

# Incidence of Gestational Diabetes Mellitus in the United Arab Emirates; Comparison of Six Diagnostic Criteria: The Mutaba'ah Study

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## Introduction/Objectives

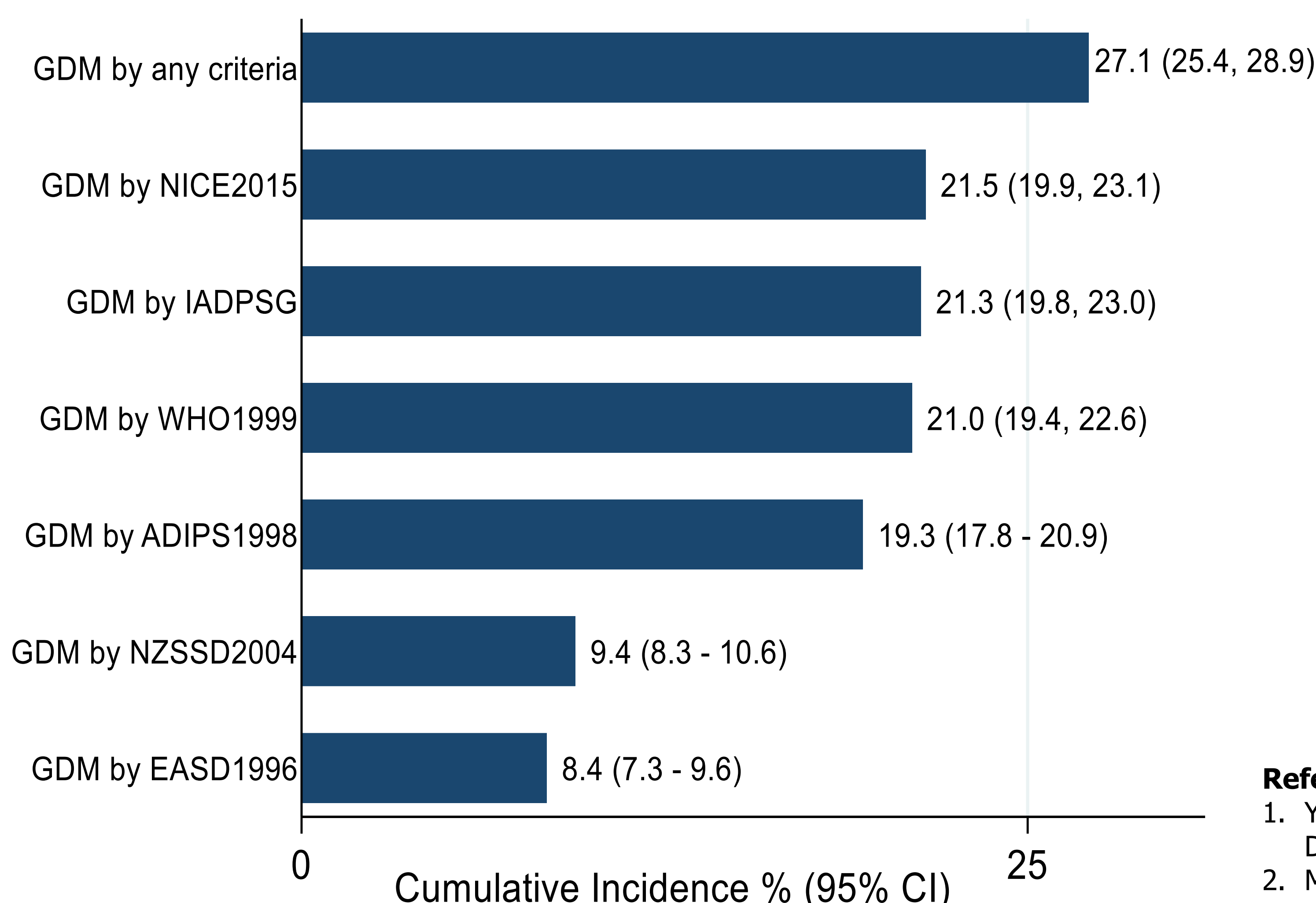
There is currently a global epidemic of gestational diabetes mellitus (GDM). In the United Arab Emirates (UAE), 1 in 4 pregnancies are affected<sup>1</sup>. If undiagnosed and untreated, GDM leads to several short- and long-term complications among patients and their children. For more than five decades, there has been much research and controversies on how to accurately screen for and diagnose GDM. Lack of a uniform GDM diagnostic criteria results in the inability to accurately combine or compare the disease burden worldwide and locally<sup>2</sup>. Our study aimed to compare the incidence of GDM in the Emirati population in UAE using six diagnostic criteria for GDM.

