

Impact of self-care education and continuous reassessment by a physician on HbA1C level in uncontrolled diabetic patients in primary health care institutions, Al Dhahira governorate, Sultanate of Oman.

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Abstract:

Background:

As patients with diabetes are at high risk of cardiovascular complications, disease management by blood sugar control is very important.

For effective management of the disease and to control blood sugar levels in diabetes patients, they should be involved in their care by identifying their needs and accordingly setting the treatment plan: attending educational sessions with a dietitian, health educator, nurses, and pharmacists or for reassessment and medication modification with the physician. Diabetes management requires the subject to replace his biological frame of reference with active self-control strategies that imply the coordinated regulation of insulin administration, oral antidiabetic drugs, physical exercise, and compliance with the recommended diet; that is, the diabetes self-management presupposes mastery of a considerable amount of information and technical skills.

Objective: This study aimed to find out the impact of self-care education and continuous reassessment by a physician on HbA1C levels in uncontrolled diabetic patients in primary health care institutions.

Sampling: Uncontrolled diabetes patients (1319) were randomly selected during their follow-up visits to the primary health institution.

Data collection: Each patient was interviewed individually by the health care providers to identify his/her need/s. According to the interview outcomes, health care providers set a treatment plan along with the patient. Patients are provided with educational or clinical interventions and then to be followed up every 3 months for evaluation. The data were analyzed by Microsoft Excel Worksheet.

Results: The results of this study are in line with those of other studies. HbA1c reductions were mostly due to change in patients' life style modification and increased awareness about diet management and knowledge about medications (storing, timing, correct doses and medication administration method), which represented 52% of the improvement. The 48% of the improvement was due to treatment modification by physicians. In addition, patients can keep track of their own blood glucose levels, which allows them to be always aware of their blood sugar levels and take steps to lower or stabilize them at a safe level, such as cutting back on their daily carbohydrate intake. There was a link between lower HA1C levels and better personal control of blood sugar levels, it was found.

Following interventional education, one of the biggest barriers to people with diabetes changing their behavior was not being able to check their own blood sugar levels.

Conclusions: Patients with diabetes must take care of themselves during the whole time they have the disease. It is good to raise awareness and change attitudes about diabetes, which is called self-care. This will help people improve their diet and diabetes management. People with diabetes and high blood sugar levels can use self-control to keep them in check. The American Diabetes Association says that people who have diabetes need educational, behavioral, psychological, and therapeutic interventions to help them keep their self-control. Besides drug therapy, these strategies want to find the right and effective ways to improve chronic diseases. These methods are mostly based on lifestyle changes and are meant to be used in addition to drug therapy.

Keywords: Self-care education, uncontrolled diabetics, HbA1C, shared-decision making, glycemic control, guideline adherence.

Introduction:

Changes in human lifestyle and food and the expansion of urbanization have resulted in a rise in the prevalence of chronic illnesses throughout time. Chronic illnesses place a heavy strain on society. In underdeveloped nations, there is a major danger to public health. Diabetes, on the other hand, is a chronic condition that has had a significant impact on public health around the globe. Individuals' perceptions regarding adherence to proposals to change dietary practices and lifestyle are clearly processed with idiosyncratic dynamics and alterations according to ethnic origin, cultural and social context, as well as individual experiences of living with a chronic illness. It has been shown in numerous studies that there is great difficulty in finding a balance between the pattern in family feeding practices and the diet adopted by the subject. Studies also show that the understanding of how positive the treatment can be and the consequent adherence to the proposals for change vary according to the time of living with the disease. As well as cohabitation with chronicity, individuals adapt to dynamic decision-making cycles, assess the risks of each period, and enhance their balance, that is, decisions that involve adherence to prescribed diets or practices. Day-to-day food

can have a sense of control, balance, and mastery, with a greater or lesser degree of benefit (Lutes et al., 2018).

