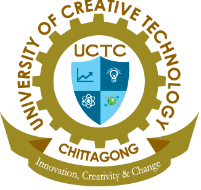
**A Dissertation Submitted to the Department of Public Health at the University of**

**Creative Technology, Chittagong for the Partial Fulfillment of the Requirements**

**for the Degree of Master of Public Health (MPH)**



**Quality of Life and Its Associated Factors Among Adult Patients with Type II Diabetes in Cox’s Bazar Sadar Hospital, Bangladesh**

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**Abstract**

The global increase in the elderly population, coupled with the rise of chronic diseases like diabetes, presents a significant public health challenge. Diabetes, particularly type 2, is a leading cause of morbidity and mortality worldwide, significantly impacting the quality of life of those affected. This study aims to explore the factors influencing the quality of life in individuals with diabetes and the importance of effective management strategies. Data were analyzed using descriptive and inferential statistics, including chi-square tests, to explore associations between health-related quality of life and socioeconomic factors. This study investigates the association between various factors and health-related quality of life (HRQOL) in type 2 diabetic patients. Significant associations were found between family history of diabetes (X² = 6.345, p = 0.012), drug regimen (X² = 4.433, p = 0.035), and HRQOL. Notably, 36.8% of patients with a family history of diabetes reported poor HRQOL, compared to 63.2% without. Additionally, those on oral anti-diabetic medications had a higher proportion of poor HRQOL (68.4%) compared to those using both oral and injectable medications (31.6%). The study found that family history of diabetes and drug regimen significantly impact health-related quality of life (HRQOL) in type 2 diabetic patients. Patients with a family history of diabetes and those on oral anti-diabetic medications alone were more likely to report poor HRQOL, while comorbidities, BMI, and fasting blood sugar levels also showed strong associations with HRQOL, highlighting the importance of comprehensive disease management.

***Keywords: Type 2 Diabetes, Health-Related Quality of Life, Family History, Drug Regimen, Disease Management***

**CHAPTER I**

**INTRODUCTION**

**1.1 Introduction**

In the contemporary era, factors such as a rise in life expectancy and a decline in fertility rates have resulted in a global surge in the elderly population. This phenomenon, often referred to as the aging of the world, has emerged as a significant public health challenge in recent times. As individuals enter old age, there is a notable increase in the likelihood of developing chronic diseases. Recent research indicates that approximately 8% of the elderly population is affected by at least one chronic ailment, elevating their susceptibility to disability and mortality. Furthermore, nearly 40% of elderly individuals residing in communities grapple with various limitations attributed to chronic conditions, with diabetes being a prevalent and incapacitating disease among this demographic. The economic burden of diabetes on governments worldwide is substantial (Silva et al., 2018).

Diabetes stands as an escalating metabolic threat in our modern age. Its historical roots date back to an Egyptian manuscript from 1500 BC, where excessive urine discharge was first noted. The term "diabetes" or "to pass through" was coined by the Greek Apollonius of Memphis around 250 BC. In 400-500 BC, Indian physicians Sushruta and Charaka distinguished between type 1 and type 2 diabetes, associating the former with youth and the latter with obesity. Thomas Willis added "mellitus" or "from honey" in the late 1600s, inspired by the sweet taste of diabetic patients' urine. Aretaeus of Cappadocia, an Ancient Greek physician from the 1st century AC, provided the first comprehensive clinical description of diabetes, noting the excessive urine production as a characteristic symptom. This ailment has persisted throughout history, appearing in Aviccena's the Canon of Medicine in medieval Persia and in the Roman Empire, where Galen documented cases of diabetic patients. The term "sugar urine disease" entered Korean and Japanese medicine as táng niào bìng. Although diabetes has been recognized since ancient times, its pathogenesis became clear around 1900, with the discovery of insulin by Canadians Frederick Banting and Charles Best in 1921, followed by its first clinical use in 1922 (Trikkalinou et al., 2017a).

Diabetes mellitus (DM) is a chronic condition impacting both developed and developing nations. According to the International Diabetes Federation (IDF), there were 415 million global cases in 2015, a number projected to reach 642 million by 2040. In Sub-Saharan Africa, an estimated 14.2 million adults aged 20–79 grapple with diabetes, with Ethiopia, a highly populated country in the region, bearing the highest-burden at 1.3 million cases and a prevalence of approximately 3.8% (Wolde et al., 2020).

Recognized by the World Health Organization (WHO) as a significant contributor to preventable mortality and morbidity among non-communicable diseases, diabetes is particularly noteworthy for its impact on global health. In 2018, over 500 million people worldwide were living with type 2 diabetes (T2DM), and lifestyle changes and behavioral factors significantly contribute to the escalating diabetes prevalence. Nepal, for instance, saw an increase in T2DM from 8.4% in 2015 to 11.7% in 2017, underscoring the global trend influenced by unhealthy lifestyles. Notably, T2DM is no longer confined to affluent populations, as its prevalence is on the rise in economically disadvantaged communities. The chronic nature of diabetes, coupled with its various complications, adversely affects the quality of life for individuals with T2DM (Chowdhury et al., 2022).

Individuals with T2DM may exhibit no symptoms or experience signs such as polydipsia, polyuria, polyphagia, lethargy, nocturia, and overweight. The diagnosis of DM relies on specific laboratory criteria, including fasting blood glucose levels of 126 mg/dl or 7 mmol/l or higher in two or more sessions following an eight-hour fast, an HbA1C level of 6.5% or more without fasting, an oral glucose tolerance test (OGTT) result of 200 mg/dl or more after consuming 75g of anhydrous glucose dissolved in water, and random blood glucose levels of 200 mg/dl or more accompanied by diabetes symptoms (Jenkusky & Gawlik, 2023).

Quality of life (QoL) serves as a vital global health outcome measure, encompassing physical, psychological, and social dimensions influenced by individual experiences, beliefs, expectations, and perceptions. Healthcare providers must comprehend the multifaceted impacts of chronic diseases like diabetes on patients' physical, emotional, and social well-being. Ample evidence suggests that effective management significantly enhances both immediate and long-term QoL for individuals with type 2 diabetes, making QoL assessment a crucial facet of comprehensive diabetes care (Kueh et al., 2015).

Despite healthcare providers delivering adequate care and support to severely ill diabetes patients, there can be a disparity between patients' and providers' perceptions of QoL. Therefore, the systematic measurement of QoL aids in monitoring treatment adherence, ensuring alignment with guidelines, and enhancing patients' well-being. Analyzing QoL data helps identify subgroups with diminished QoL, guiding targeted interventions to improve their circumstances, prevent severe consequences, allocate resources efficiently based on unmet needs, inform strategic planning, and monitor the effectiveness of interventions. Elevating the quality of life stands as a fundamental goal for the Centers for Disease Control and Prevention, reflecting a critical outcome for all medical interventions in diabetes patients. To enhance the World Health Organization Quality of Life (WHOQOL), healthcare providers must grasp their patients' subjective perceptions of QoL (Trikkalinou et al., 2017a).

**1.2 Justification of the Study**

Quality of Life (QoL) is inherently subjective, encompassing dimensions that are challenging to measure directly, relying on individuals' perceived impacts on their lives. Individuals with Type 2 Diabetes (T2DM) often exhibit lower QoL and heightened depressive symptoms compared to those without T2DM. T2DM significantly diminishes patients' quality of life, resulting in higher disability-adjusted life years when compared to many other diseases. This condition induces long-term damage to various organs, accounting for the majority (90%) of all diabetes cases. The complications associated with T2DM are major contributors to morbidity and mortality, exerting a substantial influence on patients' QoL and productivity (Deshpande et al., 2008).

