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# Assessment of quality of life and dietary practices of Type2 Diabetes patients in Bharatpur Metropolitan City, Chitwan

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## ABSTRACT

**Background:** Diabetes is one of the rapidly increasing non-communicable diseases and largest global health emergencies of the 21st century. It is associated with changes in lifestyle and resulting in less physical activity and increased obesity.

**Objectives:** This study aimed to assess the Quality of life and dietary practices among type 2 diabetes patients and associated factors with food consumption practices.

**Methods:** A cross-sectional study was conducted among the type2 diabetes patients with sample size of 236. Consecutive sampling technique was used for the selection of participants. Interview schedule was used for doing face to face interview. Diabetes-39 questionnaire was used as a tool for assessing the quality of life of the participants. Nepali version of the D-39 instrument was pre-tested among 10% of total sample in Aasha Hospital, Chitwan to check its simplicity and Morisky medication adherence scale was used to find out the dietary practices.

**Results:** The higher population of diabetes was observed among age group 50-59 and majority of participants were female. Only few numbers of the participants had dietary plan (33.1%) and among them 66.7% of the participants were following their dietary plan routine. More than half of the participants had good quality of life and nearly half of the participants had good dietary practices. Sex, education, those who used to take eggs, fruits, vegetables, milk were associated with the quality of life.

**Conclusion:** This study highlights the importance of implementing and adhering to dietary plans for individuals with diabetes. It emphasizes the need for empowering women to improve their quality of life. Additionally, family support and education play significant roles in managing diabetes and enhancing quality of life.

**Keywords:** Diabetes, Food consumption, Practices, Nepal, Nutrition, Quality of life

## 1. Introduction

Diabetes is rapidly increasing non-communicable diseases, important public health problem [1]. One of the common metabolic disorders in the world [2, 3] and the serious chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces [4, 5]. Health related quality of life (HRQOL) refers to the physical, psychological, and social domains of health that are influenced by a person's experiences, beliefs, expectations, and perceptions [6].

According to the World Health Organization (WHO) estimates, the cases of diabetes in Nepal are increase from the 2% prevalence in 2000 to 10% prevalence in 2030 where, Kathmandu, the capital city has a diabetes prevalence of 25.9% [7]. Insufficient intake of fruits and vegetables is also estimated to cause approximately (14%) of gastrointestinal cancer worldwide, (10%) in Africa and, (3%) in Nigeria; approximately (11%) of ischemic heart disease deaths and about 9% stroke deaths globally. 8.3% burden of diseases was also attributed to low fruits and vegetables intakes worldwide [8] . The rise in diabetes prevalence and its main risk factors are overweight and obesity, and physical inactivity [9].

This study would assist the healthcare practitioners, institutions, policy makers and community people to understand the assessment of quality of life, food consumption practices and its associated factors of Type 2 Diabetes. Several studies have been done on the quality of life and food consumption practices in different cultural settings globally, but only few people known about it. Recently one studied have been done on the Diabetes in low- and poor-income countries. So, food consumption practices are also one of the main mechanisms to control the diabetes.

## 2. Methods

### 2.1 Study type and study design

An analytical cross-sectional study design was adopted.

### 2.2 Place and duration of study

The study area was Bharatpur Metropolitan, Chitwan, Nepal and the total study duration was seven months.

### 2.3 Sample size and Sampling method

The total sample size was 236. The sample size was calculated by using the formula $\mathbf{n} = Z^2\, pq/d^2$ (Where, z = 1.96, p = 19% (0.19) [10], q = 1-p, and d = allowable error of known prevalence. Consecutive sampling technique was performed. From the selected diabetes centers

and hospitals, sample was drawn depending upon the proportion of patients in each selected diabetes center and hospital. The steps of sampling were performed as:

Step 1: Listing all the hospitals and diabetic centers in Bharatpur Metropolitan, Chitwan.

Step 2: Selection of 1/3$^{rd}$centers and hospitals as per the simple random sampling.

Step 3: Sample was selected depending upon the proportion of patient's flow.

Step 4: Data were collected after the opening of diabetes centers and hospitals using consecutive sampling.