As part of patient's care, diabetes patients should figure out what they need and set up a treatment plan that meets those needs. They should go to educational sessions with dietitians, health educators, nurses, and pharmacists, or meet with their doctor for a reassessment and medication changes. If one wants to control the diabetes, he'll need a lot of knowledge and skills. One should know how to administer insulin, take oral antidiabetic drugs, do some physical exercise, and follow the doctor's advice about what to do with the food. This study aimed to find out the impact of self-care education and continuous reassessment by a physician on HbA1C levels in uncontrolled diabetic patients in primary health care institutions.

Literature review:

A number of microvascular and macrovascular problems are connected with diabetes, and these consequences are associated with life-threatening illnesses and a poor quality of life in diabetic patients. The risk of developing cardiovascular disease and nephropathy in diabetics is 20 times greater than in the general population. Many of the acute and chronic consequences of diabetes, particularly those associated with type 2 diabetes, may be delayed by maintaining good blood sugar management. Maintaining proper blood sugar and hemoglobin levels is important in preventing the delayed effects of diabetes; on the other hand, neglecting one's own health is related to an increase in the disease's difficulties (Ahrari et al., 2021)

Unhealthy lifestyles and consuming unhealthy food increase the prevalence of chronic diseases like diabetes. Diabetes is associated with macrovascular and microvascular complications which affect the quality of life. Blood sugar control plays a major role in reducing the chance of getting these complications.

According to Almetahr (2020), therapeutic adherence imperatively begins with the confrontation and acceptance of the medical diagnosis and the patient's decision to contemplate this diagnosis, or not, in their system of representations. Suppose the individual with diabetes does not accept that he has a chronic pathology that will imply a huge change in his lifestyle, which will require a great commitment on his part so that he can control it properly. In that case, he will hardly adhere to the proposed recommendations. In this sense, a Portuguese investigation indicates that

the greater the level of uncertainty regarding the pathology, in view of the diagnosis and treatment, the less motivated diabetics are to adopt a healthy lifestyle, respect drug treatment, glycemic control, and the practice of physical exercise (Hambidge, 2019). Obstacles to adherence must be analyzed from the individual's perspective and include intrapersonal factors such as forgetfulness, knowledge deficits, negative self-affirmation, and environmental factors such as social interference and lack of support, which compete with the attempt to follow precisely the proposed treatment. In the literature, some types of obstacles have been pointed out, such as age, visual changes, deficits in motor function and changes in daily instrumental activities that appear in limitations in going shopping, problems in observing the feet, difficulties in cooking, and little control at mealtimes, giving rise to food excesses (Ribeiro, 2010). It should be noted that some demographic obstacles, such as low socioeconomic and educational levels, have also been identified as associated with low adherence and greater morbidity related to DM. According to Almetahr et al. (2020), psychological factors, marked by attitudes and health beliefs, have been linked to adherence to treatment, and these obstacles are manifested in a particular way, that is, individuals support treatment because they want to. have control over their eating patterns, at other times they have insufficient guidelines regarding the control of DM, or they have different perceptions of the control of the pathology based on the sociocultural differences between them and the caregivers (Rubin, 2005). It is important to point out that DM interferes in the daily life of subjects since they have to follow a series of prescriptions that interfere with meal times, the obligation to take medication, the imminence of hypoglycemic crises, and emotional instability, some of the greatest obstacles to treatment adherence.

DM requires the subject to replace his biological frame of reference with active self-control strategies that imply the coordinated regulation of insulin administration, oral antidiabetic drugs, physical exercise, and compliance with the recommended diet; that is, the diabetes self-management presupposes mastery of a considerable amount of information and technical skills. It is here that self-efficacy plays a leading role, as with its motivating role, it helps the subject in the self-regulation of their behaviors, thus allowing them to live with a chronic disease in a very adaptive way (Lutes et al., 2018).

Thus, in a study carried out by Werfalli (2019), where the meaning of the loss of pleasure and freedom attributed to diet was evaluated, identifying those sweet foods are recommended as the most fascinating and appreciated, since the fact from having a prohibitive and limiting meaning, they are recommended as a source of pleasure in everyday life, turned them into something even more attractive.

