CLINICAL & BASIC RESEARCH

Factors Affecting the Quality of Diabetic Care in Primary Care Settings in Oman
A qualitative study on patients' perspectives

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العوامل التي تؤثر على جودة الرعاية المقدمة لمرضى السكري في مجال الرعاية الصحية الأولية في عُمان

دراسة نوعية عن وجهة نظر المرضى

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الملخص: الهدف: إن لجودة الخدمات الطبية المقدمة للمرضى المصابين بداء السكري من النوع الثاني في الرعاية الصحية الأولية تأثير هام على صحة المريض على المدى البعيد. هذه الدراسة تهدف إلى معرفة آراء مرضى السكري من النوع الثاني عن العوامل التي تؤثر على جودة الخدمات المقدمة لهم في مجال الرعاية الصحية الأولية في سلطنة عُمان، الدولة النامية ذو المعدل العالي لانتشار داء السكري. الطريقة: تم إجراء مقابلات فردية لدى عينة ملائمة من 19 مريضا مشخصين بمرض السكري من النوع 2 تم اختيارهم من أربعة مراكز صحية من مراكز الرعاية الصحية الأولية في منطقة مسقط، عاصمة سلطنة عُمان. النتائج: حدد المشاركون العديد من العوامل التي قد تؤثر على جودة الرعاية المقدمة لمرضى السكري من النوع الثاني في مراكز الرعاية الصحية الأولية بما في ذلك إطالة مواعيد المتابعة، عدم تطبيق الرعاية المستمرة ، عدم توفر مواد تثقيفية لمرضى السكري في قاعة الانتظار، نقص عدد الممرضات العمانيات اللواتي يتكلمن لغة المرضى، عدم كفاية الشرح المقدم لمرضى السكري من أطباء الرعاية الصحية الأولية، ندرة التحويل إلى اختصاصيي التغذية في علاج المرضى، تأخر الحصول على النتائج المخبرية في الوقت المحدد، عدم كفاية الأدوية المقدمة لمرضى السكري لتغطية الفترة بين المواعيد وعدم الحصول على موعد قريب مع أطباء العيون. الخلاصة: نتائج هذه الدراسة حددت عدة عوامل من وجهة نظر مرضى السكري من النوع الثاني والتي قد تؤثر على جودة الخدمات المقدمة لهم في الرعاية الصحية الأولية في سلطنة عُمان. لذلك ينبغي على الأطباء العاملين في مجال الرعاية الصحية الأولية وصناع القرار في وزارة الصحة وغيرها من قطاعات الرعاية الصحية النظر في آراء المرضى وأخذها بعين الاعتبار لكي يتسنى تحسين جودة خدمات الرعاية الصحية المقدمة لمرضى السكري.

مفتاح الكلمات: الجودة، المقابلات، داء السكري– النوع الثاني، الرعاية الأولية، عُمان.

ABSTRACT: *Objectives:* The quality of services delivered to type 2 diabetic patients in primary health care has an important impact on long-term outcomes. The aim of this study is to explore diabetic patients' views of factors affecting quality of diabetic services delivered in primary care in Oman, a developing country with a high burden of diabetes. *Methods:* Semi-structured face to face interviews were conducted with 19 type 2 diabetic patients recruited from four selected primary healthcare centres (PHCs) in Muscat region, the capital city of Oman. A framework approach was used to analyse the qualitative data. *Results:* Participants identified several factors which could affect the quality of diabetic services provided in PHCs: delays in the follow-up process; lack of continuity of care; diabetes educational materials unavailable in waiting areas; shortage of Omani nurses able to speak the patients' language; inadequate explanations from the attending primary care physician (PCP); under involvement of dieticians in patient management; delays in provision of laboratory results; inadequate supplies of diabetic medication between appointments, and long waits to see ophthalmologists. *Conclusion:* Several factors were identified by diabetic patients that may influence the quality of diabetic services provided in the PHC setting in Oman. Health care professionals and decision makers in the Ministry of Health (MOH) and other health care sectors in Oman should consider patients' views and concerns in order to improve the quality of diabetic care services in primary health care.

