Healthcare Professionals' Perceptions of Type 2 Diabetes Mellitus Care in the Mediterranean Region

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ABSTRACT

Introduction: This study aimed to assess the adherence to guidelines by practitioners working in the Mediterranean region and to identify the reasons for non-compliance.

Methods: A opportunistic self-administered questionnaire was circulated among members of the Mediterranean Group for the Study of Diabetes (MGSD) and regional diabetic associations. The study was limited to the Mediterranean region; 2841 medical practitioners participated in the study. Intervention involved a self-administered questionnaire enabling demographic and personal details to be correlated to relevant information related to practice

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and continuing health professional education (CHPE) attitudes, perceptions related to diabetes and healthcare systems in the community, and physicians' attitudes to healthcare practices and target goals relevant to type 2 diabetes mellitus (T2DM). The main outcome measure was adherence to evidence-based guidelines.

Results: While the majority of respondents (69.9%) reported being confident in managing these patients, and 79.2% reported being aware of the availability of local guidelines; only a fifth opted to manage patients by strictly targeting an HbA1c value below 6.5%, while 3.3% were happy to maintain an HbA1c value of up to 8.0%. These goals appeared to be tempered by fear of eliciting hypoglycaemia in the belief that patients and their families do not have the skills to manage the complication. Endocrinologists/internists preferred more rigid control.

Conclusion: It is clear that the promulgation of evidence-based guidelines cannot assume automatic adoption in clinical practice since adoption is tempered by on-the-ground practice circumstances that make the practitioner reluctant to fully endorse and adopt the targets defined by the guidelines. The evidence-based guidelines need to be modified for local or regional circumstances.

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INTRODUCTION

Continuing health professional education (CHPE) is an essential prerequisite for providing up-to-date evidence-based clinical care since advancement in medical thought and therapeutics is a progressive process that moves forward at a steady often rapid rate. This premise is even more telling in diabetes mellitus management since various factors have played a role in changing management options and targets. These have included the development of new pharmaceutical agents, identification of optimum biochemical targets based on clinical target outcomes, and involvement of different stakeholders at different levels of disease management including the changing attitudes towards principles of patient empowerment. These advances have led to the promulgation of clinical guidelines that serve to guide clinicians to thus strive to provide the best care with the primary aim of reducing long-term complications with best quality of life. The design and publication of these evidence-based clinical guidelines is not enough to ensure that patient care is positively influenced. These guidelines must be circulated to the medical practitioner on the ground and modified according to the healthcare provisions available in the various different communities.

The Mediterranean region represents a unique regional setting with common ethnic and cultural features, but definitely heterogeneous in terms of socio-economic, political and demographical factors. These sociopolitical differences result in varying levels of healthcare provision and education facilities especially as these relate to community care services. These differences influence the attitudes of healthcare providers towards healthcare practices in respect to patient care and empowerment. These in turn determine how the healthcare providers look upon established evidence-based standard guidelines and their willingness to adhere to these. These healthcare differences are particularly marked between the countries bordering the northern bank and those bordering the southern bank of the Mediterranean Sea. There are also differences in healthcare practices between the countries bordering the western part and the eastern part of the northern bank. Standard guidelines must therefore be tempered to local needs and available facilities, besides the views and perceptions of healthcare professionals towards type 2 diabetes mellitus (T2DM) care. Awareness of these views and perceptions is an essential prerequisite prior to undertaking any CHPE programme.

The present study was undertaken by the Mediterranean Group for the Study of Diabetes (MGSD) to assess the views and perceptions towards T2DM care of primary and hospital-based healthcare professionals, and members of professional bodies and their trainees in the Mediterranean region as this relates to practice organization, clinical issues relating to diagnosis and complications, attitudes to diabetes control, and the use of clinical guidelines including recommended targets of control. The MGSD was set up in 1985 to meet the needs of all those health professionals in the Mediterranean area involved in the delivery of diabetes care. The MGSD aims to bring together health professionals from a widely different socially and educationally heterogeneous region to keep them abreast of the latest key developments in the specialty and to establish training programmes empowering those entering the specialty with the requisite technical skills to conduct broad national studies. The information would thus serve to provide a diagnostic educational baseline picture which would allow tailored training programmes to be designed for the region.

