Reasons for complications of type 2 diabetes mellitus observed in United Arab Emirates: An opinion survey among practicing physicians

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ABSTRACT

Objective: The present study explored factors responsible for complications of diabetes mellitus as observed in the clinical practice of doctors.

Materials and Methods: One hundred and seven practicing physicians and general practitioners from clinics and hospitals, identified using a snowballing technique starting with one physician in each emirate, participated in the cross sectional survey.

Results: The majority (81%) was males, and 62% were from clinics and 48% from hospitals; more than 50% had over 5 years of clinical experience in the UAE. Fifty eight percent of those practicing in clinics and 80.6% in hospitals felt they had the facilities required for monitoring DM and complications. While 22.4% felt that the complications were due to poor glycemic control, 11.2% attributed it to sedentary lifestyle, 10% to smoking, 9.3% each to diet and co-morbidity, and 4.7% to obesity. Poor glycemic control was considered to be mainly due to low compliance (25.2%), lifestyle (18.7%), lack of awareness (14%) about the silent disease and its complications, finance (5.6%) and depression (0.9%). Of the 46 who responded, 57% felt the complications were more common among Asians compared to other nationals. No age, gender or occupational difference was reported.

Conclusion: One third of the respondents attributed the complications to poor glycemic control mainly due to low compliance and lack of awareness and hence mostly preventable. Health service needs to organize nationwide campaigns emphasizing diabetic care. Financial and social support are likely to enhance compliance among the victims of this fast increasing slow epidemic.

Key words: type 2 diabetes mellitus, practicing physicians, UAE

INTRODUCTION

An estimated 2.5 to 15% of health care budgets worldwide are devoted to diabetes¹. Increasing incidence in the developing countries in the middle aged adults in the productive years of their lives is also a great concern². The social and financial burden of diabetes is mainly due to the complications³, and about 50% of people die of cardiovascular disease. The major complications include cardiovascular problems like ischemic heart disease, hypertension, stroke; diabetic neuropathies, retinopathy, renal complications, skin ulcers; sexual and urologic problems like erectile dysfunction, and oral problems⁴.

Based on WHO data, the prevalence of diabetes among citizens of the UAE is 350,000 in a population of 684,000, ranking the country as the second highest in the entire world⁵. The unpublished study among UAE citizens above the age of 30 years in Al-Ain a decade ago, showed a prevalence rate about 20%, more in urban areas (25.4%) than in rural (14.1%) with expected underestimation as much as 20%⁶. A national diabetes survey during the period 1998 to 2000 reported a prevalence of 19.6 per cent (24% among nationals and 17.4% among expatriates); the percentage increased with age to 40% in the age
group 60 years and above. In a study on prevalence of diabetes mellitus and its complications in a population-based sample in Al Ain, the prevalence rates for retinopathy, nephropathy, neuropathy, peripheral vascular disease and coronary heart disease were 54.2, 40.8, 34.7, 11.1 and 10.5 percent respectively in patients with diagnosed DM. A significant proportion of subjects with undiagnosed DM and pre diabetes also had micro- and macro-vascular complications.

According to Gehani, unlike the general population, diabetic women have twice the mortality of diabetic men, quadrupling if having myocardial infarction whereas it only doubles in men. The report of a multinational study comparing complications of Type 1 DM identified wide variation and geographic patterns in prevalence of complications not dependent on glycemia alone but blood pressure correlating with neuropathy and microalbuminuria.

