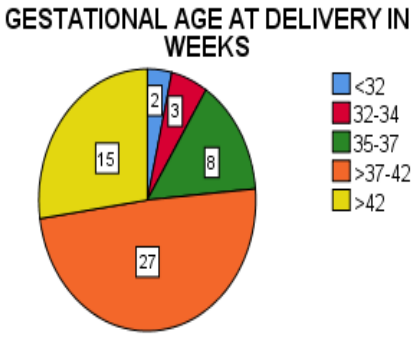
This study shows that GDM was found in 10.5%.GDM seems to be more prevalent in un-booked patients and those with a history of GDM (63.6%) in previous pregnancies. Our study showed mean age of patients was 30.6 years ± 6.729 standard deviation, GDM was most prevalent in parity between 2-4 (47.3%), & in those who belong to urban, 58.2% had normal BMI & 23.6% had >30 BMI, 43.6% showed polyhydramnios on the scan. Among these patients, 43.6% underwent cesarean section while 36.4% deliver vaginally. 12.7% had placental insufficiency, around 50% delivered at term and 27.3% were postdated. 7.3% experience PPH, 3.6% develop septicemia & wound gap. 10.9% develop preeclampsia. 8 newborns needed NICU admission >24 hours, 3 had developmental defects, 7 had respiratory problems, 10 developed hypoglycemia, around 38 babies had weight between 2.5 to 4.5, 10 had >4.5 kg & 7 had < 2.5kg. out of 55, 48 babies were alive & healthy, 3 died in the first 7 days of life (2 with congenital anomaly), and 2 feti died in utero.

MODE OF DELIVERY					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	VAGINAL	20	36.4	36.4	36.4
	CAESAREAN SECTION	24	43.6	43.6	80.0
	INSTRUMENTAL DELIVERY	11	20.0	20.0	100.0
	Total	55	100.0	100.0	

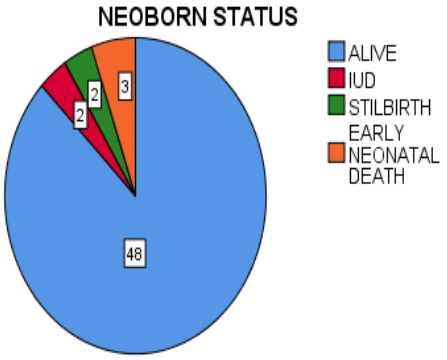


PRE-ECLAMPSIA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	49	89.1	89.1	89.1
	YES	6	10.9	10.9	100.0
	Total	55	100.0	100.0	



DISCUSSION:



Gestational diabetes mellitus is considered a ruining illness that has unpleasant effects on both the fetus and mother current study, findings clearly diverted from the traditional notion that GDM is associated with a higher age group as cases are seen in the majority, with a maternal age of 30 years Based on our study GDM is present in 10.5% with a similar prevalence seen in Italy[12] eastern Mediterranean,[13] little higher in mainland China[14] was 14.8% as seen in the meta-analysis study. Studies previously led in Pakistan display the prevalence rate of GDM at 6.25%.[15] An additional study directed in Sindh exhibited the measures and screening strategies utilized by various nations.

The gambling variables of GDM were examined in this ongoing survey. Individuals with parity ≥2, a prior GDM, innate peculiarities, stillbirth, early termination, preterm conveyance, macrosomia, with simultaneous PIH, age ≥ 25, PCOS, BMI ≥25, and family background of diabetes are the huge risk factors for GDM in current pregnancy.

Our review showed that women with past GDM history have at greater chance of being able to foster GDM compared to those without a history of past GDM. This finding is consistent with past reviews[23,24].A history of intrinsic peculiarities seems to be more in patients with GDM in different to those with no history of inborn oddities. This finding is reliable based on past reviews[25,26].Obesity is one of the principal factors in the development of diabetes and GDM. BMI is a commonly utilized strategy to quantify the seriousness of stoutness. In our study, we found that 58% of women with normal BMI had GDM, showing changing trends toward GDM in normal-weighted women. While a lot of studies are available to show GDM with high BMI[27,28,29,30].