Keywords: Quality; Interviews; Type 2 diabetes; Primary care; Oman

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ADVANCES IN KNOWLEDGE

1. *The quality of services provided to patients with type 2 diabetes in the primary care setting could affect the outcomes of care including long term diabetic complications.*

2. *Patients' views of the quality of diabetic services provided in primary care settings in developing counties, including Oman, remained a relatively unexplored research topic.*

APPLICATION TO PATIENT CARE

1. *Patients with type 2 diabetes identified several factors which could affect the quality of diabetic services provided in primary care settings in Oman, including: delays in the follow-up process, in provision of laboratory results, and in seeing ophthalmologists; lack of continuity of care; inadequacies in physician explanations and dieticians' involvement; undersupply of educational materials and diabetic medication, and shortage of Omani nurses able to speak the patients' language.*

2. *Health care professionals and policy makers in Oman should consider patients' views if they want to improve diabetic services and reduce long term diabetes related complications.*

D IABETES HAS BEEN CONSIDERED AS the greatest challenge in primary care[1] and primary care physicians (PCPs) play a major role in the care of diabetic patients.[2] Evidence showed that good diabetic control reduces the risk of cardiovascular and micro-vascular complications;[3] hence, the quality of care delivered to type 2 diabetic patients has an impact on the long term outcomes.[4] Nonetheless, the quality of care provided to diabetic patients in primary care in some developing countries appears to be suboptimal.[3]

Oman, a high income country with a total population of 3.2 million (2.0 million Omanis and 1.2 expatriates),[5] has experienced substantial socioeconomic development. This development has been accompanied by remarkable changes in lifestyle towards a "Westernised pattern"; this is reflected in changes in nutrition, less physical activity and thus an increased burden of diabetes, obesity, hypertension and hyperlipidemia.[6] Currently, Oman is among the top ten countries worldwide in terms of high prevalence of diabetes.[7] In a study published in 2006, the prevalence of diabetes (fasting blood glucose $\geq$ 7 mmol/l) in Muscat, the capital city of Oman, was 17.7% and in rural areas was 10.5%. Furthermore, the estimated death rate from diabetes in the year 2002 in Oman was 16.8 per 100,000 population.[8]

Despite the immense advances that have been made in the management and treatment of diabetes in recent years, many patients do not achieve optimal outcomes and continue to experience devastating complications that result in decreased length as well as quality of life. A cross-sectional observational study conducted in 2009 at six general health centres in Muscat showed that more than 70% of Omanis with type 2 diabetes obtained all their diabetic care service requirements at every visit; however, only 2.4 % of them achieved the indicators of good outcomes of diabetic care.[9]

Patients with type 2 diabetes often feel challenged by their disease and multiple personal, psychosocial factors influence their daily decisions which in turn could affect their diabetic metabolic state, long-term glycaemic control, and risk of developing long-term complications.[10] In addition, there are other factors at multiple levels that impede health care systems' ability to deliver high-quality diabetic services including provider-oriented factors (e.g. lack of knowledge about guidelines, lack of time with patients), and system-oriented factors (e.g. lack of specialty care services, lack of interdisciplinary team approaches, long patient waiting times for services).[11] Furthermore, some health care providers tend to view their own management strategy as scientifically legitimate and have focused on managing numbers rather than attempting to understand the patient's concept of their disease and their treatment goals. This could lead to frustration, unsatisfactory outcomes and serious obstacles in achieving the optimum outcomes.[12] Patient's views on the quality of primary health care are vital for better health care delivery. The aim of this study was, therefore, to explore diabetic patients' views of factors affecting the quality of diabetic services delivered in primary care in Oman, a developing country with high burden of diabetes.

Methods

The study was carried out in four public primary care health centres (PCHCs) in the Governorate of Muscat, the political and the economic hub of Oman. PCHCs in Muscat have specific days (1–2 per week) when they provide free diabetic care

services for patients with type 2 diabetes through special diabetic clinics. Usually, diabetic patients would have a regular follow-up every month or sometimes every two or three months depending on the progression of the disease and on outcomes. Patients are seen first by a diabetic nurse who checks their blood pressure, fasting blood sugar, weight, height and body mass index (BMI). Patients are then be seen by PCPs who might use specific guidelines in the management of diabetes.[13] Moreover, a dietician visits the health centre twice a week to offer advice on lifestyle modifications for referred patients.

