Review Article

Methodology and feasibility of a structured education program for diabetes education in India: The National Diabetes Educator Program

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ABSTRACT

India has over 62 million people with diabetes. Unfortunately, there are no trained diabetes educators in India although many are self-taught through experience. The National Diabetes Educator Program (NDEP) was initiated with the primary aim to educate and train diabetes educators in India. The first cycle of NDEP was conducted during the period June 2011 to March 2012 in 96 training centers in India and trained 1032 diabetes educators mainly drawn from various diabetes clinics across the country. Structured modules were taught by diabetologists/endocrinologists or experienced educators. A majority of the trainees attended all sessions and 95% of the trainees acknowledged that the program met its objective and was beneficial to them. This article elaborates the methodology of the program and its evaluation based on feedback received from the participants and trainers.

Key words: Diabetes, diabetes educator, India

Introduction

Diabetes is a chronic condition that requires individuals diagnosed with the disorder develop and maintain a complex care routine at home. They are expected to incorporate lifestyle changes, primarily related to diet and physical activity, to keep glycemic levels under control, slow the progression of the disease, and reduce the likelihood of developing acute and chronic complications of diabetes. They are also expected to be proficient in self-monitoring of blood glucose (SMBG) and in adjusting doses of antidiabetic drugs primarily insulin doses. Self-injection of insulin also has to be taught. Failure to follow appropriate self-care regimes with the consequent poor metabolic regulation can lead to development of acute complications, such as hypoglycemia or ketoacidosis or chronic complications leading to blindness, amputations, renal failure, or heart attacks.[1]

India is already home to 62.4 million people with diabetes[2] and it is estimated by the International Diabetes Federation (IDF), Diabetes Atlas, 5th Edition that over 101 million people will have diabetes in India by the year 2030.[3]

Being a chronic disease, diabetes requires adequate infrastructure and support service and a team care approach to care. The lack of a proper support systems, due to non-availability of trained paramedical personnel, and absence of appropriate health care insurance schemes for diabetes are some of the challenges of diabetes health care in India.[4,5]

Diabetes self-management education (DSME) has long been considered to be an important part of the clinical management of diabetes in the west. Indeed, DSME is now

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considered as the cornerstone of treatment for all people with diabetes. There is a growing need to develop an effective educational program to enable patients to adequately deal with the complexities of living with a chronic condition like diabetes.[6] Indeed, India with its overwhelming number of individuals with diabetes has an urgent need for developing a cadre of diabetes educators as available in the west.[7,8]

Certification of a diabetes educator (CDE) ensures a standardized level of knowledge, skills, and experience related to the disease of diabetes and diabetes education, which can positively influence delivery of health care to people with diabetes.[9]

In western countries, diabetes educators have been playing a significant role for several decades.[10] The presence of such qualified diabetes educators are currently lacking in India. Earlier studies have shown that Indians have less knowledge about diabetes, regard the disease less seriously, and have little understanding of the relationship between control and complications.[11,12] The need for training qualified diabetes educators to serve the ever increasing number of patients with diabetes in India is thus obvious.[13]

Both medical and paramedical personnel can be trained to be diabetes educators, through well-designed guidelines based and well-implemented education programs with certification and accreditation. However, given the fact that doctors have limited time at their disposal, training of nonmedical personnel as diabetes educators would make sense. These diabetes educators can offer tremendous support to diabetic patients by helping the physicians/diabetologists train patients in the long-term self-management of this chronic condition. This article describes an ambitious National Diabetes Educator Program (NDEP), specifically designed to create a cadre of diabetes educators in India.

National Diabetes Educator Program

Program objective

The NDEP was developed with the objective of creating professional diabetes educators in India. Eligible individuals primarily staff currently assisting practicing physicians but without any formal training in diabetes education were included in the program. This approach was adopted in order to ensure that all those trained would be automatically employed without having to look out for a job. It was felt that if the first set of individuals were gradually employed, they would become spokesperson for subsequent batches being trained.