In the current review, polyhydramnios was seen in 43.6% of patients comparable to the work by Jindal et al[31] in which 28% of cases showed polyhydramnios, and by Dixit M et al[32] which showed 44% as it is more considered in patients with diabetes in pregnancy because fetal hyperglycemia is the reason for osmotic diuresis, which thusly prompts polyuria and the advancement of polyhydramnios. 8% of patients had uteroplacental deficiency. There was intrauterine death in 6% of cases**.** 43.6% of the patients underwent cesarean section, same prevalence is seen in the study by Gonçalo Inocêncio et al[33] while lesser as compared to the study by Amna Najam (52%)[34] Our population in the study develop preeclampsia in 10.9% which is much less as seen in the study by Amna najam.[34] Which shows a 21% incidence. Newborn weight is seen more than 2.5kg in 18%, which is also lesser than other studies (32%)[34] 15-45% by another study.[35]In an alternative study, 39% of neonates showed hypoglycemia after GDM[36].These issues are linked to gestational diabetes. Such gestations should be supported with a correct nutrition plan to prevent poor pregnancy consequences. Though no direct correlation has been established between eclampsia and hypertension in our study, these are likewise related to bad pregnancy outcomes in pregnant ladies with GDM.

CONCLUSION:

Ladies determined to have GDM before 24 weeks have exceptional highlights, are in danger of unfavorable results, and require designated ways to deal with treatment. Maternal and neonatal dreariness with gestational diabetes mellitus could be constrained by hasty conclusions and legitimate antenatal and postnatal considerations. It should be possible by educating women about their eating regimen and glycemic control to keep away from weight gain and hyperglycemia. Medications are prompted when expected to switch the glucose level. These are expected to avoid hypoglycemia in newborns soon after birth. The future ramifications of our review are to forestall and regulate the effects of gestational diabetes. Anticipation of fostering the illness is significant among females of the conceptive age bunch by lessening the adjustable risk factors.

ETHICS APPROVAL: The ERC gave ethical review approval.

CONSENT TO PARTICIPATE: written and verbal consent was taken from subjects and next of kin.

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AUTHORS' CONTRIBUTIONS: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST: No competing interest declared.

REFERENCE

1. Gao C, Sun X, Lu L, Liu F, Yuan J. Prevalence of gestational diabetes mellitus in mainland China: a systematic review and meta-analysis. Journal of diabetes investigation. 2019 Jan;10(1):154-62.
2. Nguyen CL, Pham NM, Binns CW, Duong DV, Lee AH. Prevalence of gestational diabetes mellitus in eastern and southeastern Asia: a systematic review and meta-analysis. Journal of diabetes research. 2018 Feb 20;2018.
3. Lee KW, Ching SM, Ramachandran V, Yee A, Hoo FK, Chia YC, Wan Sulaiman WA, Suppiah S, Mohamed MH, Veettil SK. Prevalence and risk factors of gestational diabetes mellitus in Asia: a systematic review and meta-analysis. BMC pregnancy and childbirth. 2018 Dec;18(1):1-20. 4.
4. Nguyen CL, Pham NM, Binns CW, Duong DV, Lee AH. Prevalence of gestational diabetes mellitus in eastern and southeastern Asia: a systematic review and meta-analysis. Journal of diabetes research. 2018 Feb 20;2018.
5. Saeedi M, Cao Y, Fadl H, Gustafson H, Simmons D. Increasing prevalence of gestational diabetes mellitus when implementing the IADPSG criteria: a systematic review and meta-analysis. diabetes research and clinical practice. 2021 Feb 1;172:108642.
6. McIntyre HD, Catalano P, Zhang C, Desoye G, Mathiesen ER, Damm P. Gestational diabetes mellitus. Nature reviews Disease primers. 2019 Jul 11;5(1):1-9.1.

