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Research Paper

A Study Determining the Relationship between Stress, Psychological Morbidity and the Well-being of People Coping with Diabetes

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ABSTRACT

Purpose: This research paper explores the intricate relationship between stress, general health, and the overall well-being of individuals diagnosed and coping with diabetes. Diabetes, a chronic medical condition affecting millions worldwide not only demands rigorous management but is also significantly influenced by psychosocial factors. The study investigates the impact of stressors on diabetes management, analyzing the physiological and psychological consequences of stress and their subsequent effects on health outcomes. **Approach:** The paper aims to shed light on how stress levels, psychological morbidity and health behaviors, which can significantly influence the well-being of individual scoping with diabetes. Through a comprehensive review of existing literature and an empirical study, the researcher investigated the associations and relationship between these variables by using three standardized tests. **Results:** The findings suggest that addressing stress and promoting healthy behaviors can enhance the well-being individuals coping with diabetes.

Keywords: *Diabetes, Stress, Psychological Morbidity, Wellbeing*

Diabetes mellitus, a group of metabolic disorders characterized by high blood sugar levels, has become a global health concern. The prevalence of diabetes has risen dramatically in recent years, leading to increased research efforts aimed at understanding the various factors affecting its management and overall impact on well-being. Diabetes is a global public health concern, with an estimated 463 million adults living with the condition in 2019, and this number is projected to increase to 700 million by 2045 (International Diabetes Federation, 2019). Managing diabetes is a complex and demanding task that involves controlling blood glucose levels, adhering to dietary recommendations, and maintaining an active lifestyle. Moreover, stress, both chronic and acute, can have substantial effect on individual's health and make it very difficult in diabetes management. Stress can lead to poor health behaviors, such as unhealthy eating, sedentary lifestyles, and disrupted sleep, which, in turn, can worsen diabetes-related outcomes. This study looks at

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the relationship between health and stress and how it affects the general wellbeing of diabetics.

Diabetes can be caused by hormonal imbalances, insulin resistance, immune disorders, pancreatic injury, and DNA variations. It can lead to severe complications such as hyperosmolar hyperglycemic state (high blood sugar causing dehydration and confusion), diabetes-related ketoacidosis (insufficient insulin causing fat breakdown and blood acidity), and serious hypoglycemia (low blood sugar). Additional complications include coronary problems (like atherosclerosis, heart attacks, and strokes), neuropathy (nerve damage), retinal dysfunction, illnesses, foot conditions, skin diseases, sexual problems, intestinal paresis, hearing loss, and oral health issues. Management involves monitoring blood sugar, taking medications, using insulin, dietary changes, regular exercise, and controlling cholesterol, blood pressure, and weight. The risk of pre-diabetes, type 2 diabetes, gestational diabetes, and autoimmune and genetic diabetes cannot be prevented, but it can be decreased by following a balanced diet, getting regular exercise, managing stress, limiting alcohol intake, getting enough sleep, quitting smoking, and taking prescribed medications for diabetes risk factors.

In the intricate tapestry of human existence, the interplay between health, stress, and well-being is a dynamic and complex phenomenon, especially when considering chronic conditions like diabetes. High blood sugar levels are a hallmark of diabetes, a condition that requires a sophisticated grasp of these relationships for both efficient treatment and overall wellness. Maintaining health for individuals with diabetes involves vigilant blood glucose control through diet, physical activity, and medication. Regular monitoring and adherence to treatment plans are essential, extending the concept of health beyond merely the absence of illness to the active management of the condition.

Stress both psychological and physiological significantly impacts diabetes. Stress causes the body to release chemicals like adrenaline and cortisol, which can raise blood sugar levels and upset the delicate balance needed to treat diabetes. Chronic stress can lead to insulin resistance, exacerbating diabetes challenges. Well-being for individuals with diabetes involves managing the condition and addressing emotional and social aspects, as diabetes can cause emotional stress, frustration, anxiety, and depression. Enhancing well-being requires support networks, mental health promotion, and a positive mindset.

Mind-body techniques that help manage stress and enhance blood sugar management, such as mindfulness meditation, yoga, and deep breathing exercises, are effective tools for improving well-being and reducing stress in people with diabetes. Building a robust social support system through support groups and peer encouragement can alleviate the emotional burden of diabetes. A holistic health approach focusing on balanced nutrition, regular exercise, and adequate sleep is crucial for diabetes management and overall well-being. These lifestyle factors mitigate stress and promote vitality.

