

RESEARCH ARTICLE

Poor glycemic control as a reason for referral of diabetes patients to specialists in Israel

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Aims/introduction: Family physicians face the dilemma of when to refer patients with diabetes to specialists. This study examined attitudes of family physicians to referring patients with poor glucose control to diabetes specialists.

Materials and methods: At continuous medical education courses, family physicians were asked to respond anonymously, as to whether they generally manage the diabetes of their patients, and specifically those with poor glycemic control (HbA1c >9.0%).

Results: Of 470 respondents, 426 (90%) reported that they generally manage their patients' diabetes; 202 (43%) reported that they manage the diabetes of patients with HbA1c >9.0%. Board certification in family medicine and affiliation to a health maintenance organization, but not sex, age, years of professional experience, or the proportion of patients with diabetes at their clinics, were associated with referral practices.

Conclusions: Family medicine residency and organizational support appear to promote treatment by family physicians of patients with poorly controlled diabetes in the primary care setting.

Keywords: *primary care; diabetes management; diabetes specialists; family medicine; endocrinologists*

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Received: 2 February 2016; Revised: 2 March 2016; Accepted: 4 March 2016; Published: 25 April 2016

With increasing incidence rates worldwide, diabetes has become one of the major health problems in developing and developed countries. The prevalence of diabetes increased in Israel during 2004–2012, afflicting 14% of the population aged ≥ 26 years (1). The management of diabetes poses particular challenges for family physicians; among them, the timing of referral to diabetes specialists. Due to the increasing proportion of healthcare budgets exploited by specialist healthcare, rationing of these services has become a priority in a number of healthcare systems (2, 3). The World Health Organization (4) has called for the strengthening of primary healthcare to enhance chronic care and to better control healthcare expenditure.

Optimal referring processes are crucial for the effectiveness, safety, and efficiency of medical care. Such processes should not only facilitate patient care but also serve as a conduit for educational guidance from specialists to their primary care colleagues. In Israel, primary care physicians care for most patients with type 2 diabetes, and thus serve as a 'gatekeeper' of the health care system. A patient can meet with an endocrinologist for a first visit, only with a referral from a primary care physician. Follow-up is by

invitation of the specialist without need for a new referral, and is not limited regarding duration or frequency.

In the past two decades, the four health maintenance organizations (HMOs) that provide primary care in Israel invested resources to improve the treatment of the diabetic patient in primary care clinics, and to support the primary care physician as the case manager. Still, many patients are treated in endocrinology clinics. However, specific recommendations or clinical guidelines for the referral of patients with diabetes to specialists are generally lacking, leaving the decision of when to refer to the discretion of the primary care physician (5). We examined the current diabetic referral patterns of primary care providers to specialists in Israel.

Methods

During 2012–2013, family physicians were approached at continuing medical education (CME) courses in Israel and requested to fill an anonymous questionnaire. The CME courses are affiliated with all the academic departments of family medicine in Israel, and do not involve pharmaceutical companies.

The current report presents the responses, according to characteristics of the physicians and of their practices, to two questions: Do you prefer to manage the diabetes of your patients rather than referring them to diabetes specialists? Would you refer a patient with HbA1c >9% to a diabetes specialist, or would you manage the diabetes yourself?

Respondents filled data regarding their characteristics: age, sex, years of professional experience (≤ 2 , 2–6, >6 years), and professional background: residents in family medicine, board-certified family physicians (BCFP) who had completed 4 years of residency in family medicine and passed the final examinations, and non-board-certified family physicians (non-BCFP) who mostly did not have training in family medicine and are not well-trained physicians (Table 1). They also provided information regarding characteristics of their practices: location (urban, rural), and HMO affiliation, and the proportion of their patients with diabetes (≤ 5 , 5–9, >9%). All participating physicians were actively providing direct patient care during the survey period.

Physicians' responses to the survey were analyzed with the SPSS Version12 statistical package. Quantitative results were reported as mean \pm SD. The data were tested by the Tukey test, significance being declared when $P \leq 0.05$. This study was exempted from applying for approval from the institutional ethics committee, since no patients were involved.