International Diabetes Foundation reviewed the studies from various countries and found that the complications varied greatly in the different places. In population studies, US had high neuropathy, but Mauritius had low prevalence. Populations from Europe had higher heart disease and stroke, and Indian immigrants to Fiji and Mauritius had higher rates of heart disease. The opportunities for comparison between various studies are limited by the definitions used, the method of data collection and the differences due to clinical and population studies. The incidence of CHD among diabetics is increased even in subjects with IGT, especially in those with hyperinsulinemia, more so at a younger age and in women. Angina pectoris is less while painless infarct is 20-40% more frequent. HbA1c concentration of 7.0% reduced microvascular complication rates by 25%, metformin macrovascular complications, and reduction in blood pressure, cerebrovascular accidents and diabetes-related deaths. The contribution of lack of exercise and control of co-morbidity to complications of DM may be considered to be related to insulin resistance factor, and control of blood pressure and lipid levels.

The important time-related variables found in a study in Australia were the duration of diabetes for retinopathy, age for macrovascular disease, duration and age at diagnosis of diabetes for sensory neuropathy, and age for renal impairment. Plasma cholesterol favored and HDL showed negative relation to macrovascular complications and renal impairment. A study reported from Japan suggests that in diabetic patients, progressive mechanism of Peripheral Vascular Disease and Cerebro-Vascular Disease might be different from that of Coronary Heart Disease and might be gender dependent.

A study four decades ago in the US found that diabetics under treatment for hypertension had higher SBPs than treated controls. Treatment with insulin or oral agent alone and gender showed no difference in complications. But Systolic Blood Pressure over 160 mmHg or reported treatment for hypertension was more than twice among orally treated females than the controls. Factors considered as risk factors for complications were smoking, obesity, physical inactivity, hypertension and high cholesterol. Though smoking patterns were similar in the two groups, cigar smoking was more among diabetics. A case control study in Egypt looked at the preventable risk factors of diabetic complications in a very comprehensive manner including socio-demographic, clinical, patient and system practices, sources of information, and lifestyle factors. Multivariate logistic regression analysis revealed that age over 49 years, female gender, type and duration of diabetes, glycemic control, and hypertension, non-health-insurance, needing assistance to reach health care facility, irregularity of follow-up visits and attending multiple clinics for follow-up, sources of health information other than...
Physician and nurse, not practicing leisure physical activities, and smoking were statistically significant risk factors. A study undertaken in the UK in the context of the trend to move long-term management of diabetes from specialist centres to primary care assessed the confidence, practices and perceived training needs in diabetes care among post-graduate trainee doctors. The trainees reported lack of confidence in monitoring some of the complications. Since the complications vary in the different countries depending on socioeconomic factors, lifestyle factors, access to health care and so on, each country needs information on its own population for proper training and comprehensive management.

The UAE has already taken the initiative to arrest the trend of rising prevalence of DM. The Ministry has formed an independent body of local scientists and experts which prepares guidelines for management of DM and public awareness programs. Training is being given to the medical professionals. Screening activities are also undertaken. But prioritizing the local activities to prevent complications of diabetes mostly depends on data from the West. Therefore the present qualitative study explored the experience of the practicing physicians in the country on the reasons for complications seen in clinical practice and the groups commonly affected.

### MATERIALS AND METHODS

The cross-sectional study was conducted among general practitioners or internal medicine doctors with a practicing experience of at least one year in the UAE to explore the reasons for the common complications of diabetes mellitus in UAE as experienced by practicing physicians. The study was conducted with approval from the Ethics Committee of Gulf Medical University. A sample of 107 physicians who satisfied the inclusion criteria were approached for the survey including doctors from all Emirates, both at hospitals and at clinics, Government run and private owned starting with one physician in an Emirate and selecting the others by snowballing technique. The researchers administered content-validated tool personally which had open-ended questions on the reasons for complications and the risk groups, and socio-demographic characteristics of the respondents. We discussed with the respondents on this problem and noted their opinion also. The data was cleaned, coded, entered on Excel spreadsheet and analyzed on SPSS version 18.0 version.