In this study, a qualitative research approach was selected to collect data from patients. Qualitative enquiry helps in exploring areas where there is likely to be complexity and diversity of experiences and perspectives of patients with diabetes.[14] Therefore, we developed a topic guide for individual interviews using some of the available literature and our local experience.[15,16] The topic guide was piloted in the first two interviews to assess the comprehensibility of the language, the relevance and logical progression of the questions. All the patients were selected based on convenient sampling. Potential rich-informant patients were identified by their PCP and then invited by the research team to participate in the study.

Patients suffering from diabetes for less than two years were excluded from the study. The number of patients was based on the saturation of the data.[17] A quiet consultation room in the PCHC was selected for the interviews. The interviews were in Arabic language and each interview lasted 30 to 45 minutes. The interview was carried out by two researchers with one of them questioning the participant and other was observing as well as helping with logistical issues such as recording and taking notes. All the interviews were recorded and transcribed verbatim.

Using the interview guide, participants were asked and probed about their experiences and views of different aspects of diabetic care services provided in the diabetic clinic at their PCHC including: the effectiveness of appointment system; suitability of the waiting area; waiting time before consulting doctor; the role of nurses and doctors and nutritionists; the efficiency of laboratory test and pharmacy procedures, and the availability of diabetes health education. Also, they were asked

for their views on the services provided in the clinic including those of the laboratory, pharmacy and the dietician. The study was approved by the Research and Ethics Committee (REC) of the Ministry of Health (MOH). Prior to each individual interview, written informed consent was obtained from participants who agreed to participate in the study. The study was conducted between March and June 2010.

The framework approach, widely used for qualitative analysis, was employed to analyse data.[18] As the framework highlights the associations between participants' attitudes, perceptions and experiences, it fitted well with the aims of this study. Data analysis was conducted by the research team; findings emerging from the analysis were regularly discussed and refined as part of an ongoing interactive process. The final analysis and findings were mutually agreed by the research team. The recruitment of participants continued until data saturation was achieved.[17] Significant findings from patients' quotes were translated to English and translated back into Arabic by a blinded researcher.

Results

Nineteen patients, 11 males and eight females, were interviewed in the study. Their age ranged from 21 to 67 years with an average of 41 years. Ten patients were educated up to secondary level and the remaining had college and postgraduate education. Ten patients had had type 2 diabetes for 2–4 years; seven for 5–9 years and three had had suffered from it for more than 10 years. Two main themes emerged from the data analysis of the factors affecting quality of care from the patients' perspective. The first was communication and continuity of care with health care professionals; the second was the timely provision and convenient location of certain services.

THEME ONE: COMMUNICATION AND CONTINUITY OF CARE WITH HEALTH CARE PROFESSIONALS

In many health centres, there are still expatriate nurses from India and south Asia and they cannot communicate well with patients in their native Arabic language. Thus, some participants stated that they prefer the diabetic nurse to speak Arabic so that their problems could be understood. "She

(the diabetic nurse) greets me and takes care of me, but I prefer an Arabic speaking nurse, so I can understand her well" (Patient 7).

Participants commented that there was lack of detail explanation about the importance of life style modification on their health when consulting their PCPs. "The doctors advise me to exercise, but they do not tell me why it is important" (Patient 3).

Other participants felt unhappy because the attending PCP did not explain the results of the previous investigations and the actions that they should consider; thus, they had to remind the PCP to give them the results at every visit. "Doctors don't tell me about my results unless I remind them… and they take no action" (Patient 5).

Although participants appreciated the importance of seeing the dietician for the benefit of their health, some of them felt that PCPs did not refer them as expected. "It is necessary to see the dietician at least twice a year … I need to know more about my diet but I did not get any referral…" (Patient 1).

Participants highlighted the importance of continuity of care; they should be able to consult the same PCP when attending the clinic. Most of them preferred to be seen by the same PCP at every visit so that their problems could be understood; they also highlighted their unwillingness to repeat the same story when consulting with a different PCP. "I prefer to see the same doctor on every visit, so we can understand each other well …. I do not like to repeat my history on every visit" (Patient 6).

THEME TWO: PROVISION OF SERVICES AT THE RIGHT TIME AND PLACE

Participants expressed their discomfort regarding the intervals between visits to the diabetic clinic. They felt that their regular visits should be every month or maximum every two months and should not to be delayed because of difficulty in obtaining an early appointment. "Sometimes I need to take appointment within a month, but the nearest appointment is available only after 3 months" (Patient 7).

