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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

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საქართველოს სამედიცინო სიახლენი

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6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები,ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტო-სურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი,ანათლების შედებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სუ-რათის ზედა და ქვედა ნაწილები.

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9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანე-ლის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა,მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა,რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შე-ჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

Содержание:

EFFECT OF GOAL-ORIENTEDPATIENT CENTRIC HEALTH CARE PROFESSIONAL INTERVENTION ON BLOOD GLUCOSE CONTROL INTYPE 2 DIABETES MELLITUSANDLEVEL OF PATIENT SATISFACTION

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Abstract.

The risk of complications, and thus the quality of life, for elderly diabetic patients is greatly affected by inadequate blood glucose control. Examining how Type 2 diabetic patients(T2DM)' complication rates and overall satisfaction with health care professional care change in response to a goal-oriented patient centric health care professional intervention. One hundred people were analysed in this study. Patients were randomly assigned to Category A (n=50) and Category B (n=50), following the random control method. Category A patients (n=50) received standard care, while Category B patients (n=50) received the goal-oriented patient centric health care professional intervention for their (T2DM). Both Categories were evaluated for their health care professional impact and health care professional satisfaction after a period of 12 weeks and compared. These three variables: blood glucose, blood pressure (DBP, mmHg) and low-density lipoprotein (Bad) Cholesterol Level (LDL-C levels)are all risk factors for problems in individuals suffering with T2DM. This improvement effect was statistically significant when compared to that seen in Category A. Both groups' self-management scores improved after the intervention compared to their baseline levels; however, the experimental group's scores improved much more than those of the Category A group. Furthermore, patients in the Category B group were more likely to adhere to their treatment protocol and the incidence of complications was lower in the Category B group compared to the Category A group (p<0.05). In addition, Category B had a higher average health care professional satisfaction along with good quality of life in comparison to Category A.

Key words. Type 2 diabetes, Health care professional, intervention, blood glucose control, elderly patients.

Introduction.

Diabetes mellitus (DM) is a persistent metabolic condition which according to the clinical studies findings are basically two types Type 1 diabetes mellitus (T1DM) accounting for 5% and type 2 diabetes mellitus (T2DM) accounting for around 95% of all diagnosed instances of diabetes [1]. T1DM being an auto immune disease in which both genetic and environmental are involved causing the destruction of beta cells of pancreas resulting in very little or no insulin productions leading to blood sugar build up in the bloodstream as the sugar is not able to enter the cells for metabolism [2]. T2DMis mainly caused due to dual defects of insulin resistance where there is inability of this insulin hormone to interact with its receptors of body cells and insufficient production of insulin by the pancreatic cells leading to increase levels of blood glucose in the blood in both the scenarios [3]. T2DM is mainly related to your lifestyle disease as in modern era over the last several decades, there has been a constant increased in the cases of diabetes due to very poor sedentary lifestyle with no proper physical activity, no psychological relaxation and improper diet [4]. Unfortunately, T1DM is a deceptive condition that, once it has taken its roots it becomes very difficult to manage it [5]. T2DM being a more lifestyle related disorder can be corrected with help of proper individualized health care intervention especially in elderly persons. It has been proven that elderly diabetic patients this who have vascular fragility, poor blood glucose (BG) control, and declining immunological function have a considerably higher risk of infective consequences as compared to younger population of diabetic patients [6]. Choosing the most effective approach to patient treatment is of the utmost significance in light of the formidable difficulties inherent in eliminating the disease.

Various studies have shown a clear connection between diabetes-related complications, particularly macro-vascular complications, and patient apathy [7], poor adherence to management of diabetes [8], and bad maintenance of blood glucose levels. These factors, along with a lengthy medical history [9] and inadequate medical attention [10], have also been shown to play a pivotal role in the development of diabetes-related complications. It is possible to lessen the likelihood of developing macrovascular problems with strict treatment of blood glucose, blood pressure (DBP, mmHg) and low-density lipoprotein (Bad) Cholesterol Level (LDL-C levels) [11]. Despite this, a number of studies have revealed that a significant proportion of people diagnosed with T2DM are unable to obtain the intended therapeutic impact due to the reasons listed above [12,13]. Community hospitals in China are the primary providers

