**A research proposal for MPH thesis to the Department of Public Health**

**Title of the proposal**

**Study on the Nutritional Status and Its Impact on Physical Activity Levels Among Young Adults in Chattogram**

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**CHAPTER I**

**INTRODUCTION**

**1.1 Introduction**

The World Health Organization (WHO) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. This includes activities such as working, playing, performing household chores, traveling, and engaging in recreational pursuits. It is important to distinguish physical activity from exercise, which is a planned, structured, repetitive activity designed to improve or maintain physical fitness (1). In contrast, any other physical activity, whether during leisure or as part of one's work, also provides health benefits. Both moderate- and vigorous-intensity physical activities contribute to improved health outcomes.

Physical inactivity is recognized by the WHO as the fourth leading risk factor for global mortality (2,3), and inactivity-related deaths have been increasing over time (4). In 2008, 3.2 million deaths annually were attributed to physical inactivity, and by 2012, this number rose to 5.3 million (5). Insufficient physical activity significantly contributes to the global burden of non-communicable diseases (NCDs), which are the leading causes of death worldwide. The mortality rate from NCDs is escalating at an alarming rate, with low- and middle-income countries being particularly vulnerable to NCD-related deaths and disabilities (6). Projections from 2004 suggested that NCD-related deaths in Southeast Asia would increase by approximately 60% by 2030 (7). In 2008, NCDs accounted for 55% of total deaths in this region, and this figure is expected to exceed 75% by 2030 (8). While data on regional trends are limited, South Asian countries are showing a steady increase in NCD-related morbidity (7,8). Given the rising burden of NCDs in South Asia and the protective role of physical activity, it is crucial to understand the physical activity profiles of individuals in this region.

Regular physical activity offers both physical and psychological benefits, including improved fitness, healthy weight, and the prevention and management of conditions such as diabetes, cardiovascular diseases, stress, and depression. However, despite these benefits, a large portion of the global population remains physically inactive. According to WHO estimates from 2010, approximately 23% of adults aged 18 and older failed to meet the recommended 150 minutes per week of moderate-intensity or 75 minutes per week of vigorous-intensity activity or an equivalent combination of moderate- to vigorous-intensity physical activity. In the WHO South-East Asian region, 15% of adults did not meet the recommended levels of physical activity (9).

Nutrition is another key determinant of health, playing a crucial role throughout the human life course in survival, development, and well-being. Proper nutrition strengthens the immune system, reduces the risk of adverse birth outcomes, and decreases the likelihood of chronic diseases such as diabetes and coronary heart disease, improving longevity (10–12). Malnutrition, especially undernutrition in women of reproductive age (defined as a body mass index [BMI] <18.5 kg/m²), increases the risk of low birth weight, neonatal illness, and other complications (13). Maternal underweight and short stature are also independent risk factors for preterm birth and small-for-gestational-age infants in rural Bangladesh (14). The double burden of malnutrition—where both undernutrition and overweight coexist—remains a significant global challenge. Worldwide, 1.9 billion adults are overweight or obese, while 462 million remain underweight. Despite this, the nutritional status of young people, particularly those aged 10–24 years, has not received sufficient attention, even though this period is critical for transitioning into adulthood and ensuring long-term health. The health and well-being of this group are vital for the country’s future and economic growth.

In Bangladesh, similar to global trends, the double burden of malnutrition affects young people. According to the latest National Demographic and Health Survey, approximately 13% of young women aged 15–24 years were underweight, while 17% were overweight or obese (15). Among young men aged 20–29 years, 20% were underweight, and 13% were overweight or obese, highlighting the emerging dual problem of undernutrition and overweight (16). These rates of malnutrition also vary across different regions of the country, emphasizing the need for targeted health interventions.

**1.2 Justification of the Study**

The rise of unhealthy lifestyle habits, including poor nutrition and inadequate physical activity, is a growing public health concern, particularly among young adults in Bangladesh. Over the past two decades, obesity rates have sharply increased, driven by poor dietary choices and decreased physical activity, especially among university students. This age group is particularly vulnerable, as the habits formed during this transition to adulthood can significantly impact long-term health.

Physical activity offers numerous health benefits, including reducing the risk of chronic diseases, enhancing mental well-being, and improving cognitive function. The World Health Organization (WHO) recommends 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week. However, studies show a decline in physical activity levels, especially among males during the transition from adolescence to adulthood, contributing to rising rates of sedentary behavior and obesity.

University students face challenges in maintaining healthy lifestyles due to increased independence and academic pressures, leading to poor eating habits and irregular physical activity. Additionally, limited healthy food options on campuses exacerbate unhealthy eating behaviors.

