General

Effectiveness of Gratitude Therapy in Diabetes Management: A Qualitative Study

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The present study involves a Qualitative research design. The study intends to assess the effectiveness of interventions on the diabetic participants. In the present study, four participants screened with high perceived stress, moderate depression, poor sense of gratitude, were selected. The study consisted of three successive phases such as baseline assessment, intervention, and follow-up. Pre-test and Post-test design were adopted. Qualitative data were expressed as percentages, and Schwartz and Blanchard's technique was administered. Participants have shown improvement in positive dimension scores and there is reduction in negative dimension scores. Blood glucose level readings are also marked before, during, and after the intervention. Participants are found to control their blood glucose level, but the change in the glucose level is not clinically significant.

Diabetes mellitus (type-2 diabetes) is one of the most common chronic diseases, increasing in terms of incidence and prevalence. Ninety percent of cases of diabetes in the world are found to be type-2. A global report found that approximately 537 million adults (20-79 years) live with type-2 diabetes.[1] This number is predicted to rise to 643 million by 2030 and 783 million by 2045. India topped in South-East Asian countries with a prevalence of 74.2 million individuals with diabetes. Odisha, with a diabetes incidence of 18%, had piped other progressive states in the country. Odisha showed high mortalities attributed to diabetes and recorded a minimum of 6 deaths every 24 hours due to diabetes.

Diabetes is considered a metabolic disease, which may result from consistent hyperglycemia and imbalances in the amount of carbohydrate, and fat content in the body, protein metabolism, and difficulties in secretion and action of insulin. Type-2 diabetes or diabetes mellitus occurs when the body does not use the produced insulin for appropriate function, or/and muscle, and tissue cells become resistant to the insulin. Long-term consequences of diabetes lead to complications such as; heart disease, retinopathy, hypertension, failure in the kidney, foot ulcers, and dissever in a certain part of the body.[2] Apart from this, diabetes negatively affects many dimensions of life, such as; relationships with family or friends (20.5%) and physical health (62.2%).[3] Recent evidence reveals that psychological variables (diabetes distress, depression, anxiety, phobia, etc.) may raise the risk of T2DM-related problems. In order to manage the negative health consequences of diabetes, persons with diabetes must improve their self-management strengths. There is a serious need to manage diabetes among Odisha patients to reduce these complications and have greater well-being. Thus in the current study, only type-2 diabetics from Odisha's two major urban cities (Bhubaneswar and Cuttack) have been considered.

Psychological correlates have been considered as both causes and effects of diabetes; when matched with healthy controls, diabetic patients were found to have higher scores for psychological distress, psychiatric morbidity, social issues, and loss of enjoyment of daily life.[4-6] The largest global psychosocial study connected to diabetes care,[7] found that the majority of people (65.6 percent) with type-2 diabetes have psychological issues.[8] Diabetic patients' psychological well-being was shown to be considerably lower than that of non-diabetic individuals.[9] Diabetic patients' well-being is linked to their perception of their ability to cope with the demands of diabetes and its treatment, to maintain social interactions, and to prevent the emergence of problems.[10] Patients with diabetes have elevated levels of depression, and decreased levels of well-being.[11]

GRATITUDE

Gratitude is promoted as a desirable human quality having the power to make life better for oneself and others, from

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ancient religious scriptures to modern social scientific studies.[12] Gratitude is related to happiness and highly desirable life outcomes, yet it is far from a simple or instinctive response to life experiences. Positive psychology, which emerged in the 1990s, shifted the focus of human behaviour away from human flaws and sicknesses and onto human strengths and resources. In terms of a quick recovery, prevention, and promotion of health, this gratitude paradigm has implications not only for physical but also behavioural and emotional health.