The educational course was designed to enable educators to provide a complete perspective of the disease condition, the importance of self-care, blood glucose monitoring, diet, physical activity, self-injection of insulin, medication adherence, and the long-term benefits of compliance and a basic awareness of the various complications of diabetes. One of the objectives of this educational program was also to improve communication skills so that they could help create awareness and also help improve compliance of people with diabetes therapy resulting in better management of their condition.

Challenges in setting up a NDEP

As a multilingual country with diverse culture and varied socio-economic structure, India offers a huge challenge for an initiative of this nature. India has a vast population that speaks over 20 different major languages apart from hundreds of dialects. Furthermore, the literacy rate is relatively low in India in many parts of the country compared to many developed countries.[14] Therefore, providing diabetes education and designing appropriate teaching material in a large number of languages is a challenge.

Comprehending and meeting the needs of a vast array of different dietary habits was another key issue to be considered while designing a uniform structure for the program. Different cultures have different attitudes toward illness in general and diabetes in particular. This also had to be addressed to make the program culturally sensitive and appropriate.

Ideally, designing the content of the program should be simple, realistic, and easy to comprehend, so that the language and cultural barriers can be overcome. The NDEP was specifically designed to overcome many of these barriers and offer a uniform and well-structured format which could be implemented easily in a cost-effective manner. Medically trained trainers were used wherever possible to overcome this issue.[10]

Program design

The first cycle of the NDEP was planned between June 2011 and March 2012. NDEP was jointly rolled out under the auspices of the Indian Association of Diabetes Educators (IADE) and Dr Mohan's Diabetes Education Academy (DMDEA), a unit of Dr. Mohan's Specialties Centre, Chennai, India which is an IDF Center for Education.

Participants

Participants with a graduate degree (a Bachelor degree in science, pharmacy, nursing, or nutrition) were selected. Those working with a practicing physician or a diabetologist, and who were willing to attend all the 10 modules were enrolled in the program. The program was conducted

across 78 cities in 96 training centers each headed by a diabetologist across India. A total of 1032 trainees were enrolled in the first batch of the program during June 2011 to March 2012. With the total of 28 states and 3 union territories of India, we had participants from 18 states.

There were a total of 10 learning modules on diabetes care. The topics covered including behavioral changes, pathophysiology and diagnosis, risk factors, medication, insulin, monitoring, diet, exercise, diabetes neuropathy and foot care, retinopathy, kidney disease, cardiovascular disease, and newer advances such as continuous glucose monitoring system (CGMS) and insulin pump. The titles of the modules are listed in Table 1.

The entire spread over was 40 hours, 4 hours on a fixed Sunday of every month for 10 months. Each group consists of 10-12 people and was led by a diabetologist of that region who was a recognized leader in the region who was also sensitive to the local cultural needs of that region and spoke the local language.

The understanding of the subject by the trainees was evaluated during training modules through multiple choice questions (MCQs), role play, home assignments, and one to one sessions with the trainer.

Monitoring and evaluation of the program

The evaluation of the success of the program was based on the feedback received from both the participants and the trainers. The evaluation process was devised in a manner that was acceptable and friendly, in addition to providing a feedback with suggestions from participants to improve the modules.

Qualitative outcome analysis

Every trainer was contacted by an NDEP Coordinator and the following information was obtained: Attendance, participation of trainees in question and answer sessions, completion of pre- and post-test questionnaires, and the home assignments.

Table 1: Training method and modules

Method	Discussion
Module 1	Behavioral change
Module 2	Pathophysiology and diagnosis
Module 3	Medication, insulin and glucose monitoring
Module 4	Diet for diabetes
Module 5	Exercise and diabetes mellitus
Module 6	Acute complications for diabetes
Module 7	Diabetic neuropathy and foot care
Module 8	Retinopathy and kidney disease
Module 9	Cardiovascular disease and CV risk factor
Module 10	Newer advances: CGMS, pumps, pattern management

CGMS: Continuous glucose monitoring system

The course coordinator also obtained the feedback from the trainees on their understanding of the modules and collected their suggestions. They also provided feedback regarding the trainer.