In Bangladesh, individuals with T2DM are predicted to experience a comparatively reduced QoL. The challenges posed by the features, complications, and daily management demands of T2DM impact health-related quality of life, both through macrovascular complications and non-vascular co-morbidities. Despite good access to specialized healthcare in urban areas, T2DM patients in Bangladesh demonstrate a lower quality of life, highlighting the urgent need to assess areas with limited healthcare access (Lewis & Newell, 2014).

While the WHO-BREF tool is widely used for QoL assessment, the D-39 questionnaire, specifically designed for T2DM, provides more precise insights into the dimensions most affected by the condition. This study in Cox’s Bazar seeks to understand the QoL of T2DM patients, considering their socio-economic and clinical status. The anticipated results aim to serve as a foundation for policy development, offering valuable insights into avenues for enhancing the QoL of T2DM patients. Ultimately, this research aims to empower health professionals and contribute to the overall improvement of T2DM patients' QoL in Bangladesh.

**1.3 Operational Definitions**

**Type 2 diabetes:** Type 2 diabetes, previously referred to as non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes, may constitute approximately 90 to 95 percent of all diagnosed diabetes cases. This form of diabetes is commonly associated with factors such as older age, obesity, a family history of diabetes, prior gestational diabetes, impaired glucose tolerance, physical inactivity, and race/ethnicity. While traditionally linked to adults, there is an increasing incidence of Type 2 diabetes in children and adolescents. Treatment typically involves oral hypoglycemic agents, including sulfonylureas, biguanides, and newer agents like thiazolidinediones, meglitinides, and alpha-glucosidase inhibitors (Barnett, 2013).

**Quality of Life (QoL):** Quality of Life (QoL), as defined by the World Health Organization (WHO), refers to individuals' perception of their life's position within the cultural and value systems of their environment. It encompasses their goals, expectations, standards, and concerns, and is intricately influenced by physical and psychological health, level of independence, social relationships, and interactions with the environment (Vahedi, 2010).

**1.4 Research Question (s)**

What is the prevalence of quality of life and its determinants among adult individuals with Type 2 diabetes mellitus receiving care in Cox’s Bazar district Sadar Hospital?

**CHAPTER II**

**LITERATURE REVIEW**

The prevalence of diabetes has significantly risen in both developed and developing nations over the past four decades, primarily attributed to abundant food availability, resulting changes in dietary patterns, and reduced physical activity. As per the International Diabetes Federation, approximately one in every 11 adults globally is afflicted with diabetes (415 million individuals). Projections indicate that by 2040, this prevalence will escalate to one in every 10 adults (642 million individuals). Gestational diabetes affects one in seven births, and 542,000 children worldwide grapple with type 1 diabetes. Alarmingly, every 15 years, an individual succumbs to diabetes, and 12% of global healthcare expenditures are directed towards diabetes-related costs. A concerning aspect is that 46.5% of adults with diabetes remain undiagnosed. A recent Greek study revealed a 10.6% age- and sex-adjusted prevalence of diabetes, with 34% of cases being undiagnosed (Trikkalinou et al., 2017a).

The progression of diabetes, particularly inadequate glycemic control, gives rise to numerous potentially life-threatening complications. Nearly half of adults with chronic kidney disease stem from the diabetic population. Additionally, 9.8% of diabetics have experienced a heart attack, 9.1% suffer from coronary artery disease, 7.9% face congestive heart failure, 6.6% have suffered a stroke, and 27.8% contend with chronic kidney disease. Moreover, 22.9% encounter foot problems and 18.9% suffer from eye damage. The cumulative impact of these complications, coupled with metabolic challenges, demands a substantial portion of patients' daily energy, planning, and attention, a situation aptly described by Rubin as "diabetes overwhelms” (Ramsey et al., 2022).

In 1948, the World Health Organization introduced a comprehensive definition of health, considering it not only as the absence of disease and infirmity but also as the presence of physical, mental, and social well-being. Over the subsequent six years, there has been a significant focus on investigating how psychosocial factors impact health outcomes. Quality of Life (QoL) is identified as a multidimensional concept, encompassing an individual's subjective evaluation of psychological, social, and physical well-being. It is crucial to note that QoL involves various domains, each contributing uniquely to the overall perception of well-being, and it should be evaluated based on the patient's self-report rather than the perspective of healthcare professionals. Unlike objective physical health status, which is assessed by physicians through reports of symptoms or the presence of complications, Quality of Life is a patient self-reported measure (Megari, 2013).

According to Czerwik-Kulpa & Chylińska (2017), Quality of Life (QoL) is not a fixed measure but rather an approach to health assessment that centers on patient reports, feelings, and expectations (Czerwik-Kulpa & Chylińska, 2017). QoL, as per Svalastog et al (2017), extends beyond health-related aspects to encompass a broad spectrum of human experiences (Svalastog et al., 2017). To narrow the focus to aspects directly tied to disease, medical treatments, or both, the term Health-Related Quality of Life (HRQOL) was introduced, exploring how health and disease influence overall QoL (Polonsky, 2000). Measurement of health dimensions includes physical, psychological, and social aspects to provide a comprehensive understanding of life functioning. There's a growing acknowledgment that chronic illnesses and their treatments should be assessed for their impact on QoL alongside more traditional medical outcomes like morbidity and mortality (Conradie et al., 2022).

Hareendran (2004) underscores the value of patient-reported outcomes, such as QoL, in evaluating new treatments, particularly in cases where there are no objective markers of symptoms or their impact (Bullinger & Quitmann, 2014). These outcomes complement traditional endpoints, offering insight into the significance of treatment effects from the patient's perspective. Additionally, information on QoL outcomes enhances patient involvement in treatment decision-making. Furthermore, QoL outcomes play a crucial role in guiding healthcare decision-making by providing a deeper understanding of the burden of illnesses and assisting in healthcare allocation decisions. Quality of Life has been identified as a significant objective for public health in the Healthy People 2010 report, outlining health objectives for the U.S. to achieve by 2010. The primary goal of Healthy People 2010 is to enhance life expectancy and improve the quality of life for individuals of all ages. Diseases can affect the QoL of people in different ways depending on the aspects of life that are compromised due to the presence of that disease. The management of diabetes itself has a major impact on people’s lives, in terms of physical and psychological well-being. This is due to the considerable demands imposed by current care practices on persons with diabetes. Complications associated with diabetes have been found to substantially increase the morbidity and mortality of affected persons and to reduce their QoL (Deshpande et al., 2008).

Patients with chronic diseases, such as Type 2 diabetes mellitus, express heightened concerns about their Quality of Life. This chronic condition is often associated with both short-term and long-term complications that can significantly diminish a patient's well-being, health status, and overall quality of life. Numerous studies consistently report a lower quality of life among diabetes patients, particularly in terms of physical functioning and well-being compared to individuals without diabetes (Tafazoli et al., 2017).

Diabetes can negatively impact physical well-being in three major ways. Firstly, the development of long-term complications in diabetic patients, such as vision loss, kidney damage, significant heart disease, erection problems, peripheral neuropathy leading to chronic pain, amputation, and/or impaired movement, contributes significantly to a decline in perceived quality of life. These complications can hinder or limit a patient's ability to work, perform household tasks, or engage in pleasurable activities, thereby impairing their independence and overall functionality (High et al., 2019).

**CHAPTER III**

**RESEARCH METHODOLOGY**

**3.1 Study Objectives**

**General Objective:** The current study seeks to assess the quality of life and its determinants among adult individuals with Type 2 diabetes mellitus receiving care in Cox’s Bazar district Sadar Hospital.