of health care professional care for diabetic patients with type 2 diabetes; nevertheless, this may create some difficulties when attempting to avoid diabetic complications. Prior to this discovery, the bulk of glucose monitoring and management was done using fasting plasma glucose readings (FPG) (mg/dL). Evaluations of patients' haemoglobin A1C (HbA1c) levels, on the other hand, are not often carried out on a regular basis in primary care settings [14-16]. Continuous health care professional strives to consolidate and preserve the benefits of therapy while improving illness outcomes. The primary emphasis of continuous health care professional is the long-term care of patients [17]. The development and expansion of the technology have occurred at a consistent pace, which has made it possible for information-based health care professional to take place continuously and effectively [18,19]. The research conducted by Xia20 on the effects of information-based continuous health care professional on patients who had colostomies demonstrates that the method is effective in increasing patients' sense of control over their condition, which in turn helps to reduce the risk of complications and improve patients' quality of life [20]. Because diabetes is long term condition requiring prolong efficient management of blood glucose, along with long-term hospital health care professional intervention frequently causing a significant financial burden on patients. The strategy currently used is ineffective in preventing the disease from progressing in elderly diabetic patient. Thus, scientific studies have fail to put a focus on the individual patient centric goal oriented health care professional intervention. In global perspective studies focusing on this important aspect is very much needed. Given this research gap, we sought to explore this component of management of T2DM through patient centric/oriented health care professional intervention therapy. The main purpose of this study is to provide a new aspect of patient centric intervention management of patient with prime goal of supporting and enhancing the quality of life in T2DM.

Materials and Methods.

Sample size calculation:

The sample size determination was done by:

$$n = \frac{(Z_\alpha + Z_\beta)^2 2S^2}{(X_1 - X_2)^2}$$

By maintaining a significance level of 5% and a test power of 80%, the critical value for a two-tailed test at a 5% significance level is $Z\alpha = 1.96$, whereas the critical value for a one-tailed test at an 80% power level is $Z\beta = 0.84$. A total of 100 patients were included in the study, with 50 patients assigned to each group of single-variable (SV) and multi-variable (MV) randomized controlled trials (RCTs). However, there was a loss of patients for follow-up.

Setting, recruitment and participants characteristics:

A total of 100 individuals with T2DM were enrolled in this research study who were attending Department of oral medicine and oral pathology, S.B. Patil dental college and hospital, Bidar, Karnataka, India were designated as patients after obtaining their relevant medical history and history of diabetes. All the assessment were conducted by individual rate who was a full-time researcher. The study was conducted from April to June

2018 and aimed at the establishment. The study was conducted and approved by the Institutional Review Board. The study was approved, and ethical clearance was obtained from the ethical board (SBPCH/2018/70).

The inclusion criteria included:
• Patient satisfying the diagnostic criteria for type 2 diabetes along with WHO criteria for diabetes from 1999.
• Age of patients. 60 years and above
• All relevant clinical diagnostic and treatment information is available to the patient.
• It took more than 6 months for the disease to develop into type 2 diabetes.
• The patient is awake and alert.
• The ability to use language and food normally.
• None of the risk indicators for hypoglycaemia have been present.

Excluding criteria included:
•Individuals afflicted with any other systemic disease or condition.
• Individuals who have a personal or familial history of mental illness.
Patient not willing to participate in the study.

Methodology:

Trained qualified health care provider (therapist) comprised of doctors and paramedical staff: nurses, dietician and pharmacist assigning them significant responsibility of patient care. Primary health care services deliver regular therapy, such as self-governance of blood sugar through channel of educatingtheT2DM patients. The goal of this study is to establish whether not individual health care professional health care intervention lowers the risk of complications for patients with T2DM along with enhancing patient level of satisfaction with the care delivered and good quality of life. In this study we opted for deliver services through telephonic sessions to make sure that all the participants would be comfortable and easy accessibility to treatment. The study was explained to the patient in patient own language to facilitate completion and comprehension of questions. Before the commencement of the study, patient informed consent was obtained in their own native language.

Patients were randomly assigned to Category A (n=50) and Category B (n=50), using the randomized control method. Category A patients (n=50) received standard treatment, whereas Category B patients (n=50) received goal-oriented patient centric professional care intervention for their T2DM condition. Patients in each group received care from a registered primary health care provider (therapist). The levels of HbA1c, blood pressure, and LDL-C were assessed in both groups and a comparison of the patients' levels of satisfaction was performed between the two groups.