Gratitude has been defined as an emotion, an attitude, a coping response, a moral virtue, a personality characteristic, or a personality disposition.[13] When gratitude is defined as an emotion, it is defined as a positive emotion that emerges as a result of another person's beneficial deeds.[13, 14] Gratitude has also been conceptualized as a moral virtue in the literature, with interpersonal ramifications.[15] Alternatively, gratitude is defined as a general tendency to identify and respond to others' helpfulness with grateful emotion when viewed as a feature or disposition.[13,14] Gratitude is defined as a way of living those entails paying attention to and acknowledging the positive aspects of life.[14] Life would be vastly enhanced if we could count our blessings as self-actualizing persons do. "A feeling of gratitude and joy in response to receiving a gift, whether the present is a concrete benefit from another person or a moment of quiet enjoyment brought on by natural beauty".[16] The study that links gratitude and physical health is still in its early stages, but preliminary findings show that at the very least, more thankful people appear to feel healthier and sleep better, and they may even have certain physiological indications of greater health. Only a few researchers have looked into how thankfulness affects diabetes care and management. Clinical research found that using self-paced online training to boost thankfulness directly improved mood and reduced depressive symptoms in adults with diabetes, and also reinforced the link between gratitude and depression.[17] Depression is a known obstacle to bettering one's self-care (e.g., adopting dietary adjustments or increasing physical activity), therefore learning to practice gratitude may be a way for persons with diabetes to modify their behaviour.

GRATITUDE AND DIABETES

Research has shown that gratitude is associated with improved physical health including better sleep quality, which also improves glucose control in individuals with diabetes.[18,19] A pilot randomized controlled trial of a gratitude intervention for adults with diabetes found that glycaemic control slightly improved in the control group while remaining stable in the gratitude group, with a between-group difference of 6.1 mmol/mol. This between-group difference was significant after controlling for baseline HbA1c.[20] Another study revealed lower levels of gratitude among diabetics, and are linked to lower HbA1c levels.[21] A moderate correlation was found between gratitude and the quality of life of diabetes patients.[22] It is believed that grateful people enhance their physical and psychological health by engaging in more positive and healthful activities and being willing to ask for help when they have health problems. A study implied that a more comprehensive approach that includes social and spiritual aspects of treatment is needed for chronic disease patients to experience positive changes.[23] Living with diabetes can be very challenging, and finding gratitude may seem far-reaching.[24] It is evident from the literature that gratitude can contribute to the motivation needed for optimal self-management of diabetics.

THEORETICAL FOUNDATION

The present study draws reference from Positive Psychology. Positive psychological correlates are used both as a framework for designing interventions and understanding how interventions work to promote change in the health outcomes of diabetic participants. Diabetes is a multi-factorial disease; therefore, management of diabetes condition needs a multi-therapeutic approach that not only on trying to reduce the negative correlates of ill-being (depression, perceived stress, learned helplessness) but also on improving a patient's quality of life by enhancing positive indicators of well-being. Earlier many psychological interventions such as; Cognitive Behavioural Therapy (CBT), mindfulness training, stress management techniques, and motivational interviewing have been found effective in the management of diabetes. Although few trials of similar therapies have been linked to improvements in positive emotion and, in some cases, higher health behaviour compliance and lower blood glucose, better glucose management and lower death rates.[25] There has been little research on the efficacy of positive psychology interventions (PPI) in type-2 diabetes care. As a result, the current study looks at how gratitude therapy might have a substantial impact on everyday functioning, blood sugar level, and diabetes management in diabetics. This recent comprehensive gratitude therapy aims to broaden the perspective on diabetes management.