METHODS

The study was carried out using a self-administered questionnaire using either an electronic version hosted on the website of the MGSD with a dedicated domain address or a hard-copy format questionnaire distributed during relevant regional or national academic meetings. To

ensure as wide a distribution as possible, all relevant professional associations in the various countries in the Mediterranean region were asked to circulate a notice to their members inviting them to participate in the study. The study population was therefore an opportunistic population. The questionnaire was compiled and designed by the members of the MGSD Educational Study Group representing all three regions of the Mediterranean to ensure that the language used was clearly understandable. The questionnaire design also took into consideration the potential multitude of worldwide guidelines relating to T2DM that the respondents may be familiar with. The questionnaire therefore avoided referring to specific guidelines but set outcome glycaemic level preferences, notably glycosylated haemoglobin (HbA1c). During analysis of the responses, an HBA1c level below 7.0% was taken as a desirable target as defined by most, though not necessarily all, published guidelines. Besides information relating to demographic details, the questionnaire further collected information related to practice and CHPE attitudes, perceptions related to diabetes and healthcare systems in the community, and physicians' attitudes to healthcare practices and target goals relevant to T2DM. Since the questionnaire was a self-administered one completed on a voluntary basis and not including any sensitive personal or identifiable information, the study was exempted from formal ethical approval by the University of Malta Research Ethics Committee. Statistics used were mainly descriptive. Inferential relationships were tested whenever appropriate using the chi-square test.

A total of 3048 physicians participated in the study; of these 207 were excluded since they failed to provide their country of residence or resided outside the Mediterranean region. Respondents were divided into three groups: (a) those from the southern bank of the Mediterranean region including countries in the Northern Africa or Maghreb region numbered 849; (b) respondents from the western region of the northern bank numbered 607, representing respondents mainly from the Iberian Peninsula incorporating Spain and Portugal, and Malta; and (c) respondents from the eastern region of the northern bank numbered 1385, representing mainly Greece, Serbia and Lebanon.

RESULTS

The overall study population showed a particular bias to females with a male-to-female ratio of 0.78 and to individuals employed in the public sector with a public-to-private sector ratio of 4.22, with 49.9% of respondents working in a hospital environment and 38.8% in the primary health sector. Only 14.1% classified their specialty as that of an endocrinologist/diabetologist, while 44.1% and 23.4% identified themselves as cardiologists/internists and family doctors respectively. The large majority had qualified less than 20 years previously. A significant majority relied on academic meetings, published material and web-based sources for their CHPE (Table 1). There were noted differences in the characteristics of the respondents between the three regions. The respondents from the southern bank region were more likely to be employed as internists/cardiologists in university hospitals. The western region respondents were more likely to belong to the male gender, be more professionally mature and were more likely to be working as primary health physicians. The respondents in the eastern region were more likely to be employed in the public primary healthcare sector but were more likely to be represented by internists/cardiologists. Diabetologists/endocrinologists accounted for 23.3%, 25.0% and 4.3% respectively. There was very little difference in how the respondents preferred to continue their professional development, the large majority preferring to rely on journals and textbooks, academic meetings and web-based sources (Table 1).

A large proportion of respondents (69.9%) were confident or very confident in their overall capability of managing patients with T2DM in their practice irrespective of the fact that there were marked variations in the support services available to them (Table 2). Public health support systems were generally considered to be adequately available (75.0%) with availability of a good follow-up system (64.1%). Team

Table 1 Population characteristics (differences in totals due to unanswered responses)

Population characteristics	Southern bank N = 849		Northwestern N = 607		Northeastern N = 1385		Total study population N = 2841	
Gender ratio (male/female)	0.80		1.03		0.67		0.78	
Public/private ratio	3.18		3.59		5.63		4.22	
Place of work								
General hospital	202	24.7%	141	23.8%	269	19.8%	612	21.5%
University hospital	340	41.5%	162	27.3%	304	22.4%	806	28.4%
Primary health	181	22.1%	220	37.1%	701	51.7%	1102	38.8%
Other	96	11.7%	70	11.8%	83	6.1%	249	8.8%
Speciality								
Cardiologist/internist	379	46.7%	159	26.3%	714	51.6%	1252	44.1%
Diabetologist/endocrinologist	189	23.3%	151	25.0%	60	4.3%	400	14.1%
Primary health physician	90	11.1%	258	42.6%	316	22.8%	664	23.4%
Other	154	18.9%	37	6.1%	294	21.2%	485	17.1%
Years since qualification								
≥ 20 years	277	37.6%	408	69.6%	543	40.7%	1228	43.3%
CHPE								
Journals and textbooks	435	51.8%	273	45.0%	599	43.2%	1307	46.0%
Academic meetings	447	53.2%	351	57.8%	905	65.3%	1703	59.9%
Advertisements	189	22.5%	175	28.8%	382	27.6%	746	26.3%
Web-based sources	423	50.4%	293	48.3%	605	43.7%	1321	46.5%
Other	32	3.8%	51	8.4%	61	4.4%	144	5.1%