The monitoring and general evaluation was done over telephone while the objective evaluation was done through a structured written questionnaire to evaluate the trainees as well as trainers.

Results

Trainee feedback

Assessment of the feedback revealed that there was significant knowledge gain in all participants at the end of the program. The participants felt motivated to attend the training sessions as they gained new knowledge could directly apply the program content in their jobs. They also felt that materials provided in the training were helpful. Home assignments were viewed as being useful. Upon completion of the training program, the participants believed they could adapt the program knowledge to their own clinics and communities. They also felt more confident to conduct awareness program on diabetes prevention and control.

Figure 1 shows that overall 91% of trainees attended all sessions and 93% received all the training materials provided. 95% of trainees stated that the modules met their objectives and 92% of trainees said they understand the material and course content [Figure 1].

Regarding feedback on the practical cases, 14% said they were excellent, 43% reported they were very good, 29% rated them good, and 14% stated that it needed improvement [Figure 2].

Feedback on the role play sessions showed that 29% of trainees rated them as excellent, 43% participants reported these as very good or good, and 29% stated that there was scope for improvement [Figure 3].

All participants completed the pre and post MCQs. 99% of trainees completed the home assignments and 98% of them participated in the interactive session [Figure 4].

Discussion

Diabetes educators could play a vital role in coaching patients to manage their disease well, thereby reducing their risk of developing diabetes-related complications or need for hospitalizations. Diabetes educators use interpersonal and communication skills to develop a therapeutic

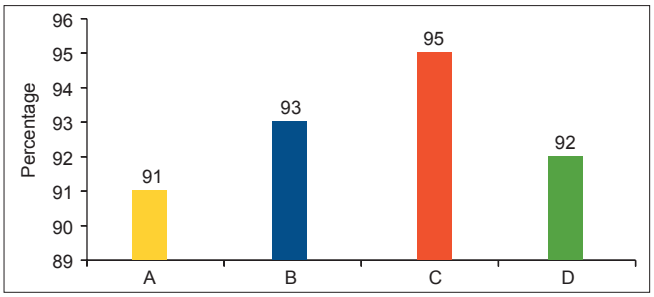

Figure 1: Trainee feedback: A = Did you attend the session; B = Did you receive all the material; C = Did the modules meet their objective; D = Was the quality and content of the material provided appropriate for your understanding

Figure 3: Feedback on role play

alliance with patients and to translate complex medical and physiological information into practical, tailor-made patient-centered diabetes management plans and programs. In developed nations, a special cadre of diabetes educators provides the vital link between the physicians and the patient. Unfortunately, such a cadre of diabetes educators is virtually nonexistent in India. Socioeconomic, educational, cultural, and language barriers pose a significant challenge in the implementation of an effective program.[15]

Diabetes education is a dynamic and ever changing field and diabetes educators need to respond to these changes in practice. The role of diabetes educator is therefore crucial in the disease management process.

In this preliminary initiative to create diabetes educators in India, it was gratifying to note that participant responses were generally very positive to this program. The participants appreciated how much they felt they learned and how meaningful the program had been for them. This project was truly a learning experience for all concerned and has changed the way DSME can be done in India.

This initiative has also identified some obstacles and some opportunities in introducing a national level education program for the first time. As the course was primarily taught in English (e.g., all slides were in English), some found this as a barrier. Some women found it a challenge to take 10 Sundays off to attend the course and there