Hambidge (2018) mentions that adherence to the food plan has three types of obstacles: the characteristics of the person, factors related to the environment, and difficulties in prescribing the food plan. Regarding the characteristics of the person and the environment, it is crucial to pay attention to the particular representations of foods and/or the suggested plan, the lack of family and friends support, the scarcity of information, psychological disorders that can lead to eating more, setbacks in controlling quantities, feeling that one is different, that is, one cannot eat the same as others, thinking that the food plan can only be interrupted for a few days, often resulting in continued abandonment, and factors of an economic and cultural order that can influence diet (Correia et al., 2019).

Community diabetes management is a community-based, patient-centered, continuous, comprehensive diabetes treatment and management service, and its management level is closely related to the overall quality and ability of community medical staff. However, community diabetes management in our country faces great challenges. First of all, most of the general practice teams in grass-roots communities in my country only consist of physicians and nurses and lack nutritionists, pharmacists, and psychotherapists, so they cannot truly provide comprehensive and comprehensive treatment and care for patients. Secondly, the insufficient number of community doctors in China and the uneven professional level all affect the quality of management of diabetic patients. Finally, compared with medical staff in general hospitals, the theoretical level of community medical staff is relatively low. At present, most of the personnel engaged in community medical and health services in my country are licensed physicians and assistant licensed physicians, with relatively low levels of education and professional titles.

The importance and necessity of education in diabetic patients began with the discovery of insulin in 1921. In 1972 Leona Millar published a study showing the importance of structured educational programs to prevent acute decompensation and reduce health costs.

Educational methodology and techniques have evolved from traditional education to more participatory and bidirectional methods (Werfalli, 2019).

Education that improves patients' understanding of diabetes can prevent or delay complications and reduce the number and duration of hospitalizations, which in turn can improve quality of life and glycemic index. Currently, a standard practice generally includes the provision of unstructured, ad hoc information about foot care for people with diabetes mellitus. It has long been thought that lifelong supervision of the feet of people with diabetes as well as programs

Educational, reduce the incidence of foot ulcers. Diabetes foot ulceration prevention education programs may target people with diabetes and/or healthcare professionals in charge of their care.

One of the most important functions of health professionals is to motivate patients and their families to stimulate attendance at consultations and ensure continuity and follow-up of DM. Professionals need to explore the reasons why scheduled appointments are missed, focus on solutions to maximize attendance, and consider the mental health dimension in diabetes child health education programs. Currently, one of these solutions is to promote interventions adapted to young people, which are the so-called "virtual visits." Programs to prevent and promote health for diabetics through the Internet have been a potentially very valuable resource in primary care, which in addition to helping health professionals, facilitates access to psychological intervention for patients (Hackworth et al., 2013).

Methodology:

The care plan of diabetic patients must be set by health care workers, and the patients as patients are an important factor in this plan (Jackson et al., 2014). The care plan should include pharmacological (medications) and nonpharmacological (lifestyle modification and healthy diet) management strategies to get the best results.

Uncontrolled diabetes patients (1319) were randomly selected during their follow-up visits to the primary health institution. Each patient is interviewed individually by the health care providers to identify his/her need/s. According to the interview outcomes, health care providers set a treatment plan along with the patient. Patients

are provided with educational or clinical interventions and then followed up every 3 months for evaluation.

As per the literature, health education is an important factor in the management of diabetes. Diabetic patients must receive the proper education regarding physical exercise, food habits, and monitoring the HbA1C level. The purpose of changing diabetic patients' behavior and habits is not only to decrease the level of HbA1C level but to improve the quality of life as well.

For raising patients' knowledge of self-care and hence their active engagement in their own treatment, it is necessary to expand the reach and frequency of diabetes messaging, with particular attention given on areas where knowledge was lacking. However, if growth in such information is not accompanied by an improvement in the practice of self-care, the rise will be useless (Jackson et al., 2014).

Hence, a diabetic patient should be individually assessed for self-care knowledge deficit to provide him/her with focused health education. This assessment should be done continuously to improve the self-care knowledge and then to be prepared as an active participant in the care plan.

The developing clinical care delivery system encompasses much more than only modifying insulin regimens. It is possible to achieve glycemic targets while also improving patients' quality of life if patient-centered strategies, such as shared decision making, motivational interviewing techniques, shared medical appointments, and multidisciplinary team collaboration, are effectively integrated into a dynamic model of diabetes care delivery (Powell et al., 2015).