MANAGEMENT OF PSYCHOLOGICAL CORRELATES AMONG DIABETICS

Earlier research on management techniques was found to be effective but not sufficient for the diabetic population. The majority of studies on the management of T2DM have been focused on finding out whether treatment for stress and depression among T2DM patients can reduce their negative physical and psychological outcomes. Antidepressant medications (including selective serotonin-reuptake inhibitors-SSRIs, and tricyclic antidepressants) had a modest impact on the severity of depression. Psychological interventions, including psychodynamic and cognitive behavioural therapy, therapeutic support, decreased depression severity as well as boosted the rate of remission from depression; however, the outcomes of the study were not conclusive on whether or not the interventions are effective in controlling glycaemic levels. Cochrane review showed that pharmacological and psychological interventions for depression among diabetics were beneficial to the short, medium as well as long-term depression severity and had a positive effect on remission from depression when con-

trasted with standard treatment.[26] A number of studies have demonstrated that mindfulness-based therapies can provide psychological benefits, including decreasing symptoms of depression and diabetes-related stress in people with diabetes.[27] However, the evidence supporting the effectiveness of these therapies in terms of glycaemic management is equivocal. Positive psychology-based diabetes treatments are a new field with a lot of preliminary studies. It is possible that many studies' short follow-up periods were insufficient to detect substantial increases in HbA1c. During the last 10 years of employing cognitive-behavioural psychotherapy (CBT) methods that it might not be completely efficient in treating depression associated with diabetes.[28] Despite a significant body of research in non-diabetic patients, few investigations assessing the efficacy of positive psychological therapies for depression in diabetics have been conducted.

Interventions do not have to focus primarily on identifying pathology and correcting problems; instead, they might focus on an individual's specific strengths and use them to create beneficial outcomes.[29] With the emergence of positive psychology in the early 20s, psychologists and researchers started addressing the issue of well-being in different populations by using evidence-based positive interventions or therapies. Studies that are focused on boosting individual happiness through positive interventions is needed, for the empirical validation of positive psychological interventions.[30] These experts also indicated that developing empirically-based programs ensures that positive treatments are conducted in a scientific manner. This contributes to the current study's purpose of providing validation for a brief positive psychological intervention that uses a dual-component method to target thankfulness and positive well-being.

Research revealed that the positive consequences of positive correlates on patients suffering from type-2 diabetes are likely to be mediated by healthy habits like more physical exercise and eating a healthy diet.[31] Additionally, numerous studies on non-diabetic people have shown that engaging in a variety of positive mental exercises (e.g. creating gratitude notes, performing acts of kindness) could lead to greater happiness. These exercises are easy compared to other existing treatments, and they incorporate components that have been linked to better adherence and diabetes-related outcomes. Although few trials of similar therapies have been linked to changes in positive emotion and, in certain cases, higher health behaviour compliance and lower blood glucose levels.[18,32] The current study attempts to fill a gap in the literature by adding positive psychological intervention which, is targeted at boosting, understanding, and enhancing positive states among diabetes patients to manage the disease.

INTERVENTIONS

Positive psychology refers to the science-based study of human performance at its best with the aim of improving understanding and applying the elements that make people and communities thrive.[30] Positive Psychological Interventions (PPIs) are instructions, activities, and recommendations that are theoretically founded and empirically proven in order to improve well-being.[33] Furthermore, PPIs emphasize the importance of employing positive emotions and strengths to achieve and/or improve well-being. PPIs are interventions, programmes or treatments that aren't designed to fix, repair or heal something abnormal or defective.[34]

A meta-analysis found that a range of positive psychology interventions included pursuing valued personal goals, practicing forgiveness, engaging in or recalling acts of kindness, counting blessings or expressing gratitude, recalling or writing about positive life events etc. enhance well-being, and leading to a moderate post-treatment effect size ($d = 0.61$).[34] Another meta-analysis looked into a variety of characteristics of happy people, and they found that happy people live longer lives, have better health, have more career success, and have better social relationships.[35] Keeping this in view, the current research uses gratitude interventions for the management of psychological correlates among diabetic participants.