management and patient education services were less widely available (53.7% and 55.6% respectively). Specialist follow-up services to assess ophthalmic and vascular complications were considered adequately available by 76.1% and 74.4% respectively. A lower proportion were happy with follow-up services related to neurological and nephrological complications (57.8% and 69.1% respectively). More than 80% of respondents believed in patient self-empowerment discussing management plans and management goals with their patients and promoting self-monitoring of blood glucose; however, only 61.4% encouraged treatment self-modification by patients (Table 2). There

were marked variations in support services across the different regions. While the northwestern region reported very good support services being available to supplement their practice as compared to the northeastern and southern regions, the reported confidence rates were similar (74% vs 66% and 75% respectively). Patient empowerment appeared to be highest in the northeastern region with a good proportion of practitioners reporting discussing treatment goals (90.2%), negotiating a management plan with the patient (84.1%), encouraging blood glucose self-monitoring (91.5%), and encouraging self-modification of the treatment (74.7%). The two other regions

Table 2 Practice characteristics and services (differences in totals due to unanswered responses)

Population characteristics	Southern bank N = 849		Northwestern N = 607		Northeastern N = 1385		Total study population N = 2841	
Management confidence								
Not confident	24	2.9%	20	3.3%	68	4.9%	112	3.9%
Somewhat not confident	183	22.1%	136	22.7%	386	28.1%	705	24.8%
Confident	447	53.9%	294	49.0%	654	47.6%	1395	49.1%
Very confident	175	21.1%	150	25.0%	266	19.4%	591	20.8%
Health care facilities for T2DM patients								
Public healthcare support	492	58.0%	518	85.3%	1120	80.9%	2130	75.0%
Patient educational support	423	49.9%	465	76.6%	693	50.1%	1581	55.6%
Team management services	357	42.1%	469	77.3%	700	50.6%	1526	53.7%
Availability of follow-up	480	56.6%	572	94.2%	769	55.6%	1821	64.1%
Easy availability of facilities								
Ophthalmic services	609	71.8%	548	90.3%	1005	72.6%	2162	76.1%
Nephrology services	588	69.3%	533	87.8%	822	59.4%	1963	69.1%
Neurological	453	53.4%	502	82.7%	687	49.6%	1642	57.8%
Cardiovascular	563	66.4%	486	80.1%	1066	77.0%	2115	74.4%
T2DM patient empowerment								
Negotiation of management	625	73.7%	523	86.2%	1164	84.1%	2312	81.4%
Discuss treatment goals	710	83.7%	492	81.1%	1248	90.2%	2450	86.2%
Encourage self-monitoring	648	76.4%	448	73.8%	1267	91.5%	2363	83.2%
Treatment self-modification	434	51.2%	276	45.5%	1034	74.7%	1744	61.4%

reported lower rates of patient empowerment practices (Table 2).

Confidence in capability to manage adequately T2DM patients was statistically dependent on the specialty the practitioner belonged to, with diabetologists/endocrinologists reportedly being more confident in their management regimens. Practitioners from the eastern region reported being less confident in the management of these patients. There appeared to be no statistical relationship between confidence and the awareness of local guidelines availability, attitudes towards patient empowerment, and acceptable glycosylated haemoglobin (HbA1c) targets (Table 3). There were differences

between the different regions. Physicians from the southern region were very likely not to be aware of the availability of local guidelines compared to those from the north. Diagnostic criteria for T2DM were generally based on the estimation of a fasting blood glucose with HbA1c being more likely used to supplement the diagnosis in the northwestern doctors who were less likely to resort to a formal oral glucose tolerance test (oGTT). The northeastern practitioners were more likely to resort to an oGTT to establish the diagnosis. Just over 50% of the respondents in all the regions believed that it was essential to maintain optimum blood glucose level but only about a fifth of the

Table 3 Practice confidence relationships (differences in totals due to unanswered responses)