A multi-specialist team (doctors, nurses, health educators, and dietitians) is required to set the care plan of diabetic patients and the patients to achieve the targeted level of HbA1C. Proper interviewing techniques and patient participation in decision-making are very important in diabetic patients' care.

People who have diabetes have a lot of problems with their micro and macrovascular systems, and these problems can lead to serious health problems and a lower quality of life. Patients with diabetes are 20 times more likely to get heart disease and kidney disease than healthy people. Many of the short-term and long-term effects of diabetes, especially those that are linked to type 2 diabetes, can be delayed if good blood sugar management is kept up. It's important to keep an eye on blood sugar and HbA1C levels to avoid the long-term effects of diabetes, but poor self-care is linked to more disease complications (Werfalli, 2019).

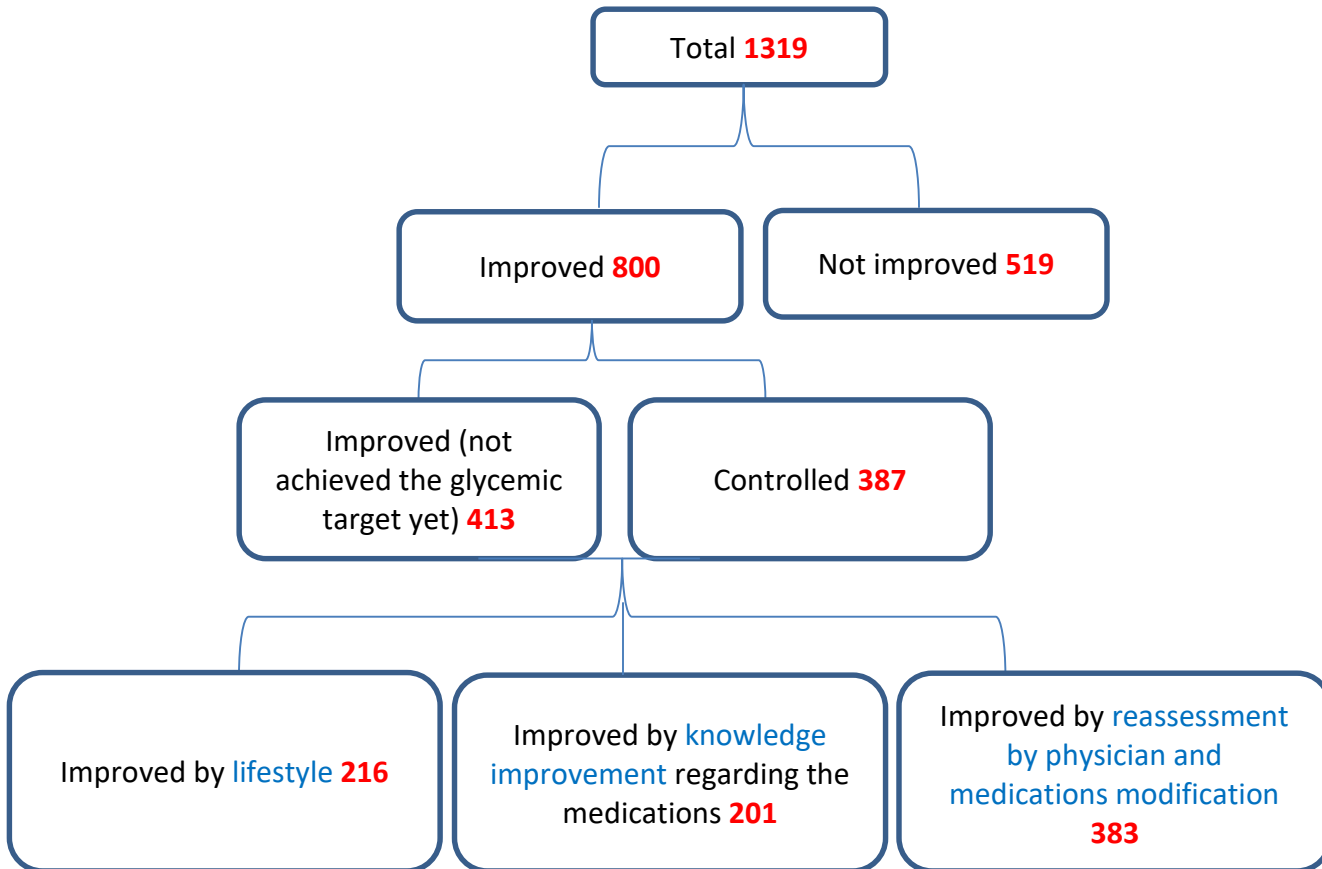
The condition is closely linked to certain aspects of a person's lifestyle, such as their diet and exercise. It's the best way to deal with the problem because there isn't a proven way to get rid of it. In the past, things like screening and diagnosis have led to better patient quality of life and cost savings for the healthcare system, which is good for everyone. A quick diagnosis and treatment based on patient education and self-care may, on the other hand, keep acute and long-term problems from happening or delay their start. Some research has shown that patient education can help people take better care of themselves, cut down on the risk of complications, and improve their overall quality of life.