Diabetes management is critical since it affects the lives of 200 million individuals worldwide.[36] Many psychological therapies have been utilized in conjunction with medical interventions to improve the quality of life and control the disease and its complications.[37] The kinds of literature have also revealed the significance and effectiveness of using PPIs across the world. In research involving over 5000 individuals, PP exercises persistently boosted well-being and lowered depressive symptoms in healthy adults.[38] PP interventions, on the other hand, aim to improve overall well-being in a wide range of people, including individuals who are psychiatrically fit. This may increase the effectiveness of PPIs which is more suited for those suffering from type-2 diabetes with mental health issues.[39] Gratitude can be cultivated in individuals with diabetes (and others) through performing various exercises and activities.[40] Positive psychological therapies had been administered to eighteen million type-2 diabetics in the United States, and PPIs have modest benefits on activity and related behaviours in T2DM patients.[41]

Gratitude interventions consist of various positive psychological exercises that are used to induce or increase gratefulness, often with the aim to reduce ill-being and improve well-being. In the present study, gratitude interventions include positive psychological exercises such as; (i) Daily gratitude journal (expressing gratitude/ counting blessings), (ii) Random act of kindness, and (iii) Writing three good things exercise. Recently researchers across the globe have shown effective results of using gratitude therapy in the management of diabetes. Therefore, the present study is an attempt to examine the same in the Indian context.

RATIONALE OF THE STUDY

There are few studies on the positive well-being of chronically ill individuals. With the rising expense and demand for health care services around the world, there is an urgent need to look after the psychological and social well-being of those patients. The researcher created a 4-week person-

to-person delivered gratitude therapy and investigated its feasibility and impact on T2DM patients in this study. The typical "fix-what-is-wrong" approach to treatment can be supplemented with a "build-what-is-strong" approach. This particular strategy for fixing what's wrong has been scientifically demonstrated to be effective: Hundreds of clinical studies and more than a dozen meta-analyses have found CBT to be superior to alternative psychotherapies, some medicines, and no-treatment, wait-list, and placebo control conditions in clinical trials, but it is high time now to focus on "builds-what's-strong" approach to therapy.[42] In the present study, the use of gratitude therapy for diabetic participants, which shows whether diabetics are benefited or not, would be a fruitful consideration. Therefore, an attempt has been made to use a framework of positive psychology for considering psychological well-being of diabetics, including both the reduction of negative aspects of well-being as well as the enhancement of indicators of wellness.

Additionally, how positive psychological intervention helps to sustain motivation in diabetic participants throughout the process of intervention needs to be examined. Since gratitude is known to be a mediating mechanism and it is a new and emerging concept, it is interesting to find out how gratitude reduces ill-being and enhances well-being among diabetics. Studies on gratitude and physical health remain an understudied area of research.

OBJECTIVES

The broader objective of the study is to analyse the effectiveness of gratitude therapy in diabetes management. The specific objectives are;

1. To design gratitude therapy, to deal with diabetic participants having a low sense of gratitude, moderate depression, and high perceived stress.
2. To assess the effectiveness of the interventions on the diabetic participants on the aforementioned measures.

RESEARCH DESIGN

Sample for the present study consists of 4 participants (2 males and 2 females), were chosen from two different clinics in Odisha, based on the higher inflow of diabetes patients across the state (one male and one female from each clinic). Informed consent and socio-economic and demographic information regarding age, sex, residence, marital status, education, course of illness, and employment status were sought from all the participants. Those with severe depression, suffering from diabetes for more than 5 years, consistently having high blood sugar levels, with any other mental or physical disease, or earlier exposure to any kind of intervention program were excluded from the research.

The study consisted of three successive phases such as baseline assessment, intervention, and follow-up. Pre-test and Post-test design were adopted. Participants have received a primary evaluation of the above-mentioned psychological issues related to diabetes and their blood glucose readings. The participants were assessed by using Perceived Stress Scale, Beck Depression Inventory, Gratitude Questionnaire-6, and Automatic Glucometer as their pre-test. Gratitude therapy were used as intervention to manage psychological issues among diabetics, to promote gratefulness, and reduce stress and depression level. Total six sessions, over four weeks, were conducted for participants for a total duration of almost one and half month including two weeks of the follow-up period. After 45 days, the researcher again measures the changes in psychological and behavioural self-report outcome by using those three aforementioned questionnaires (post-test). Qualitative data were expressed as percentages, and Schwartz and Blanchard's technique was administered.