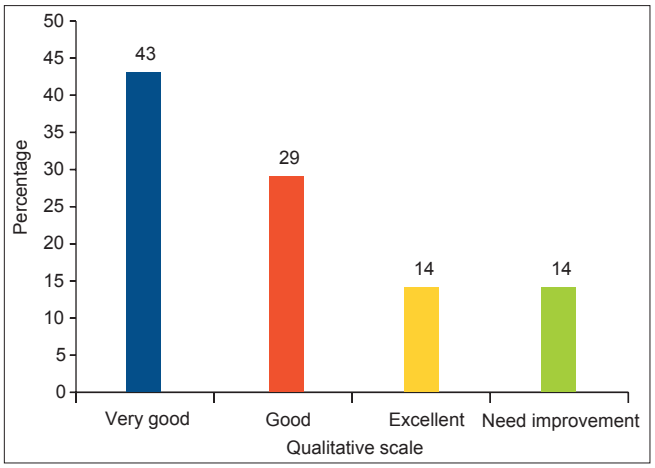

Figure 2: Feedback on practical cases

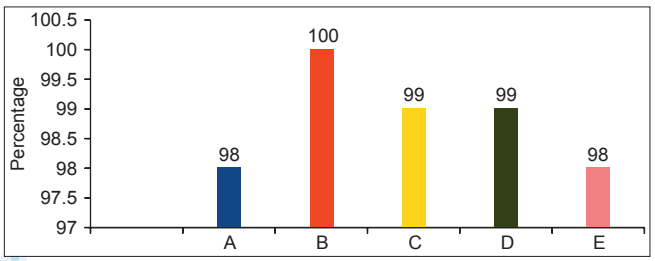

Figure 4: Trainer's feedback: A = Was the participation of trainees interactive; B = Were the pre-post MCQ's completed; C = How assignment completed by trainee; D = Was the experience good or satisfactory; E = Was the educational material of good standard and quality

were requests for online course. The current training program was feasible, enjoyable, and improved diabetes knowledge to a great extent. Evaluation indicated their positive responses to the approach, culturally relevance, and applicability to diabetes prevention in their communities.

The trainers, in turn were evaluated by the participants. This is the first diabetes educator program in India where an evaluation component was also incorporated.

On the part of the patient, seeking assistance from diabetes educators may demand a paradigm shift from habitual consulting patterns. However, given the time constraints of doctors, the role of the diabetes educators is likely to become a part of effective strategies for health prevention and promotion particularly to the hard-to-reach populations in our country such as the rural areas. However, implementation of this newer approach in real life clinical practice and the overall impact on patients with diabetes need further evaluation.[16] An increase in educator involvement in patient counseling therapy may further lead to patient satisfaction.

Conclusions

The National Diabetes Educator Program (NDEP) is

the first systematically structured qualitative education program for diabetes educators in India. Within a span of a year, over 1000 diabetes educators have been trained through a network of 96 diabetologists and physicians. The diabetes educators benefited by receiving practical guidance, skills, and knowledge required for counseling of their patients with diabetes. Specifically, participants gained new knowledge, increased confidence, and improved attitude toward diabetes care. The participants acknowledged that they had learned new skills which they would be able to use with their patients. They gained competence and confidence, and now had sufficient resources to applying their knowledge to the diabetic population which attends their clinics. The newly qualified diabetes educators were advised to conduct follow-up assessments of their patients to determine the effectiveness of their education program and we hope that future studies will collect objective information on the outcomes with the diabetes center after introduction of the NDEP in India.

One of the limitations of the program is that we have not evaluated the impact of the program on improvement in patient compliance or objective measures such as improvement in HbA1c or lipid levels. We plan to do this in the next phase of the program.

Acknowledgment

We acknowledge the contribution of all our diabetologists and trainers (names listed in Appendix 1) in making this initiative a success.