Group A: Health care professional intervention based on teaching patients with T2DM how to take care of their own health via education and training. The cognitive component of the intervention aimed to provide patients with education and support, while the behavioural component assisted patients in incorporating dietary and physical activity recommendations into their day-to-day life style formed the management

strategies and the psychological component helped patients adjust their roles, interpersonal relationships, and emotional states (emotional components).

Category B received telephonic counselling from health care professional in one-on-one sessions (per patient) (Table 1). At the study entry, every patient was assigned health care therapist who provided all treatment sessions and data was collected to guide future lessons. The health care provider spoke to the patient during each phone call session. Therapy sessions were conducted thrice weekly for 12 weeks by phone and lasted an average of 30 minutes each.15contacting 3 times in a week allowed the therapist to monitor progress more closely and assist families with any issues encountered by the patient or the family members. All participant completed the study session (36 telephonic session) Phone calls session oriented the patients and educated them on how to manage their diabetic situation on their own via the intervention, which included subjects such as food, exercise, oral hypoglycemic medicines and side effects, stress, self-monitoring, cleanliness, and foot care. After each lesson, the health care provider (therapist) would check the patients' blood pressure and post-meal glucose levels, as well as evaluate their progress in self-management and any new habits they may have adopted. In addition to providing medical care, these health care professionals also offer psychological mental boost succour through motivational interviews or open Question Answer platform aiding the patients in exploring different solutions. The phone call session terminated after scheduling the next session appointment.

Table 1. *The substance of intervention training that may be used in a variety of ways.*

Evaluate	Learn more about the history of diabetes diagnosis, treatment, and effects on individual lives. Diabetic self-management was associated with a person's routines in areas such as nutrition, exercise, medication, stress, foot care, personal values, and the development and modification of an individual's own diabetic self-management education (cognitive education)
Definition	Goal-setting in terms of behaviour is defined, with attention paid to changes in eating, exercising, drug use, stress management.
Analyse	Where do people stand now in terms of establishing objectives?
Explore	What are the means by which this objective may be attained, and how are they defined?
Action projects	When asked, the patient agrees and says he or she will follow through.
Study	Incorporate the 2-week action plan into your routine.
Feedback	How do nurses share their knowledge with their patients? Ways through which the conduct modifies.

Study Evalution:

The researchers evaluated the patients' knowledge about diabetes and their ability to self-management of the condition with the use of two questionnaires: the questionnaire on diabetic knowledge and self-care activity questionnaire [21]. For the purpose of determining HbA1c and LDL-C concentrations, blood samples were obtained both before the beginning of the

goal-oriented patient centric professional care intervention (i.e., before the start of study) and after the completion of the final guidance intervention at the end of the 12th week (i.e., after the trial) of the study. The data was collected at the beginning of the study as well as after it had been running for a full 12 weeks. In order to determine how patients feel about health care professional care, we employed a questionnaire called the nurse intervention satisfaction questionnaire. The scale was mostly evaluated using the respondent's own subjective impressions. 22 There was a total of 21 questions, broken down into four categories based on levels of satisfaction: hospitalization, acceptability, accessibility, and practicality. The dependability of the questionnaire came in at 0.92.

Inquiry and review were done to evaluate treatment compliance and the results were classified into three categories: compliance, partial compliance, and non-compliance. The cumulative count was hundred and higher scores indicated better compliance with the requirements. The possibility that there may be issues and the consequences included angina pectoris as well as hypoglycemia. In the patient centric goal-oriented health care professional intervention group (Group B), after 12 weeks of intervention, the key indices or risk factors of T2DMcomplicity were analysed. These problems include heart disease, kidney disease and any nerve damage. Following the completion of the intervention therapy, the patients' compliance with their diets was analysed using the dietary behavior compliance scale, which has a cumulative score of 100. Non-compliance is indicated by a score of 60, partial compliance is indicated by a score of 60-95, and compliance is indicated by a score of >95. The requirements for the chronic disease self-management research scale were used in the process of developing the self-management ability score.

Statistical analysis.

SPSS 25.0, a statistical analysis application, was licensed. The independent or non-independent sample t-test was used to compare the two groups' HbA1c, mean blood pressure, LDL-C, and levels of satisfaction. In statistical terms, a significant difference is shown if the p-value is less than 0.05.

Results.

Table 2 demonstrates that there was no statistically significant difference between the two groups' fundamental characteristics ($P > 0.05$).