**2.4 Methods of data collection**

Face to face interview was performed for the gathering of information with an interview schedule. Reliability and validity were maintained by applying different methods together with pretest 10% i.e. 24 of the estimated sample. The D-39 questionnaire was used to assess quality of life. The total 11 questions for dietary practices was used. Morisky medication adherence scale was used to calculate the dietary practices. The quality of life was measured based on scale which was adopted from Global Quality of Life Scale. Responses were scored on a seven-point scale that ranged from ''not affected at all'' (score = 1) to ''extremely affected'' (score = 7). The domain scores were computed by summing the responses and then applying a linear transformation to a 0–100 scale. On a transformed scale of 0 - 100, a score closer to 0 indicated a poor QOL and a score closer to 100 a good QOL. Score above 70 was good quality of life and below 70 was poor quality of life.

**2.5 Ethical Approval**

Ethical approval for the conduction of the study was taken from Institutional Review Committee (IRC) Pokhara University. Permission to conduct study was taken in the respective diabetes centers and hospitals. Written informed consent was obtained from each participant. Withdrawal from the study was accepted anytime throughout the study. To maintain confidentiality, no personal name of the participants was taken and unique identify number was used. Collected information was used only for the purpose of the study. Native language Nepali was used for the information assortment to the participants.

**2.6 Inclusion and exclusion criteria**

**2.6.1 Inclusion criterion:**

- People living with type 2 diabetes mellitus in Bharatpur Metropolitan.

### 2.6.2 Exclusion Criteria

- The participants who were unable to participate.
- Participants who refused to participate in this study.

### 2.7 Statistical analysis and software used

EpiData software was used for the data entry and SPSS was used for data analysis as per research objective and data analysis plan. Descriptive statistics (frequency/ percentage /mean/SD) was calculated to study the characteristics of the participants where Chi-square test was used to find the association between dependent and independent variables.

## 3. Results

Table 1 shows that more than half of the participants 53% were female. Majority of the participants were in the age group 50-59 years that is 22.9 %. More than two third of the participants 83.5% followed Hinduism. Majority of participants were of upper caste group. 83.1% of the participants were married. More than half (52.54%) of the participants had 5 or more than 5 members in the family. Majority of the participants had secondary education. The source of income is Agriculture and the monthly income is in the range of 20000-30000.

Table 1: Socio-demographic distribution of participants (n=236)

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| <30 | 13 | 5.5 |
| 30-39 | 13 | 5.5 |
| 40-49 | 42 | 17.8 |
| 50-59 | 61 | 25.8 |
| 60-69 | 54 | 22.9 |
| 70-79 | 49 | 20.8 |
| >80 | 4 | 1.7 |
| Mean± SD(years) = 57.0 ±13.89, Min= 19, Max= 88 | | |
| **Sex** | | |
| Male | 111 | 47.0 |
| Female | 125 | 53.0 |
| **Religion** | | |
| Hindu | 197 | 83.5 |
| Buddhist | 34 | 14.4 |
| Christian | 3 | 1.3 |
| Muslim | 2 | 0.8 |
| **Ethnicity** | | |
| Upper caste | 139 | 58.9 |
| Relatively advantages janajati | 57 | 24.2 |
| Disadvantage janajati | 18 | 7.6 |
| Disadvantage non-dalit terai caste | 12 | 5.1 |
| Dalit | 6 | 2.5 |
| Religious minorities | 4 | 1.7 |
| **Marital status ( n=236)** | | |

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| Married | 196 | 83.1 |
| Widow | 17 | 7.2 |
| Separated | 12 | 5.1 |
| Unmarried | 10 | 4.2 |
| Divorced | 1 | 0.4 |
| **Family type (n=236)** | | |
| Nuclear | 48 | 20.3 |
| Joint | 176 | 66.9 |
| Extended | 12 | 12.7 |
| **Number of family (n=236)** | | |
| ≤4 | 112 | 47.46 |
| ≥5 | 124 | 52.54 |
| Median 4, Min 1 and Max 8 | | |
| **Education status (n=236)** | | |
| Illiterate | 50 | 21.2 |
| Informal education | 38 | 16.1 |
| Primary education | 41 | 17.4 |
| Secondary education | 64 | 27.1 |
| Bachelor | 34 | 14.4 |
| Master | 9 | 3.8 |
| **Monthly income** | | |
| <20000 | 69 | 29.2 |
| 20000-30000 | 113 | 47.9 |
| >30000 | 54 | 22.9 |
| **Source of income (n=236)** | | |
| Agriculture | 69 | 29.2 |
| Labor | 16 | 6.8 |
| Foreign job | 7 | 3.0 |
| Pension | 33 | 14.0 |
| House work | 24 | 10.2 |
| Business | 39 | 16.5 |
| Job | 48 | 20.3 |