Patients with diabetes must take care of themselves when they have the disease. It is good to raise awareness and change attitudes about diabetes, called self-care. This will help people improve their diet and diabetes management. People with diabetes and high blood sugar levels can use self-control to keep them in check. The American Diabetes Association says that people who have diabetes need educational, behavioral, psychological, and therapeutic interventions to help them keep their self-control. Besides drug therapy and other traditional treatments, these strategies want to find the right and effective ways to improve chronic diseases. These methods are mostly based on lifestyle changes and are meant to be used in addition to drug therapy and other traditional treatments.

According to clinical practice guidelines, people with type 2 diabetes should have their glycated hemoglobin A1c (HbA1c) often checked. Most guidelines say they should be checked every six months. Improved adherence to the guidelines on how often to check your HbA1c was linked to better glycemic management and a lower risk of chronic kidney disease (CKD). These findings could help support the use of clinical guidelines in the treatment of people with type 2 diabetes, which could lead to better patient outcomes (Imai et al., 2021).

As clinical guidelines are made to guide health care workers to provide the proper and well-updated care, following these guidelines is important to ensure providing the best care to diabetic patients as well as to ensure the appropriate frequency of follow up appointments to achieve the glycemic target and to reduce the chance of developing complications.

Results:



As per the results obtained from the important questions asked in the interviews conducted among the patients, 43% of the patient were observed to be expressed, as explained in figure 01, that they have deficit knowledge about the medications, which is a huge problem in the process of self-care, this can lead to harmful results, and thus they become less motivated. Another important outcome that we observed was the imbalance in diet management. Also, the patients were observed to be unaware or have insufficient knowledge of diet management. According to our assessment and analysis, almost 34% of the patients were observed to face the issue of diet management.

