Diabetes care : Is it adequate? -An audit of Diabetes care in a hospital

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Summary

An audit of diabetes care was done in a hospital to assess its effectiveness. The results revealed that diabetic patients received less than adequate care. Only 9% of the patients achieved good glycaemic control; 39% had hypertriglyceridemia and 65% had undesirable weight gain while on treatment. The average duration of diabetes in this group of young diabetic patients under study was only 4.5 years, yet 12% of them had evidence of diabetic retinopathy. Few patients possessed adequate knowledge and skills of diabetes self-care. No patients could draw up and mix insulin adequately. Only one patient could self-inject insulin correctly. Few understood the nature of hypoglycaemia, hence few took adequate precaution against it. Patients had frequent hypoglycaemia; 61% had at least one episode per week and 56% of the diabetic drivers admitted to occurrence of hypoglycaemia while driving. No patient understood the principle of diabetic diet therapy, nor did they carry out regular home-monitoring of their diabetes. Good diabetes care requires organisation with supportive patient education. The less than adequate standard of care achieved by the hospital under study is probably explained by the absence of both.

Key Words: Audit, diabetes care, patient education.

Introduction

Diabetes is common in Malaysia. Most diabetics are cared for either in hospital clinics or by general practitioners. However, little is known concerning the quality of management of diabetes. An audit of diabetes care was done in a hospital to assess the effectiveness of the service.

Methods

Thirty-three diabetic patients on treatment at the hospital Outpatient Department were assessed. All patients selected for this study were under 40 years of age to ensure minimal level of literacy and ease of communication.

Assessment was carried out by three doctors and two nurses who had undergone a period of training in diabetes care. Assessment followed a structured protocol. It included collection of basic socio-demographic data, a structured interview, a practical assessment where patients demonstrated their ability at performing skills required in diabetes self-care, medical history taking, physical examination, and urine and blood tests.

Care performance indicators and patient's knowledge and skill assessed, as well as the pre-defined standard of adequate care, or ability for each area assessed, were as follows:

(1) **Glycaemic control:** Adequate control is the mean value of last five tests of fasting blood glucose between 3.3 - 5.6 mmol/l, and 2 hour post-prandial blood glucose of less than or equal to
10 mmol/l.

(2) **Blood lipid:** Hospital laboratory normal range for serum triglyceride is 0 - < 1.7 mmol/l and serum cholesterol is 3.62 - 6.21 mmol/l.

(3) **Weight and height at diagnosis and at assessment:** Obesity is defined as percent desirable weight (PDW) equal to or greater than 120%.[1] PDW less than 100% is considered underweight and PDW greater than 100% and less than 120% is considered within normal weight limit.

(4) **Long term complications of diabetes:** Retinopathy, neuropathy, ischemic heart disease, cerebrovascular disease and diabetic nephropathy.

(5) **Drawing up and mixing insulin:** Patient's performance was judged to be adequate if the patient followed this procedure:
- invert vial a few times.
- wipe top.
- inject air into vial.
- able to deal with bubble.
- sequence of drawing up and mixing insulin.

(6) **Injection technique:** This was judged to be adequate if the patient followed this procedure:
- stretch or pinch skin.
- perpendicular insertion of needle.
- full length needle insertion.

(7) **Patient's understanding of hypoglycaemia:** An adequate understanding is defined as an awareness that lowering of blood sugar can occur while patient is on treatment and this can give rise to various symptoms. And an appreciation of the causal relation of 'hypo' with excessive insulin, missed or delayed meals.

(8) **Frequency of hypoglycaemia and occurrence of serious hypoglycaemia (unconscious):**

(9) **Precaution and action taken against hypoglycaemia:** Precaution against 'hypo' occurrence is adequate if the patient regularly carries sugar with him and has informed people around him (family or colleagues) about the possibility of him having 'hypo'.
Action taken against 'hypo' when it occurs is adequate if the patient knows he should take something sweet quickly.

(10) **For diabetic driver on insulin therapy:** Precaution against 'hypo' is adequate if he keeps some sugar in his car and knows the danger of driving if he had missed or was late for a meal.
-Incidence of 'hypo' while driving and previous involvement in an accident as a result of 'hypo'.

(11)**Dietary advice for diabetic:**
- list of food to avoid.

- advice on carbohydrate intake.
- understanding of principle of diet therapy: this is judged to be adequate if patient understands the importance of spreading of food intake and the relation between diet and insulin injection.

(12) **Home monitoring of diabetes:**
- choice of test.
- understand the need to perform test regularly. (Four times per day for at least 1 day per week).
- understand significance of test results.