Table 2 shows that, majority of participants don't eat sugar and boil rice. 76.3% of the participants eat normal non-veg food. 33.1% of the participants had dietary plan and 67.1% of the participants eat according to routine of dietary plan. Half of the participants were suffering diabetes from 2 years or more than 2 years and majority of the participants 73.8% started to take medicine before 2 years. Many of them have family supports and more than half of the participant's family don't have diabetes in their family.

Table 2: Distributions of participants based on self-care practices

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| **Sugar intake (n=236)** | | |
| Yes | 40 | 16.9 |
| No | 174 | 73.7 |
| Sometimes | 22 | 9.3 |
| Mean 1.92, median 2.00, min 1, max 3 | | |
| **Define dietary plan** | | |
| Normal non-veg food | 180 | 76.3 |

| Variable | Frequency (n) | Percentage (%) |
|---|---|---|
| Vegetarian food | 56 | 23.7 |
| **Dietary plan** | | |
| Yes | 78 | 33.1 |
| No | 158 | 66.9 |
| **Used according to your routine (n=78)** | | |
| Yes | 53 | 67.9 |
| No | 25 | 32.1 |
| **Duration of the diseases (n=236)** | | |
| < 2 years | 40 | 16.9 |
| ≥ 2 years | 196 | 83.1 |
| Mean 3.83, median 4.0, min 3, max 4 | | |
| **Started to take the medicine (n=236)** | | |
| <2 years | 174 | 73.8 |
| ≥2 years | 62 | 26.2 |
| **Family support** | | |
| Yes | 220 | 93.2 |
| No | 16 | 6.8 |
| **Presence of diabetes in your family** | | |
| Yes | 60 | 25.4 |
| No | 176 | 74.6 |

Table 3 shows that majority 93.2% (220) of the participants had good quality of life and rest of the participants had poor quality of life. 49.2% of the participants had good dietary practices and rest of the participants had poor quality of life.

Table 3: Quality of life and Dietary practices among type 2 diabetes patients

| Factors | Frequency (n) | Percentage |
|---|---|---|
| **Quality of life** | | |
| Good Quality of life | 220 | 93.2% |
| Poor Quality of life | 16 | 6.8% |
| **Dietary practices** | | |
| Good Dietary practices | 116 | 49.2 |
| Poor Dietary practices | 120 | 50.8 |

Sex and education are associated with the quality of the life Dietary plan is associated with the quality of the life. Consumption of fish, milk is associated with the quality of the life. Quality of life is not associated with Dietary practices (table 4).

Table 4: Association between Quality of life and Socio-demographic variables

| Variable | Good QoL (%) | Poor QoL (%) | Total | Chi square | Df | P value | OR | 95% CI | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower | Upper |
| **Sex** | | | | | | | | | |
| Male | 55 (49.5) | 56 (50.5) | 111 | 6.178 | | | | | |
| Female | 42 (33.6) | 83 (66.4) | 125 | | 1 | 0.013* | 1.941 | 1.148 | 3.283 |
| **Education** | | | | | | | | | |
| Illiterate | 14 (28.0) | 36 (72.0) | 50 | 4.498 | | | | | |
| Literate | 83 (44.6) | 103 (55.4) | 186 | | 1 | 0.034* | 0.483 | 0.244 | 0.954 |
| **Dietary Plan** | | | | | | | | | |

