AN AUDIT OF THE QUALITY OF CARE INDICATORS FOR THE MANAGEMENT OF DIABETES IN FAMILY PRACTICE CLINICS IN KARACHI, PAKISTAN

Raheem H. Dhanani, Mohammad Mustafa Qureshi, Ali Khan Khuwaja, Badar Sabir Ali, Riaz Qureshi

Department of Family Medicine, Aga Khan University, Karachi, Pakistan

Background: Management of diabetes is a painstaking and careful approach. This study was aimed to evaluate the quality of care for the management of diabetes provided by family practitioners to their patients having diabetes. This is a retrospective audit of medical records conducted in a tertiary care teaching hospital of private sector in Karachi for one month. **Methods:** For this study, 150 medical records of patients with type 2 diabetes that visited family practice clinics for their diabetes care were examined. A total of 88 patient's medical records were selected and analyzed who attended the studied clinics for at least one year and had minimum of four out-patient visits. Majority (68%) of the audited medical records were of females. **Results:** Of the total medical records analyzed, only one-quarter of the cases qualified the criteria of 'excellent' or 'good' diabetes care. Monitoring of body weight of the patient was only one indicator which was according the recommendations in 100% case at every visit. The other nearest quality of care indicator documented was blood glucose advice at every visit in 79.5% (95% CI: 71.1–87.9) of cases. Physical activity advised/reinforced at every visit was least observed (27.3%; 95% CI: 18.0–36.6). In addition, blood sugar control was reported in less than a quarter (23.9%) with 95% CI of 15.0–32.8. **Conclusion:** This work has identified a big gap in the management of type 2 diabetes provided by family practitioners. In addition, majority of the patients found to have poor glycemic control. Interventions are suggested to improve the quality of diabetes care. More such audits and research are recommended at the larger scale.

Key words: Diabetes; Management; Audit; Family Practice

INTRODUCTION

Diabetes mellitus has been described as a modern epidemic which is emerging rapidly in developing countries including Pakistan.[1,2] In the year 2000, there were 5 million people with diabetes mellitus in Pakistan and it is projected that by the year 2030, this number will rise to 14 million,[1] if no active interventions were made.

Diabetes is a chronic medical condition associated with large number of co-morbids and complications. Basit and colleagues reported concurrent hypertension, obesity and hypertriglyceridemia in majority of patients having diabetes[3] while microalbuminuria was reported among 34% of type 2 diabetic patients in Karachi, Pakistan.[4] Microvascular and macrovascular complications are also reported in substantially large number of patients with type 2 diabetes[5-7] which leads to poor quality of life, and premature morbidity and mortality. Globally, approximately 4 million deaths are attributed to diabetes every year[8] and in every 10 seconds, one person dies of diabetes related causes.[9] These poor and unwanted outcomes results in destitution and economic lose which not only affect to the suffering person and his/her family but also had poor impact on the community and the health system resources of the country at large. Ample evidence supports the fact that proper management of diabetes significantly reduces the risk of diabetes related complications and premature mortality. According to the UKPDS,[10] decrease of one percent of A1c reduces 37% risk of microvascular complications, 14% myocardial infarction, and 21% diabetes related deaths among persons with type 2 diabetes. Similarly, tight control of blood pressure significantly decreases the incidences of microvascular and macrovascular complications as well as deaths related to the diabetes.[11]

Diabetes Mellitus is a complex disease requiring comprehensive and extensive management on continuous basis. A number of international federations and associations developed and recommended standards and guidelines for diabetes care and management;[12,13] however, a large number of studies from different parts of the world had identified the poor adherence to these diabetes care and management guidelines.[14-16] In UK, compliance to the management guidelines documented, was well below the recommendations.[14] Similarly, in USA, only one half of the diabetic patients were provided education about their disease and 58% diabetic patients examined for their feet by health care providers.[16] Situation in Pakistan is even more disappointing where recently Khuwaja *et al*[16] reported overall poor quality of care provided to the people with type 2 diabetes attending out-patient clinics in Karachi. According to this report, only 68% of the study subjects were informed about the risk factors and complications of diabetes while base line serum cholesterol and electrocardiogram were not done in 57 and 58% of type 2 diabetic patients respectively.

Family practice is an integrated and comprehensive care provided to individuals and their families[17] in a wide range of conditions including chronic non-communicable diseases like diabetes mellitus. Over the past decade the focus of care for people with diabetes has shifted from hospital clinics

to family practice[18] and family practice is supposed as the first contact source of diabetes management.

Therefore, we conducted an audit to evaluate the quality of care for the management of diabetes provided by family practitioners to their patients having diabetes. Thus to identify the management gaps and to make the interventions accordingly, likewise, to develop specific evaluation and management flow sheets for patients with diabetes, updating and improving the knowledge and practices of family practitioners regarding the management of diabetes and allocation of manpower, material and other resources in this regards.

MATERIALS AND METHODS

This was a retrospective audit of medical records, conducted in a family practice set-up affiliated with a tertiary care teaching hospital of private sector in Karachi, Pakistan. The majority of the patients visiting this facility were residing in Karachi city but some proportion of the patients also belonged to other parts of the country.