Risk factors for problems in persons with T2DM, such as high hemoglobinA1C, high blood pressure, and low HDL cholesterol (LDL-C), were reduced after 12 weeks of therapy thanks to the individual personalized patient centric goal oriented professional care intervention (Table 3). When compared to Group A, this impact on improvement is statistically significant ($p<0.05$).

Both Category A and Category B were affected, although to various degrees, by the occurrence of complications (Table 4). Complications arose in ten of the patients who were placed in Category A; they included four occurrences of angina pectoris and six episodes of hypoglycemia. There was a twenty percent chance of problems occurring. There were no occurrences of angina pectoris and three cases of hypoglycemia that were recorded. There were three individuals in Category B who

Table 2. Basic characteristics of category A and category B.

	Category A	Category B	P value
Sex			0.15
Male	30(60%)	35(70%)	
Female	20(40%)	15(30%)	
Age in years	67.85±5.85	68.94±4.87	0.63
Duration of disease	8.02±1.26	8.25±2.03	0.58
smoking			0.37
Yes	25(50%)	20(40%)	
Alcoholic			0.77
Yes	10(20%)	15(30%)	
Exercise habit			0.52
Yes	9(18%)	12(24%)	
Marital status			0.62
Married	35(70%)	35(70%)	
Unmarried	15(30%)	15(30%)	
Area			0.33
Urban	25(50%)	20(40%)	
Rural	25(50%)	30(70%)	

Table 3. Parameters of diabetes before and after treatment.

Parameters	Category A		Category B		P Value
	Before	After	Before	After	
HbA1c level	8.25±1.36	7.54±1.39	8.19±1.47	7.11±1.55	
Systolic pressure level	135.12±12.58	125.69±14.58	133.47±13.69	120.22±12.87	
Diastolic pressure level	86.55±5.69	80.25±4.33	85.36±4.98	79.54±5.12	(p<0.05).
LDL-C level	140.52±11.37	111.54±9.87	137.52±12.54	117.52±10.52	

Table 4. Degrees of complications.

Degrees of complications	Category A	Category B	P value
Cases of angina pectoris	4	0	
hypoglycemia	6	3	0.03

Table 5. Evaluation of patient level of satisfaction in two categories.

Patient level of satisfaction	Category A		Category B		P value
	Before	After	Before	After	
Accommodation	2.6	3.8	2.2	5.0	
Availability	4.3	4.3	4.3	4.5	
Accessibility	3.1	3.0	3.0	4.4	0.03
Acceptability	3.0	2.7	2.5	4.7	
Overall	2.7	2.5	2.3	4.6	

Table 6. Type of compliances.

	Category A	%	Category B	%	P value
Non- compliance	12	24	3	6	
Partial compliance	10	20	15	30	0.021
Complete compliance	28	56	32	64	

Table 7. Self-treatment of patients in two categories.

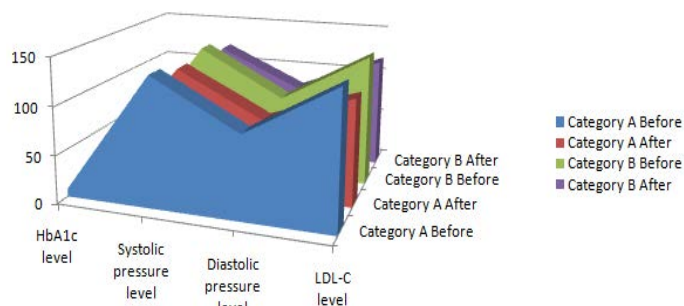|	Category A		Category B		P value
self-treatment	Before	After	Before	After	
Blood glucose monitoring	31.25±4.39	35.50±4.74	31.50±5.33	49.55±6.37	
Medication Treatment	12.10±2.14	13.55±2.85	12.44±2.47	20.52±2.69	0.04
Sports Treatment	16.11±2.98	22.58±4.79	16.33±2.87	39.89±5.54	

Figure 1. *Parameters of diabetes before and after treatment.*
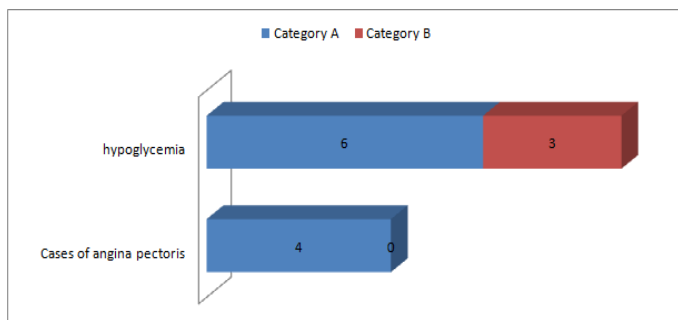