Well-being, defined as being comfortable, healthy, and happy, involves making meaningful contributions and maintaining quality of life. Changes in blood sugar levels can lead to mood swings, worry, exhaustion, and problems with mental clarity. Good mental health, high life satisfaction, purpose, stress management, physical fitness, strong relationships, meaningful interactions, and belonging are key components. Studies show personal relations impact happiness more than financial status.

The World Health Organization (WHO) defines health as more than just the absence of disease; it is a comprehensive condition of physical, mental, and social well-being. It is a practical tool that highlights social, individual, and physical skills. Mental and physical health, along with spiritual, emotional, and economic well-being, is interconnected. For example, financial health reduces stress and improves diet, while spiritual health provides tranquility and purpose, enhancing mental health. Health should be viewed holistically to achieve total well-being and balance.

Stress is a natural response to challenging situations, causing anxiety or mental strain. It can arise from pressure, life changes, worry, excessive responsibilities, or discrimination. Symptoms include aches, chest discomfort, fatigue, and sleep issues. Managing stress is crucial as it can worsen mental health. Techniques include physical activity, balanced diet, and limited screen time, and self-care, journaling, reducing caffeine, spending time with loved ones, and setting boundaries.

In summary, coping with diabetes extends beyond physical health to encompass emotional and social well-being. A complete approach to health must acknowledge the influence of stress on managing diabetes and incorporate holistic techniques to improve overall well-being. By embracing a holistic perspective, individuals with diabetes can navigate their condition's challenges and foster balance and vitality in their lives.

LITERATURE REVIEW

Diabetes and Well-Being

Well-being in the context of diabetes encompasses various aspects, such as physical health, mental health, social support, and quality of life. Individuals with diabetes often face physical challenges, including hyperglycemia and hypoglycemia, which can lead to complications if not managed properly. They may also experience psychological distress related to the condition, such as anxiety and depression. Social support from family and healthcare providers plays a vital role in helping individuals cope with the demands of diabetes. The quality of life can be diminished due to the daily self-management tasks and the fear of complications (Lloyd & Smith, 2021).

Stress and Diabetes

Stress is a known factor that can negatively affect glycemic control and diabetes management. Hormonal imbalances brought on by prolonged stress, such as high cortisol levels, can result in insulin resistance and poor glucose management. Acute stress can lead to increased blood sugar levels due to the release of stress hormones like epinephrine and nor epinephrine. Stress can also lead to emotional eating and other unhealthy coping mechanisms, which can further complicate diabetes management (Hackett et al., 2014).

Health Behaviors and Diabetes

For those who have diabetes, it is essential to maintain a healthy lifestyle. This include keeping an eye on blood glucose levels, following prescription drug regimens, maintaining a balanced diet, and getting frequent exercise. Unhealthy habits including bingeing on sugar-filled foods and leading sedentary lives can result in weight gain, poor glycaemic control, and a higher chance of complications from diabetes (Narayan et al., 2016).

Perceived Stress, Coping and Psychological Well-Being among Diabetes Patients

The aim of the research was to investigate potential differences between individuals with and without diabetes in terms of psychological well-being, coping strategies, and perceived stress. A comparative study including 240 adult participants from Bangladesh was conducted. There were 120 healthy persons without diabetes, ages ranging from 31 to 59 (M = 41.07 years, SD = 6.81), and 120 diabetics, ages ranging from 27 to 56 (M = 40.10 years, SD = 6.86). They were split equally between the sexes. There were no discernible variations between the two groups of people's age, occupation, educational attainment, or monthly family income when analysed using the 2 and Mann-Whitney U tests. The results of the Mann Whitney U test showed a significant variation in psychological, coping, and perceived stress. (Farhana Yeasmin Satu and Rumana Aktar et al., 2017)

Wellbeing and Diabetes

Diabetes is a progressive metabolic condition that impairs a person's social, mental, and physical well-being in addition to their psychological state. Furthermore, the most common psychological issues among diabetic patients have a significant negative impact on the patient's social life and overall well-being if left untreated. In treatment interventions, addressing psychosocial elements such cognitive, emotional, behavioural, and social factors will assist break through psychological obstacles related to diabetes adherence and self-care, which is the ultimate objective of diabetes management. The ideal situation that all diabetologists aspire to is one in which patients with psychosocial issues are recognized and assisted early in the course of their diabetes, as this may enhance their psychosocial well-being and capacity to adapt or assume appropriate responsibility in diabetes self-management. (Rajiv Yeravdekar, Biranchi Narayan Jena, and