Other participants expressed their concern regarding the long waiting time to see the PCP in the diabetic clinic in the day of their appointment. "Sometimes, I go for my appointment on time, but, I have to wait for two hours until the doctor finishes with the patients who came before me …

I feel tired and bored" (Patient 9) Participants were dissatisfied because of the difficulty in obtaining early appointments with the ophthalmologist in the hospital, which is part of the annual diabetic review. "I have not seen the eye doctor for last 5 years … I am not reminding the doctor because I do not like to go to the hospital …. I will only get an appointment after months" (Patient 14).

Other participants commented that their medications finished before their next appointment. The regulations of the MOH prevent the PCP from prescribing drugs for more than one month. This is not enough to cover the patients' needs until next appointment in the diabetic clinic. "If my medicine finishes before my appointment, I have to see the walk-in doctor, if there is crowding I get bored and I leave …" (Patient 16).

Some participants were unhappy about the delay of their laboratory results report when coming for their follow-up as the majority of investigations are sent to the nearest hospitals and it can take several weeks to get the results. "They (doctors) asked me to come after two weeks for the results, but my results were not ready…" (Patient 2).

Therefore, some participants suggest that a copy of the laboratory results be sent by e-mail and tand that they are informed by a telephone based system (SMS) when their results are ready so that they can make appointments with their PCP accordingly. "I suggest if they can send a copy of the results through e-mail …. at least send an SMS when the results are ready" (Patient 8).

Some participants commented on the waiting area in the clinic. They prefer the male waiting area to be separate from the female waiting area so they feel more at ease. Other participants suggested that the patient waiting area for the diabetic clinic should be separated from the general patients waiting area. This would enable them to get the chance to share their experiences of diabetes with other diabetic patients while waiting to see the PCP. "I will feel more comfort if they separate the males from the females in the waiting area…"(Patient 10). "I like it if they separate the diabetic patients from the general clinic patients … so I can share my experience with other diabetic patients" (Patient 12).

Other participants suggested keeping some diabetic educational materials in the waiting area so they can utilise their time for something beneficial such as reading about diabetes while waiting to see

the PCP. "In the waiting area there are no pamphlets or health education materials about diabetes …. I would like to sit and read something that could benefit me …" (Patient 11).

Discussion

To our knowledge this is the first study conducted in Oman to explore the factors which influence the quality of diabetic care provided in the PHC setting from the perspective of type 2 diabetic patients. Several factors were identified which could affect the quality of diabetic care including delays in getting appointments; lack of proper utilisation of the waiting area for the purpose of health education; language barriers with diabetic nurses; inadequate provision of continuity of care; lack of sufficient clarification of disease related issues; delays in obtaining investigation results; long waits for ophthalmology appointments, inadequate supplies of prescribed medications to cover the time between appointments, and lack of referrals to dieticians.

Participants in some health centres found it difficult to communicate with the diabetic clinic nurses as they were expatriates and could not speak Arabic. Research from elsewhere found that language barriers can be a risk factor for adverse outcomes and quality of care in diabetes; nurses, on the other hand, perceived language barriers with their patients as an impediment to quality care delivery and as a source of workplace stress.[19-21] In the case of Oman, large numbers of expatriate nurses contribute to the health care workforce. Nonetheless, the overall Omanization rate (replacement of expatriate professionals by Omanis) in Minsitry of Health and other health care institutions in Oman has grown over the years; the percentage of Omani nurses in 2007 was 64% of total nurses compared to only 12% in the year 1990.[5] This Omanization of the health care workforce, which includes nurses, could help to overcome the language barriers in the future.

Participants emphasised the importance of continuity of care in diabetic clinics. Good continuity of care is associated with better outcomes and improves the quality of care among diabetes patients in primary health care, for example by reducing macrovascular complications and associated non-vascular comorbidity.[22] Indeed, continuity is highly valued and preferred by most diabetic patients and other patients with chronic diseases compared with acute or minor problems.[23,24] It has been found that maintaining continuity of care with the same health care provider improves the quality of life for diabetic patients and enhances the clinical management of the disease by improving the outcomes and decreasing diabetic related complications.[25]

Patients with diabetes should be able to consult the same physician frequently as this would increase their satisfaction, trust and confidence and hence they would be more likely to adhere to the doctor's recommendations, thus improving their outcomes and quality of life.[24,25] Also, as a result of continuity, the doctor would know the patient well and would be more likely to identify appropriate therapies and, thereby, also improve the outcomes.[26] However our patients identified significant lack of continuity which led to difficulties in building good patient-doctor relationships (e.g. familiarity, understanding, explanations). This could impede the provision of a good standard of care.[27]

