

# Diabetes Mellitus, Management of Patient versus Management of Sugar and the Need for National Guidelines

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## Abstract

**Objectives:** This study was conducted to know the characteristics of patients with diabetes mellitus and to assess the need for national guidelines for the management of these patients in Jordan.

**Methods:** Retrospectively, the files of 1027 patients with diabetes mellitus attending Queen Alia Military Hospital were reviewed. A structured data collection sheet was developed which includes information about the demographic characteristics, age at diagnosis, medication, follow up, body mass index, clinical examination for complication, compliance and the frequency and type of blood testing.

**Results:** The results of the demographic characteristics were detailed in tables (1- 5), Male gender constituted 51%, the average duration of diabetes mellitus was 11.3 years with 70% of them aged less than 40 years.

**Conclusion:** The disparity in the management of patients with diabetes mellitus in Jordan highlighted the need for a national guideline for the management of such patients.

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## Introduction

Diabetes Mellitus (DM) is a global disease that knows no boundaries. In Jordan, it was estimated that 13.4 % of Jordanians above 25 years of age have DM, while 9% have impaired glucose tolerance.<sup>1</sup> DM is not just a high blood sugar; it goes further to be a leading cause of morbidity and mortality. This study was concerned with the daily practice in a general internal medicine clinic, showing how far we stand from international guidelines

in management of DM. It shows the urgency to establish national guidelines that need to be obligatory for all physicians who participate in DM management, and the possible need for "diabetes clinics" that deal with the disease from A to Z.

## Methods

Queen Alia Military Hospital is a general hospital with 200 beds. As there are no subspecialties in the hospital, the internists cover all patients in regards to medical diseases.

Diabetics accounts for 42% of internal medicine patients. This retrospective study reviewed the files of 1027 diabetics, who were having their disease for more than one year. As physicians rotate in military hospitals yearly, patients were seen by different physicians over the last 10 years, the study period. Medical notes and investigations were studied in comparison with the Basic Guidelines for Diabetes Care,<sup>2</sup> which are consistent with the American Diabetes Association Clinical Practice Recommendations 2001.<sup>2</sup> All patients were 14 years and above, as younger patients are dealt with by pediatricians. 523 were females (50.9), 729 were above 40 years of age (70.1%), 417 were on Insulin alone (40.6%), 473 were on oral hypoglycemic agents (46.0%), while 137 were on combined therapy. The average duration of DM was 11.3 years with a range of 1 year to 57 years.

## Results

On average, the patients are seen 3 times a year for regular visits in the internal medicine clinic. In regard to Physical and Emotional Assessment, it was shown that 937 patients (91.2%) were having their blood pressure (BP) checked every visit, while 38 patients (3.7%) have no single reading of BP. Weight and height were recorded in 211 patients (20.5%), weight only in 328 patients (31.9%), and neither in the rest (47.6%). In the 211 patients both weight and height were recorded, 105 were having BMI of > 30 (49.8%), as shown in table (1).

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**Table 1: Body Mass Index in the 211 patients with recorded weight and height.**

BMI	No. of patients	%
<20	4	1.9
20-24.9	31	14.7
25-29.9	71	33.6
>30	105	49.8
Total	211	100

Foot examination, including pedal pulses was reported only in 121 patients (11.8%), 32 of them have infected diabetic feet or amputations. Internists never reported dilated eye exams, but 627 patients were assessed by ophthalmologists (61.1%), with only 217 patients on regular basis (21%).

As for lab exams, in 838 patients (81.6%) the treating physician depended only on a single reading of plasma glucose every 4 months.

A random sample of 250 patients who were questioned about their follow up of sugar, showed that only 24 patients have gluco-check devices at their home (Table 2).

**Table 2: Frequency of sugar monitoring in a random sample of 250 patients.**

Frequency	No. Of patients	%
More than once daily	17	6.8
Once daily	36	14.4
Once weekly	24	9.6
Once monthly	78	31.2
Only with appointment	95	38
Total	250	100

There was no regular check of HbA1c, and only 192 patients (18.7%) have one or more results of HbA1c, of which only 41 patients (21.5%) have their HbA1c < 7%. There was no reporting of Microalbuminuria (Albumin/Creatinine Ratio).

Blood lipids were reported yearly in 729 patients (71%), sporadically in 288 patients (28%), the rest 10 patients have no lipid measurements.

The issue worsens when it comes to self-management, training and interventions, as it was only mentioned in files of only 92 patients (9%) with no details about nutrition monitoring, weight management or smoking cessation.

The study showed that taking the last reading of Fasting Blood Sugar (FBS) as a reference; only 241 patients (23.5%) were having their FBS ≤ 126 mg% (Table 3).