**Specific Objectives:**

* To evaluate the prevalence of socio-economic factors by quality of life in individuals with Type 2 diabetes mellitus
* To examine the association between the quality of life in Type 2 diabetic mellitus patients and socio-economic status.
* To explore the association between the quality of life in Type 2 diabetic mellitus patients and clinical factors.

**3.2 Conceptual Framework**

**Dependent Variable**

**Independent Variables**

**Socio-Demographic**

Age, Sex, Ethnicity

Family type, Marital Status

Religion, Residence

Educational Status

Occupation

Physical exercise

Smoking Habit

Alcohol Consumption

Counseling

Wealth index

Living status

**Clinical**

Diabetes-related complications

Confirmed co-morbidity

Duration of diabetes mellitus since diagnosis

Body Mass Index

Fasting blood glucose levels.

Physical trauma

Family history

Drug regimen

WHOQOL-BREF (domains: Physical health, Psychological, environmental, and social)

**3.3 Study Design**

This study employed a descriptive, cross-sectional study design, chosen for its suitability in collecting data randomly on various variables from participants at a single point in time. The research adopted a community-based approach to examine the Quality of Life (QoL) of individuals with Type 2 diabetes mellitus.

**Socio-economic variable:** The socio-economic variables utilized in this study, includes education and cultural factors, occupation, family dynamics, family possessions, home sanitation, economic status, and healthcare access.

**The second part (History taking):** Developed by the researcher, this section collected data on family history of diabetes, medical history of hypertension (HTN), previous surgical history, duration of follow-up, and smoking status.

**The third part (Medical data):** This segment covered the duration since the initial diagnosis of diabetes, the presence of diabetes complications, medical nutrition therapy, regularity of physical activity, glycated hemoglobin (HbA1c) level, and treatment regimen.

**The fourth part (Bio-physiological measurement):** This component includes Body Mass Index (BMI) and random blood sugar test (RBS). Weight was measured without shoes and heavy clothing, and height was measured with the patient standing straight on a flat surface. BMI was calculated as weight in kilograms divided by the square of height in meters. BMI categories followed international classifications: underweight (<18.50 kg/m2), normal range (18.50 - 24.99 kg/m2), and overweight (≥25.00 kg/m2)."

**Blood Sugar (RBS) test:** This involved obtaining a capillary blood sample through a needle stick, with the blood analyzed at a random time. The blood sugar level was measured in milligrams per deciliter (mg/dl). A random blood sugar level of 200 mg/dl or higher indicates diabetes, particularly when accompanied by symptoms such as frequent urination and extreme thirst.

**World Health Organization Quality of Life Questionnaire Abbreviated version (WHOQOL-BREF):** This questionnaire comprises 26 items, including two individual items assessing the overall quality of life and satisfaction with health. The remaining 24 items are grouped into four domains: physical health, psychological health, social relationships, and environment. Participants responded to each question on a 5-point Likert scale, with scores ranging from 1 to 5. Responses included very dissatisfied/very poor (coded as 1), dissatisfied/poor (coded as 2), neither dissatisfied nor satisfied/neither poor nor good (coded as 3), satisfied/good (coded as 4), and very satisfied/very good (coded as 5). The questions addressed experiences over the past two weeks (WHO, 2012).

**Scoring System:** The WHOQOL-BREF (Field Trial Version) generated four domain scores, with two individual items assessed separately: question 1, which inquired about an individual's overall perception of quality of life, and question 2, which focused on an individual's overall perception of their health. Domain scores were oriented positively, where higher scores indicated a better quality of life. The mean score of items within each domain was computed to determine the domain score. Mean scores were then multiplied by 4 to align them with the scores utilized in the WHOQOL-100. The first transformation method converted raw scores to transformed scores within a range of 4-20, making them comparable with the WHOQOL-100. The manual calculation method for individual domain scores is outlined below:

Physical Health Domain = ((6 - Q3) + (6 - Q4) + Q10 + Q15 + Q16 + Q17 + Q18).

Psychological Health Domain = (Q5 + Q6 + Q7 + Q11 + Q19 + (6 - Q26)).

Social Relationships Domain = (Q20 + Q21 + Q22).

Environmental Domain = (Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25).

The second transformation method scaled domain scores to a 0-100 range, utilizing the formula:

Transformed Scale = (Actual Raw Score − Lowest Possible Raw Score) × (100 / Possible Raw Score Range), where the actual raw score represents the values achieved through summation, the lowest possible raw score is the lowest attainable value through summation (4 for all facets), and the possible raw score range is the difference between the maximum possible raw score and the lowest possible raw score (16 for all facets: 20 – 4).

In instances where more than 20% of data were missing, the assessment was discarded. If up to two items were missing, the mean of other items in the domain was substituted. For cases with more than two missing items from the domain, the domain score was not calculated (except for domain 3, where the domain was calculated only if < 1 item was missing). A total score was computed by summing scores across all items, resulting in a WHOQOL-BREF score range of 26 to 130. The study adopted the following values: a score ≤ 65 denoted Poor Quality of Life (QOL) and a score > 65 suggested relatively Good QOL (WHO, 2012).

**3.4 Target Population & Sample Population**

The target population in a study is the group to which the study aims to extend its findings, often known as the theoretical population. In this particular study, the target population encompasses T2DM adult patients who visited Cox’s Bazar District Sadar Hospital in the study period.

**3.5 Study Site & Area**

Cox’s Bazar District Sadar Hospital is located in southeastern part of Bangladesh.

**3.6 Study Period**

An institutional-based cross-sectional study will be conducted from 01 April, 2024 to 30 Sep, 2024 in Cox’s Bazar District Sadar Hospital among type 2 diabetic mellitus adult patients.

**3.7 Sample Size**

The required sample size was determined by using single population proportion formula with basic assumptions of 95% confidence interval, 5% margin of error, and 73.6% estimated proportion of good health-related quality of life from a previous study (Saleh et al., 2014). Hence, the following formula was used for sample size calculation for the first objective:

The formula is: n =

Where, n = estimated sample size

Z = 1.96 (in 95% Confidence Interval)

p = prevalence, 73.6% (0.736),

q = 1- 0.736 = 0.264,

d = permissible error, 5% (0.05)

So, sample size (n) = {(1.96)2\*0.736\*0.264}/ (0.05)2 = 299.

**3.8 Inclusion Criteria**

Patients with type 2 diabetes mellitus will be approached in Cox’s Bazar Sadar Hospital. Respondents with given consent who will willingly join or participate in the study will be included.

**3.9 Exclusion Criteria**

Patients who will not match the inclusion criteria or who will not give their consent to participate in the study will not involve in the study.

**3.11 Data Collection Tools**

The primary researcher and research assistants will conduct interviews with the study participants to gather quantitative data. The questionnaire will be encompassed inquiries about demographic and socio-economic details, featuring a combination of open-ended and closed-ended questions. The questionnaire was structured into three sections: the first section, labeled as socio-demographic (Section A), the second section, focusing on the clinical features of participants (Section B), and the third, focusing on QoL (Section C).

**3.12 Data Management & Analysis Plan**

Data collection will involve conducting face-to-face interviews. Before initiating data collection, permission will be sought from the respective patients. A comprehensive explanation of the study's purpose will be provided to the respondents. Respondents will receive assurance, from an ethical standpoint, that the content of the interview will remain confidential and will not be disclosed to any unauthorized individuals.

**Data Preparation:** The data will be thoroughly cleaned and prepared for analysis, which includes the identification of missing values, outliers, and any other irregularities within the data.

**Descriptive Statistics:** Descriptive statistics will be calculated for the variables of interest. This will involve determining measures such as the mean, median, standard deviation, and frequency distribution. These calculations will provide insights into the data's distribution and facilitate the identification of outliers or unusual observations.