Participants' also emphasised that the quality of their diabetic care could be affected by long waiting times either for getting their next appointment at the diabetic clinic at their health centre, or at specialty clinics such as the ophthalmology one in the hospital. Long appointment waiting times limit the opportunity for the early detection, evaluation and management of new diabetic problems leading to poor diabetic control, increased risk of complications and poor quality of life.[28] The availability of more PCPs to manage patients with diabetes in primary care on a regular basis was found to improve the process of diabetic care such as regular measurements of haemoglobin A1c, lipid profiles and retinal eye examinations which ultimately improve the outcomes.[29]

Participants highlighted the importance of utilising the waiting room for diabetes education and they also wanted to have group-based health education about diabetes and lifestyle modifications. Using waiting rooms for educational purposes has been shown to be effective for patient education.[30] Patient education has been found to be an important factor in patient adherence to therapy; educating diabetic patients about lifestyle changes is an important factor for good diabetic control.[31] Group-based study for diabetic patients has also been shown to be effective in improving patients'

knowledge and confidence about their diabetes.[32]

Although the emerging findings from the analysis were discussed and refined by the research team which increased the credibility of the study, we believe that similar studies should be repeated in other countries as diabetic patients' views and experiences might be different within the context of their national primary health care system setting. Furthermore, the sample of patients was homogenous selected by convenient sampling methodology, thus, they might not represent all diabetic users of PHCs in Oman.

Conclusion

This study is an attempt to explore diabetic patients' perceptions regarding the quality of health care services provided in primary care setting in Oman. Several recommendations emerged from this study relevant for the practice and policy of primary care organisation in order to improve diabetic care services and hence improve the quality of diabetic care. Waiting areas could be used to educate patients about their diabetes as the level of literacy in Oman is rising. Thus, providing patients with educational materials and leaflets highlighting important information about diabetes (complications, need for compliance with lifestyle changes and medication) might help increase patients' awareness and improve outcomes.

Another challenge for the quality of diabetes care in the PHC is the shortage of local specialised diabetic nurses. The MOH and other governmental education bodies in Oman should consider developing postgraduate programmes to train Omani nurses in the proper management of diabetes care. This would avoid communication problems and misunderstandings that may occur with patients which can increase chances of medical errors which could affect the quality of care.

According to the current prescribing policy in Oman, PCPs can write prescriptions and repeat prescriptions for chronic diseases such as diabetes for only one month. Patients sometimes travel from a long distance to their PCHC so it could be difficult for them to obtain medication every month and therefore they could run short of medication before their next diabetic appointment. The MOH should consider changing the current prescribing strategy by allowing PCPs to prescribe drugs for diabetics

for at least 3 months.

References

1. Spann SJ, Nutting PA, Galliher JM, Peterson KA, Pavlik VN, Dickinson LM, et al. Management of type 2 diabetes in the primary care setting: A practice-based research network study. Ann Fam Med 2006; 4:23–31.

2. Khunti K. Use of multiple methods to determine factors affecting quality of care of patients with diabetes. Fam Pract 1999; 16:489–94.

3. Alberti H, Boudriga N, Nabli M. "Damm sokkor": Factors associated with the quality of care of patients with diabetes: A study in primary care in Tunisia. Diabetes Care 2007; 30:2013–18.

4. Zgibor JC, Rao H, Wesche-Thobaben J, Gallagher N, McWilliams J, Korytkowski MT. Improving the quality of diabetes care in primary care practice. J Healthc Qual 2004; 26:14–21.

5. Ghosh B. Health workforce development planning in the Sultanate of Oman: A case study. Hum Resour Health 2009; 11:7–47.

6. Al-Lawati JA, Mohammed AJ, Al-Hinai HQ, Jousilahti P. Prevalence of the metabolic syndrome among Omani adults. Diabetes Care 2003; 26:1781–5.

7. International Diabetes Federation. Prevalence estimates of diabetes mellitus (DM), 2010. From: www.diabetesatlas.org/content/prevalence-estimates-diabetes-mellitus-dm-2010 Accessed: November 2010.