Practice confidence relationships	Confident N = 1985		Not confident N = 817		P value
	No.	%	No.	%	
Region					
Northwestern region	444	22.4	156	19.1	0.055
Southern bank region	621	31.3	207	25.3	
Northeastern region	920	46.3	454	55.6	
Specialty					
Cardiologist	73	3.7	32	3.9	0.0001
Diabetologist/endocrinologist	317	16.3	79	9.7	
Internist	800	41.0	332	40.9	
Primary health physician	434	22.3	215	26.5	
Other specialty	326	16.7	154	19.0	
Optimal target HbA1c					
< 6.5%—very stringent control	408	20.9	182	22.5	0.11
< 7.0%	1311	67.1	556	68.6	
< 7.5%	171	8.8	53	6.5	
< 8.0%—less stringent control	64	3.3	19	2.3	
Knowledge about availability of national guidelines					
Aware of availability	1569	79.4	653	80.1	0.73
Unaware of availability	406	20.6	162	19.9	
Patient empowerment to adjust dosage					
Promotes empowerment	1211	61.8	518	64.1	0.27
Discourages empowerment	749	38.2	290	35.9	

respondents opted for very strict HbA1c control at a level below 6.5% with the larger majority preferring an HbA1c level below 7.0% (Table 3). These management goals appeared to be tempered by a fear of eliciting hypoglycaemia with practitioners generally believing that the patients and their families do not have the required skills to manage the complication (Table 4).

Overall, 79.2% of practitioners were aware of the availability of local guidelines. The majority relied on a fasting blood glucose estimation to diagnose the condition with 62.4% and 44.8% resorting to an HbA1c estimation and oral glucose tolerance test respectively. Over 50% of the respondents believed that it was essential to maintain optimum blood glucose level but only about a fifth of the respondents opted for very strict HbA1c control at a level below 6.5% with the larger majority preferring an HbA1c level below 7.0%. However, 3.3% of the respondents were happy with an HbA1c target of up to 8.0% (Table 4). The management target goals were very much dependent on the specialty of the

Table 4 Target goals attitudes (differences in totals due to unanswered responses)

Target goals attitudes	Southern bank N = 849		Northwestern N = 607		Northeastern N = 1385		Total study population N = 2841	
Physician awareness of local guidelines	502	59.2%	513	84.5%	1235	89.2%	2250	79.2%
Diagnostic criteria for T2DM								
Fasting blood glucose	723	85.2%	507	83.5%	1187	85.7%	2417	85.1%
Oral glucose tolerance test	272	32.0%	109	18.0%	891	64.3%	1272	44.8%
HbA1c	532	62.7%	465	76.6%	777	56.1%	1774	62.4%
Target goals								
Ideal BG essential target	497	58.5%	357	58.8%	706	51.0%	1560	54.9%
Optimal target HbA1c								
< 6.5%—very stringent	176	21.7%	115	18.9%	303	22.0%	594	20.9%
< 7.0%	663	81.7%	525	86.5%	1285	93.3%	2473	87.0%
< 7.5%	782	96.3%	574	94.6%	1346	97.7%	2702	95.1%
< 8.0%—less stringent	810	100.0%	607	100.0%	1378	100.0%	2795	98.4%
Attitudes towards hypoglycaemia								
Hypoglycaemia common enough to influence management choices	591	69.6%	394	64.9%	1136	82.0%	2121	74.7%
Treatment modification necessary if BG 3.5–4.0 mmol/l irrespective of symptomatology	626	73.7%	476	78.4%	871	62.9%	1973	69.4%
Family/patient competences re hypoglycaemia management	634	74.8%	531	87.5%	1021	73.8%	2186	76.9%

practitioner. It therefore would appear that a greater proportion of diabetologists/endocrinologists and internists/cardiologists preferred a target HbA1c goal of below 7.0% when compared to primary health physicians and other specialties (Table 5).

The metformin add-on medication in case of monotherapy failure was generally one of the sulfonylureas or meglitinide group with dipeptidyl peptidase 4 (DPP-4) inhibitors being increasingly used. Insulin was reported to be the favoured add-on medication choice by 7.0% of respondents, even though 58.2% of respondents reported encountering difficulties with introducing insulin in the therapeutic regimen

generally because of patient reluctance (Table 6).