### RESULTS

A total of 107 physicians were approached more than 80% were males, almost 60% of Indian origin, more than 60% from hospitals, and almost 55% had more than five years of UAE experience as seen in Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>87</td>
<td>81.3</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>20</td>
<td>18.7</td>
</tr>
<tr>
<td>Country of origin (N=98)</td>
<td>India</td>
<td>56</td>
<td>57.1</td>
</tr>
<tr>
<td></td>
<td>Pakistan</td>
<td>10</td>
<td>10.2</td>
</tr>
<tr>
<td></td>
<td>Middle East</td>
<td>11</td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>20</td>
<td>21.6</td>
</tr>
<tr>
<td>Place of work</td>
<td>Hospital</td>
<td>66</td>
<td>61.7</td>
</tr>
<tr>
<td></td>
<td>Clinic</td>
<td>41</td>
<td>38.3</td>
</tr>
<tr>
<td>UAE Clinical experience(years)</td>
<td>1-5</td>
<td>50</td>
<td>46.7</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>28</td>
<td>26.2</td>
</tr>
<tr>
<td></td>
<td>&gt;10</td>
<td>20</td>
<td>27.1</td>
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77 responded (72%) to the questions on their opinion on the reasons for complications among their diabetic patients. Figure 1 depicts the various reasons reported.

Of the 77 respondents 22.4% considered poor glycemic control as the reason for complications. Life style factors like lack of exercise (11.2%), smoking (10.3%) and poor diet control (9.3%), and co-morbidity (9.3%) followed. 4.7% considered obesity and 2.8% stress as risk factors.

Clarifying further on the reasons for poor glycemic control (Figure 2), a quarter of the 69 respondents (25.2%) indicated that it was due to poor compliance to treatment, 18.7% to poor life style, 14% to lack of awareness, 5.6% to poor finance and 0.9% to depression.

The opinion were collected from 107 practicing physicians from across the UAE regarding the reasons for complications of diabetes mellitus among the patients they managed. There was a 72% response rate. Most of the respondents were males, from the Indian subcontinent, working in hospitals across UAE with more than half having above 5 years of UAE experience. In the study the poor glycemic control topped the list of reported factors responsible for complications in DM. Lack of exercise, smoking, poor diet control and co-morbidity were all considered almost equally important. Obesity and stress were not considered as important. Except for obesity, other factors were similar to those considered in the study by Dupree and Meyer.

Unlike the study from Japan, no gender difference was noted for the complications by the physicians in this study. The duration of diabetes and transportation problems, the preventable risk factors reported in the Egyptian study were also not listed by the UAE physicians.

On discussion with the respondents, the factors that were highlighted as reasons for the poor glycemic control and poor compliance were work pattern, social isolation, inaccessibility, poor finance or no insurance, long-term treatment, silent disease, poor awareness about self-care and poor monitoring. None reported lack of monitoring unlike the study by NHS. One physician commented on the need for affordable treatment rather than the latest drugs. There was no other comment on the role of the health system, role of health professionals or training for better monitoring. However no study was found exploring physician opinion regarding complications of DM which could be comparable to the present study.

In spite of collecting data by direct interview, some of the respondents did not seem to take interest in voicing their opinion, which would have brought in some error into the result. Those practitioners in remote areas could not be included into the present study.

Figure 1. Opinion on reasons for complications in the DM patients in the UAE (N=77)

Figure 2. Reported reasons for poor glycemic control among DM patients in the UAE as proportion of respondents (N=69)

DISCUSSION
The study attempted an exploration of the clinician perceived burden of complications of DM in the different subgroups of UAE population by age, gender, education, nationality, duration of illness, co-morbidity and clinical setting.
CONCLUSION
The majority consider poor glycemic control and poor compliance as the reasons for complications. There is a need for further behavioral research to plan appropriate interventions. The trend being to move towards primary care, and chronic diseases being a priority area, the implications are not only on research and service but also on the educational needs of medical students, primary care physicians and all health care professionals for a comprehensive effort to contain the complications of this slow epidemic. The social factors in promoting both monitoring DM and lifestyle change in the UAE context need serious consideration as well.

REFERENCES


