

SPECIAL ARTICLE**THE ROLE OF THE DIABETES SPECIALIST TEAM IN THE MODERN MANAGEMENT OF DIABETES MELLITUS: A CALL FOR ITS IMPLEMENTATION IN GHANA****Yorke E**

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Summary

Many chronic illnesses require patient-centred care where behavioural change aimed at dealing and coping with the socio-psychological as well as the physical impact of the disease is emphasized.

Diabetes presents such a challenge especially in the developing world where both human and material resources are limited in dealing with this complex disease. Most centres in Ghana and Africa in general, rely on overburdened practitioners who have responsibilities to other acute and chronic illnesses in addition to diabetes care.

The Diabetes Specialist Team (DST) has become a tool in overcoming these complexities to improve care and outcomes. They work in a team with specialised and sometimes overlapping skills. Core members include Consultant physician diabetologists, specialist diabetes nurses, podiatrists, dieticians and clinical psychologists.

The positive impact of DST is noticed in the aspects of diabetes preventive services, early diagnosis, patient education, medication use, risk factor and complication identification and management, together with in-patient care and management of special groups.

Recognising that the needs of persons living with diabetes are under served, coupled with the fact that developing countries are expected to experience the greatest burden in terms of numbers and complications of diabetes, more resources are needed to reverse these expected grim statistics. Efforts should be made to develop and deploy DST as much as possible to provide specialised and dedicated services in the routine management of diabetes at least at the district or municipal health level. Resources are needed to maintain and snowball the impact of this approach.

Key Words: *Diabetes mellitus, diabetes specialist team, multi-disciplinary, outcomes*

Introduction

‘The greatest improvement in the productive powers of labour, and the greatest part of skill, dexterity, and judgment with which it is anywhere directed, or applied, seem to have been the effects of the division of labour’. (Adam Smith, 1776)”.

Medical practice traditionally, especially in Africa, has been set up in a way to deal mainly with acute problems and does not adequately cater for the demands and needs of persons with chronic illnesses. In the care of individuals with chronic illnesses, behavioural change aimed at dealing and coping with the socio-psychological as well as the physical impact

of the disease is key ¹. In recent years, multidisciplinary approach to deliver chronic care has been emphasized where the individual care components are integrated into a structured care model to achieve the desired impact ¹. Diabetes is a multi-faceted illness and therefore requires a multi-disciplinary care approach to achieve the desired results ^{1,2}.

The core components of diabetes care identified by Diabetes UK ‘Task and Finish’ Group include diabetes preventive services, early diagnosis, patient education, medication use, risk factor and complication identification and management, together with in-patient care and management of special groups ². They assert that these can best be delivered by specialised team of diabetes care givers ².

The situation is even more paramount for us in Africa because of the fact that not only is diabetes care rudimentary and underdeveloped, but the number of

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persons also living with diabetes is going to experience the largest increases in the next decade with its attendant morbidity and mortality³. The underdeveloped nature of diabetes care in Ghana and sub-Saharan Africa was demonstrated by Amoah et al in 1999, when they assessed and surveyed five regional hospitals in southern Ghana for facilities and resources for diabetes care⁴. They found out that only Korle Bu Teaching Hospital had a running diabetes clinic which also had serving diabetologists. Interestingly, none of the five facilities had a trained diabetes educator or chiropodist and only two facilities had an eye specialist or trained dietician. Laboratory facilities and basic care equipment were woefully inadequate, and at that time none of the facilities had on-going chronic haemodialysis service⁴. This assessment brought to the fore the unsatisfactory nature of both human and material resources in chronic diabetes care. It emphasized the urgent need for training healthcare personnel and provision of the needed equipment and support services to provide a comprehensive diabetes care model.

Following from the results of the above survey and assessment, a national diabetes care and education programme was developed through international collaboration of medical schools, industry financiers and government health care institutions⁵. They adopted a 'top-down' approach where diabetes teams were trained consisting of physicians, dieticians and nurse educators at two teaching hospitals. They in turn trained teams consisting of physicians, dieticians or diet therapy nurses, nurse educators and pharmacists at regional and sub-regional levels to offer care and education to patients and the community. After three years of the programme, trained diabetes health care teams, diabetes services and diabetes registers were available in all regional and about 63% of sub-regional health facilities⁵ and had greatly reduced travelling distances for patients seeking diabetes care. Unfortunately, such interventions were not sustained and many of the teams have been disbanded.

Components and benefits of DST care approach

The need for a DST in the management of diabetes is highly encouraged so as to overcome some of the shortcomings of conventional management which include poor adherence to diabetes management guidelines, inadequate time for consultation, complexity of care, inadequate education of the patient, lack of confidence on the part of care givers, and inadequate follow up of patients⁶.