7. iabetes mellitus amongst black South African women is a public health concern. Diabetes research and clinical practice. 2018 May 1;139:278-87.
8. Casagrande SS, Linder B, Cowie CC. Prevalence of gestational diabetes and subsequent Type 2 diabetes among US women. Diabetes research and clinical practice. 2018 Jul 1;141:200-8. 13.
9. Muche AA, Olayemi OO, Gete YK. Prevalence and determinants of gestational diabetes mellitus in Africa based on the updated international diagnostic criteria: a systematic review and meta-analysis. Archives of Public Health. 2019 Dec;77(1):1-20.
10. Karaçam Z, ÇelİK D. The prevalence and risk factors of gestational diabetes mellitus in Turkey: a systematic review and meta-analysis. The Journal of Maternal-Fetal & Neonatal Medicine. 2021 Apr 18;34(8):1331-41.
11. Lawrence RL, Wall CR, Bloomfield FH. Prevalence of gestational diabetes according to commonly used data sources: an observational study. BMC Pregnancy and Childbirth. 2019 Dec;19(1):1-9.
12. M. Meregaglia, L. Dainelli, H. Banks, C. Benedetto, P. Detzel, G. Fattore, The short-term economic burden of gestational diabetes mellitus in Italy. BMC Pregnancy Childbirth 18, 58 (2018).
13. Badakhsh M, Daneshi F, Abavisani M, Rafiemanesh H, Bouya S, Sheyback M, Rezaie Keikhaie K, Balouchi A. Prevalence of gestational diabetes mellitus in Eastern Mediterranean region: a systematic review and meta-analysis. Endocrine. 2019 Sep;65(3):505-14.
14. C. Gao, X. Sun, L. Lu, F. Liu, J. Yuan, Prevalence of gestational diabetes mellitus in mainland China: a systematic review and meta-analysis. J. Diabetes Investig. 10, 154–162 (2019).
15. Behboudi-Gandevani S, Amiri M, Bidhendi Yarandi R, Ramezani Tehrani F. The impact of diagnostic criteria for gestational diabetes on its prevalence: a systematic review and meta-analysis. Diabetology & metabolic syndrome. 2019 Dec;11(1):1-8.
16. Riaz M, Nawaz A, Masood SN, Fawwad A, Basit A, Shera AS. Frequency of gestational diabetes mellitus using DIPSI criteria, a study from Pakistan. Clinical epidemiology and Global Health. 2019 jun 1;7(2):218_21
17. Garcia R, Ali N, Guppy A, Griffiths M, Randhawa G. Analysis of routinely collected data: Determining associations of maternal risk factors and infant outcomes with gestational diabetes, in Pakistani, Indian, Bangladeshi and white British pregnant women in Luton, England. Midwifery. 2021 Mar 1;94:102899.
18. Mwanri AW, Kinabo J, Ramaiya K, Feskens EJ. Gestational diabetes mellitus in sub-Saharan Africa: systematic review and metaregression on prevalence and risk factors. *Tropical Med Int Health*. 2015;**20**(8):983–1002. doi: 10.1111/tmi.12521.
19. Yuen L, Wong VW. Gestational diabetes mellitus: challenges for different ethnic groups. *World J Diabetes*. 2015;**6**(8):1024. doi: 10.4239/wjd.v6.i8.1024.
20. Makgoba M, Savvidou M, Steer P. An analysis of the interrelationship between maternal age, body mass index, and racial origin in the development of gestational diabetes mellitus. *BJOG Int J Obstet Gynaecol*. 2012;**119**(3):276–282. doi: 10.1111/j.1471-0528.2011.03156.
21. Kodama S, Fujihara K, Ishiguro H, Horikawa C, Ohara N, Yachi Y, et al. Quantitative relationship between cumulative risk alleles based on genome-wide association studies and type 2 diabetes mellitus: a systematic review and meta-analysis. *Am J Epidemiol*. 2018;**28**(1):3–18. doi: 10.2188/jea.JE20160151.
22. Cho N, Shaw J, Karuranga S, Huang Y, da Rocha Fernandes J, Ohlrogge A, et al. IDF diabetes atlas: global estimates of diabetes prevalence for 2017 and projections for 2045. *Diabetes Res Clin Pract*. 2018; **138:271**–281. doi: 10.1016/j.diabres.2018.02.023.
23. Alfadhli EM, Osman EN, Basri TH, Mansuri NS, Youssef MH, Assaaedi SA, et al. Gestational diabetes among Saudi women: prevalence, risk factors, and pregnancy outcomes. *Ann Saudi Med*. 2015;**35**(3):222. doi: 10.5144/0256-4947.2015.222.
24. Al-Rubeaan K, Al-Manaa HA, Khoja TA, Youssef AM, Al-Sharqawi AH, Siddiqui