In respect to management of T2DM and gestational diabetes (GDM) during pregnancy, the respondents were generally (70.6%) aware of the services of pre-conception care services for T2DM patients who desire to conceive. Respondents in the southern region were more likely to be unaware of the availability of pre-conception care services. Oral glucose-lowering medications were only being resorted to for the management of pregnant women by less than a quarter of the respondents, while about 60% were happy to use insulin analogues during pregnancy. Oral hypoglycaemic pharmaceuticals were more likely to be resorted to in

Table 5 Target HbA1c by specialty (differences in totals due to unanswered responses)

HbA1c level target	< 7.0%		> 7.0%		P value
	No.	%	No.	%	
Diabetologist/endocrinologist	355	14.5	36	11.4	
Internist/cardiologist	1108	45.4	122	38.6	
Primary health physician	539	22.1	101	32.0	
Other	439	18.0	57	18.0	0.01

Table 6 Treatment choices attitudes (differences in totals due to unanswered responses)

Treatment choices	Southern bank N = 849		Northwestern N = 607		Northeastern N = 1385		Total study population N = 2841	
What is your most common choice as add-on therapy in case of metformin monotherapy failure?								
Sulfonylureas/meglitinides	543	64.0%	244	40.2%	747	53.9%	1534	54.0%
DPP-4 inhibitors	76	9.0%	302	49.8%	469	33.9%	847	29.8%
Thiazolidinediones	8	0.9%	6	1.0%	25	1.8%	39	1.4%
GLP-1 receptor agonists	11	1.3%	29	4.8%	37	2.7%	77	2.7%
SGLT-2 inhibitors	9	1.1%	13	2.1%	7	0.5%	29	1.0%
Acarbose	15	1.8%	2	0.3%	4	0.3%	21	0.7%
Insulin	98	11.5%	8	1.3%	92	6.6%	198	7.0%
Do you have difficulties in starting insulin treatment in patients with T2DM when other management options fail to control glycaemia?	593	30.9%	204	33.6%	857	61.9%	1654	58.2%
Why?								
Insufficient experience	183	30.9%	37	18.1%	337	39.3%	557	19.6%
Patient reluctance/difficulties	328	53.3%	14	70.1%	490	57.2%	832	29.3%
Fear of hypoglycaemia	186	31.4%	45	22.1%	223	26.0%	454	16.0%
Other reason/s	75	12.6%	7	3.4%	120	14.0%	202	7.1%

pregnant women in the northwestern region than their counterparts in the other regions, while practitioners from the southern region appeared more likely to resort to insulin analogues during pregnancy than their counterparts in the other regions especially in the northeastern region. About a fifth of the respondents reported that they still use the old 1999 World Health Organization (WHO) oGTT diagnostic criteria to identify women with GDM. Less than a fifth of the respondents had adopted the criteria adopted by the International Associations for Diabetes in Pregnancy Study Groups (IADPSG) to establish a diagnosis of GDM. The larger majority rely of the American Diabetes Association (ADA) or the IADPSG

criteria to establish a diagnosis with the IADPSG being the less likely criteria used by northwestern practitioners (Table 7).

DISCUSSION

The formulation of practice guidelines is the natural follow-up to the goal of implementing evidence-based practice. Many developed countries have set out to standardize practice by publishing guidelines for virtually all aspects of healthcare. Many of these guidelines have been adopted by the Guidelines International Network [1]. Evidence-based practice guidelines for the management for type 2 diabetes mellitus have been developed with the aim of reducing the long-term morbidity of the condition [2–4]. These have been further abridged to address the needs of the busy primary healthcare provider [5]. Compliance with evidence-based guidelines seems to be problematic since the development of these seems to have had little impact on actual primary care practices [6]. A study carried out in Norway to assess the physicians' adherence to clinical guidelines by reviewing patient files showed that more than half of the patients aged less than 70 years had HbA1c levels above the recommended level. Similarly, attention to the control of the systolic blood pressure did

not reach target levels [7]. The reasons as to why practitioners fail to rigorously follow the published guidelines are varied, ranging from lack of familiarity with updated guidelines to inability to apply them with the community they serve [8, 9]. More studies relating to sustainability of adherence to clinical guideline by healthcare professionals are needed to assess why adherence to guidelines principles is not sustained over the long term. This study population was an opportunistic population and may therefore carry particular biases and cannot truly be said to be a totally representative sample, being biased by interest and opportunity to answering the questionnaire presented. However, important and relevant observations have been identified.

This study has shown that a fifth of the respondents were not aware of any practice guidelines related to T2DM care, though this did not appear to influence the practitioners' confidence in managing the patients. As expected, confidence in managing T2DM patients was more prevalent in endocrinologists or diabetologists rather that the other specialties particularly family medicine practitioners. These observations are a reflection of acquired knowledge and awareness of the defined evidence-based clinical practice.