While some studies have focused on students in health-related fields, there is a lack of research on broader student populations. This study will provide valuable insights into the health behaviors of young adults in Chittagong, guiding public health interventions and the development of effective health education programs to promote healthier lifestyles.

**1.3 Operational Definitions**

**Physical Activity:** Any bodily movement produced by skeletal muscles that requires energy expenditure, including activities such as working, playing, and traveling.

**Exercise:** A subcategory of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness.

**Physical Inactivity:** The lack of sufficient physical activity, recognized by the WHO as a leading risk factor for global mortality, associated with various health issues such as obesity and chronic diseases.

**Non-communicable Diseases (NCDs):** Chronic diseases that are not caused by infectious agents, including heart disease, diabetes, and cancer, which are the leading causes of death worldwide.

**Obesity:** A condition characterized by excessive body fat, commonly defined by a Body Mass Index (BMI) of 30 or higher, which increases the risk of several chronic diseases.

A condition resulting from an imbalanced diet, including both undernutrition (e.g., underweight) and overnutrition (e.g., overweight/obesity), leading to health issues.

**Body Mass Index (BMI):** A measure used to assess whether a person has a healthy body weight relative to their height

**Malnutrition:** A BMI under 18.5 is considered underweight, while 25 or higher is overweight.

**Health Interventions:** Actions or programs designed to improve public health outcomes, such as promoting healthy eating, increasing physical activity, and reducing malnutrition.

**1.4 Research Question**

What is the nutritional status of young adults in Chattogram, and how does it impact their physical activity levels?

**CHAPTER II**

**LITERATURE REVIEW**

Malnutrition, in all its forms, includes under nutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related noncommunicable diseases. The developmental, economic, social, and medical impacts of the global burden of malnutrition are serious and lasting, for individuals and their families, for communities and for countries (WHO 2018). Although adult nutritional status can be evaluated in many ways, the BMI is most widely used because its use is inexpensive, noninvasive and suitable for large-scale surveys(Bose, Bisai et al. 2006). Therefore, BMI is the most established anthropometric indicator used for assessment of adult nutritional status (Datta Banik, Bose et al. 2007). BMI is generally considered a good indicator of not only the nutritional status but also the socio-economic condition of a population, especially adult populations of developing countries (Banik 2012).

Under-nutrition among adults is commonly assessed by using body mass index (BMI), defined as the weight in kilograms di vided by the square of the height in meters (kg/m2 ). Under-nutrition or Chronic Energy Deficiency (CED) is usually defined when the BMI values is less than 18.5 kg/m2 (Letamo and Navaneetham 2014).

A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight (Organization 2015).

**The consequences of under-nutrition among adults and children are well known. There are certain health risks associated with under-nutrition such as vitamins deficiencies, osteoporosis, decreased immune function, increased risk for complications from surgery etc. (Nall 2018). Under-nutrition is a greater risk factor for low productivity, poor health and mortality. Moreover, under-nutrition among women leads to poor reproductive health outcomes (Mora and Nestel 2000). Under-nutrition and poor health from preventable causes disproportionately affect the well-being of millions of people in the developing 23 countries (Bitew and Telake 2010). Fear of being fat may induce unnecessary attempts to reduce body weight , producing thinness that in some cases is associated with nutritional deficiencies, irregular menstruation, and eating disorders (Patton, Selzer et al. 1999).**

**Previous studies suggest that underweight in women of childbearing age is a risk factor for adverse pregnancy outcomes, such as intrauterine growth retardation or low-birth weight infants. Low BMI can be a sign of CED and lack of adequate weight gain during pregnancy can lead to low birth weight babies leading to adverse health implications. Women with CED have increased morbidity while other studies have linked low BMI to decreased work capacity (Letamo and Navaneetham 2014). Recent studies suggest that overweight and obese women were at greater risk to develop pregnancy-related complications like gestational diabetes, hypertension and prolonged labor and more likely to deliver through caesarian section (Hasan, Sutradhar et al. 2017). There is an overall consensus that obesity poses a significant risk for the development of cardiovascular disease, alterations in glucose metabolism and certain cancers, and reduces life expectancy (Gunaid 2012). According to Global Nutrition Report, 2016 11 percent of gross domestic product (GDP) is lost every year in Africa and Asia due to malnutrition. Every year, global GDP losses from malnutrition are greater than what was lost each year during the 2008-2010 financial crisis.it also states that in the United States, when one person in a household is obese, the household spends on average an additional 8 percent of its annual income in healthcare costs. In China, a diagnosis of diabetes results in an annual 16.3 percent loss of income for those with the disease (Haddad, Achadi et al. 2015). Thus malnutrition, both under-nutrition and over-nutrition not only has health consequences but also economic consequences. On the other, health professionals have warned about the adverse health outcomes of overweight and obesity [3]. Another explanation emanates from the fact that thinness is commonly regarded as an ultimate goal to the extent that it is hard to think of thinness as a health concern [7]. As such there is limited research on the health and well-being of underweight adults in the context of Sub-Saharan Africa, particularly in Botswana. Both underweight and obesity are forms of under-nutrition and have greater health consequences. However, with respect to human development perspective, underweight 24 demands as high degree of priority as it signifies the lack of food security than obesity which indicates over consumption of food.**