Figure 2. *Degrees of complications.*
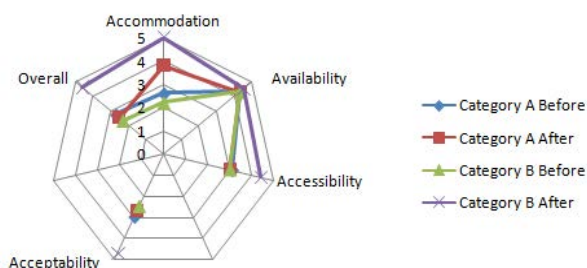

Figure 3. *Evaluation of patient level of satisfaction in two categories.*
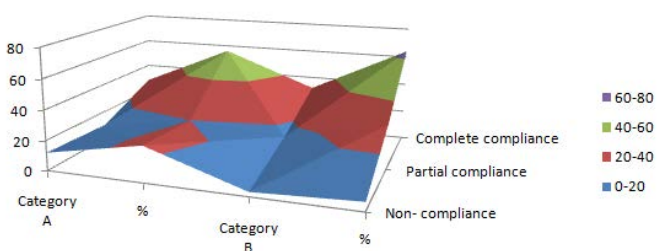
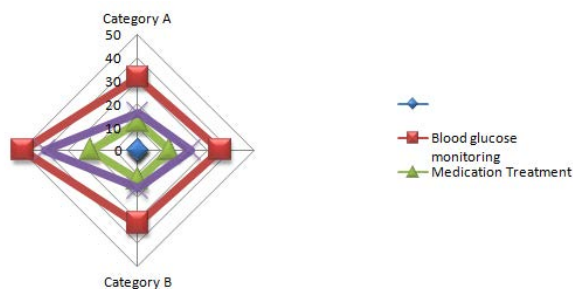

Figure 4. *Type of compliances.*

Figure 5. *Self-treatment of patients in two categories.*

suffered problems, which corresponds to a 6% incidence rate. This difference was due to the fact that in Category B group because of personalized health care attention experienced less complication and less visit or admission in the hospital.

Figure 3 displays the average level of satisfaction with health care professional interventions. There was a statistically significant difference between the two categories (p<0.05) in terms of health care professional satisfaction, with Category B having a higher average (Category B =4.6, SD=0.21) than Category A (Category A =2.50, SD=0.88) (Figures 1-5).

There were 12 instances of non-compliance, 10 cases of partial compliance, and 28 cases of complete compliance, resulting in a compliance rate of 86% for Category A. Within Category B, we discovered 3 instances of non-compliance, 15 cases of incomplete compliance, and 32 instances of compliance, which results in a compliance rating of 94% overall. The overall compliance rate of the Category B was greater than that of the control group, and there was a statistically significant difference between the two rates (2=7.25, p=0.021).

After controlling for confounding variables, there was no pre-intervention group difference in self-management ratings (p>0.05). Post-intervention, self-management ratings were higher across the board for both groups, but they were significantly higher in the Category B group compared to the control group (Table 7, p<0.05).

Discussion.

The incidence of DM among the elderly is increasing rapidly in light of the development of society and the ageing of the population [23]. Aging diabetics are at increased risk for osteoporosis and chronic cardiovascular illnesses. The high rate of osteoporosis in older people with T2DMsignificantly reduces their ability to engage in daily activities and has a profound impact on the quality of life for both the patients and their loved ones. Because of this, it is essential to provide patient centric goal-oriented health care professional practises for the benefit of all elderly DM patients across the world. When more individuals demand medical attention in hospitals, the workload for nurses increases accordingly. Patients over 65 with DM who are at high risk of relapse should get long-term ongoing care even after the first phase of therapy [24].