MEASURES OF GRATITUDE

The Gratitude Questionnaire-Six Item Form (GQ-6) is a six-item self-report measure that assesses an individual's gratitude frequency and intensity.[43] Items are graded on a seven-point Likert scale, with 1 representing "strongly disagree" and 7 representing "strongly agree." The higher the score, the more grateful you are.[43] In an adult sample, the GQ-6 showed strong internal consistency ($r = 0.82$).[43] The authors also claim that higher GQ-6 scores are associated with higher levels of positive emotions and life satisfaction, as well as lower levels of negative emotions. Scoring is calculated by summing replies ranging from 1 to 7 for each of the six items, yielding a range of 6-42. A higher score indicates a person who is more grateful.

THE MEASURE OF BLOOD GLUCOSE

The blood glucose level of diabetic participants was recorded before and after the interventions. Blood glucose level was recorded using an automatic glucometer kit (Apollo Pharmacy Blood glucose monitoring system-APG01). This measurement device has been validated for easy, accurate, and instant test results (in 5 seconds) testing across multiple cohort studies. Briefly, before (pre-test) and after (post-test) three days, three Fasting Plasma Glucose (FPG) and three Post Prandial Glucose (PPG) level readings were taken; the three readings were averaged to generate the final blood glucose level measure.

The ethical considerations are explained to all participants, and written consent regarding their right to refuse participation in the study is obtained, according to the APA's ethical code of conduct, and they are told that they can withdraw from the intervention once participation has begun.

PROCEDURE

The study was conducted during the period of March 2021 to August 2021. The data collection took 45 days including a follow-up period. In the initial phase of the research, private diabetes clinics in Cuttack and Bhubaneswar city were located, and the clinics' respective doctors were contacted. After gaining consent from clinic officials and the

individual client visiting the outpatient clinics, people with type-2 diabetes were purposively sampled from two different diabetes clinics. People with diabetes in the age group (aged 40-60 years) were approached personally to take psychological therapies for a period of one and half month. After receiving positive responses from four participants, the therapies were conducted. Pre-test Post-test design was adopted, consisting of three successive phases such as baseline assessment, interventions, and follow-up.

Initially all the measures were administered on the participants, and scores were considered as pre-test scores. Then six individual psychological intervention sessions once a week are conducted on 4 participants, in the Ravenshaw Counselling Centre, Sambhav, Cuttack, Odisha, with the permission of Ravenshaw University's Ethics Committee and Head of the Department of Psychology. The duration of each session was 45 minutes to 1 hour. Two sessions were spent for assessment and four sessions for therapy. The procedure continues over six weeks for participants and the total duration is almost one and half month including the follow-up period. Again after 4 months (post-test score), and after 6 months (follow-up score) researcher assessed the effectiveness of therapy by administering all the above-mentioned measures.

GRATITUDE THERAPY

The researcher contacted to each participant individually and briefed the purpose of the therapies, which included completing particular positive psychology activities to enhance positive thoughts and feelings and increasing one's attention on positive states by converting the exercises into skills that may be applied in everyday life. The participants were then given precise instructions on how to get the most out of the activities. To maximize involvement and engagement at the start of the therapy, the researcher has completed the first activity of each intervention with the subjects. The contestants were also given the opportunity to finish the first round. The activity for the following week is explained and given. Weekly appointments with the research interventionist (45 minutes–1 hour) were made in accordance with the exercise assignment schedule. The four weeks (1-4) were spent on gratitude therapy, with pre-post assessment and therapy session once in a week.