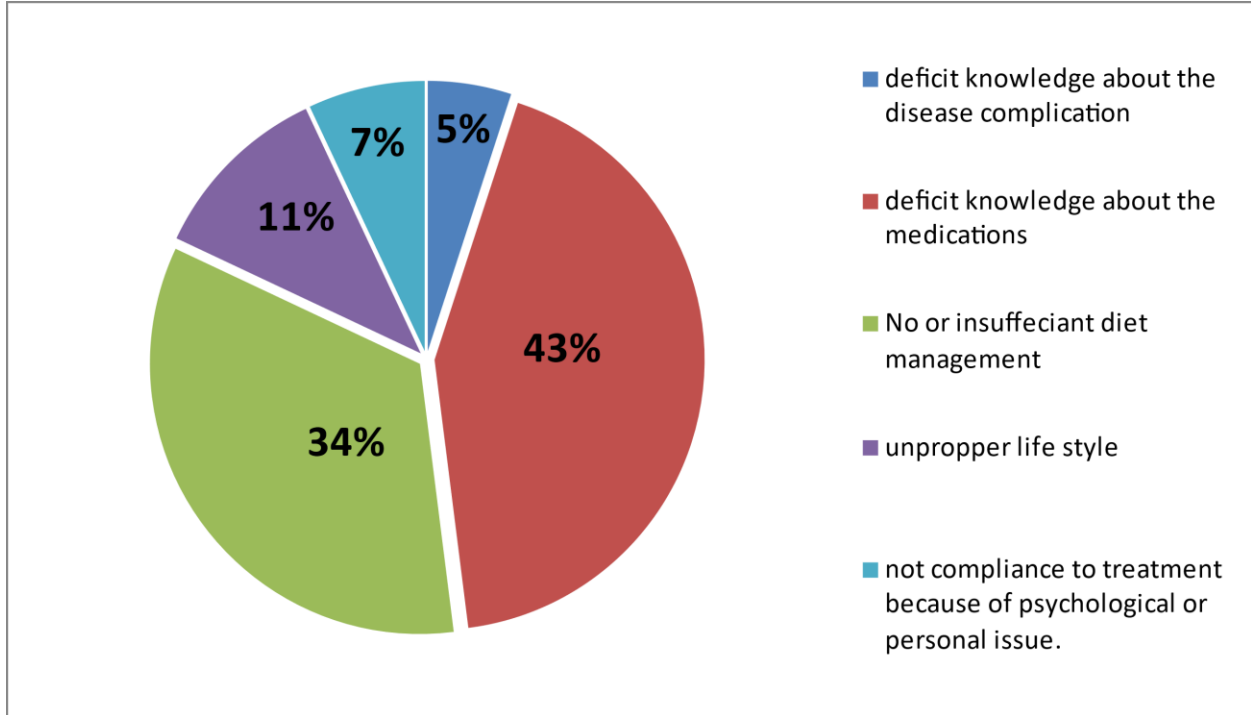


Figure 01: Outcomes of interviews

As per figure 2, after completing the experiment in the outcomes of interventions, we measured the HBA1C level of patients; thus, we got our different groups of people with similar results. As per the results, 29.3% were transferred to control status, 31.31 had improved conditions, which was quite an achievement for us.

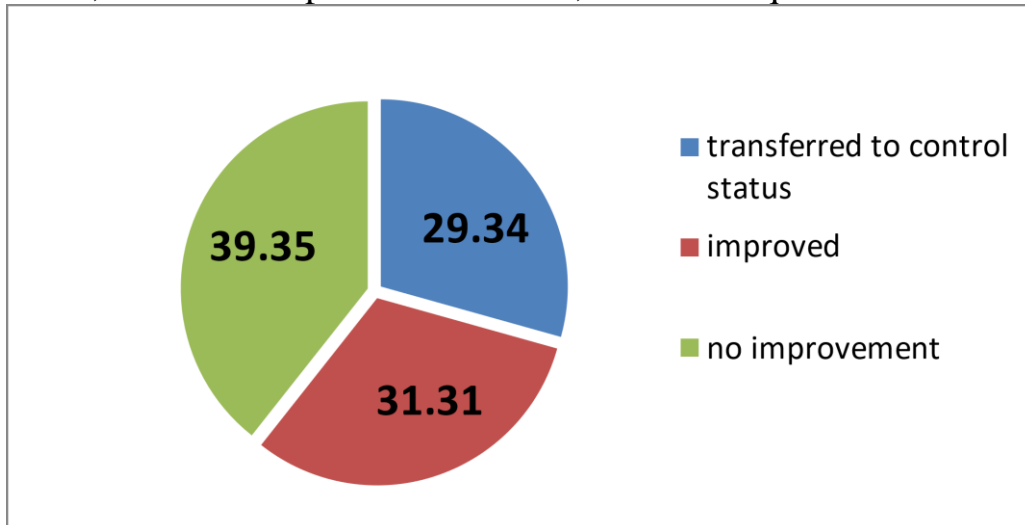


Figure 02: Outcomes of interventions

This raised a question regarding the reasons due to which patients expressed their feelings by which we evaluated them by continuous assessment by the health care workers in the institutions that they have control or improved conditions and better understanding. Figure 03 shows that the nonpharmacological factors were comparatively more than medical aid.