Research was conducted showed health care professional intervention for diabetic self-management worked. Despite the prevalence of research on the topic, many individuals with T2DMstill don't know how to take control of their illness or how to prevent macrovascular and microvascular problems [25-27]. T2DMalso have a higher prevalence of complications such cardiovascular disease, retinopathy, and neuropathy [26]. An increase in blood flow to the glomeruli can cause extracellular matrix production and endothelial damage, two factors that contribute to diabetic nephropathy [27]. A lack of proper control of the levels of glucose in the blood may result in structural nerve damage, such as axonal atrophy, progressive demyelination, and segmental demyelination. Regrettably, this may induce neuropathy in some people [28]. The health care professional intervention, in general, takes a multidimensional

strategy, focussing on these main areas and delivering practical techniques for enhancing both management and knowledge [28,29].

This kind of evidence suggests that those who suffer from chronic diseases such as asthma, as well as the elderly, could gain immensely by receiving individual personalized instruction to modify their behaviour [30,31]. Because patients may have difficulty maintaining a complex life pattern over time, health care professional intervention and self-management education provides best course of action because they can boost the efficacy of behaviour change and offer continuous support while the training process is being carried out. The findings of this research indicate that decreasing HbA1c, which indicates how well blood glucose has been controlled over the course of the preceding three months, has larger advantages in reducing the risk of diabetic complications for people who have T2DM. The HbA1c levels of those in the observation group decreased by an average of 94%, but the levels of those in Category A decreased by just 48%. After completing the programme, all intervention group patients saw a decrease in their HbA1c levels. The severity of complications experienced by patients with T2DM may be correlated with the degree to which their HbA1c levels were reduced in response to ongoing treatment. There was a 2% decrease in HbA1c, a 30-36% decrease in diabetic micro-vascular complications (like retinopathy and nephropathy) and a 30% decrease in mortality. While this study's HbA1c reduction of 2% is nearly as low as that recommended by the Diabetes Control and Complications Trial (DCCT) [26].

The blood pressure changes due to the health care professional intervention that goes in multiple directions. Compared to patients receiving standard care, those receiving the multi-directional health care professional intervention saw a significant reduction in their blood pressure after the intervention. Some researchers speculate that the patients' hypertension is to blame [27]. The hardening of the vascular wall caused by atherosclerosis causes hemodynamic disturbances. The most prevalent complication of diabetes was hypertension, which was linked to both macro- and micro-vascular issues [32]. Patients in this research range widely in age, have varying degrees of hypertension, and have been diabetic for an extended period of time as a result of their T2DM. According to our results, patients suffering from hypertension and T2DM benefit from receiving individualized health care professional care that encompasses a variety of approaches. LDL-C levels are clearly altered in some manner by the multi-pronged health care professional intervention techniques that are being implemented. Patients have some say in what they learn from their nurses, and they frequently select material about lowering their LDL-C, an indicator of atherosclerosis risk [30]. As a result, a patient's progress in managing T2DM may be reflected in their LDL-C levels. Patients in the group that had received the patient centric health care professional intervention had a markedly lower complication rate than those in the control group. Additionally, this unidirectional heath care system targeting an individual patient with a goal to regulate the diabetes and improve the quality of life with health care professional intervention can help the patients immensely in their overall health and recovery from the illness.

The average satisfaction with health care professional services in Category B increased significantly after the intervention compared to the control group. The average score after evaluation of each item was higher following the intervention. Therefore, the health care professional care provided to these patients with T2DM was effective in meeting their needs. This finding is consistent with the findings of Duangla's study [33], which found that volunteer participation in health care professional services improved both patients' health care professional satisfaction and their ability to self-manage their diabetes [33].

Conclusion.

This goal-oriented patient centric professional care intervention technique should be broadly used in the clinic/Hospitals/individual set up so that more patients may get assistance with diabetes self-management education. It has been shown to be effective in patients with T2DM.

Limitations of the study.

1. Study is expensive
2. Timeline presents limitation for studying the impact of intervention
3. Financial demands associated with the longitudinal research
Key finding of the study.

It has been suggested that individual personalized patient centric care professional health care intervention approach improves the quality of care and quality of life in individuals with long term conditions like diabetes.

Health care professional perceived to attain a complementary role focusing on patient education, trust building and emotional support back up.

This study also throws light on the sharing of responsibility and learning with from and about each other's.

Studies focusing on individual patient care can re-organized diabetes care to more selective approach.

Added value of study or strength of study.

Our study evaluated the effectiveness of goal oriented personalized patient centric care professional health care intervention therapy, our study adds vale by informing new arena and study results strongly advocates the personal attention should be administered to diabetic patient as it contributes to improved glycaemic control, blood pressure, LDL-C reduced diabetes related consequences and increased self-efficiency related to life.

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