**Inferential Statistics:** Inferential statistical tests will be conducted to examine the study's hypotheses. These tests may include a chi-square test to assess the association between QoL and various socioeconomic factors.

**Interpretation of Results:** The results of the statistical tests will be interpreted, taking into consideration elements such as p-values, effect sizes, and confidence intervals. Typically, a p-value below 0.05 is considered indicative of statistical significance, implying that there is less than a 5% probability that the results are due to random chance.

**3.13 Quality Control & Quality Assurance**

Before collecting data from the respondents, a friendly and welcoming environment was established, and the research objectives were clearly communicated to the participants. Throughout the data collection process, an effort was made to engage with the respondents in the local Bangla language.

**3.14 Ethical Considerations**

Written permission will be obtained from the relevant authorities and the respondents before commencing data collection. The investigator will provide the respondents with a detailed explanation of the study's objectives before collecting data.

**CHAPTER IV**

**4 Results**

**Table 1: Association between gender and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 1.056  P = 0.304 |
| Female | 62 (48.1) | 72 (42.1) | 134 (44.7) |
| Male | 67 (51.9) | 99 (57.9) | 166 (55.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 1 examines the relationship between gender and HRQOL among type 2 diabetic adult patients. Among females, 48.1% reported good HRQOL, while 42.1% had poor HRQOL. Among males, 51.9% reported good HRQOL, whereas 57.9% had poor HRQOL. The chi-square test (X² = 1.056, p = 0.304) indicates no statistically significant association between gender and HRQOL, suggesting that gender does not play a major role in determining the quality of life among type 2 diabetic patients.

**Table 2: Association between marital status and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 1.732  P = 0.188 |
| Married | 100 (77.5) | 121 (70.8) | 221 (73.7) |
| Unmarried | 29 (22.5) | 50 (29.2) | 79 (26.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 2** assesses the impact of marital status on HRQOL. Among married individuals, 77.5% reported good HRQOL, whereas 70.8% reported poor HRQOL. Among unmarried individuals, 22.5% had good HRQOL, while 29.2% had poor HRQOL. The chi-square test (X² = 1.732, p = 0.188) shows no significant association, indicating that marital status does not significantly affect HRQOL in this patient population.

**Table 3: Association between age and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.069  P = 0.793 |
| <30 years | 30 (23.3) | 42 (24.6) | 72 (24.0) |
| >=30 years | 99 (76.7) | 129 (75.4) | 228 (76.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 3** explores whether age influences HRQOL. Patients under 30 years had a nearly equal distribution of good (23.3%) and poor (24.6%) HRQOL. Similarly, patients aged 30 years and above showed 76.7% with good HRQOL and 75.4% with poor HRQOL. The chi-square test (X² = 0.069, p = 0.793) suggests no significant relationship between age and HRQOL, implying that HRQOL does not differ significantly across age groups.

**Table 4: Association between ethnicity and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 1.399  P = 0.237 |
| Bengali | 125 (96.9) | 169 (98.8) | 294 (98.0) |
| Others | 4 (3.1) | 2 (1.2) | 6 (2.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 4** analyzes the role of ethnicity in HRQOL. Bengali patients had a slightly higher percentage of poor HRQOL (98.8%) compared to good HRQOL (96.9%). Patients from other ethnic backgrounds constituted 3.1% of the good HRQOL group and 1.2% of the poor HRQOL group. The chi-square test (X² = 1.399, p = 0.237) indicates no significant association, suggesting that ethnicity does not significantly impact HRQOL.

**Table 5: Association between family type and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 1.105  P = 0.293 |
| Extended | 30 (23.3) | 49 (28.7) | 79 (26.3) |
| Nuclear | 99 (76.7) | 122 (71.3) | 221 (73.7) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 5** examines whether family type (nuclear vs. extended) influences HRQOL. Among patients from extended families, 23.3% reported good HRQOL, while 28.7% had poor HRQOL. Among those from nuclear families, 76.7% had good HRQOL, and 71.3% had poor HRQOL. The chi-square test (X² = 1.105, p = 0.293) suggests no significant relationship between family type and HRQOL.

**Table 6: Association between religion and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 3.628  P = 0.057 |
| Muslim | 121 (93.8) | 149 (87.1) | 270 (90.0) |
| Others | 8 (6.2) | 22 (12.9) | 30 (10.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 6** investigates the role of religion in HRQOL. Among Muslims, 93.8% had good HRQOL, whereas 87.1% had poor HRQOL. Among individuals from other religious backgrounds, 6.2% reported good HRQOL, while 12.9% had poor HRQOL. The chi-square test (X² = 3.628, p = 0.057) suggests that religion does not significantly influence HRQOL.

**Table 7: Association between residence and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.694  P = 0.405 |
| Rural | 99 (76.7) | 138 (80.7) | 237 (79.0) |
| Urban | 30 (23.3) | 33 (19.3) | 63 (21.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 7** assesses whether living in a rural or urban setting impacts HRQOL. Among rural residents, 76.7% had good HRQOL, while 80.7% had poor HRQOL. Among urban residents, 23.3% had good HRQOL, while 19.3% had poor HRQOL. The chi-square test (X² = 0.694, p = 0.405) indicates no significant association.

**Table 8: Association between educational status and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 2.810  P = 0.422 |
| No education | 47 (36.4) | 69 (40.4) | 116 (38.7) |
| Higher | 15 (11.6) | 24 (14.0) | 39 (13.0) |
| Primary | 30 (23.3) | 27 (15.8) | 57 (19.0) |
| Secondary | 37 (28.7) | 51 (29.8) | 88 (29.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 8** evaluates the effect of education on HRQOL. Patients with no education had slightly higher percentages of poor HRQOL (40.4%) compared to good HRQOL (36.4%). The chi-square test (X² = 2.810, p = 0.422) shows no significant relationship, implying that educational status does not significantly affect HRQOL.

**Table 9: Association between employment status and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 5.171  P = 0.023 |
| No | 111 (86.0) | 129 (75.4) | 240 (80.0) |
| Yes | 18 (14.0) | 42 (24.6) | 60 (20.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 9** analyzes the effect of employment on HRQOL. Among unemployed individuals, 86% had good HRQOL, whereas 75.4% had poor HRQOL. Among employed individuals, 14% had good HRQOL, whereas 24.6% had poor HRQOL. The chi-square test (X² = 5.171, p = 0.023) suggests a significant association, indicating that employment status impacts HRQOL.

**Table 10: Association between smoking/alcohol habit and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.041  P = 0.839 |
| No | 109 (84.5) | 143 (83.6) | 252 (84.0) |
| Yes | 20 (15.5) | 28 (16.4) | 48 (16.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 10** examines whether smoking or alcohol consumption affects HRQOL. The results show no significant differences, with 15.5% of non-smokers having good HRQOL and 16.4% having poor HRQOL. The chi-square test (X² = 0.041, p = 0.839) indicates no significant relationship.

**Table 11: Association between family income and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.258  P = 0.612 |
| <= 30000 | 52 (40.3) | 64 (37.4) | 116 (38.7) |
| >30000 | 77 (59.7) | 107 (62.6) | 184 (61.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 11 examines whether family income influences the health-related quality of life (HRQOL) in type 2 diabetic patients. Patients were categorized based on their monthly family income, either ≤30,000 or >30,000 (currency not specified). Among those earning ≤30,000, 40.3% reported good HRQOL, while 37.4% reported poor HRQOL. In contrast, among those earning >30,000, 59.7% had good HRQOL, while 62.6% had poor HRQOL. The chi-square test result (X² = 0.258, p = 0.612) indicates no statistically significant association between family income and HRQOL. This suggests that income level, within the studied range, does not have a notable impact on the quality of life of type 2 diabetic patients. Even though higher-income patients had a slightly higher proportion of poor HRQOL, the difference was not statistically meaningful.