**Over the last 2 decades the importance of PA has been highlighted in the World Health Organisation (WHO) public health agenda (12). In the 2015 World Report on Ageing and Health published by WHO, PA was highlighted as a key component to the concept of “Healthy Ageing” (13). Sadly, despite the multitude of beneficial effects from PA participation, the World Health Survey, which collected data from 70 countries between 2002 and 2004, showed that 18.8% (median prevalence) of 60-69 years old male and 24.5% of 60-69 years old female did not meet the minimum aerobic target (150 minutes/week) set by the WHO PA guidelines. This percentage increased to 42.1% for the ≥80 years old male age group, and 54.6% for females (14).**

**Both the WHO and the UK have released official guidelines in recommending the amount of PA that an older adult, ≥65 years old, should ideally participate in (see 0). However from the worldwide research literature the level of self-reported PA in older adults varies (15). Data from the Survey of Health, Ageing and Retirement in Europe (SHARE), a cohort of 10 European countries showed the prevalence of insufficient levels of PA (defined as engaged in vigorous PA ≤ once a week) in 65 to 75-year-olds range from 55.4% to 83.3% in women and from 46.6% to 73.7% in men (16). In a nationally representative cohort of Australian older adults, aged ≥60 years old, 25.8% were found to be sufficiently active, defined as 150 mins of activity per week over five or more times per week, of any walking or other moderate and vigorous PA (17). In the US, using the Behavioural Risk Factor Surveillance System (BRFSS), a national survey of health behaviours, 43% of older adults aged ≥ 50 years old were reported to have met the recommended level of PA, which also include travelling to work (walking or cycling), household activities as well as leisure time physical activity (LTPA) (18). The recommended level refers to ≥30mins per day of moderate-intensity non-occupational PA ≥5 days per week or ≥20 minutes per day of vigorous intensity nonoccupational PA ≥3 days per week (18).**

**Meyer and colleagues found 44.6% of older adults in Switzerland, aged ≥ 50 years old, participated in habitual PA (defined as 30 minutes of daily walking and or cycling at ≥5 times per week) (19). However, the percentage of older adults participating in exercise or sporting activities was much lower, only 9.1% of older adults performed moderate sports/exercise and 18.2% performed vigorous sports/exercise. The trend for both moderate and vigorous sports/exercise participation showed a downward trajectory as age increased (19). However, for habitual PA interestingly, the youngest age category 50-64 years were less likely to report regular habitual PA than their older counterparts, perhaps reflecting increased time pressures on the younger age group.**

**The proportion of older adults in the UK reported as being sufficiently active has been found to be lower than in the US and Australia. Utilising data from the Health Survey for England (HsfE), which draws an annual nationally representative sample of the general population living in households, researchers showed in 2003 that 20% of women aged 55-64 and 19.3% of men were meeting the UK PA guidelines, defined as ≥30 minutes of moderate or greater intensity activity on ≥ 5 days per week (20). For this study reported PA was a combination of housework, manual work, walking, and sporting activity; occupational PA was excluded(20). Like the Swiss data reported above, the percentage of older adults meeting the recommended level of PA decreased as age increased, for instance only 8.7% of ≥75 year old men and 4.3% of ≥75 years old women meet the UK PA guideline (20).**

**One key observation from these studies is that the definition for being active or inactive varies from study to study, thus resulting in difficulty directly comparing studies. A uniform approach such as using the WHO recommended level of weekly PA activities as the threshold of being active, could lead to the figures being more easily compared. Currently the definition of PA is broad. In 1985 Caspersen and colleagues defined PA as “any bodily movement produced by skeletal muscles that results in energy expenditure” (21) which has been widely adopted including by the WHO. Based on the Caspersen definition, PA comprises any activity requiring energy expenditure including exercise, occupational work, household work, and recreational activity.**

