

# GDM diagnostic criteria in use in the Mediterranean region

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## Purpose

The diagnostic criteria for gestational diabetes has been a controversial issue over the last decades but has in the last decade been standardized by the establishment of the IADPSG criteria. In spite of the new guidelines determining diagnostic criteria and management option for pregnant women with diabetes, practice still varies widely. This study aimed to identify the level of clinical practice differences in the Mediterranean region.

## Methods

A self-administered questionnaire study was carried out among a convenient sample of 2841 professionals working in the Mediterranean region. The volunteered responses were collected either in an online survey or as hard copy questionnaires that were eventually transcribed electronically in an excel database.

## Results

Only 28.5% of the respondents reported using the IADPSG criteria, the larger majority of these being obstetricians. The majority endocrinologists still preferred and relied on the ADA criteria. Only 22.4% of the respondents reported having adopted the use of oral hypoglycaemics during pregnancy. In contrast, 59.2% have adopted insulin analogues in their practice.

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In the last decade, consensus has been generally reached about the diagnostic criteria for gestational diabetes mellitus (GDM) identifying cut-off blood glucose values that are clinically relevant when interpreting the 75-gram oral glucose tolerance test (75-g oGTT) using evidence-based medicine based on clinical outcome indicators.<sup>1</sup> These criteria, first proposed by the International Associations for Diabetes in Pregnancy Study Groups (IADPSG), have now been adopted in formal guidelines published by the majority of professional associations dealing with pregnant diabetic women have, including the World Health Association (WHO).<sup>2,3</sup> There have further been developments that have altered the pharmaceutical armamentarium available to the clinician when managing GDM.<sup>4</sup> The dissemination of these evidence-based guidelines and pharmacological options has not been effective in ensuring widespread adoption sufficient to reach the medical practitioner in the community.<sup>5</sup> The present study was undertaken by the Mediterranean Group for the Study of Diabetes (MGSD) to assess the views of primary and hospital-based healthcare professionals working in the Mediterranean region in regards to the practice attitudes towards GDM diagnosis and management.

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## METHODOLOGY

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The study was carried out using a self-administered questionnaire. This was made available to the participants either as an electronic version hosted on the MGSD website or a hard-copy format distributed during relevant regional or national academic meetings. The study population was therefore an opportunistic population. The questionnaire collected demographic and professional information, and further enquired about attitudes towards GDM diagnosis and medical management. Statistics used were mainly descriptive. Inferential relationships were tested whenever appropriate using the chi square test. Since participation in the study was voluntary and involved the submission of a self-administered questionnaire, consent to the material submitted was assumed. All submitted data was automatically anonymized.

A total number of 3048 questionnaires were received; of these 207 participants failed to provide their country of residence or resided outside the Mediterranean region. These were excluded from the study leaving a total of 2841 responses. Of these respondents, 968 practitioners (34.1%) stated that they preferred to refer pregnant women to their

specialised colleagues. The remaining 1873 responses were used in the analysis. Respondents were grouped into two regions:

- a) those from the Southern Bank of the Mediterranean region including countries in the Northern African or Maghreb region;
- b) respondents from the Northern Bank representing European mainly from Spain, Portugal, Malta, Greece, and Serbia, and Eastern Mediterranean mainly from Lebanon.

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## RESULTS

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It would appear that over a fourth (n = 534: 28.5%) of the respondents reported having adopted the modern diagnostic criteria of the IADPSG. A similar proportion (n = 533: 28.5%) preferred to rely on the American Diabetes Association (ADA) criteria; while about a third of respondents (n = 621: 33.2%) preferred to still rely on the old 1999 WHO diagnostic criteria. The remaining respondents (n = 185: 9.9%) relied on other diagnostic criteria.