## Methods & Materials

The Mutaba'ah Study<sup>3</sup> is the largest ongoing birth cohort study in the UAE. For this analysis, we included singleton pregnancies from the Mutaba'ah Study cohort screened with the oral glucose tolerance test (OGTT) at 24-32 weeks from May 2017 to March 2021. We excluded those with pre-existing diabetes. GDM cumulative incidence was determined using six commonly used criteria in the UAE (IADPSG/WHO 2013, WHO 1999, NICE 2015, ADIPS 1998, EASD 1996, and NZSSD 2004 criteria). Agreements among the six criteria were assessed using kappa statistics.

## Results

**2,546 Emirati women** were included with a mean ( $\pm$ SD) age of 30.5 $\pm$ 6.0 years. Mean ( $\pm$ SD) gravidity was 3.5 $\pm$ 2.1 and mean ( $\pm$ SD) body mass index (BMI) at booking was 27.7 $\pm$ 5.6 kg/m<sup>2</sup>. GDM cumulative incidences by the six criteria are compared in **Figure 1** below.



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## Results (contd.)

- GDM cumulative incidence ranged from **8.4% - 21.5%**
- NICE 2015 & IADPSG were **the most inclusive**.
- NZSSD 2004 & EASD 1996 **missed 65.2% and 68.8% of GDM cases** identified by the other criteria, respectively.
- The locally **recommended IADPSG/WHO 2013 criteria had weak to moderate agreement** with the other criteria

**Table 1: Agreement among the Criteria (in pairs)**

	IADPSG	NICE 2015	WHO 1999	ADIPS 1998	EASD 1996	NZSSD 2004
IADPSG	1.0					
NICE2015	0.66	1.0				
WHO1999	0.64	0.99	1.0			
ADIPS1998	0.71	0.91	0.89	1.0		
EASD1996	0.51	0.50	0.50	0.56	1.0	
NZSSD2004	0.55	0.52	0.49	0.61	0.94	1.0

Cohen's kappa coefficient (k) interpretation; 0 - 0.20 = None, 0.21 - 0.39 = Minimal, 0.40 - 0.59 = Weak, 0.60 - 0.79 = Moderate, 0.80 - 0.90 = Strong, >0.90 = Almost perfect /Perfect. P-values were <0.001 for all the comparisons

## Conclusions

- There were **discrepancies among the six diagnostic criteria** in identifying GDM cases.
- This emphasizes the **need to unify GDM diagnostic criteria in the UAE population** to provide accurate and reliable estimates for healthcare planning.
- Our study also positively impacts on maternal and child health in UAE which is in line with **achieving the health goals of Sustainable Development and UAE's National Agenda**.

## References

- Y. Zhu and C. Zhang, "Prevalence of Gestational Diabetes and Risk of Progression to Type 2 Diabetes: a Global Perspective," (in eng), Curr Diab Rep, vol. 16, no. 1, pp. 7-7, 2016.
- Maryam M. Bashir, Luai A. Ahmed, Iffat Elbarazi, Tom Loney, Rami H. Al-Rifai, Juma M. Alkaabi and Fatma Al-Maskari, "Incidence of Gestational Diabetes Mellitus in the United Arab Emirates; Comparison of Six Diagnostic Criteria: The Mutaba'ah Study" (in English), Frontiers in Endocrinology, 2022, <https://www.frontiersin.org/articles/10.3389/fendo.2022.1069477/full>.
- A. Al Haddad et al., "Mutaba'ah—Mother and Child Health Study: protocol for a prospective cohort study investigating the maternal and early life determinants of infant, child, adolescent and maternal health in the United Arab Emirates," BMJ Open, vol. 9, no. 8, p. e030937, 2019.