**Table 3: Last FBS reading among all patients.**

FBS (mg%)	No. Of patients	%
≤ 126	241	23.52
127-200	413	40.2
201-250	301	29.3
251-300	32	3.1
>300	40	3.9
Total	1027	100

To complicate the issue more, 433 patients (42.2%) have co morbid medical disease(s). Hypertension was the commonest of which, with 356 patients (84.3%) followed by hyperlipidemia in 239 patients (55.2%) (Table 4).

**Table 4: Co-morbid Medical Diseases.**

Disease	No. Of patients	%
Hypertension	356	84.3
Ischemic heart disease	123	12
Hyperlipidemia	239	55.2
Cerebrovascular accidents	65	6.3
Renal failure	14	1.4
Others*	176	17.1

▪ *Mainly Respiratory, Peptic ulcer and Thyroid diseases.*

The problem of poly pharmacy is added to diabetic problems, with regard to drug-drug interactions, compliance and side effects including worsening of **plasma glucose control**, 328 patients (32%) were on three drugs or more, excluding aspirin (Table 5).

*Table 5: No. Of medications (other than aspirin).*

No. Of medications	No. Of patients	% (Out of 1027 patients)
2	325	31.6
3	149	14.3
4	137	13.3
5	32	3.1
>5	10	1
<b>Total</b>	<b>653</b>	<b>63.5</b>

## Discussion and Conclusions

Diabetes is a major and growing health care problem.<sup>3</sup> It is expected that the number of people with diabetes will double by the year 2010.<sup>4</sup> It is far more than disturbed sugar readings. Its complications have a huge burden on all body systems including physical and psychological aspects. It remains a major cause of blindness as a sequence of retinopathy beside many other ocular complications.<sup>5, 6</sup> It has a variety of vascular complications that reflect themselves as cardiovascular, cerebrovascular, as well as peripheral vascular events that contribute largely to population morbidity and mortality.<sup>7- 10</sup> It is now clear that strict control of Plasma glucose; blood pressure and cholesterol can reduce diabetes-related complications.<sup>4, 6,11,12,13</sup>

Structured care is needed to achieve the strict control.<sup>14</sup> Many studies showed that adherence of primary care physicians to diabetic guidelines is sub optimal.<sup>15</sup> One study showed that the rate of adherence was 15% for foot exam, 20% for HbA1c measurements, 23% for eye exam referrals, 33% for urine protein screening, 44% for lipid profiles, 73% for home glucose monitoring, and 78% for blood pressure measurements.<sup>15</sup>

Another study in the USA showed that <5% of diabetic patients receive care that conforms with the American Diabetes Association guidelines.<sup>16</sup> In Jordan, we lack the national guidelines that need to be established and followed in the daily practice in an attempt to reduce the burden on the society, patients and health system.

The dynamic health care process obligates the diabetes community to periodically review and revise the national standards to reflect advances in scientific knowledge and health care.<sup>17</sup> Management of diabetes needs a teamwork that includes physicians, trained nurses, pharmacists, dietitians and possibly behaviorists.<sup>17</sup> Based on expert consensus, there is support that primary instructors on the diabetes team require specialized diabetes and educational training beyond their basic academic preparation, including counseling skills.<sup>17</sup> As diabetic patients are the target of the whole process, the addition of the patient education to these interventions leads to improvement in the outcome and the process of care.<sup>4</sup> Diabetes education via telemedicine and in person was equally effective in improving glycemic control, and both methods were well accepted by patients.<sup>8</sup>

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## داء السكري: هل نعالج المريض ام الفحص المخبري؟ الحاجة الى خطة وطنية للتعامل مع المرض

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### ملخص:

لقد وضحت الدراسة أننا لا نزال في ممارستنا اليومية كأطباء بعيدين عن المستوى المطلوب عالمياً للحد من آثار السكري، إذ أننا في غالب الأحيان نتعامل معه كإضطراب في سكر الدم كرقم مجرد. وتخلص الدراسة الى ضرورة التوصل الى خطة وطنية يشترك فيها كافة المتعاملين مع المرض والمريض، مع وضع آلية واضحة لتنفيذ ذلك في الممارسة اليومية.

يعتبر داء السكري من الأمراض التي لا تعرف حدوداً، وهو مرشح ليضاعف من أعداد ضحاياه بحلول عام 2010. إن إفتقادنا الى الخطة الوطنية للتعامل مع هذا المرض يرافقه ضعف واضح في التقيد بالخطط العالمية وهو ما يؤدي الى نمو مرعب في أعداد المرضى الذين يصبحون عرضة لآثاره المدمرة على الأجهزة الحيوية للجسم بما فيه البعد النفسي. وينعكس ذلك عبئاً مضاعفاً على المجتمع والنظام الصحي.