In respect to the preferred choice of diagnostic criteria, there did not appear to be any bias in regard to physician gender, health sector of employment, or geographical region of residence. There was however a definite statistically significant difference between the speciality of the respondents with the larger majority of obstetricians (74.4%) having adopted the IADPSG criteria; and endocrinologists-diabetologists preferring mainly the ADA criteria (43.2%) but with 38.2% adopting the IADPSG criteria. Other specialities still relied mainly upon the 1999 WHO diagnostic criteria though more than a fifth had adopted the IADPSG criteria. The Continuing Professional Education (CPE) preferences were also statistically different with professionals adopting the IADPSG criteria relying more on web-based resources (Table 1).

Physicians using the 1999 WHO criteria appeared to more likely accept the use of oral hypoglycaemic agents and less likely to use insulin analogues during pregnancy in women with type-2 diabetes or GDM, though the differences were not statistically significant (Table 1). There did appear to be a markedly statistically significant differences in clinical management according to geographical regions (Table 2). Thus, physicians from the northern bank were more likely to resort to oral hypoglycaemic agents, while those from the southern bank were more likely to prefer insulin analogues. A lower

Table 1

Diagnostic criteria	IADPSG	ADA	1999 WHO	Total population	p-value
	N = 534	N = 533	N = 621	N = 1688*	
<b>Male-Female ratio</b>	0.7	0.8	0.7	0.78	NS
<b>Private-Public Health sector ratio</b>	4.2	4.5	4.2	4.22	NS
<b>Southern-Northern bank ratio</b>	0.47	0.55	0.42	0.47	NS
<b>Professional speciality</b>					<b>p&lt;0.0001</b>
Obstetricians	32 (74.4%)	8 (18.6%)	3 (7.0%)	43	
Endocrinologists/ diabetologists	130 (38.2%)	147 (43.2%)	63 (18.5%)	340	
Internists/cardiologists	219 (30.0%)	200 (27.4%)	310 (42.5%)	729	
Primary health care physicians	98 (28.7%)	102 (29.8%)	142 (41.5%)	342	
Other specialists	55 (23.5%)	76 (32.5%)	103 (44.0%)	234	
<b>GDM Management attitudes</b>					<b>NS</b>
Use of oral hypoglycaemic agents	90 (16.9%)	110 (20.6%)	209 (33.6%)	409 (24.2%)	
Use of insulin analogues	427 (79.9%)	346 (65.0%)	395 (63.6%)	1168 (69.2%)	
<b>CPE preference</b>					<b>p=0.02</b>
Journals & textbooks	170 (31.8%)	190 (35.7%)	145 (23.3%)	505	
Educational Academic meetings	173 (32.4%)	204 (38.3%)	213 (34.3%)	490	
Pharmaceutical information	83 (15.5%)	102 (19.1%)	105 (16.9%)	290	
Web-based source	180 (33.7%)	162 (30.4%)	134 (21.6%)	476	
Other sources	18 (3.4%)	24 (4.5%)	18 (2.9%)	60	

Definitions of different diagnostic criteria based on a 75-g oGTT:

IADPSG: Fasting BG >5.1 mmol/l | 1-hr BG >10.0 mmol/l | 2-hr BG >8.5 mmol/l (any one abnormal value)

ADA: Fasting BG >5.3 mmol/l | 1-hr BG >10.0 mmol/l | 2-hr BG >8.6 mmol/l (two abnormal values needed)

WHO-1999: Fasting BG >6.1 mmol/l | 2-hr BG >7.8 mmol/l (any one abnormal value)

**Table 2** Attitude towards management by locality

Region	Southern Bank	Northern Bank	Total	p-value
	N = 849	N = 1992	N = 2841	
<b>Use of oral hypoglycaemic agents</b>	156 (18.4%)	479 (24.1%)	635 (22.4%)	0.001
<b>Use of insulin analogues</b>	624 (73.5%)	1057 (53.1%)	1681 (59.2%)	<0.00001
<b>Knowledge of availability of pre-conceptual care for pre-gestational DM</b>	506 (59.6%)	1500 (75.3%)	2006 (70.6%)	0.00001

proportion of physicians from the southern bank were aware of any preconceptional care services in their locality. Obstetricians were less likely to use oral hypoglycaemics in their treatment regimen (Table 3).