Following the exercise review, the researcher and subject discussed how the exercises/principles would be implemented and maintained on a regular basis, and also worked together to create a framework that lists good psychological activities for the next four weeks. The pre and post intervention performance on psychological measures included the PSS for a level of stress, GQ-6 for the sense of gratitude, BDI-II for the level of depression, and glucometer for blood glucose level readings of the group were compared to evaluate the effect of the intervention. Timeline of therapy and content of sessions are provided as supporting data, at the end of the paper.

STATISTICS ANALYSIS

For the complete sample, descriptive statistics summarizing baseline characteristics are presented for perceived stress, level of depression, sense of gratitude; these are presented as means, and standard deviation as appropriate. The study presents the percentage of participants who experienced reliable change on each outcome measure. Percentages were used to determine the magnitude of pre–post changes in participants' aforementioned psychological correlates as a function of the intervention.

RESULTS AND ANALYSIS

From the case studies, it is found that difficulties faced by diabetic adults are very much psychological in nature. Participants' willpower and motivation to change and adapt new strategies for a better life, in their adulthood were the key to successful therapy. Data analysis for the cases included analysis of scores obtained by the four clients on three aforementioned outcome measures and the blood glucose level. These are baseline (pre-test score), post-test score, and follow-up. Blanchard and Schwarz's (1988) algorithm were used to calculate clinically significant changes (50 percent and above). The efficacy of the therapeutic intervention was evaluated using pre-and post-therapy data, as well as follow-up data.

$$\frac{Pre-test\ score-Post-test\ score}{Pre-test\ score}\times 100 = \text{Therapeutic change}$$

$$\frac{Pre-test\ score-Followup\ test\ score}{Pre-test\ score}\times 100 = \text{Therapeutic change}$$

Note: When the improvement criterion is from higher to lower score, the percentage of change or improvements score comes as a positive number. However, when the improvement criterion goes from lower to higher score, we find negative (minus -) score.

The current study aimed to design and examine the efficacy of psychological interventions in managing psychological correlates among diabetes participants. Table 1.1, 1.2, 1.3, 1.4, shows baseline, post-test, and follow-up scores and percentage of improvement of four participants on Perceived stress scale, Depression inventory, Gratitude questionnaire, and FPG and PPG scores are an average of 30 days of Blood glucose level respectively.

Results from above-mentioned tables indicate that gratitude intervention is partially effective in managing psychological issues in diabetic adults. It has found higher success in the case of managing depression, sense of gratitude, than other dimension like perceived stress. Clinically significant reduction seen in perceived stress scores in one participant C (54.54%) at post-intervention, and decrease in perceived stress scores in two participants A (59.37%) and C (54.54%) at follow-up score (See Table 1.1). There was also a clinically significant decrease in depression scores in three participants A, B, and D at both post-intervention (53.48%, 62.79%, 63.63% respectively) and follow-up scores (53.48%, 58.13%, 68.18% respectively) (See Table 1.2). Clinically significant changes observed in gratitude scores in three participants A, C, and D at both post-intervention (-73.91%, -61.11%, -56%) and follow-up level

Table 1.1. Pre-test score, Post-test score, follow-up scores, and percentage of change on Perceived Stress Scale measure

Perceived Stress Scale measure					
Cases	**Pre-test Score**	**Post-test Score**	**% of Change**	**Follow-up Score**	**% of Change**
A	32	24	25	13	59.37
B	23	15	34.78	11	37.5
C	22	10	54.54	10	54.54
D	30	21	30	24	20

Source: Primary Survey, 2021.