8. Al-Moosa S, Allin S, Jemiai N, Al-Lawati J, Mossialos E. Diabetes and urbanization in the Omani population: An analysis of national survey data. Popul Health Metr 2006; 24:4–5.

9. Al-Mandhari A, Al-Zakwani I, El Shafie O, Al-Shafaee M, Woodhouse N. Quality of diabetes care: A cross-sectional observational study in Oman. SQU Med J 2010; 9:32–6.

10. Funnell MM, Anderson RM. Empowerment and self-management of diabetes. Clin Diabetes 2004; 22:123–7.

11. Suwattee P, Lynch JC, Pendergrass ML. Quality of care for diabetic patients in a large urban public hospital. Diabetes Care 2003; 26:563–8.

12. Freeman J, Loewe R. Barriers to communication about diabetes mellitus. Patients' and physicians'

different view of the disease. J Fam Pract 2000; 49:507–512.

13. Ministry of Health, Oman. Diabetes Mellitus management guideline for primary health care, 2003. From: www.moh.gov.om/reports/DiabetesAfterCorrection1.pdf Accessed: November 2010.

14. Khunti K. Use of multiple methods to determine factors affecting quality of care of patients with diabetes. Fam Pract 1999; 16:489–94.

15. Nicolucci A, Greenfield S, Mattke S. Selecting indicators for the quality of diabetes care at the health systems level in OECD countries. Int J Qual Health Care 2006; 18:26–30.

16. Meulepas MA, Braspenning JC, De Grauw WJ, Lucas AE, Harms L, Akkermans RP, et al. Logistic support service improves processes and outcomes of diabetes care in general practice. Fam Pract 2007; 24:20–5.

17. Pope C, Ziebland S, Mays N. Analysing qualitative data. BMJ 2000; 320:114–6.

18. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess R, Eds. Analysing Qualitative Data. London: Routledge, 1994. Pp. 173–94.

19. Caraway LT. The impact of language barriers on the health care of Latinos in the United States: A review of the literature and guidelines for practice. J Midwifery Womens Health. 2002; 47:80–96.

20. Andrew B, Misty W, Myrna R, Anna R, Marietta B, Stephen LB, et al. Impact of language barrier on acute care medical professionals is dependent upon role. J Prof Nurs 2006; 22:355–8.

21. Brown AF, Gerzoff RB, Karter AJ, Gregg E, Safford M, Waitzfelder B, et al. Health behaviors and quality of care among Latinos with diabetes in managed care. Am J Public Health 2003; 93:1694–8.

22. Wändell PE. Quality of life of patients with diabetes mellitus. An overview of research in primary health care in the Nordic countries. Scand J Prim Health Care 2005; 23:68–74.

23. Overland J, Yue DK, Mira M. Continuity of care in diabetes: To whom does it matter? Diabetes Res Clin Pract 2001; 52:55–61.

24. Kearley KE, Freeman GK, Heath A. An exploration of the value of the personal doctor-patient relationship in general practice. Br J Gen Pract 2001; 51:712–8.

25. Hanninen J, Takala J, Keinanen-Kiukaanniemi S. Good continuity of care may improve quality of life in Type 2 diabetes. Diabetes Res Clin Pract 2001; 51:21–7.

26. O'Connor PJ, Desai J, Rush WA, Cherney LM, Solberg LI, Bishop DB. Is having a regular provider of diabetes care related to intensity of care and glycemic control? J Fam Pract 1998; 47:290–7.

27. Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: A critical review. Ann Fam Med 2005; 3:159–66.

28. Wang JS, Lin SY, Sheu WH, Lee IT, Tseng LN, Song YM. Effects of patient volume on quality of outpatient diabetes care. Diabetes Res Clin Pract 2009; 84:27–9.

29. Holmboe ES, Wang Y, Tate JP, Meehan TP. The effects of patient volume on the quality of diabetic care for medicare beneficiaries. Med Care 2006; 44:1073–7.

30. Brazier CW. Waiting room classes: Effective use of waiting time in a diabetes clinic. J Am Diet Assoc 1999; A107.

31. Van den Arend IJM, Stolk RP, Krans HMJ, Grobbee DE, Schrijvers AJP. Management of type 2 diabetes: A challenge for patient and physician. Patient Educ Couns 2000; 40:187–94.

32. Adriaan V, Frank S. Perspectives on education and counseling for diabetes patients. Patient Educ Couns 2004; 53:251–5.