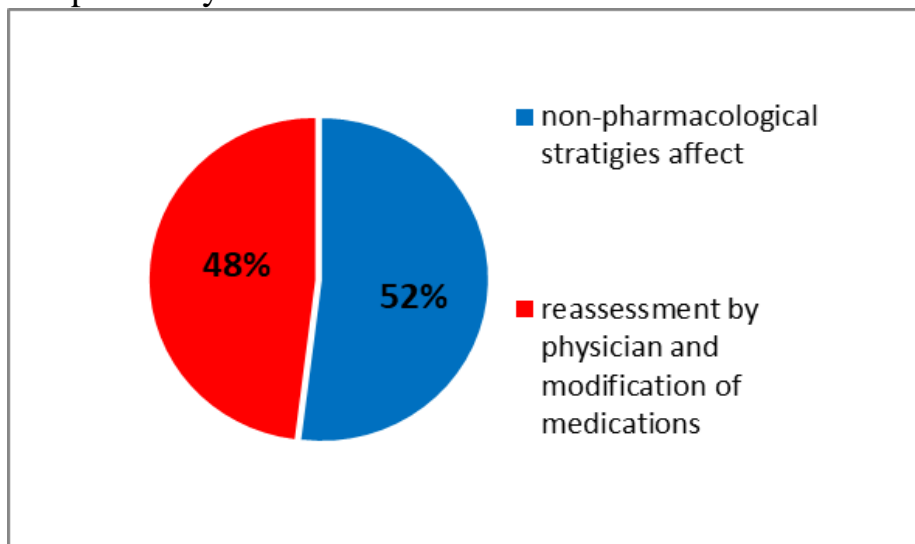


Figure 03: Causes

The detailed discussions with the patients further helped in the research to assess in detail the causes of their improvement, which were due to multiple reasons as per Figure 04.

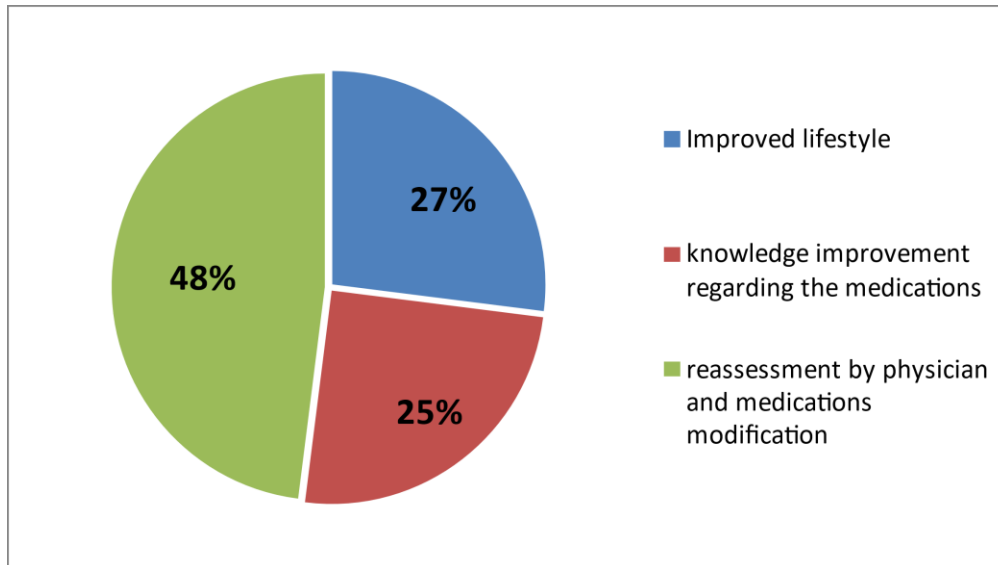


Figure 04: Various causes of improvement and control

Patients who keep their blood sugar levels in the normal range see a big drop in cardiovascular and renal problems. Obviously, this would not have happened if the patient had taken good care of himself. The most difficult part of this phase is giving the patient follow-up instructions.

Another factor that was looked at in this study was how much knowledge and skill patients gained through diabetes education, which is needed to start the process of self-control.