Table 1.2. Pre-test score, Post-test score, follow-up scores, and percentage of change on Depression Inventory measure

Beck's Depression Inventory					
Cases	**Pre-test Score**	**Post-test Score**	**% of Change**	**Follow-up Score**	**% of Change**
A	43	20	53.48	20	53.48
B	43	16	62.79	18	58.13
C	45	34	24.44	25	44.44
D	22	8	63.63	7	68.18

Table 1.3. Pre-test score, Post-test score, follow-up scores, and percentage of change on Gratitude Score

Gratitude Questionnaire - 6					
Cases	**Pre-test Score**	**Post-test Score**	**% of Change**	**Follow-up Score**	**% of Change**
A	23	40	-73.91	40	-73.91
B	31	42	-35.48	42	-35.48
C	18	29	-61.11	34	-88.88
D	25	39	-56	41	-64

Table 1.4. Pre-test Scores, Post-test scores, Follow-up Scores, and percentage of change on average score of 30 days of Blood Glucose Level Measure

Blood Glucose Level										
Cases	***Pre-test Scores***		***Post-test Scores***		***% of Change***		***Follow-up Score***		***% of Change***	
	FPG	***PPG***	***FPG***	***PPG***	***FPG***	***PPG***	***FPG***	***PPG***	***FPC***	***PPG***
A	116	221	105	160	9.48	27.6	110	154	5.17	30.32
B	131	177	122	154	6.87	12.99	109	146	16.79	17.51
C	120	249	116	205	3.33	17.67	124	221	-3.33	11.24
D	129	278	101	209	21.71	24.82	111	186	14.87	33.09

(-73%, -88%, -64%) (See Table 1.3). In the case of C, an interesting finding suggests the scores of negative correlates do not reduce significantly but show clinically significant improvements in positive correlates of well-being (sense of gratitude score).

ASSESSING IMPROVEMENTS AS A CONSEQUENCE OF GRATITUDE THERAPY

Most recently, positive psychological interventions have begun to apply in clinical populations with physical health problems. A study on gratitude for developing affective health to improve adherence to diabetes treatment.[17] The post-intervention result showed a reduction in depressive symptoms of diabetic participants. Another study on general feelings of gratitude and hemoglobin A1c levels.[21] The result revealed stronger feelings of general gratitude are associated with a lower level of haemoglobin A1c. The study on the impact of positive psychological interventions on patients with type-2 diabetes, showed that positive psychology exercises have been beneficial in promoting posi-

tive psychological states and changing health behaviours in type-2 diabetics.[44] Interventions aimed at modifying psychological aspects in patients with diabetes mellitus have proven helpful in lowering the intensity of depression and diabetes-related misery, although evidence for an effect on glycemic control is equivocal.[45] However, the decrease in depression severity reported after collaborative treatment were not statistically significant in relation to HbA1c reductions. Analyzing the above-mentioned studies, the study is designed to use gratitude therapy to deal with diabetics affected by a low sense of gratitude, higher scores in depression, higher perceived stress, in the second phase of the present study, along with that, the current study also assesses the effectiveness of the gratitude therapy on selective diabetic participants and found the improvement of participants on the aforementioned measures. The result of the current case series shows that gratitude therapy can be partially effective in reducing the perceived stress, level of depression. Additionally, it can enhance the sense of gratitude of diabetic adults. Based on the findings of particular cases, performance measuring level of depression, sense of gratitude, score improved, and a marked difference was found between pre-and post-assessment phases; however, there was no significant improvement between pre-and post-assessment phases in perceived stress, indicating that significant changes might need a greater number of sessions in psychological issues and difficulties faced due to diabetes.

The findings suggest that gratitude therapy were efficacious in reducing the level of depression but not perceived stress. Since the perceived stress of a diabetic is influenced by a multitude of social and environmental factors, it is probably more difficult to generalize therapeutic gains in real-life situations. The result also suggests that gratitude therapy enhance the score of gratitude. There were qualitative changes reported subjectively by all the four participants. The qualitative changes reported by the participants are improvement in calmness; improvement in a personal, professional, and social relationships; development of a positive outlook towards others, the world around, and the future of oneself; development of a thanking attitude; reduction of self-blame; reduction in the occurrences of sad moods; reduction in worries about the disease and their management. The participants were also motivated to engage in their daily activities, engage in social activity (which they were earlier resisting), and deal with the disease effectively without complaining (which they were earlier doing). Pre-intervention sessions in the second phase of the study revealed a common statement "Diabetes as a frustrating condition" by almost all participants, which is replaced later post-intervention as "we can manage the disease", "diabetes become a part of life", "with positivity anything is possible", "seeing diabetes from a different point of view makes life easy", etc.