Appendix 1

Dr. Brij Mohan Makkar	Delhi
Dr. Rajesh K. Marya	Delhi
Dr. Rajeev Chawla	Delhi
Dr. Dinesh Aggarwal	Meerut
Dr. N. K. Soni	Ghaziabad
Dr. S. K. Sharma	Jaipur
Dr. Anand S. Menawat	Jodhpur
Dr. G. D. Ramchandani	Kota
Dr. Punit Mittal	Chandigarh
Dr. Karamveer Goel	Ludhaiana
Dr. Rishi K. Arya	Jalandhar
Dr. Vishal Mehra	Ambala
Dr. J. K. Bhutani	Karnal
Dr. Rakesh Arora	Patiala
Dr. Narsingh Verma	Lucknow
Dr. Vishal Chopra	Kanpur
Dr. K. K. Vishwani	Agra
Dr. Sanjay Mohan Pandey	Varanasi
Dr. Mahim Mittal	Gorakhpur
Dr. Subodh Jain	Allahabad
Dr. Subhash Kumar	Patna
Dr. Bimal Chandra Jha	Muzaffarpur
Dr. G. S Patar	Ranchi
Dr. Ram Kumar	Jamshedpur
Dr. S. K. Pathak	Dhanbad
Dr. Sunil R. Dube	Mumbai
Dr. Sanjay P Khare	Navi Mumbai
Dr. Milind Thanekar	Dadar
Dr. Sanjay Godbole	Vile Parle
Dr. Rajiv S Tungare	Vileparle/Borivali
Dr. Mangesh Tiwaskar	Vileparle/Borivali
Dr. V. H. Kriplani	Kolhapur
Dr. Rufino Monteiro	Goa
Dr. Ravindra Kiwalkar	Pune
Dr. K. P. Runwal	Pune
Dr. Mulay Sachin S.	Solhapur
Dr. Chitale Manoj Sharadrao	Nashik
Dr. Archana Sarda	Aurangabad
Dr. Santosh H. Malpani	Nanded
Dr. Sunil Gupta	Nagpur
Dr. Banshi Saboo	Ahmedabad
Dr. Prakash Kurmi	Mehsana
Dr. Vinod K. Abhichandani	Ahmedabad
Dr Arvindlyer	Baroda
Dr. Piyush Desai	Surat
Dr. Birju Shantilal Mori	Rajkot
Dr. Ajay Gupta	Indore
Dr. Navneet Agrawal	Gwailor
Dr. Vipin Porwal	Indore
Dr. Sanjeev Gulati	Bhopal
Dr. Rajesh Gupta	Raipur
Dr. Sanjay Nema	Jabalpur
Dr. Sambhu Nath Mukherjee	Kolkata
Dr. Mary D'cruz	Kolkata
Dr. Debasish Banerjee	Midnapur
Dr. Siddhartha Mukherjee	Asansol
Dr. Arvind Ojha	Asansol
Dr. Anal Deb Basu	Burdwan
Dr. S.R. Jana	Midnapor
Dr. Santosh Adhikary	Guwahati
Dr. N.V. Ram Mohan	Chennai
Dr. V. Kalaivanan	Chennai
Dr. Saroja Raghavan	Chennai
Dr. G. Karthekeyan	Chennai
Dr. C. Balaji	Chennai
Dr. Manakavala Perumal	Nagercoil
Dr. V. Sivakumar	Madurai
Dr. P. K. Siva	Tirunelveli
Dr. S. Krishna Kumar	Chennai
Dr. A. Moorti	Coimbatore
Dr. Sabesan Swaminathan	Tanjaore
Dr. V. Balamurughan	Trichy
Dr. R. Gopinath	Trichy
Dr. Sayed Nazaraullah	Bangalore
Dr. H. S. Ravindra	Bangalore
Dr. Imtiaz Pasha	Tumkur
Dr. M. S. Basavaraj	Mysore
Dr. Vinaya Swami P. M	Davangere
Dr. Sandhya Kulkarni	Hubli
Dr. R. R. Walvekar	Belgaum
Dr. A. Vinaya Shekar	Hyderabad
Dr. P. Raghu Ramulu	Warrangal
Dr. S. Uday Shankar	Guntur
Dr. Srikanth Ganti Eswar	Vijaywada
Dr. K.A.V. Subrahmanyam	Vizag
Dr. Jayanta K. Panda	Cuttack
Dr. U. K. Khadenga	Bhubneshwar
Dr. Jihs George	Ernakulam
Dr. Riju Khader	Kottayam
Dr. Jiju Kandrassery	Trichur
Dr. G.Vijaya Kumar	Tiruvalla
Dr. P. V. Ajith Kumar	Trivandrum
Dr. P. Hussein	Calicut
Dr. T. K. Shabeer	Cannannore
Dr. Mohan Das	Palakkad
Dr. N. M. Arun	Palakkad

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