Results

A total of 595 family physicians were invited to participate in the survey at 18 CME programs. Of them, 470 (79%) filled and returned the questionnaires before the meeting. Age and seniority in family medicine differed significantly among the three groups of physicians (Table 1); the resi-

dents were the youngest and the non-BCFPs the oldest (Table 1). According to the websites of the HMOs, 6,761 family physicians provide primary health care in Israel. The proportional affiliations of the study participants in the four HMOs in Israel are very similar to the overall proportional affiliations of family physicians nationwide (Table 2). The number of adult endocrinologists is relatively small (Table 2) which is partially responsible for the long (several weeks to several months) waiting time for referrals.

An almost equal number of male and female physicians participated in the study (51% females). Seventy-seven percent of the participants reported working in urban clinics; only 52% graduated in Israel; 39% reported the proportion of diabetes patients to be 5–9% of all their patients aged above 20 years, and 36% reported this proportion to be more than 9% (Table 3).

Overall, 90% of the family physicians who responded to the survey expressed a preference to manage the diabetes of their patients, rather than to refer them to diabetes specialists. Regarding patients with poor glucose control, defined as HbA1c >9.0%, 43% (202/470) stated that they themselves would manage the diabetes, rather than referring the patients to diabetes specialists. Sixty-three percent of BCFPs compared to only 39% of non-BCFPs stated that they do not refer patients with poor glycemic control to specialists (Table 3). Half of the respondents who were affiliated with Clalit Health Services, the largest HMO in Israel, and considerably smaller proportions of physicians affiliated with the three other HMOs in Israel responded that they would treat such patients themselves. Of the physicians who studied medicine in Israel, 48% responded that they themselves would treat patients with HbA1c >9%, compared with 30% of those who studied in the former USSR, and 41% of those who studied in other

Table 1. Professional status, age, and seniority (number of years in practice) of participating physicians

| Professional status | All | Residents | Board-certified family physicians | Non-board-certified family physicians |
|--------------------------------------|----------------|----------------|-----------------------------------|---------------------------------------|
| No. of physicians | 470 (100%) | 82 | 260 | 114 |
| Age (mean \pm SD) | 42.4 \pm 8.1 | 32.5 \pm 4.6 | 44.1 \pm 6.8 | 48.9 \pm 6.8 |
| Seniority (in years) (mean \pm SD) | 16.4 \pm 8.7 | 2.9 \pm 3.4 | 13.1 \pm 7.2 | 21.7 \pm 8.1 |

Missing data are not shown.

Table 2. The number of surveyed participating FPs and endocrinologists compared with the number of FPs in the four HMOs

| | HMO 1 | HMO 2 | HMO 3 | HMO 4 |
|---|---------------|---------------|-------------|-------------|
| Israeli FPs ($n = 6,761$) | 3,521 (52.1%) | 1,368 (20.2%) | 985 (14.6%) | 887 (13.1%) |
| Surveyed FPs ($n = 470$) | 269 (57.2%) | 71 (15.1%) | 66 (14.0%) | 64 (13.6%) |
| Total no. of endocrinologists ($n = 274$) | 142 | 75 | 35 | 22 |

FP = family physician; HMO = health maintenance organization.

Table 3. Characteristics of all FPs and of the subgroup that prefers managing, rather than referring to specialists, diabetic patients with HbA1c >9.0%