## DISCUSSION

### Findings And Interpretation

While the present study represents an opportunistic population that may carry particular biases and may be therefore not be fully representative of the Mediterranean healthcare professional population, important observations can be identified. The present study has shown that in the Mediterranean region the IADPSG diagnostic criteria have only been embraced by slightly more than a fourth of the respondents. More than a third of respondents still adhered to the old 1999 WHO diagnostic criteria –

criteria that have been superseded by the more recently published criteria.<sup>3</sup> Standard uniform diagnostic criteria are essential to ensure standardization of clinical management and to enable comparison of outcome indicators of healthcare management options between different centres. The adoption of the IADPSG diagnostic criteria has been shown to be associated with a threefold increase in the prevalence of diagnosed GDM cases. Reluctance to adopt these criteria may in part be related to the perceived increased demand of the healthcare serves this would bring about and therefore with the predicted increase in the associated financial burden. The long-term cost-effectiveness of adopting the IADPSG criteria has however been repeatedly demonstrated.<sup>8,9</sup> The present study has shown a significant relationship between adherence to outdated guidelines and professional speciality with obstetricians and

**Table 3** Attitude towards oral hypoglycaemic use by speciality (p<0.0001)

Professional speciality	Oral hypoglycaemics	Total population
<b>Obstetricians</b>	8	43
<b>Endocrinologists/diabetologists</b>	89	340
<b>Internists/cardiologists</b>	286	873
<b>Primary health care physicians</b>	148	449
<b>Other specialists</b>	109	299

endocrinologists or diabetologists being readier to adopt the modern diagnostic criteria. There was no relationship to physician gender or place of work or region. This seems to suggest that the message has as yet not reached professionals who may not be regularly faced with managing pregnant women.

Because of the potential long-term foetal effects of oral hypoglycaemic agents, the current GDM management guidelines promote the use of insulin as the mainline management option. However, the use of oral hypoglycaemic agents has increasingly been recommended especially when close monitoring or poor patient compliance are issues.<sup>10</sup> About a quarter of the respondents in the present study reported being ready to rely on oral hypoglycaemic agents in the management of GDM especially if they preferred to use the 1999 WHO diagnostic criteria or came from the Northern Mediterranean bank. Approximately 60% were ready to rely on insulin analogues when managing GDM.

### **Strength & Weaknesses**

The present study represents a broad spectrum of healthcare professionals caring for pregnant women with diabetes in the various countries in the Mediterranean region. The study therefore given an overall view of actual clinical practice in the region. It does however suffer from the limitation that it is simply based on a self-administered questionnaire and that enrolment of participants to the study was on a voluntary basis possibly

### **Similarities & Differences In Relation To Other Studies**

The identification of evidence-based practice should lead to the formulation of practice guidelines that aim to reduce the short and long-term morbidity of the condition in question. The HAPO study has helped define gestational diabetes mellitus in respect to outcome variables and thus has helped establish definite evidence-based guidelines which have been adopted by the large majority of relevant professional bodies. Unfortunately, the promulgation of evidence-based guidelines is not necessarily followed by widespread embracement and the development of guidelines seems to have had little impact on actual care practices.<sup>5</sup> The reasons reported by practitioners as to why they fail to follow published evidence-based guidelines vary

from inability to apply them in the specific health care environment to simple lack of familiarity to the guidelines.<sup>6,7</sup> Further studies are needed to understand how evidence-based guidelines can be brought into play to the benefit of the patients.

### **Open Questions & Future Action**

It is evident that the identification of evidence-based best clinical practice is not necessarily automatically translated to universal adoption. The responsible professional bodies need to ensure that all professionals are made aware of the updated guidelines by providing Continuing Professional Educational programs involving all facets of the professional media.<sup>11</sup> The promulgation of evidence-based community-specific guidelines does not necessarily equate to automatic compliance. Adoption in clinical practice is tempered by communication delays and by professional reluctance to change clinical practice. The guidelines, especially those relating to screening and management, may however need to be modified to balance ideal management with practicality and available resources in specific populations. This should further encourage practitioners to provide the best evidence-based management plan in the context of the environment they work in.

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