Wellbeing, Self-care and Weight Management among Diabetes Patients

The study examined the association between self-reported weight-related discrimination and diabetes outcomes, such as glucose control, discomfort associated with diabetes, and diabetes self-care. 185 adults in a community who had poorly controlled type 2 diabetes (mean age 55.4; 80% White/Caucasian, 65% female) completed self-report measures on discrimination, diabetes self-care activities, and distress related to diabetes as part of a larger research study. In addition, the subjects' weight, height, and glycated hemoglobin (HbA1c) were assessed by qualified study personnel. Those who attributed self-reported discrimination to weight were also those with significantly higher HbA1c levels, higher reports of pain associated with diabetes, and inferior diabetes-related self-care behaviors (general diet, exercise, and glucose testing). Even after accounting for BMI, depressive symptoms, overall discrimination, demographics, and other variables, these correlations persisted. The findings of this research show a robust correlation between a number of negative outcomes related to diabetes and the feeling of weight stigma among people with type II diabetes. Patients with type 2 diabetes may benefit from initiatives to lessen exposure to and/or teach adaptive coping strategies for weight stigma.

Yoga and Diabetes

In 2017, Arkiath Veettil Raveendran, Anjali Deshpande, and Shashank R Joshi conducted research on the impact of yoga in diabetes management. The results indicate that various yoga poses, mudras, bandhas, pranayama, cleansing methods, meditation, mindfulness, and relaxation are among the practices that have been demonstrated to considerably enhance clinical outcomes by reducing blood glucose levels and controlling co morbid conditions linked to type 2 diabetes mellitus.

Living well and Diabetes

In 2022, Meenakshi R. Verma and associates carried out research to investigate the impact of Art of Living's 'Living Well' program on the blood pressure, pulse rate, and blood sugar levels of diabetic volunteers over the course of a week. Over the course of seven days, participants in the Living Well workshop participated in a comprehensive Yogic Breathing Program that included breathing exercises, meditation, three stages of Pranayama, Sudarshan Kriya Yoga (SKY), yogic movements and postures (Asana), and a discussion of stress-relieving principles. According to the research, people with type 2 diabetes could gain by using SKY and other complete yogic breathing techniques.

Diet, Yoga and Diabetes

In 2005, Varun Malhotra, Savita Singh, Om Prakash Tandon, and Suman Bala Sharma studied twenty patients with mild to moderate type II diabetes who were practicing yoga for forty days under a certified instructor. According to the study, there was a substantial drop in the waist-hip ratio and changes in insulin levels in individuals with non-insulin-dependent diabetes mellitus (NIDDM), suggesting that yoga may enhance glucose utilization and fat redistribution. Apart from medication and food, yoga poses can aid in managing Type II diabetes.

Exercise, Mind-body Relationship with Diabetes

A review of the literature was conducted by Senthil Raj Thangasami, Arati Lal Chandani, and Thangasami in order to give a comprehensive summary of the studies that compare the benefits of yoga and exercise for diabetic patients. The following are the paper's conclusions: Yoga has a positive impact on glycaemic control and could be a desirable alternative to traditional strength training and aerobic workout regimens because it requires no equipment and takes up less space. Exercise can help people with type 1 and type II diabetes better absorb glucose by increasing insulin sensitivity and decreasing body fat.

METHODOLOGY

Research Aim

To determine the relationship between stress, psychological morbidity and the wellbeing of people coping with diabetes.

Operational Definitions

In this research-

- ***Stress refers to*** perceived stress which is more about a person's sense of unpredictability and loss of control than the stressors themselves. It may also refer to a person's belief in their capacity to face adversity. It is assessed by the Perceived Stress Scale ***developed by Cohen, Kamarch & Memelstein (1983)***

- **Psychological Morbidity** refers to the dimensions of general health as assessed by the General Health Questionnaire developed by Goldberg& Williams (1988). The dimensions of health/morbidity comprise of Somatic Symptoms, Anxiety and Sleeplessness, Social Dysfunction and Severe Depression.

- **Well-being** refers to the individual's subjective sense of well-being as assessed by the PGI General Well-Being Scale (PGIGWB) developed by S.K. Verma and Anita Varma (1989).

Objectives

1. To explore the relationship between stress and wellbeing of people coping with diabetes
2. To examine the impact of psychological morbidity on the wellbeing of people coping with diabetes.
3. To provide insight to the unique approaches adopted by the cases selected for the study to manage and cope with diabetes.

Hypotheses

1. There is a negative correlation between stress and wellbeing of people coping with diabetes.
2. There is a negative correlation between psychological morbidity and wellbeing of people coping with diabetes.

Variables

Independent Variable-

- Stress
- Psychological Morbidity.