| | | Totals by category | | Do not refer to specialists | | P |
|-----------------------------------|---------------------|--------------------|------|-----------------------------|------|--------|
| | | No. | % | No. | % | |
| Factors of physicians and clinics | Total respondents | 470 | 100 | 202 | 43 | |
| FP background | Board certified | 260 | 57.0 | 164 | 63.0 | <0.001 |
| | Residents | 82 | 18.0 | 49 | 59.7 | |
| | Non-board certified | 114 | 25.0 | 44 | 38.6 | |
| Experience | ≤2 years | 48 | 10.7 | 16 | 33.3 | 0.09 |
| | 2–6 years | 67 | 14.9 | 30 | 44.7 | |
| | >6 years | 333 | 74.3 | 121 | 36.3 | |
| Location of clinic | Urban | 348 | 77.5 | 207 | 59.5 | 0.180 |
| | Rural | 101 | 22.5 | 36 | 35.6 | |
| Country of MD graduation | Israel | 238 | 51.9 | 114 | 47.9 | <0.001 |
| | Former USSR | 138 | 30.1 | 42 | 30.4 | |
| | Other | 82 | 17.9 | 34 | 41.4 | |
| HMO | HMO 1 | 274 | 59.8 | 135 | 49.2 | <0.001 |
| | HMO 2 | 68 | 14.8 | 17 | 25.0 | |
| | HMO 3 | 62 | 13.5 | 15 | 24.1 | |
| | HMO 4 | 61 | 13.3 | 14 | 22.9 | |
| Prevalence of diabetes in clinic | ≤5% | 112 | 24.8 | 40 | 35.7 | 0.204 |
| | 5–9% | 175 | 38.8 | 82 | 46.8 | |
| | >9% | 163 | 36.2 | 64 | 39.2 | |
| Age | ≤40 | 135 | 29.4 | 51 | 37.7 | 0.246 |
| | 40–59 | 269 | 58.6 | 102 | 34.4 | |
| | 60+ | 55 | 12.0 | 21 | 38.1 | |
| Sex | Male | 225 | 48.7 | 80 | 35.5 | 0.436 |
| | Female | 237 | 51.2 | 78 | 32.9 | |

Data were missing for some of the characteristics.

FP = family physicians; HMO = health maintenance organization.

countries. No other statistically significant differences were found in referral practice, according to the physician characteristics examined: sex, age, and years of professional experience; or according to characteristics of the clinics: location and prevalence of diabetes (Table 3). Forty-three percent of family physicians who reported a preference for managing their patients' diabetes stated that they refer patients with poor glycemic control (HbA1c >9%) to specialists, rather than managing the diabetes themselves.

Discussion

Overall, 90% of the family physicians who responded to the current survey expressed a general preference to manage the diabetes of their patients, while 43% stated that they manage the diabetes of patients with poor glucose control. Rates of referrals to diabetes specialists were shown to vary greatly among countries in Europe (6). The question as to whether diabetes is treated better in primary care or by specialists is frequently asked. A

number of studies reported that consultation with diabetes specialists improved the achievement of targets of diabetes control and cardiovascular risk, as well as the performance of tests important for diabetes management, such as foot examination, eye examination, HbA1c measurement, a lipid panel, and a urine microalbumin test (7–12). Others reported acceptable rates for the performance of such measures (13, 14) in the primary care setting. Still, challenges of insulin therapy, such as the optimal time of its initiation (15), appear most pronounced in the primary care setting (16). Diabetes specialists have been reported to initiate insulin treatment more frequently than family physicians, in response to elevated HbA1c, and to more often prescribe insulin monotherapy and insulin analogs (17). However, primary care physicians may provide greater quality healthcare, at the level of the whole person and population, and at lower costs (18).

Diabetic patients who are treated at endocrinology clinics in Israel tend to have more advanced disease than those treated at primary care clinics, as evidenced by

longer duration of diabetes and a higher proportion of insulin-treated patients (19). It appears that family physicians tend to refer diabetic patients who have an advanced stage of diabetes. As a result, treating these patients, as well as managing their glycemic control and comorbidities is more complex.

Poor glycemic control was the main reason for 77% of referrals to diabetes specialists 6 months following implementation of the Quality and Outcome Framework of General Medical Services in The United Kingdom, which provides financial rewards for achieving diabetes-related quality indicators (20). That rate was an increase from 54% before the intervention, with the mean HbA1c threshold for referral decreasing from 10.6 to 9.7%. Interestingly, no significant change was observed in the number of referrals to diabetes specialists during that period, other than in the reasons for referral. Also in the United States, diabetes specialists stated an inadequate level of HbA1c as the number one reason for referral to specialists of patients with diabetes by primary care providers (21). However, primary care providers in the same survey cited diabetes complications, difficulty with insulin therapy, and the use of advanced therapeutic options to be more prominent reasons for referral; only 37% cited inadequate HbA1c as a primary reason for referral (21). As in our population, family physicians in that survey reported a preference to treat patients with diabetes within the primary care setting; 68% reported referring less than 25% of their patients to diabetes specialists.