K, et al. A community-based survey for different abnormal glucose metabolism among pregnant women in a random household study (SAUDI-DM) *BMJ Open.* 2014;**4**(8):e005906. doi: 10.1136/bmjopen-2014-005906.
25. Alfadhli EM, Osman EN, Basri TH, Mansuri NS, Youssef MH, Assaaedi SA, et al. Gestational diabetes among Saudi women: prevalence, risk factors and pregnancy outcomes. *Ann Saudi Med.* 2015;**35**(3):222. doi: 10.5144/0256-4947.2015.222.
26. Nayak PK, Mitra S, Sahoo JP, Daniel M, Mathew A, Padma A. Feto-maternal outcomes in women with and without gestational diabetes mellitus according to the International Association of Diabetes and Pregnancy Study Groups (IADPSG) diagnostic criteria. *Diabetes Metab Syndr Clin Res Rev.* 2013;**7**(4):206–209. doi: 10.1016/j.dsx.2013.10.017.
27. Shin D, Song WO. Prepregnancy body mass index is an independent risk factor for gestational hypertension, gestational diabetes, preterm labor, and small-and large-for-gestational-age infants. *J Matern Fetal Neonatal Med.* 2015;**28**(14):1679–1686. doi: 10.3109/14767058.2014.964675.
28. Shah A, Stotland NE, Cheng YW, Ramos GA, Caughey AB. The association between body mass index and gestational diabetes mellitus varies by race/ethnicity. *Am J Perinatol.* 2011;**28**(7):515. doi: 10.1055/s-0031-1272968.
29. Leung MYM, Carlsson NP, Colditz GA, Chang S-H. The burden of obesity on diabetes in the United States: medical expenditure panel survey, 2008 to 2012. *Value Health.* 2017;**20**(1):77–84. doi: 10.1016/j.jval.2016.08.735
30. Buscot M-J, Thomson RJ, Juonala M, Sabin MA, Burgner DP, Lehtimäki T, et al. BMI trajectories associated with resolution of elevated youth BMI and incident adult obesity. Pediatrics. 2017;141(1):e20172003
31. Jindal A, Ahmed F, Bharadwaj B. Clinical profile and outcome of Gestational Diabetes Mellitus. J Obstet Gynecol India. 2001;51:46–9.
32. Dixit M, Kapadia SN, Parmar KG. Pregnancy with diabetes: The study of fetomaternal outcome in a tertiary care teaching center in western India. Indian J Obstet Gynecol Res 2023;10(1):12-16.
33. Inocêncio G, Braga A, Lima T, Vieira B, Zulmira R, Carinhas M, Gonçalves J, Silva C. Which Factors Influence the Type of Delivery and Cesarean Section Rate in Women with Gestational Diabetes? J Reprod Med. 2015 Nov-Dec;60(11-12):529-34. PMID: 26775462.
34. Najam A, 2. Safia, 3. Jamil M, 4. Akhtar S. Factors Associated with Gestational Diabetes Mellitus and Its Outcome in Pregnancy. P J M H S Vol. 16, No. 03, MAR 2022 751.
35. Kc K, Shakya S, Zhang H. Gestational diabetes mellitus and macrosomia: a literature review. Ann Nutr Metab. 2015;66 Suppl 2:14-20.
36. Kole MB, Ayala NK, Clark MA, Has P, Esposito M, Werner EF. Factors Associated With Hypoglycemia Among Neonates Born to Mothers With Gestational Diabetes Mellitus. Diabetes Care. 2020;43(12): e194-e5.