**Table 12: Association between family expenditure and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.979  P = 0.323 |
| <= 30000 | 64 (49.6) | 75 (43.9) | 139 (46.3) |
| >30000 | 65 (50.4) | 96 (56.1) | 161 (53.7) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 12 evaluates whether monthly family expenditure affects HRQOL. Patients were grouped based on whether their monthly expenditure was ≤30,000 or >30,000. Among those spending ≤30,000, 49.6% reported good HRQOL, while 43.9% reported poor HRQOL. Among those spending >30,000, 50.4% had good HRQOL, while 56.1% had poor HRQOL. The chi-square test result (X² = 0.979, p = 0.323) shows no statistically significant association between family expenditure and HRQOL. This suggests that the amount spent by a family does not significantly influence the quality of life of diabetic patients. While higher-spending individuals had slightly higher rates of poor HRQOL, the difference was not large enough to be considered statistically significant.

**Table 13: Association between physical exercise and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.305  P = 0.581 |
| No | 81 (62.8) | 102 (59.6) | 183 (61.0) |
| Yes | 48 (37.2) | 69 (40.4) | 117 (39.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 13** evaluates the impact of physical exercise. Among those who exercised, 37.2% reported good HRQOL, whereas 40.4% reported poor HRQOL. The chi-square test (X² = 0.305, p = 0.581) suggests no significant association.

**Table 14: Association between counselling and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 2.003  P = 0.157 |
| No | 55 (42.6) | 87 (50.9) | 142 (47.3) |
| Yes | 74 (57.4) | 84 (49.1) | 158 (52.7) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

**Table 14** analyzes whether counseling affects HRQOL. Patients who received counseling had slightly better HRQOL (57.4%) than those who did not (42.6%), but the chi-square test (X² = 2.003, p = 0.157) shows no significant relationship.

**Table 15: Association between Diabetic Complications and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 0.105  P = 0.746 |
| No | 70 (54.3) | 96 (56.1) | 166 (55.3) |
| Yes | 59 (45.7) | 75 (43.9) | 134 (44.7) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 15 examines the relationship between diabetic complications and the health-related quality of life (HRQOL) in type 2 diabetic patients. Among patients without complications, 54.3% reported good HRQOL, while 56.1% had poor HRQOL. In contrast, among those with diabetic complications, 45.7% had good HRQOL, whereas 43.9% had poor HRQOL. The chi-square test result (X² = 0.105, p = 0.746) suggests no statistically significant association between the presence of diabetic complications and HRQOL. This indicates that having diabetic complications does not significantly impact HRQOL in this study population.

**Table 16: Association between Confirmed co morbidity and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 24.661  P = <0.001 |
| No | 103 (79.8) | 89 (52.0) | 192 (64.0) |
| Yes | 26 (20.2) | 82 (48.0) | 108 (36.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 16 assesses the impact of confirmed comorbid conditions (such as hypertension, cardiovascular disease, or kidney disease) on HRQOL. Among patients without comorbidities, 79.8% had good HRQOL, while 52.0% had poor HRQOL. Conversely, among those with comorbidities, only 20.2% reported good HRQOL, whereas 48.0% had poor HRQOL. The chi-square test result (X² = 24.661, p < 0.001) indicates a statistically significant association between comorbid conditions and HRQOL. Patients with comorbidities were significantly more likely to experience poor HRQOL, suggesting that managing additional health conditions is crucial for improving HRQOL in diabetic patients.

**Table 17: Association between Duration of diabetes mellitus since diagnosis and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 2.186  P = 0.139 |
| <=59 months | 69 (53.5) | 106 (62.0) | 175 (58.3) |
| >59 months | 60 (46.5) | 65 (38.0) | 125 (41.7) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 17 evaluates whether the duration of diabetes since diagnosis affects HRQOL. Patients were categorized into two groups: those diagnosed for ≤59 months and those diagnosed for >59 months. Among those with diabetes for ≤59 months, 53.5% reported good HRQOL, while 62.0% had poor HRQOL. Among those with diabetes for >59 months, 46.5% had good HRQOL, and 38.0% had poor HRQOL. The chi-square test result (X² = 2.186, p = 0.139) indicates no statistically significant association between diabetes duration and HRQOL. This suggests that the length of time a person has had diabetes does not have a major impact on their quality of life in this study population.

**Table 18: Association between BMI and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 10.106  P = 0.006 |
| Normal | 22 (17.1) | 44 (25.7) | 66 (22.0) |
| Overweight | 101 (78.3) | 106 (62.0) | 207 (69.0) |
| Underweight | 6 (4.7) | 21 (12.3) | 27 (9.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |  |

Table 18 investigates whether body mass index (BMI) influences HRQOL. Patients were categorized as normal weight, overweight, or underweight. Among normal-weight patients, 17.1% had good HRQOL, while 25.7% had poor HRQOL. Among overweight individuals, 78.3% reported good HRQOL, while 62.0% had poor HRQOL. Among underweight individuals, only 4.7% had good HRQOL, while 12.3% had poor HRQOL. The chi-square test result (X² = 10.106, p = 0.006) indicates a statistically significant association between BMI and HRQOL. The data suggests that being overweight is associated with a higher proportion of good HRQOL, while being underweight is linked to poorer HRQOL. This may indicate that maintaining a balanced weight is beneficial for diabetic patients.

**Table 19: Association between Fasting blood sugar status and HRQOL of type 2 diabetic adult patients**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 29.010  P <0.001 |
| >=200 | 91 (70.5) | 67 (39.2) | 158 (52.7) |
| 126-199 | 38 (29.5) | 104 (60.8) | 142 (47.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 19 explores the relationship between fasting blood sugar levels and HRQOL. Patients were divided into two groups: ≥200 mg/dL and 126-199 mg/dL. Among those with fasting blood sugar ≥200 mg/dL, 70.5% reported good HRQOL, while 39.2% had poor HRQOL. In contrast, among those with fasting blood sugar 126-199 mg/dL, only 29.5% had good HRQOL, while 60.8% had poor HRQOL. The chi-square test result (X² = 29.010, p < 0.001) shows a highly significant association between fasting blood sugar levels and HRQOL. Interestingly, patients with higher fasting blood sugar levels (≥200 mg/dL) were more likely to report good HRQOL compared to those with lower levels (126-199 mg/dL). This counterintuitive finding might be due to factors such as medication use, perception of health, or differences in disease management strategies.

Table 20: Association between Family history and HRQOL of type 2 diabetic adult patients

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 6.345  P = 0.012 |
| No | 99 (76.7) | 108 (63.2) | 207 (69.0) |
| Yes | 30 (23.3) | 63 (36.8) | 93 (31.0) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 20 examines the relationship between a family history of diabetes and health-related quality of life (HRQOL) in type 2 diabetic patients. Among patients with no family history of diabetes, 76.7% had good HRQOL, while 63.2% experienced poor HRQOL. In contrast, among those with a family history of diabetes, only 23.3% reported good HRQOL, while 36.8% had poor HRQOL. The chi-square test result (X² = 6.345, p = 0.012) indicates a statistically significant association between family history and HRQOL. This suggests that patients with a family history of diabetes are more likely to experience poor HRQOL. One possible explanation is that individuals with a genetic predisposition to diabetes may develop the condition at an earlier age or experience more severe disease progression, leading to a reduced quality of life.