(13) **Intercurrent illness management:** Awareness of need to continue insulin.

(14) **Precaution during exercise:** Awareness of need to take a small snack before exercise.

(15) **Travelling:** awareness of need to continue insulin injection.
- took precaution by carrying with them an identification card.

Results

Table 1 summarises the results of various care-performance indicators. Few patients achieved good control of their diabetes. Many had hypertriglyceridemia; many had undesirable weight gain or even became obese, while on treatment for diabetes. However, only four patients had evidence of diabetic retinopathy. No patients had evidence of nephropathy, neuropathy and macrovascular diseases. This was not surprising given that the average duration of diabetes for this group of patients under study was only 4 1/2 years (range 2 - 6 years).

Table 2 summarises some of the results of patients' ability, skill and knowledge of diabetes self-care. Most patients fared badly. No patient could draw up or mix insulin correctly and only one patient was able to self-inject correctly.

Table 1 Results of various Diabetes care performance indicators.

Indicators:	**Number of Patients** Total number assessed (%)	
Good glycaemic control	3/33	(9 %)
Hypertriglyceridemia	11/28	(39%)
Hypercholesterolemia	3/28	(11%)
Undesirable weight gain	17/26	(65%)
Long term complications:		
- retinopathy	4/33	(12%)
- nephropathy	0/33	(0%)
- neuropathy	0/33	(0%)
- macrovascular diseases	0/33	(0%)

Patients understanding of 'hypo' was poor. Frequency of 'hypo' was high; 87% (27/31) of patients had an occasional 'hypo' and 61% (19/31) had an episode at least once per week. Few patients took adequate precaution against hypo, and the action taken by some patients was potentially dangerous like taking a nap, having a rest, or taking 'Pandadol'. Few drivers took adequate precaution. Not surprisingly, 56% admitted to occurrence of 'hypo' while driving, though only two patients admitted to having been involved in an accident as a result of 'hypo'. None of the patients informed their motor insurance company or the Road Transport Department about their diabetes.

All patients correctly identified the type of food they should avoid. However, 97% (31/32) also identified 'sweet' fruits (e.g. papaya) as food to be avoided; 94% (30/32) of the patients claimed that they had been advised to consume less carbohydrate. Eighty-eight per cent (28/32) claimed they had been advised that bread was a better source of carbohydrate than rice for diabetics though only 9% of patients completely avoided rice in their diet.

Most patients (83%) chose the urinary Benedict's test for home monitoring. Only 4 patients (14%) understood the significance of test results and attempted to adjust the dosage of theirinsulin in relation to the results.

Table 2 : Results of patient's ability, skill and knowledge of Diabetes self-care

Area assessed	no. achieving adequate skill or giving correct response total no. assessed (%)	
Drawing up insulin	0/26	(0%)
Mixing insulin	0/11	(0%)
Injection technique	1/26	(4%)
Understanding of Hypo	4/31	(13%)
Precaution against Hypo	4/27	(15%)
Action against Hypo	19/27	(70%)
Precaution against Hypo for driver	6/16	(37%)
Understanding principle of diet therapy	0/32	(0%)
Perform home monitoring test regularly	0/32	(0%)
Continue insulin injection when ill	20/26	(77%)
Continue insulin injection when travelling	14/20	(70%)
Carry identification card	2/20	(10%)
Precaution during exercise	4/16	(25%)

Discussion

The findings from this study highlight that diabetic patients received less than perfect care. Few patients achieved good control and many were hypertriglyceridemic. Hardly any patient was able to master some of the basic skills required in diabetes self-care. They had frequent hypoglycaemia, and yet did not take appropriate action and precaution against it. More often than not, they were uninformed and even misinformed.

Adequate diabetes care is important. There is high mortality and morbidity due to diabetes. However, this can be reduced if adequate metabolic control is achieved to prevent long term complications of diabetes.[2]

Diabetes care needs to be formally organised to achieve an adequate standard of care. Clinical audit has confirmed this.[3,4] Further, patient's education is a crucial integral part of organised diabetes care. Examination of patients' knowledge about their diabetes has revealed major deficiencies.[5,6] Studies have confirmed the importance of knowledge in diabetes care[7] and education may even abolish the need for amputation for neuropathic ulceration of the foot in elderly patients[8]. The patients in this study came from a hospital where diabetes care was not formally organised nor was there supporting patient's education, which probably explained the poor standard of care achieved.

In conclusion, clinical audit of medical practice is useful in providing insight into management practice and for identifying major area of deficiencies. This audit has revealed management and educational deficiencies in the care of diabetic patients.

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