A total of 150 medical records of the diabetic patients were scrutinized who visited the studied facility for their diabetes care during the last three months of audit. We identified and included 88 (59%) all cases in this audit that were attending the clinic for at least last one year, had type 2 diabetes and had minimum of four out-patient visits. We excluded those patient's files that were seen by doctors of other specialties/sub-specialties, hence we only included those patient's records which were attended by Family Physicians. Majority (68%) of the medical records included in the audit were of females.

We targeted the management criteria recommended by American Diabetes Association[12] for the care of patients with diabetes. The main outcome variables for this audit were 17 'Quality of Diabetes Care' (QDC) indicators which are given in the Table. For the data collection, an audit data sheet was developed which included the list of 17 QDC indicators and information about the sex of the patient. This data collection instrument was developed on the standards of medical care in diabetes recommended by American Diabetes Association.[12] All medical records were reviewed by audit investigators and were allotted points on the basis of identification of selected 17 indicators for the quality of diabetes cares. One point was awarded for each variable except blood sugar control, which was awarded 2 points. A mean score for each medical record was calculated according to the above criteria and was categorized against one of the four levels of quality care, which were previously used in other audits of diabetes care conducted in United Kingdom[19] and Saudi Arabia.[20] These four levels were categorized and marked as Excellent: 15 to 18 points, Good: 11 to 14 points, Fair: 7 to 10 points and Poor: 6 or less points.

For this study, being an audit of management practices for diabetes care by family practitioners, we took the ethical approvals from the Chairman–Department of Family Medicine and Physician–In-Charge of Family Practice clinics affiliated with the studied hospital.

All the extracted information from medical records was entered in the audit sheet and the proportion and percentages with 95% CI of quality of care indicators were calculated by using the Statistical Package for Social Sciences (SPSS) version 14.

RESULTS

The mean score for the care provided by the family physicians to their patients with diabetes was calculated to be 8.41. Pie chart represents the proportion of different levels of categories for diabetes care offered in the studied clinics. Only 3.5% of medical records were met the criteria of 'excellent' and 21.7% were of 'good'. The remaining 74.8% were either plotted in 'fair' or 'poor' category.

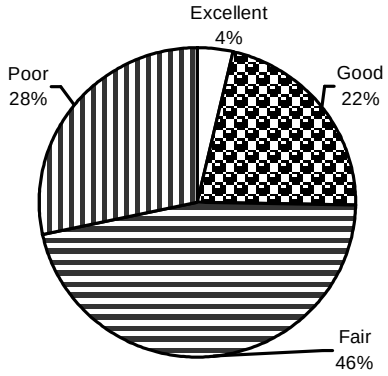

Figure-1: Proportion of different levels of categorize for diabetes care provided by family practitioners

Quality of care indicators noted from the medical records of the people with diabetes is presented in table. Only, weight of the patient was recorded as suggested by international guidelines. In 79.5% (95% CI: 71.1–87.9) of cases, blood glucose monitoring was advised at every visit and in 55.7% (95% CI: 45.3–66.1) of cases, urinalysis was suggested at least once in a year. About three quarter of medical records had documentation of blood pressure measurement and appropriate pharmacological advice given. Fundoscopic and foot examination was performed in well below the standards recommended. Similarly, dietary and physical activity advice was reported in 37.5% (95% CI: 27.4–47.6) and 27.3% (95% CI: 18.0–36.6) of the medical records respectively. Blood sugar control was recorded in less than one-quarter (23.9%) of the studied records.

Table-1: Quality of care indicators documented from the studied medical records of patients with diabetes

Indicators	No. (%) N=88	(95% CI)
New symptoms recorded (at every visit)	41 (46.4)	(36.0–56.8)
Weight recorded (at every visit)	88 (100)	---
Blood pressure recorded (at every visit)	67 (76.1)	(67.2–85.0)
Visual acuity recorded/advised (at least once in a year)	11 (12.5)	(5.6–19.4)
Fundoscopic examination performed (at least once in a year)	17 (19.3)	(11.1–27.5)
Detailed foot examination performed (at every once in a year)	28 (31.8)	(22.1–41.5)
Peripheral pulses checked (at least once in a year)	29 (33.0)	(23.2–42.8)
Peripheral sensations checked (at least once in a year)	52 (59.1)	(48.8–69.4)
Tendon reflexes checked (at least once in a year)	42 (47.8)	(37.4–58.2)
Urinalysis advised (at least once in a year)	49 (55.7)	(45.3–66.1)
Blood Glucose advised (at every visit)	70 (79.5)	(71.1–87.9)
Serum creatinine advised (at least once in a year)	43 (48.9)	(38.5–59.3)
Total cholesterol advised (at least once in a year)	41 (46.6)	(36.2–57.0)
Diet advised/ reinforced (at every visit)	33 (37.5)	(27.4–47.6)
Physical activity advised/reinforced (at every visit)	24 (27.3)	(18.0–36.6)
Appropriate pharmacological advised (at every visit)	63 (71.6)	(62.2–81.0)
Blood sugar controlled	21 (23.9)	(15.0–32.8)

DISCUSSION

The management of diabetes mellitus is supposed to be a challenge for patients as well as for health care providers; mainly because of its chronic and complex nature and associated co-morbids, and large number of macrovascular and microvascular complications. High cost of diabetes care may be one of the reasons for the poor diabetes management particularly in resource constrains country like ours. However, better control of diabetes could significantly reduce the development of these complications, thereby reducing premature morbidity and mortality and also the health care costs associated with the disease.