Table 21: Association between Drug regimen and HRQOL of type 2 diabetic adult patients

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | HRQOL | | | **Chi square test and p-value** |
|  | Good  n (%) | Poor  n (%) | Total  n (%) | X2 = 4.433  P = 0.035 |
| Injection and oral anti-diabetic | 56 (43.4) | 54 (31.6) | 110 (36.7) |
| Oral anti diabetic medication | 73 (56.6) | 117 (68.4) | 190 (63.3) |
| Total | 129 (43.0) | 171 (57.0) | 300 (100.0) |

Table 21 explores the impact of different treatment regimens on HRQOL. Patients were categorized into two groups: those using both insulin injections and oral anti-diabetic medications and those using only oral anti-diabetic medications. Among patients on a combination therapy of injections and oral medications, 43.4% had good HRQOL, while 31.6% had poor HRQOL. In contrast, among those taking only oral anti-diabetic medications, 56.6% reported good HRQOL, while 68.4% experienced poor HRQOL. The chi-square test result (X² = 4.433, p = 0.035) indicates a statistically significant association between drug regimen and HRQOL. Patients using oral medications alone were more likely to have poor HRQOL compared to those using both injections and oral medications. This could suggest that patients on combination therapy might have better glycemic control or receive more intensive medical management, leading to an improved perception of their health and well-being.

**CHAPTER V**

**5 Discussion**

In this study, the majority of respondents reported poor HRQOL scores, a finding consistent with another research conducted in Ethiopia (Gebremedhin et al., 2019). However, a study from Jimma found that 67% of participants had a good HRQOL, which is higher than the results in this study (Muze et al., 2014). This difference could be attributed to variations in study timing and the characteristics of the study populations. In the Jimma study, the majority of participants were male, whereas this study had a higher number of females, whose HRQOL was more negatively impacted compared to males. This could explain the lower overall HRQOL observed in this study. In contrast, a study in Botswana found that 42.5% of participants had a good HRQOL, which is lower than the findings in this study (Rwegerera et al., 2018). This discrepancy may be due to differences in study locations and the tools used to measure HRQOL, as the Botswana study utilized the Short Form-12 (SF-12).

The study found that being male was directly linked to better HRQOL, aligning with findings from studies in Jimma, Greece, Saudi Arabia, and India (Jain et al., 2014; Muze et al., 2014; Rwegerera et al., 2018). This might be due to the additional challenges faced by female patients, including pregnancy and lactation. However, studies in Botswana and Bangladesh showed that males had lower HRQOL than females, which may reflect differences in the study settings. This aligns with observed gender disparities in HRQOL both in the general population and among people with diabetes (Albasheer et al., 2018; Arifin et al., 2019). This study also indicated that individuals over 60 years old had a lower HRQOL, which is consistent with research from Vietnam (Nguyen et al., 2018). Older adults often experience poorer health and more chronic conditions.

Additionally, the study found that living in a rural area was associated with better HRQOL, which is in line with a study in Poland (Golicki et al., 2015) but contradicts studies from Vietnam (Nguyen et al., 2018) and Pakistan (Nazir et al., 2016), where rural living had a positive effect on mental health but a negative impact on physical health (Zagozdzon et al., 2013). The better HRQOL in rural areas in this study might be due to the smaller, more tight-knit communities in rural areas, while urban areas tend to have higher population densities, which can lead to social isolation, higher crime rates, pollution, and other stressors (Walters et al., 2004; Weziak-Białowolska, 2016). Education, which often correlates with better treatment decisions and increased income, also contributes to better HRQOL (Edgerton et al., 2012).

Moreover, engaging in physical exercise significantly improved HRQOL for diabetic adults in this study, aligning with findings from research in Nigeria, Gondar (Ethiopia), San Diego (California), and Canada (Adeniyi et al., 2016; Imayama et al., 2011; Kaplan et al., 1987). Physical activity boosts mood, reduces anxiety, and enhances overall well-being by improving energy levels, sleep, and self-esteem (Martín-Rodríguez et al., 2024). However, the impact of physical activity on HRQOL can vary depending on cultural and social factors, as well as the level of development in a country (Hao et al., 2024).

The presence of diabetic complications negatively impacted HRQOL, likely due to the added burden of managing complications such as kidney, eye, and nerve damage, as well as the extended use of multiple medications (Ahmed et al., 2023). Interestingly, patients who had lived with diabetes for more than 59 months showed a better HRQOL, a result consistent with studies from Nigeria and Nepal (Mishra et al., 2015; Wonde et al., 2022). Longer disease duration may allow patients more time to learn to manage their condition effectively, which can lead to better quality of life. However, consistent with other studies, HRQOL tends to worsen over time with the progression of diabetes, as it is associated with poor glycemic control, treatment adherence, and the development of complications (Trikkalinou et al., 2017b).

**CHAPTER VI**

**6 conclusions**

The study examined the association between various sociodemographic and clinical factors with health-related quality of life (HRQOL) among type 2 diabetic adult patients. The findings indicate that family history of diabetes and drug regimen are significantly associated with HRQOL. Patients with a family history of diabetes were more likely to experience poor HRQOL, suggesting a potential genetic influence on disease severity and progression. Additionally, individuals on oral anti-diabetic medication alone had a higher prevalence of poor HRQOL compared to those on combination therapy (insulin and oral medication), implying that more intensive disease management may lead to better health outcomes. Other variables such as family income, expenditure, diabetic complications, duration of diabetes, and physical exercise did not show statistically significant associations with HRQOL. However, comorbid conditions and BMI were found to have a significant impact on HRQOL, with patients having comorbidities or being overweight more likely to report poor HRQOL. Fasting blood sugar levels also showed a strong association, highlighting the importance of maintaining optimal glycemic control. These findings underscore the complex interplay between genetic predisposition, disease management, and quality of life in diabetic patients. Addressing these factors through targeted interventions can help improve the overall well-being of affected individuals.

**CHAPTER VII**

**7 Recommendations**

Based on the findings of this study, several recommendations can be made to improve the health-related quality of life (HRQOL) of type 2 diabetic patients. First, individuals with a family history of diabetes should undergo early screening and preventive interventions, such as lifestyle modifications, dietary counseling, and physical activity programs, to delay or prevent disease onset. Public health initiatives should focus on raising awareness about diabetes risk factors and encouraging high-risk individuals to adopt healthier lifestyles. Secondly, optimizing treatment strategies is crucial for better disease management. Patients on oral anti-diabetic medication alone were found to have poorer HRQOL compared to those on combination therapy (insulin + oral medication). Therefore, healthcare providers should implement personalized treatment plans based on patient-specific needs and glycemic control. Regular follow-ups and medication adjustments should be prioritized to ensure effective disease management. Additionally, the management of comorbid conditions and weight should be integrated into diabetes care. Patients with multiple health conditions require a comprehensive care approach, including collaboration between endocrinologists, cardiologists, and dietitians. Weight management programs should be promoted, as overweight and obesity were linked to poorer HRQOL, emphasizing the need for regular physical activity and nutritional guidance. Furthermore, maintaining optimal glycemic control is essential, as fasting blood sugar levels were significantly associated with HRQOL. Patients should be encouraged to monitor their blood glucose levels regularly and adhere to prescribed medications. Healthcare professionals should provide continuous education on diabetes self-management, including dietary practices, medication adherence, and lifestyle modifications. Lastly, psychosocial support and counseling should be incorporated into diabetes care to address emotional and mental health challenges. Patients should have access to diabetes self-management education programs, psychological counseling, and peer support groups, which can help improve their motivation and adherence to treatment plans. By implementing these recommendations, healthcare providers, policymakers, and individuals can work together to enhance the overall well-being and quality of life of diabetic patients.