Table 7 Management attitudes in pregnant women (differences in totals due to unanswered responses)

Pregnancy management	Southern bank $N = 849$		Northwestern $N = 607$		Northeastern $N = 1385$		Total study population $N = 2841$	
Availability of pre-conception care facilities	506	59.6%	490	80.7%	1010	72.9%	2006	70.6%
Use oral hypoglycaemic agents during pregnancy in GDM	156	18.4%	208	34.3%	271	19.6%	635	22.4%
Use insulin analogues during pregnancy in GDM	624	73.5%	377	62.1%	680	49.1%	1681	59.2%
Diagnostic criteria for GDM used								
WHO (old)	182	21.4%	107	17.6%	332	24.0%	621	21.9%
ADA	189	22.3%	152	25.0%	192	13.9%	533	18.8%
IADPSG	171	20.1%	75	12.4%	288	20.8%	534	18.8%
Other	43	5.1%	114	18.8%	28	2.0%	185	6.5%
Referral + unrecorded	314	37.0%	157	25.9%	582	42.0%	1053	37.1%

Continuing professional educational programmes need to be organized by the responsible professional bodies to ensure that professionals—whatever the specialty—are made aware of the standard guidelines [10]. The modern professional media must be utilized fully to disseminate these guidelines. In spite of the relatively mature respondent population in the study, about half reported relying on web-based information sources to update their knowledge.

Another important determinant detracting from the adoption of evidence-based clinical guidelines is the view that these guidelines are simply designed for use in a developed country with good support services in a highly educated population. Such practices may be perceived as unattainable because of lack of resources or because of potential associated adverse consequences such as hypoglycaemia. While the present study did not investigate all the potential contributors to non-adherence to guideline protocols, T2DM patient characteristics such as the expected short life expectancy and presence of comorbidities may also influence the practitioners' tendency towards non-adherence. These are relevant concerns and dedicated practice guidelines need to be formulated for specific populations, balancing ideal management with practicality on the basis of available resources and support services. Only in this way can practitioners working in relative isolation be encouraged to provide the best ideal management plan in the context of their environment. In this study, family doctor practitioners were proportionately more likely to accept a glycosylated haemoglobin level higher than proposed by evidence-based guidelines. The main detractor to adopting stringent targets for HbA1c appears to be the fear of inducing hypoglycaemia in patients, with over 58% of respondents reporting that problems were encountered when attempting to introduce insulin in the therapeutic regimen and 16% quoting fear of inducing hypoglycaemia as the deterrent. This may potentially be a reflection that these practitioners deal with patients with different profiles than the hospital-based physician. About 20% of respondents reported, however, that their reluctance to introduce insulin in the therapeutic regimen was the result of insufficient professional experience. This emphasizes the need for continuous professional education to ensure that practitioners are knowledgeable and skilled in how and when to initiate insulin add-on treatment and how to monitor the patient to ensure management within a safety profile. The practitioners also need to be made increasingly familiar with the management of hypogylcaemia but, more importantly, they need to be motivated to empower the patient and close family to be better equipped to manage this complication of adding on insulin to the therapeutic regimen [11]. About 80% of respondents were unhappy with the perceived level of competence in patients and family in managing hypoglycaemia [12].

In respect to gestational diabetes management, in spite of updated diagnostic criteria based on evidence-based outcome indicators, there appears to be continuing non-conformity of the diagnostic criteria to diagnose GDM, with less than 20% relying on the currently recommended IADPSG criteria. About 40% are still relying on past criteria. The adoption of standard uniform criteria is essential to ensure conformity with evidence-based guidelines and to enable comparisons of management outcomes between communities and countries. While the current guidelines still promote the use of insulin in managing GDM because of concerns regarding potential long-term effects of oral hypoglycaemic agents on the foetus, there is still a role for these agents especially in environments where close monitoring or where patient compliance may be an issue. Only about a quarter of respondents actually reported incorporating oral hypoglycaemic agents as part of their therapeutic armamentarium in the management of GDM. In contrast about 60% of respondents were willing to use insulin analogues in the management of GDM.

CONCLUSION

It is clear that the promulgation of evidence-based guidelines cannot assume automatic compliance. The adoption of these guidelines in

clinical practice is tempered by communication issues that delay the information from reaching the practitioner on the ground and by on-the-ground practice circumstances that make the practitioner reluctant to fully endorse and adopt the targets defined by the guidelines. The evidence-based guidelines need to be modified by the local or regional professional bodies to suit the local circumstances; these modified guidelines then need to be actively distributed to all practitioners involved with the care of T2DM patients.

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