It noteworthy that the results of the Diabetes and Complications Clinical Trial (DCCT), United Kingdom Prospective Diabetes Study (UKPDS) and the Steno-2 and their -follow up studies, have all demonstrated the benefit of intensive treatment compared with conventional therapy on the overall glycaemic control⁷⁻¹¹. These studies also demonstrated that early aggressive therapy produces lasting effects in terms of microvascular and macrovascular complications rendering such interventions cost effective. Significantly, the intensive treatment was achieved through the use of multidisciplinary diabetes care employing the DST to achieve targets⁷⁻¹¹.

Key members of the Diabetes Specialist Team (DST) include Consultant physician/ diabetologists, specialist diabetes nurses, podiatrists, dieticians and clinical psychologists². Furthermore, there may be the involvement of ophthalmology, nephrology, specialist pregnancy diabetes teams, and maturity onset diabetes of the young (MODY) services².

Patient Education & Integration of Care

Diabetes related micro and macrovascular complications confer an increased morbidity and risk of premature death but this can be reduced with lifestyle intervention which is the cornerstone in diabetes care¹². Though, patients find it difficult to comply with and sustain these interventions¹³, both lifestyle interventions and other aspects of diabetes management can be greatly improved by attending a structured diabetes education program, and this is highly recommended¹⁴⁻¹⁶.

The diabetes education and self-management program for on-going and newly diagnosed intervention for people with type 2 diabetes (DESMOND) and Dose Adjustment for Normal Eating (DAFNE) for type 1 patients are examples of structured education programmes available to diabetes patients in the United Kingdom (UK)^{17,18} which are delivered by accredited educators and have been found to improve outcomes. Unfortunately, such structured education programmes are unavailable in most parts of Africa including Ghana. Glasgow RE¹⁹ suggests that patient education may improve self-management and compliance to therapy and also motivate patients to implement lifestyle changes with regards to diet, smoking habits and physical exercise. This is important to achieve better diabetes control and to delay or prevent the development of complications. Aside structured education, a process of systematic and regular review of patients together has been shown to improve the management of diabetes²⁰. This can be

achieved by a central computerized tracking system or by nurses who regularly contact patients²⁰.

Whilst diabetes can be managed mainly at the primary care level, very often both secondary and tertiary care are needed especially when treatment become more complex and complications develop^{14,20}. It is therefore important that guidelines on diabetes management, teaching and training should be integrated and such inter linkages be made clear and simple at all levels of care^{14,16, 20}. It is the hope of the author that DSTs be at least established in each district or municipal hospital.

Diabetes Physician/Consultant or Diabetologist

These are normally Consultant physicians with specialist training and accreditation in diabetes and they have the responsibility of providing specialist consultations and are generally seen as the leader of the DST. Among other things, they provide consultancy advise to other colleagues in other specialty units and clinics, training of other members and support staff of the DST, leadership and strategic planning, research and coordination as well as support of all staff in the provision of the highest service standards possible, provision of support to self-help groups and ensuring the proper inter linkages, referrals and continuity of care^{2,21}. Due to the commitments of most diabetologists to the practice of endocrinology and other general medical duties and the differing strengths of the other members of the DST and support staff as well as work load differences, the frequency of visits and contact time of the diabetes consultants vary from centre to centre and locality²¹. In Africa, unfortunately the number of diabetologists and endocrinologists are few and may further compound this situation³. Non-consultant medical staff, depending on their availability and workload can and should be trained to assist the diabetes consultants in service provision, training, research and supervision²¹. At the district level and centres without consultants, the team could be led by the non-consultant medical staff.

Diabetes Specialist Nurse

These are key personnel in the DST who anchor the whole diabetes management programme and must have undergone a specialist training course²¹. Diabetes nurses serve as educators and counsellors, monitoring and motivating patients to be compliant with their medications and lifestyle modifications. They serve to provide initial and ongoing education and advice to both patients and carers and by so doing help patients to get adapted to their disease and develop efficient

skills in self-care²¹. Both in the clinic and community setting, diabetes nurses associate with dieticians to deliver a range of interventions and help in the attainment of clinically significant improvement in blood glucose control, blood pressure and lipid profile, aimed at decreasing morbidity and mortality. In certain centres diabetes nurses with other support staff provide home visits as part of a comprehensive health care package²¹. Through a systematic review process of patient data and records, diabetes nurses may take steps to reduce the number of patients who default and get lost to follow up, an approach that helps to reduce diabetes related complications^{21,22}.