**CHAPTER VIII**

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**CHAPTER IX**

**9 APPENDICES**

**APPENDIX-A**

**CONSENT FORM**

Hello, my name is (your name). We are surveying the “Evaluation of Knowledge, Attitudes, and Practices Regarding Infant and Young Child Feeding Among Mothers of Children Under Two at Cox's Bazar Sadar Hospital, Bangladesh”. I would like to talk to you about your IYCF practices and other topics. This interview usually takes about 45 minutes. All the information we obtain will remain strictly confidential and anonymous. If you wish not to answer a question or wish to stop the interview, please let me know. May I start now?

**APPENDIX-C**

**QUESTIONNAIRE**

**ABOUT YOU**

Before you begin, we would like to ask you to answer a few general questions about yourself: by circling the correct answer or by filling in the space provided.

**Socio-Demographic**

What is your **age**?

What is your **gender**? Male Female

What is your **family type**?

What is your **marital status**? Single Separated Married Divorced Living as married Widowed

What is your **religion**?

Where is your **residence**?

What is the highest **education** you received? None at all

Primary school

Secondary school

Tertiary

What is your **occupation**?

Do you take **physical exercise**?

Do you have **smoking habit**?

Do you have **alcohol consumption**?

Do you take **counselling**?

What is your family **income**?

What is your **living status**?

**Clinical**

Do you have **diabetes-related complications?**

Do you have **confirmed co-morbidity?**

What is your **duration of diabetes mellitus since diagnosis?**

What is your **Body Mass Index?**

What is your **Fasting blood glucose levels?**

Do you have **Physical trauma?**

Do you have **Family history?**

Do you have **Drug regimen?**

**Instructions**

This assessment asks how you feel about your quality of life, health, or other areas of your life. **Please answer all the questions.** If you are unsure about which response to give to a question, **please choose the one** that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last two weeks.** For example, thinking about the last two weeks, a question might ask:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Do you get the kind of support from others that you need? | Not at all  1 | Not much  2 | Moderately  3 | A great deal  4 | Completely  5 |

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others as follows.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Do you get the kind of support from others that you need? | Not at all  1 | Not much  2 | Moderately  3 | A great deal  4 | Completely  5 |

You would circle number 1 if you did not get any of the support that you needed from others in the last two weeks.

### Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Very poor | Poor | Neither poor nor good | Good | Very good |
| 1 | How would you rate your quality of life? | 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Very dissatisfied | Dissatisfied | Neither satisfied nor dissatisfied | Satisfied | Very satisfied |
| 2 | How satisfied are you with your health? | 1 | 2 | 3 | 4 | 5 |

The following questions ask about **how much** you have experienced certain things in the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Not at all | A little | A moderate amount | Very much | An extreme amount |
| 3 | To what extent do you feel that physical pain prevents you from doing what you need to do? | 1 | 2 | 3 | 4 | 5 |
| 4 | How much do you need any medical treatment to function in your daily life? | 1 | 2 | 3 | 4 | 5 |
| 5 | How much do you enjoy life? | 1 | 2 | 3 | 4 | 5 |
| 6 | To what extent do you feel your life to be meaningful? | 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Not at all | A little | A moderate amount | Very much | Extremely |
| 7 | How well are you able to concentrate? | 1 | 2 | 3 | 4 | 5 |
| 8 | How safe do you feel in your daily life? | 1 | 2 | 3 | 4 | 5 |
| 9 | How healthy is your physical environment? | 1 | 2 | 3 | 4 | 5 |

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Not at all | A little | Moderately | Mostly | Completely |
| 10 | Do you have enough energy for everyday life? | 1 | 2 | 3 | 4 | 5 |
| 11 | Are you able to accept your bodily appearance? | 1 | 2 | 3 | 4 | 5 |
| 12 | Have you enough money to meet your needs? | 1 | 2 | 3 | 4 | 5 |
| 13 | How available to you is the information that you need in your day-to-day life? | 1 | 2 | 3 | 4 | 5 |
| 14 | To what extent do you have the opportunity for leisure activities? | 1 | 2 | 3 | 4 | 5 |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Very poor | Poor | Neither poor nor good | Good | Very good |
| 15 | How well are you able to get around? | 1 | 2 | 3 | 4 | 5 |

The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Very dissatisfied | Dissatisfied | Neither satisfied nor dissatisfied | Satisfied | Very satisfied |
| 16 | How satisfied are you with your sleep? | 1 | 2 | 3 | 4 | 5 |
| 17 | How satisfied are you with your ability to perform your daily living activities? | 1 | 2 | 3 | 4 | 5 |
| 18 | How satisfied are you with your capacity for work? | 1 | 2 | 3 | 4 | 5 |
| 19 | How satisfied are you with yourself? | 1 | 2 | 3 | 4 | 5 |
| 20 | How satisfied are you with your personal relationships? | 1 | 2 | 3 | 4 | 5 |
| 21 | How satisfied are you with your sex life? | 1 | 2 | 3 | 4 | 5 |
| 22 | How satisfied are you with the support you get from your friends? | 1 | 2 | 3 | 4 | 5 |
| 23 | How satisfied are you with the conditions of your living place? | 1 | 2 | 3 | 4 | 5 |
| 24 | How satisfied are you with your access to health services? | 1 | 2 | 3 | 4 | 5 |
| 25 | How satisfied are you with your transport? | 1 | 2 | 3 | 4 | 5 |

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Never | Seldom | Quite often | Very often | Always |
| 26 | How often do you have negative feelings such as blue mood, despair, anxiety, depression? | 1 | 2 | 3 | 4 | 5 |

Did someone help you to fill out this form?..............................................................................................................

How long did it take to fill this form out?.................................................................................................................

**APPENDIX-D**

**QUESTIONNAIRE**

**ABOUT YOU**

আপনি শুরু করার আগে, আমরা আপনাকে আপনার সম্পর্কে কয়েকটি সাধারণ প্রশ্নের উত্তর দিতে চাই: সঠিক উত্তরটি প্রদক্ষিণ করে বা প্রদত্ত স্থানটি পূরণ করে।

**Socio-Demographic**

আপনার বয়স কত?

আপনার লিঙ্গ কি? পুরুষ মহিলা

আপনার পরিবারের ধরন কি?

আপনার বৈবাহিক অবস্থা কি? একক বিচ্ছিন্ন

বিবাহিত তালাকপ্রাপ্ত

বিধবা হিসাবে বসবাস

তোমার ধর্ম কি?

আপনার বাসস্থান কোথায়?

আপনি প্রাপ্ত সর্বোচ্চ শিক্ষা কি?

কোনোটিই নয় প্রাথমিক বিদ্যালয়

মাধ্যমিক বিদ্যালয় টারশিয়ারি

আপনার পেশা কি?

আপনি কি শারীরিক ব্যায়াম করেন?

আপনার কি ধূমপানের অভ্যাস আছে?

আপনি অ্যালকোহল সেবন আছে?

আপনি কাউন্সেলিং নেন?

আপনার সম্পদ সূচক কি?

**আপনার জীবনযাত্রার অবস্থা কি?**

**Clinical**

আপনার কি ডায়াবেটিস সংক্রান্ত জটিলতা আছে?

আপনি সহ-অসুস্থতা নিশ্চিত করেছেন?

নির্ণয়ের পর থেকে আপনার ডায়াবেটিস মেলিটাসের সময়কাল কত?

আপনার বডি মাস ইনডেক্স কি?

আপনার উপবাসের রক্তে গ্লুকোজের মাত্রা কী?

আপনার কি শারীরিক আঘাত আছে?

আপনার কি পারিবারিক ইতিহাস আছে?

আপনি ড্রাগ regimen আছে?