Dependent Variable- Wellbeing of diabetic patients

Sample

Methodology of this research includes administering of 3 scales where so many of them are male and so many of them are female ranging from the age group of 45 to 65 years. All the patients who were selected for the study were seeking treatment from Kanva Hospitals and Diagnostics Bangalore, Karnataka, India. The patients consent to participate in the research was obtained. Each of the 10 patients was asked to respond to a set of 10 questions presented in an Information Schedule. The 10 questions pertained to their diet; their perception of stress, their coping mechanisms to manage stress, their diet schedules was prepared by the researcher. The 10 questions on the information schedule aimed to determine the coping patterns of the diabetic patients selected for the study.

Procedure

Each subject was sent a Google form with the 3 standardized questionnaires and the responses were tabulated and subject to statistical analysis. The subjects were also interviewed and were asked to respond to the Coping Behaviors Information Schedule prepared by the researcher.

Research Design

This study utilized a mixed-method approach, combining both quantitative and qualitative methods to assess the relationship between stress, psychological morbidity and the well-being of individuals coping with diabetes. Statistical analysis of the data focused on correlation between stress, psychological morbidity on well-being. The qualitative analysis involves examining the responses of the 10 diabetic patients to questions related as to how they coped with the diabetes. A sample of 10 individuals with diabetes was taken for the case study. Participants completed self-report questionnaires assessing stress levels, general health, and well-being. Additionally, these 10 participants engaged in semi-structured interviews to provide qualitative insights into their experiences.

ANALYSIS OF RESULTS

- The responses of the patients to the Perceived Stress Scale, the General Health Questionnaire and PGI General Well-Being Scale (PGIGWB) were scored and interpreted with reference to the norms.

- The correlation between levels of perceived stress and levels of wellbeing was determined as well as the correlation between the levels of psychological morbidity and levels of wellbeing was determined.

- The responses of the 10 patients to the information schedule were recorded and used for discussion during an interview to get an insight to the patients approach to coping with stressors and psychological morbidity to maintain and enjoy a state of wellbeing even with a diagnosis of diabetes.

Tests used for Assessment

- **Perceived Stress Scale (PSS- 1983)** -This scale was developed by Cohen, Kamarch& Mermelstein and has 10 items which helps to assess the degree of stress people feel in unpredictable situations, out of control and overloaded situations. Scores are interpretedas low, moderate and high stress levels experienced by the respondents.

- ***General Health Questionnaire (GHQ-1988)-This scale was developed by*** Goldberg & Williams and has 28 items which measures psychological morbidity. The scale provides four options for each item and the respondent is expected to underline 1 of the 4 options. The dimensions of health/morbidity comprise of Somatic Symptoms, Anxiety and Sleeplessness/Insomnia, Social Dysfunctionand Severe Depression.

- **PGI General Well-Being Scale (PGIGWB- 1989) -** This scale was developed by S. K. Verma & Amita Verma and has 20 items which measures general wellbeing of the individuals. The scores measure positive mental health of the participants.

- **The Coping Behaviour Information Schedule:** Thisschedule was prepared by the researcher. It consisted of 10 questions related to the coping behaviour of patients with diabetes. The patient was instructed to put a tick mark for one of the 3 options to question 1 and respond with yes or no for the remaining 9 questions. The questions in the schedule were as follows:

Case No:
Please respond by putting a tick mark for the correct option.
1.Is your physical and mental health better
a) with the practicing diet given by doctor.
b) following a particular diet pattern by yourself.
c) not following any diet and going with the flow.
2. Do you believe that stress can affect your blood sugar levels? Yes / No
3. Have you noticed a correlation between stressful days and higher blood sugar readings? Yes / No
4. Do you practice stress reducing techniques like meditation or deep breathing to help manage your diabetes? Yes / No
5. Do you engage in at least 30 minutes of physical activities such as brisk walking most of

the days? Yes / No
6. Do you use a fitness tracker to track your physical activity? Yes / No
7. Do you practice stretching exercises regularly to improve flexibility and muscle tension? Yes / No
8. Have you participated in an exercise class specifically designed for people dealing with diabetes? Yes / No
9. Do you practice yoga to help manage stress and anxiety? Yes / No
10. Have you tried meditation to reduce stress and improve blood sugar levels?

DISCUSSION

The aim of this research was to determine the relationship between stress, psychological morbidity and the wellbeing of people coping with diabetes.

High levels of stress are associated with poor health behaviors and lower well-being. Interventions targeting stress management techniques and promoting healthy behaviors may have a positive impact on the overall quality of life for people with diabetes.Several key themes and observations have emerged from an examination of the scores of both the individual patients and the group.The results of this study as indicated in the table below,supports the existing literature suggesting that stress and high levels of psychological morbidity plays a crucial role in the well-being of individuals coping with diabetes.