Diabetes specialised nurses can offer motivational interview to patients who lack treatment compliance. A pilot study reported that screening for psychological problems and mental derangement by diabetes nurses, with a subsequent psycho-educational and motivational intervention, resulted in a positive outcome²³.

Specialist Dietician

Dieticians who provide specialist services must be certified after some training in diabetes, and it is recommended that all newly diagnosed diabetics and their carers should be encouraged to see them within four weeks of diagnosis²¹. Dieticians have a constructive effect on the health of patients with diabetes, encouraging an appropriate diet-related behaviour. Such behaviour is accompanied with an improvement of blood glucose control, having an impact in reducing the risk of diabetes complications²⁴. The importance of healthy eating, sufficient physical activity and attainment of a positive self-esteem has been supported by dieticians, as the three main steps to attaining a healthy weight²⁵. Dieticians help patients attain a healthy body weight by modifying their nutrient intake and by so doing help prevent the development of chronic complications of diabetes²⁶. They are responsible for informing diabetes patients about the nutritional composition of food. They also recommend the daily caloric intake but at the same time, help patients in maintaining blood glucose, lipid, and lipoprotein profiles within normal values^{24, 26}. They employ a flexible approach in food selection, adhering to patients' preferences and traditions, with the aim to provide an optimal quality of life²⁷.

Foot care services / Podiatrist service

The podiatrist is concerned with the maintenance of foot health to prevent complications, by providing patient education and expert care. Every newly diagnosed patient with diabetes should have a

screening foot examination by a specialist podiatrist, and this should be repeated, at least once annually^{21, 28}. All patients with category 2 and 3 risk classification based after a comprehensive foot examination should be seen by the podiatrist every 1-3 months to avoid or delay the complications of diabetes²⁸.

The multidisciplinary team approach to foot care improves screening and considerably decreases amputation rate^{28,29}. The role of the podiatrist involve preventing and treating diabetic foot ulcers, which are associated with a high risk of mortality³⁰. They improve the awareness and ensure the delivery of an appropriate management in diabetic peripheral neuropathy, limiting any unnecessary morbidity³¹. As part of a larger foot care service, joint multidisciplinary foot care services are encouraged to reduce duplication of visits²¹. Notwithstanding, in many parts of Africa including Ghana, there are very few podiatrists, if any. In their absence, nurses and other medical staff may be trained to provide basic foot care education and examination. In the larger scheme of things, general surgeons with interest in foot care, vascular surgeons and interventionists may be consulted for both diagnostic and restorative care.

Clinical Psychologist

Access to psychology services should be made available to the patients and carers around the time of diagnosis and anytime during the course of their treatment, and ideally, they should be part of the core DST team²¹. Psychological services are particularly useful when patients are newly diagnosed, those who are in transition from adolescent to adult care, those experiencing psychological barriers like fear of needles, issues of non-compliance especially in adolescents, factitious hypoglycaemia as well as anxiety or depression related issues²¹. The work of the psychologist may include serving as a liaison between diabetes and mental health services, education, training as well as research²¹.

Monitoring and discussing psychological wellbeing are extremely important. Distress in diabetes could occur secondary to patient's concerns about disease evolution, lack of support, emotional burden and access to care which if not managed could undermine the attainment of positive outcomes in diabetes management^{21, 23, 32, 33}. It is associated with a higher risk of diabetic complications, poor control of Hb1Ac, functional impairment and increased risk of mortality^{21,23,32,33}. All patients with distress secondary to diabetes should be ideally referred to a psychologist for management^{21,32}. Social stigma deters a high

proportion of patients to engage with psychological services^{21, 23,32}.

Screening for depression is critical and valid tools for screening have been developed and are best done in a clinical setting. Some of these screening tools include the Beck Depression Inventory (BDI)³⁴ and the Patient Health Questionnaire-9 (PHQ-9)³⁵. Once identified, treatment with psychotherapy, self-management or pharmacotherapy improves depressive symptoms and distress³⁶. In the absence of a qualified psychologists, diabetes educators could be trained to offer such motivational and support services. They must however be empowered to recognise their limitations and to know when to refer patients to see a qualified psychologist.