**However often exercise is a term that has been used interchangeably with PA which is confusing as exercise has been strictly defined as “a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness” (21).**

**Whilst it is very difficult to compare the data discussed so far directly, it is clear that several studies have shown that the proportion of older adults been physically active declines as age increases. Certainly the temporal trend from the Spanish National Health Surveys showed there was a decrease in the prevalence of ≥80 year olds self-reporting LTPA in 2011 (40.5%, 29.7% ≥80 year old men and women respectively self-reported LTPA) compared to the prevalence in 2006 (65.3%, 46.0% ≥80 year old men and women respectively self-reported LTPA) (22). However, the bulk of PA data on older adults tend to report on findings at the younger end of the older adult age spectrum i.e., participants in their sixties or seventies. Therefore, more studies involving those aged 80 and above would be valuable.**

**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 (17).

**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 ≤ 45 denoted low Quality of Life (QOL), a score 46–65 indicated moderate QOL, and a score > 65 suggested relatively high QOL (17).

**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 (18). 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. Additional participants will be included in the sample size calculation to account for any missing data, resulting approximately 350 patients will be interviewed for the study.

**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.

**3.15 Expected Outcomes**

We anticipate that there is a noteworthy correlation between the QoL of Type 2 diabetes mellitus patients with various socioeconomic factors. We hypothesize that there is a relationship between the quality of life of type 2 diabetes, socio-economic status, and clinical factors related to diabetes mellitus.

**3.16 Work Plan**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Activities** | **Apr**  **2024** | **May**  **2024** | **Jun**  **2024** | **July**  **2024** | **Aug**  **2024** | **Sep**  **2024** |
| **Designing the Study** |  |  |  |  |  |  |
| **Review of Literature** |  |  |  |  |  |  |
| **Development & approval of proposal** |  |  |  |  |  |  |
| **Development of Data Collection Tools** |  |  |  |  |  |  |
| **Pre-testing Questionnaire** |  |  |  |  |  |  |
| **Data Collection, Entry & Analysis** |  |  |  |  |  |  |
| **Report Writing** |  |  |  |  |  |  |
| **Submission & Approval of Thesis** |  |  |  |  |  |  |
| **Printing, Binding, and Submission** |  |  |  |  |  |  |

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**APPENDICES**

**APPENDIX-A**

**CONSENT FORM**

Hello, my name is Mukta Deb. I am from the University of Creative Technology, Chittagong (UCTC). We are surveying the situation of “Quality of Life and Its Associated Factors Among Adult Patients with Type II Diabetes in Cox’s Bazar Sadar Hospital, Bangladesh.”. I would like to talk to you about your health 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.

|  |  |  |
| --- | --- | --- |
| Can I start interviewing now? Yes No | | |
| Name of Respondent | Signature  (If you are unable to sign, please use your fingerprint) | Date |

**APPENDIX-B**

**CONSENT FORM**

**হ্যালো, আমার নাম মুক্তা দেব। আমি ইউনিভার্সিটি অফ ক্রিয়েটিভ টেকনোলজি, চট্টগ্রাম (ইউসিটিসি) থেকে এসেছি। আমরা "বাংলাদেশের কক্সবাজার সদর হাসপাতালে টাইপ II ডায়াবেটিস সহ প্রাপ্তবয়স্ক রোগীদের মধ্যে জীবনযাত্রার গুণমান এবং এর সাথে সম্পর্কিত কারণগুলি" এর পরিস্থিতি জরিপ করছি। আমি আপনার স্বাস্থ্য এবং অন্যান্য বিষয় সম্পর্কে আপনার সাথে কথা বলতে চাই। এই সাক্ষাত্কারটি সাধারণত প্রায় 45 মিনিট সময় নেয়। আমরা প্রাপ্ত সমস্ত তথ্য কঠোরভাবে গোপনীয় এবং বেনামী থাকবে। আপনি যদি কোনো প্রশ্নের উত্তর না দিতে চান বা ইন্টারভিউ বন্ধ করতে চান তাহলে অনুগ্রহ করে আমাকে জানান।**

|  |  |  |
| --- | --- | --- |
| আমি কি এখন সাক্ষাৎকার নেয়া শুরু করতে পারি? হ্যাঁ না | | |
| উত্তরদাতার নাম | উত্তরদাতার স্বাক্ষর  (আপনি স্বাক্ষর করতে অক্ষম হলে, আপনার আঙ্গুলের ছাপ ব্যবহার করুন) | তারিখ |

**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 **wealth index**?

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।

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|  |  | 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?.................................................................................................................