Table showing the mean scores on the PSS, GHQ and PGI Scales, the correlation between PSS and PGI scores and the correlation between GHQ and PSI Scores

Scales	**Mean**	**INTERPRETATION**
PSS	20.5	Moderate stress
GHQ	26.2	High Psychological Morbidity
PGI	29.2	Moderate level of well-being
PSS PGI	r -0.2	Low Negative Correlation
GHQ PGI	r -0.3	Low Negative Correlation

The mean score of 20.5 on the psychological stress scale indicates that this group of patients were experiencing moderate levels of stress after the diagnosis of diabetes. One patient with a score of 30, stands out in this group with high stress; whereas the remaining 9 patients have moderate and relatively lower stress levels.

The scores of the group as a whole on the General Health Scale showsa range of distress levelswith high levels of psychological morbidity post diagnosis of diabetes except in one patient. Each patient had score above the cut off score of 4 showing some form of psychological morbidity Most of the 10 patients scored high on the anxiety dimension,fairly high on somatic symptoms and insomnia and lower scored on social dysfunction and depression.A notable portion of the group was experiencing moderate to severe distress.This variation suggests that while some individuals are coping well, others are facing significant mental health challenges.

With a total score of 205 and a mean of 20.5, the group's stress level is interpreted as moderate. This suggests that stress is a common experience among the participants, but it is not uniformly high across the group.

The qualitative study involved examining the responses of the 10 diabetic individuals to the coping behaviors information schedule questions.

Additionally, these ten individuals took part in semi-structured interviews to give qualitative insights into their experiences. Of the 10 patients 3 followed the diet prescribed by their doctor, 4 followed their own diet and the remaining 3 ate whatever diet was available to them. All patients were convinced that stress affects blood sugar levels and confirmed that their blood sugar record seems to be higher on stressful days. Eight of the 10 patients were attempting to manage stress and subsequently their blood sugar levels through meditation and deep breathing exercises. The same 8 patients also engaged in brisk physical activity such as walking for at least 30 minutes and used a fitness tracker on most of the days. These patients also attempted to work on their anxiety through yoga and had enrolled for exercise classes as well.

During the interviews participants who reported high stress were aware that they were engaging in emotional eating, experiencing disruptions in sleep patterns, and neglected regular exercise.

Preliminary findings also indicate a negative low correlation of -0.2between high stress levels and wellbeing in individuals coping with diabetes as well as negative low correlation of -0.3 between psychological morbidity and diabetic patients' perception of their wellbeing. Most patients were unaware of the importance of ones perceived wellbeing and how it could be enhanced. They appreciated the psychoeducation related to psychological morbidity dimensions and wellbeing.

Implications and Recommendations

- Targeted Interventions: Tailored interventions with a component of psychoeducation are essential to address the lowered levels of well-being and distress levels among individuals with diabetes. For instance, those with severe distress or low well-being could benefit from individual counseling or structured stress management programs.
- Stress Management Programs: Group-based stress reduction activities like mindfulness sessions, yoga classes, or workshops can effectively support broader groups of individuals experiencing moderate stress associated with diabetes.
- Regular Monitoring: Routine assessments of well-being, distress levels, and stress are vital for tracking progress and evaluating intervention effectiveness in diabetes management.
- Healthcare Interventions: Integrating stress management and mental health support into diabetes care plans is crucial. This includes regular screenings for psychological distress and ensuring access to counseling services.
- Public Health Initiatives: Advocating through public health campaigns can raise awareness about the psychological challenges of diabetes and promote community-based support networks.
- Future Research: Future directions should include longitudinal studies on the impact of stress management interventions and culturally tailored approaches for diverse diabetes populations.

CONCLUSION

This research paper highlights the intricate relationship between stress, psychological morbidity, health behaviors, and the well-being of individuals coping with diabetes. The findings emphasize the importance of addressing stress and promoting healthy behaviors to enhance the quality of life for those managing diabetes. Healthcare providers should consider these factors when designing comprehensive care plans. Future research could further develop and evaluate interventions targeting stress reduction and the promotion of healthy lifestyles in individuals with diabetes. The data reveal diverse experiences of well-being, health, and stress within the group, with many managing moderately well, but significant pockets of severe distress and varying stress levels need attention. Recognizing these differences and implementing supportive measures can improve the group's overall mental health and well-being

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Conflict of Interest

The author(s) declared no conflict of interest.

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