| Variable | Good QoL (%) | Poor QoL (%) | Total | Chi square | Df | P value | OR | 95% CI | |
|---|---|---|---|---|---|---|---|---|---|
| Yes | 24 (30.8) | 54 (69.2) | 78 | 5.138 | 1 | 0.023* | 0.518 | 0.292 | 0.918 |
| No | 73(46.2) | 85 (53.8) | 158 | | | | | | |
| **Consumptions of fish** | | | | | | | | | |
| Yes | 58 (47.9) | 63 (52.1) | 121 | | | | | | |
| No | 39 (33.9) | 76 (66.1) | 115 | 4.788 | 1 | 0.029* | 1.794 | 1.061 | 3.035 |
| **Consumption of milk** | | | | | | | | | |
| Yes | 70 (37.2) | 118 (62.8) | 188 | | | | | | |
| No | 27 (56.2) | 21 (43.8) | 48 | 5.712 | 1 | 0.017* | 0.461 | 0.243 | 0.877 |
| **Quality of Life** | | | | | | | | | |
| Good | 55 (47.4) | 61(52.6) | 116 | | | | | | |
| Poor | 42 (35.0) | 78 (65.0) | 120 | 3.755 | 1 | 0.053 | 1.674 | 0.993 | 2.825 |

****p value significant at < 0.05***

## 4. Discussion

The main aim of present study was to assess the of quality of life and dietary practices of type 2 diabetes patients in Bharatpur Metropolitan, Chitwan. It showed that majority of type 2 diabetes patients had good quality of life.

Quality of life (QOL) and Dietary practices is an important and understudied topic in the diabetes. Most studies report that diabetes significantly affects the health-related quality of life of patients. In contrast to the findings of those studies found that majority of participants had good QOL in both physical and mental health [5,11]. In this research also, it showed majority of the participants had good quality of the life and had poor dietary practices.

In this research, that majority of participants were in the age group 50-59 and majority of the participants were female. Available research of Pakistan, Nepal, Iran and Thailand also shows that majority of the participants were on the same age group and majority were female [5, 8, 11,12]. So a study found that age strongly affected the HRQol of diabetes patients in physical health and psychological domain and there is association between age and quality of life [5] But this research don't shows that there was no association between age and quality of life.

Current research showed majority of participants were married and followed Hindu religions. Other studies also revealed that mostly married people were suffering from diabetes mellitus [5, 6, 8,13]. A study conducted in Thailand shows that majority of the married participants had good quality of life [8] but this research shows that half of participants had bad quality of life. So, the possible reason for this might be due to the economic variation. According to the research conducted in India showed that religions is associated with the quality of life [14] but this research showed no association. This finding

shows there is association between educations with quality of life. Likewise, other articles also have also showed that there is association between education and quality of life [5, 8,15].

The finding from this study showed, majority of participants don't eat sugar and a study conducted in Saudi Arabia also showed that majority participants don't eats sugar and there is association between sugar and quality [16]. But in this research, it shows that there is no association between sugar and quality of life.

Present research shows that majority of the participants don't eat rice by boiling and they had poor quality of life where a research done in western India showed that majority of participants eat rice by boiling and had good quality of life [17]. So, in this research there is no association, but a study conducted in India had association.

Present research showed that the participant who used mustard oil had good quality of life and a study showed that the participants who used sunflower oil they had good quality of life and is associated with quality of life [16, 18,19]. But in this research, there is no association. In this study on half of the participants who eat normal non vegetarian food had good quality of life but a study conducted in Ethiopia also showed that majority of participants were non-vegetarian and had good quality of life [18]. Both this study and that study showed that there is no any association between quality of life.

This study showed only few numbers of participants eat food and vegetable according to their dietary plan and had association with quality of life. According to the study conducted in India and Ethiopia also showed that majority of the participants eat according to their dietary plan and had good quality of life [16,17].

Present research shows that all of participants eat fruits and vegetable and had good quality of life and is associated with the quality of life. According to the research of Srilanka half of the participants eats fruits and all of the participant's eats vegetable and is associated with the quality of life [19].

This study showed the overall quality of life of diabetes patients was good and a study conducted in Gaza strip camp, Nepal showed that quality of life is poor [5,11] and this study showed that the dietary practices of the participants were poor where a study conducted in Ethiopia Saudi Arabia also showed that they had poor dietary practices [1, 16] and this could be due to the variation in the setting of the study and the type of foods available in that place.

## 5. Conclusion

The results indicated that the majority of participants reported a favorable quality of life, while approximately half of them demonstrated good dietary practices. These findings emphasize the importance of promoting healthy dietary habits and considering the overall quality of life when providing treatment to patients with diabetes in clinical and hospital settings.

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## Conflict of interests

The authors declare that they have no conflict of interests.

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