**Instructions**

এই মূল্যায়ন জিজ্ঞাসা করে যে আপনি আপনার জীবনযাত্রার মান, স্বাস্থ্য বা আপনার জীবনের অন্যান্য ক্ষেত্র সম্পর্কে কেমন অনুভব করেন। সব প্রশ্নের উত্তর দয়া করে. কোন প্রশ্নের কোন উত্তর দিতে হবে সে সম্পর্কে আপনি যদি অনিশ্চিত হন, তাহলে অনুগ্রহ করে সবচেয়ে উপযুক্ত মনে হয় এমন একটি বেছে নিন। এটি প্রায়শই আপনার প্রথম প্রতিক্রিয়া হতে পারে।

আপনার মান, আশা, আনন্দ এবং উদ্বেগ মনে রাখবেন. আমরা জিজ্ঞাসা করি যে আপনি গত দুই সপ্তাহে আপনার জীবন সম্পর্কে ভাবছেন। উদাহরণস্বরূপ, গত দুই সপ্তাহের কথা চিন্তা করে, একটি প্রশ্ন জিজ্ঞাসা করতে পারে:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | আপনি কি অন্যদের কাছ থেকে আপনার প্রয়োজনীয় সমর্থন পান? | মোটেই না  1 | বেশি না  2 | পরিমিতভাবে  3 | একটি মহান চুক্তি  4 | সম্পূর্ণরূপে  5 |

আপনি গত দুই সপ্তাহে অন্যদের কাছ থেকে কতটা সমর্থন পেয়েছেন তার সাথে সবচেয়ে ভালো মানানসই নম্বরটি বৃত্ত করা উচিত। সুতরাং আপনি যদি নিচের মত অন্যদের কাছ থেকে প্রচুর সমর্থন পান তাহলে আপনি 4 নম্বরে বৃত্ত হবেন।

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | আপনি কি অন্যদের কাছ থেকে আপনার প্রয়োজনীয় সমর্থন পান? | মোটেই না  1 | বেশি না  2 | পরিমিতভাবে  3 | একটি মহান চুক্তি  4 | সম্পূর্ণরূপে  5 |

আপনি যদি গত দুই সপ্তাহে অন্যদের কাছ থেকে আপনার প্রয়োজনীয় কোনো সমর্থন না পান তাহলে আপনি 1 নম্বর বৃত্তে যাবেন।

### অনুগ্রহ করে প্রতিটি প্রশ্ন পড়ুন, আপনার অনুভূতি মূল্যায়ন করুন এবং প্রতিটি প্রশ্নের জন্য স্কেলে নম্বরটি বৃত্ত করুন যা আপনার জন্য সেরা উত্তর দেয়।

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | খুবই গরীব | গরীব | গরীব না ভালো | ভাল | খুব ভালো |
| 1 | আপনি আপনার জীবনের মানকে কীভাবে মূল্যায়ন করবেন? | 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | খুবই অসন্তুষ্ট | অসন্তুষ্ট | সন্তুষ্ট না অসন্তুষ্টও নয় | সন্তুষ্ট | খুব সন্তুষ্ট |
| 2 | আপনি আপনার স্বাস্থ্য নিয়ে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |

নিম্নলিখিত প্রশ্নগুলি জিজ্ঞাসা করে যে আপনি গত দুই সপ্তাহে কতটা কিছু অভিজ্ঞতা পেয়েছেন।

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Not at all | A little | A moderate amount | Very much | An extreme amount |
| 3 | আপনি কতটা অনুভব করেন যে শারীরিক ব্যথা আপনাকে যা করতে হবে তা করতে বাধা দেয়? | 1 | 2 | 3 | 4 | 5 |
| 4 | আপনার দৈনন্দিন জীবনে কাজ করার জন্য আপনার কতটা চিকিৎসার প্রয়োজন? | 1 | 2 | 3 | 4 | 5 |
| 5 | আপনি জীবন কতটা উপভোগ করেন? | 1 | 2 | 3 | 4 | 5 |
| 6 | আপনি কতটা আপনার জীবনকে অর্থবহ বলে মনে করেন? | 1 | 2 | 3 | 4 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Not at all | A little | A moderate amount | Very much | Extremely |
| 7 | আপনি কতটা ভালোভাবে মনোনিবেশ করতে পারবেন? | 1 | 2 | 3 | 4 |  |
| 8 | আপনি আপনার দৈনন্দিন জীবনে কতটা নিরাপদ বোধ করেন? | 1 | 2 | 3 | 4 | 5 |
| 9 | আপনার শারীরিক পরিবেশ কতটা স্বাস্থ্যকর? | 1 | 2 | 3 | 4 | 5 |

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | মোটেই না | একটু | পরিমিতভাবে | বেশিরভাগই | সম্পূর্ণরূপে |
| 10 | আপনার দৈনন্দিন জীবনের জন্য যথেষ্ট শক্তি আছে? | 1 | 2 | 3 | 4 | 5 |
| 11 | আপনি আপনার শারীরিক চেহারা গ্রহণ করতে সক্ষম? | 1 | 2 | 3 | 4 | 5 |
| 12 | আপনার প্রয়োজন মেটাতে যথেষ্ট টাকা আছে? | 1 | 2 | 3 | 4 | 5 |
| 13 | আপনার দৈনন্দিন জীবনে আপনার প্রয়োজনীয় তথ্য আপনার কাছে কতটা উপলব্ধ? | 1 | 2 | 3 | 4 | 5 |
| 14 | আপনি অবসর কার্যক্রমের জন্য কতটা সুযোগ পান? | 1 | 2 | 3 | 4 | 5 |
|  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | খুবই গরীব | গরীব | গরীব না ভালো | ভাল | খুব ভালো |
| 15 | আপনি চারপাশে পেতে সক্ষম কতটা ভাল? | 1 | 2 | 3 | 4 | 5 |

The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | খুবই অসন্তুষ্ট | অসন্তুষ্ট | সন্তুষ্ট না অসন্তুষ্টও নয় | সন্তুষ্ট | খুব সন্তুষ্ট |
| 16 | আপনি আপনার ঘুম নিয়ে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 17 | আপনি আপনার দৈনন্দিন জীবন ক্রিয়াকলাপ সম্পাদন করার ক্ষমতা নিয়ে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 18 | আপনার কাজের ক্ষমতা নিয়ে আপনি কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 19 | আপনি নিজের সাথে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 20 | আপনার ব্যক্তিগত সম্পর্ক নিয়ে আপনি কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 21 | আপনার ব্যক্তিগত সম্পর্ক নিয়ে আপনি কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 22 | আপনি আপনার বন্ধুদের কাছ থেকে যে সমর্থন পান তাতে আপনি কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 23 | আপনি আপনার থাকার জায়গার অবস্থার সাথে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 24 | স্বাস্থ্য পরিষেবায় আপনার অ্যাক্সেস নিয়ে আপনি কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |
| 25 | আপনি আপনার পরিবহনের সাথে কতটা সন্তুষ্ট? | 1 | 2 | 3 | 4 | 5 |

নিম্নলিখিত প্রশ্নটি বোঝায় যে আপনি গত দুই সপ্তাহে কতবার কিছু কিছু অনুভব করেছেন বা অনুভব করেছেন।

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | কখনই না | কদাচিৎ | প্রায়ই | খুব প্রায়ই | সর্বদা |
| 26 | কত ঘন ঘন আপনার নেতিবাচক অনুভূতি যেমন নীল মেজাজ, হতাশা, উদ্বেগ, বিষণ্নতা? | 1 | 2 | 3 | 4 | 5 |

কেউ কি আপনাকে এই ফর্মটি পূরণ করতে সাহায্য করেছে?..............................................................................................................

এই ফর্মটি পূরণ করতে কতক্ষণ লেগেছে?.................................................................................................................