In the current study, HbA1c of 9% was the cutoff for poor glycemic control. According to the National Health and Nutrition Examination Survey (NHANES) 2005–2010, 12.5% of US adults with self-reported diabetes had HbA1c above this threshold (22). Among persons with diabetes insured by Clalit Health Services in Israel, the prevalence of HbA1c >9% decreased from 40 to 13% from 1995 to 2007 (23).

Significantly, 63% of the BCFP compared with 39% of non-BCFP responded that they themselves would manage the diabetes of patients with poor glycemic control rather than refer them to specialists. The observation presented in a previous report of the same population (24) that BCFP and their residents exhibited more knowledge about obesity practice than did non-BCFP may explain the difference between these groups in their tendencies to refer patients with poor glycemic control to specialists.

The higher interest among physicians affiliated with HMO 1, compared with other physicians, to manage the diabetes of patients with poor glycemic control within the primary care setting may be attributed to the multifaceted educational intervention for the promotion of diabetes treatment that was implemented in the primary care clinics of Clalit Health Services over the past two decades (25, 26). The intervention comprised adminis-

trative and quality components. A multi-disciplinary team, chaired by a primary care physician, and including a diabetologist, a dietician, a nurse, and a health educator were appointed in each district of Clalit Health Services. Diabetes coordinators were assigned to all primary care clinics. Updated professional information on diabetes was distributed to family physicians through the Internet and by means of CME programs. All family physicians were asked to provide information on all their patients with diabetes, to a nationwide diabetes registry. Data were collected and disseminated regarding the performance of diabetes quality indicators. The first few years of the intervention focused on increasing the rates of performance of diabetes quality indicators, while later years focused on increasing the rates of patients who achieved glucose targets. Twelve years following implementation of the intervention, increases were observed in the proportion of patients with diabetes who underwent annual HbA1c and other relevant tests, from 22% in 1995 to 88% in 2007; and in the proportion who reached targeted HbA1c levels ($\leq 7\%$), from 10 to 53%. Achievements in performance of diabetes indicators and in their results were better for Clalit Health Services than for Leumit Health Services; no intervention was implemented in the latter (25, 26).

In the Clalit Health Services intervention, the high performance of primary care clinics was acknowledged, although no rewards were granted to individual physicians. This contrasts with pay for performance systems, in which physicians receive financial rewards for the achievement of glucose control within a target range in a high proportion of patients. Differences in the availability of specialist care according to HMOs and geographical areas, and the ease in which patients may move from one general practitioner to another, may influence consulting patterns. In Israel there is no open access to diabetes specialists. This contrasts with the open access to medical specialists in countries such as Belgium and Croatia (6).

The generalizability of our findings is limited by the fact that the survey included only physicians who attended CME courses in Israel. This raises the possibility of selection bias, as more motivated family physicians may be expected to have attended the CME courses, and to have agreed to participate in the survey. Nevertheless, survey responders were representative of all family physicians who are CME attendees. Although respondents answered anonymously, an information bias is possible, as with all surveys.

This study did not assess actual referral patterns and the Israeli gatekeeper model does not fit all countries' practices. In Israel, there is no penalty or patient co-payment for referrals from primary care to specialists. Areas for further study are the investigation of the actual rates and reasons of referral of patients with diabetes to secondary care, as measured prospectively per patient;

and the knowledge and assistance required by family physicians to improve the care of patients with diabetes and the continuity of healthcare.

In conclusion, a higher level of professional experience and affiliation with a health organization that implemented an administrative and educational intervention were associated with a preference for primary care physicians to manage poorly controlled diabetes within the primary care setting. Maintaining updated knowledge among primary care physicians of advances and technologies in diabetes care may contribute to the decision-making process on the seam of primary and secondary care. Furthermore, a national clinical practice guideline for referrals from primary care to specialist clinics is needed.

Conflict of interest and funding

No funding was received for conducting the study, and the authors do not have any competing interests. The authors declare no conflict of interest and no financial or personal relationship with other people or organizations that could inappropriately influence this work.

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