Other Specialist Services

Specialist Diabetic Pregnancy Service

Multidisciplinary team approach is key in achieving good pregnancy outcomes³⁷. It involves the specialist diabetes midwife and an obstetrician ensuring timely delivery, according to the underlying maternal and foetal condition^{21, 22, 37}. In addition, they provide pre-pregnancy counselling and help to optimize blood glucose before conception, check on medications and advice on smoking and alcohol cessation^{21, 22, 37}. They assist in maintaining normoglycaemia throughout pregnancy and labour²¹. The paediatrician handles complications arising as a result of diabetic pregnancy³⁷. The diabetes educator advises on blood glucose monitoring, diet, different types of insulin injections and exercise. A dietician helps to plan a diet, tailored to the patient needs and calorie requirement^{21, 22, 37}. The service of an eye specialist is essential in monitoring for any diabetes retinopathy, which may worsen in pregnancy^{21,22,37}. Due to the diversity of the members needed to set up such a team, this team approach to pregnancy may only be possible at the secondary and tertiary levels.

Nephrology Service

Patients with diabetes are essentially managed in primary care. A screening programme for early detection of nephropathy and eventual end-stage renal failure (ESRF) is vital³⁸. The American Diabetes Association³⁹ recommends that yearly urine micro albumin estimation should done five after diagnosis in type 1 diabetes and immediately after diagnosis in type 2 diabetes. All T1DM and T2DM patients with progressive renal insufficiency or serum creatinine >150µmol/l should be referred to a nephrologist for assessment and continued shared management (update

reference)⁴⁰. Also, the Canadian Diabetes Association recommends the referral to nephrologists when estimated glomerular filtration rate (eGFR) <30 ml/min/1.73m² or earlier if albumin creatinine ratio (ACR) is persistently >60mg/mol, or if the individual is unable to achieve blood pressure targets or remain on reno-protective therapies due to adverse effects⁴¹. Methods to prevent and reduce the progression of nephropathy include tight glucose control (glycated haemoglobin < 7%), blood pressure control <140/80 mmhg, the use of angiotensin conversion enzyme inhibitors and angiotensin receptor blockers receptors as well as the avoidance of nephrotoxic drugs³⁹. Patient education and counselling is essential^{39,41}. The screening and monitoring could be provided by all grades of medical doctors including general practitioners but must recognise when to refer to nephrologist as discussed above.

Ophthalmic services

It is essential that both human and material resources are mobilised to provide comprehensive and a well-structured eye service for diabetes patients^{21,39}. Local protocols should be developed for screening and management of diabetic eye provided²¹. The ADA recommends yearly eye screening in diabetes but in type 1 this should be done within five years³⁹. The screening could be done by ophthalmic nurses. Once retinopathy is identified, this screening should be done by an optometrist or ophthalmologist, but the frequency should be increased when retinopathy is progressive or life threatening. Support for the visually handicapped should also be provided³⁹. Tight glucose and to some extent blood pressure control slows the progression of retinopathy³⁹.

In-patient Diabetes Services

The basic structure of the inpatient diabetes team comprises of a consultant specialist in diabetes and at least one diabetes inpatient specialist nurse. They must have access to the other members of the DST when needed. The multidisciplinary in-patient team helps to set standards, plan pathways, train and support the delivery of personalized care both on medical and non-medical wards.

Hospitals should provide specialist diabetes inpatient teams to deliver high-quality cost-effective care, so as to reduce hospital stay and to provide effective patient centred care and outcomes^{2,21}. At the primary level, general practitioners could lead this service.

Others

Other specialised services may include genetic testing for maturity onset diabetes of the young (MODY) which is an autosomal dominant condition and can occur at any age⁴². Consider genetic testing for MODY in the absence of obesity, in all non-ketotic diabetes patients independent of age; If obese and non-ketotic, then consider it in young and middle-aged patients⁴². Others services include specialised and adolescent diabetes care and also care of the elderly with diabetes^{2,21}.

Conclusion and Policy Redirection

Diabetes mellitus is a chronic multifaceted disease with high morbidity and mortality. It requires a multi-targeted approach to achieve targets to prevent and reduce macrovascular and microvascular complications and also sustain such benefits in the long term⁷⁻¹¹. The complexities of diabetes care require that such intensive approaches could be achieved by a good organised care delivery system using the DST which ensures specialisation of the individual component care givers with a lot of inter linkages^(1,2). Indeed, in all of this, patient empowerment is central^{2,21}. Unfortunately, in Africa, both the specialist personnel and organisation hardly exist.

The ministry of health and the Ghana Health Service (GHS) must vigorously encourage the setting up the of DST across the whole country to provide focused care to a complex disease. At the minimum, the team could comprise of a general practitioner with some further training in diabetes, a diabetes nurse, a diabetes educator, a registered dietician and an ophthalmic nurse. They must work towards laid down protocols with linkages to specialist services at secondary and tertiary centres. Effort and resources must be committed to maintain its impact in the long term, whilst ensuring that members of the DST have the highest level of human care and empathy.

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