In this audit we identified the poor quality of care that was provided to the people with diabetes mellitus by family physicians in Karachi, Pakistan. Only weight of the patients was recorded in all cases as recommended. There was considerably high recording rate for blood pressure monitoring and pharmacological advice at every visit. This is probably due to the fact that in studied clinics both of these parameters are mainly looked after by supporting staff like nurse and pharmacist and both of these indicators are not directly related to the cost to the patient (in terms of money) and to the treating physician (in terms of time).

Given that the early detection of retinopathy and its prompt treatment among people with diabetes mellitus reduces the negative impact on eyesight, the examination for visually acuity and fundoscopy was very disappointing in this audit. Microalbumiuria is a predictor of advanced nephropathy as well as a risk indicator for cardiovascular mortality among diabetic patients.[12] Ahmedani *et al*, in a multi-centre study reported of having microalbuminuria among 34% of diabetic patients which was significantly associated with microvascular as well as macrovascular complications.[4] In spite of the importance for urinalysis, it was advised in only 56% of patients in this study. All the laboratory tests such as serum cholesterol were also showed moderate levels recording. Foot and peripheral pulses were examined well below the standards set in this audit. This infrequent foot examination was reposted by other researchers as well,[5,16] which may increase the risk of diabetic foot; hence amputations and disabilities.

Healthy diet and physical activity plays a key role in the control of glycemic levels as well as the management of other metabolic parameters among patients with diabetes.[11,12] Literature revealed that the healthy lifestyle modification advice significantly improve the diabetes outcomes.[21,22] The results of these two items in this audit were rather unsatisfactory, only 37.5% and 27.3% for dietary and physical activity advice reported respectively.

The positive impact of good glycemic control for the prevention of diabetes related complications and all cause-mortality among diabetic patients is clearly demonstrated.[10,11,23] However, there are many studies from different parts of the world[14,24,25] reporting poor glycemic controls in majority diabetic patients. Researchers from Karachi[3] reported of having hyperglycemia in 88% of type 2 diabetics. In our report also, this important indicator was not controlled in over three–forth of the studied files.

Having certain limitations, the interpretation of the results of this audit should be generalized with caution. Firstly this audit was done in a single facility of private sector and secondly being a retrospective file audit, some variables and information were missing. Thirdly, the sample size reviewed for this audit is of limited number and belongs only to the patients with type 2 diabetes. Having the non-availability of any recently developed and/or revised diabetes management guidelines at local as well as regional level, we used American guidelines for quality of care standards as gold standard which may not be truly applicable in our local scenario.

On the basis of the results of this audit we suggest that family practitioner should be educated appropriately about adequate management of diabetes mellitus, early detection and prompt treatment of complications as well as patient's counseling. Family practitioners should provide sufficient time to every person suffering from diabetes, not only to prescribe drugs but also to provide patient education. There is a need to formulate the local standards of care and clinical practice guidelines for the management of diabetes that are easily affordable and available to the

health care providers and more appropriate and suitable for our part of the world.

This assessment highlights the need for a separate flow sheet for diabetic patients in which all these items can be recorded properly and regularly in their medical files records. It will have multiple advantages as it will not only provide a constant and regular care to all patients equally but will also guide the physician in how to manage the patient and will keep them aware of all the important things to note. In addition, this will facilitate the achievement of our management goal, and also be very useful tool in performing different stages of audit cycle in future. This study has also highlighted the benefits of continuing audit of patients with diabetes. It is obviously a feasible and a very useful method of promoting and helping to achieve the management goals of a good quality care in a family practice setting.

CONCLUSION

This audit has shown that the quality of care provided by family physicians to their patient's having diabetes was well below the standards recommended for the care of this diseases. A large number of patients were not educated about the diabetes and were not screened for long-term complications as suggested and only a small proportion of patients were asked for routine/base-line laboratory tests. In addition, over three-quarter of the patients had not achieved their glycemic control as recommended levels. It is pertinent to educate and update the family physicians about the standards of care for diabetes and the importance of its implications. There is also a need to conduct this type of audits and research work at larger scale to identify the gaps and reasons for the provision of poor quality of diabetes care.

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Address for Correspondence:

Dr. Raheem H. Dhanani, Assistant Professor, Department of Family Medicine, Aga Khan University, Stadium Road, Karachi-74800. Tel: +92-21-4864873

Email: raheem.dhanani@aku.edu