The results of this study are in line with those of other studies. People in the intervention group had lower levels of HbA1c than people in other studies (Lutes et al., 2018). HbA1c reductions were mostly due to people in the intervention group changing their behavior. In addition, patients can keep track of their own blood glucose levels, which allows them to be always aware of their blood sugar levels and take steps to lower or stabilize them at a safe level, such as cutting back on their daily carbohydrate intake. There was a link between lower HbA1C levels and better personal control of blood sugar levels, it was found. Following interventional education, one of the biggest barriers to people with diabetes changing their behavior was not being able to check their own blood sugar levels.

A lot of people in the group that got help didn't try to control their blood sugar on their own, even though they had been trained and given advice. This was one of the main problems in this case, and it was already mentioned. Patients who can't afford to buy a home blood glucose meter should be encouraged to do so and given other help. As we said before, physical activity play a big role in lowering HbA1c levels. People with diabetes should do exercises that are right for their age and physical condition, and they should be encouraged to do them often. Diabetes patients' metabolic management may not be linked to training in all cases. Some research has shown a link between teaching patients and their HbA1c levels, but this isn't always the case. HbA1c levels can help keep diabetes at bay if they stay in a healthy range.

Discussion:

Strengthening the training of community doctors and improving the comprehensive diagnosis and treatment level of community doctors are necessary measures to promote the health management of community diabetes, which requires us to carry out multi-channel, multi-level and multi-form continuing education and training for medical staff. In view of the current situation that the current medical education and training mechanism is unsystematic, imperfect, and lack pertinence, it is difficult to meet the needs of general practitioners at different levels.

Improve the theoretical level of diabetes health management.

The theory is the forerunner of action; a qualified community medical staff must first have certain theoretical knowledge. The Australian government has provided a large number of continuing education resources in the process of diabetes health management by community doctors, conducted examinations related to diabetes health management, and achieved good results (Cummings et al., 2019). Community doctors can be regularly organized to conduct theoretical studies in daily work. Short-term training courses, advanced training courses, and seminars can be held to strengthen the theoretical knowledge of diabetes health management.

Improve the practical ability of diabetes health management.

Community doctors' implementation and application of the theoretical knowledge of diabetes health management is an important manifestation of their clinical business capabilities and needs to be improved and improved in different ways.

First of all, community doctors should do a good job in teaching diabetes community management. Through demonstrations, leaders and backbones with high professional skills in the community help people with low professional skills improve their practical ability. Secondly, send community doctors to higher-level hospitals or medical institutions for further study and study, so that community doctors can fully appreciate the importance of health management in the actual management of diabetic inpatients, increase their emphasis on diabetes health management, and promote community health (Correia et al., 2018).

This is an important step in managing diabetes, and it may help patients become more self-aware and care for themselves more. Because patients don't know that they have a disease, they don't take the right steps to keep their condition under control.

Establish and improve the incentive mechanism for the continuing education of community doctors.

For improving the quality of community medical personnel through continuing education and making continuing education an important measure to optimize the community medical personnel team, the key is to mobilize the enthusiasm and initiative of community doctors to participate in continuing education (Cummings et al., 2019).

Through systematic and standardized diabetes health management continuing education, community doctors can serve individuals with diabetes and serve their family members and community residents. Paying attention to the continuing education on diabetes health management of community doctors can improve the theoretical and professional level of community doctors, improve the quality of diabetes management services, delay the development of diabetes, improve the prognosis of diabetic patients, and further improve the quality of life of diabetic patients. Therefore, there is a long way to go for the continuing education of community doctors who do a good job in diabetes health management.

Conclusion:

The physicians' self-care education and continuous assessment demonstrated a positive effect on HbA1C level, lifestyle, and knowledge of uncontrolled diabetic

patients. Therefore, it is recommended that self-care education and continuous assessment by physicians be delivered and taken more seriously by health care providers in primary health care institutions. This study concluded that diabetes could be controlled with self-care education and regular doctor checks. They also found that teaching patients to be more aware, change their attitudes, and take better care of themselves could be very beneficial in controlling the disease. More attention should be paid to the design and development of cooperative education programs in the country because education is a big part of health care, and interventions that encourage people to work together to improve their health.

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