Apart from these psychological correlates, the present study also emphasized the physical indicator of diabetes, i.e., blood glucose level of the patients. The result for all the four patients shows improvement in the maintenance of blood glucose levels, but the pre-and the post-assessment difference was not significant, indicating the presence of other factors influencing the blood glucose level. Such factors include the medication they take on a daily basis, fluctuation in doses of insulin, patient's BMI level, etc. Due to the study's limited scope, the researcher did not consider these factors while assessing blood glucose levels.

The current study's findings should be interpreted with caution since they need to be replicated, validated, and followed up for a longer duration of intervention administered in the diabetes population to confirm their efficacy and usefulness in the management of these psychological issues. The outcome was assessed on the basis of clinically significant changes, and remarkable changes have been observed in all patients. Optimism regarding the idea that diabetes management is achievable was partially established in three out of four participants.

CONCLUSION

The study suggests that gratitude therapy was considerably helpful in lowering depression and enhancing positive correlates of well-being, such as a sense of thankfulness, among participants. The present findings also imply that the intervention approach, might be beneficial to those with diabetes and related psychological issues. Additionally, the current study's findings indicate that more rigorous research efforts in this field are needed to confirm long-term impacts. Due to the small sample size purposefully selected for intervention, generalization of the results is difficult in this phase. Due to time restrictions, longer follow-up and long-term impacts could not be investigated, and so long-term efficacy could not be determined. Control measures were not able to be implemented to the acceptable standard. Future research should be more extensive, including analyses of other significant factors. Follow-up over a lengthy period of time should be used to determine the therapy's long-term effectiveness, and better experimental control may have been used in the studies to increase confidence in the results' validity.

IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The current study will be useful in designing interventions to increase positive dimensions of well-being among type-2 diabetes patients. Positive interpersonal ties, or social support, are linked to self-management, particularly in the case of diabetes. Peer interventions might be a useful way to improve social support for diabetes treatment. Again, gratitude training is cost-effective in terms of time, and it applies a wide range of clients. Gratitude therapy, whether used alone or in combination with other behavioural interventions, have a number of drawbacks. Not all patients will be interested in activities that will improve their mood and well-being, and not all patients will be willing or able to participate in positive activities on a regular basis, despite the exercise's simplicity. Furthermore, while there is a lot of evidence relating good psychological emotions to healthy behaviours, there is less evidence tying PPIs to essential physiologic outcomes. Overall, this research is still in its in-

fancy, and gratitude therapy (alone or in combination) are far from becoming well-established health-promoting therapies. Therefore, positive psychological therapies, including such issues, should be combined with pharmacological treatment to help diabetics to manage their disease effectively.

All of the above can only be accomplished if governments make health care a high-priority investment issue. In the case of PPIs in chronic physical conditions, if the results of medical research are backed up by discoveries from behavioural research that addresses psychological requirements, it can lead to advances in a variety of areas that will benefit not just people but also communities and nations. This is especially true for developing countries, as a study states investment in chronic illness preventive programs is crucial for many low- and middle-income countries grappling with poverty reduction.[46]

Given the clear links between well-being and outcomes in type-2 diabetes, as well as the promising results of early positive psychology-based studies, more research is required to determine whether PPIs can affect function, daily activities, and psychological health in this key population. In light of the growing significance of positive psychology within the health care systems, this research can lay the foundation for further studies and facilitate high-quality clinical practices and better working circumstances for health practitioners on a global scale.

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