

# ASSESSMENT OF CANCER-RELATED FATIGUE ON THE LIVES OF PATIENTS

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## ABSTRACT

A cross-sectional study entitled "Assessment of Cancer-Related Fatigue on the lives of patients" conducted at National Institute of Cancer Research & Hospital, Mohakhali, Dhaka, Ahsania Mission Cancer & General Hospital, Mirpur 13, Dhaka, and Kurmitola General Hospital, Dhaka among 267 cancer patients, has assessed the level of Cancer-Related Fatigue (CRF), using The Functional Assessment of Cancer Therapy Fatigue Scale (FACT-F), version 4, evaluates the socioeconomic impact and explores the distressing symptom on patients' functioning and Quality of Life. Data was collected by face to face interview using a Pre-tested Semi-structured questionnaire. Among 267 patients, 55.8% were male & 44.2% female. The majority (40.1%) cancer patients were in 36-55 age group. The mean age was 46.11 (SD  $\pm$  16.548) years, with minimum age 16 & maximum 83 years. Most of the respondents (19.5%) were Graduate, 10.1% Post-Graduate & 13.1% illiterate. Majority (34.5%) were house-wives, 11.6% students, 7.9% retired person & rest were businessmen, service holder & day laborer. The majority (52.1%) income were within 25000 taka. Larger part of the patients (15.7%) were affected by Gastro-intestinal cancer, 15% breast cancer, 14.2% lung cancer, 12.4% Ca head-neck, 10.5% Soft tissue Sarcoma, 10.1% Gynaecological cancer, 7.9% Genitourinary cancer, 7.9% Haematological cancer, & rest were suffering from Ca Brain-PNS-Spinal cord, Ca Melanoma & Skin, Carcinoma of Unknown Primary Site (CUP). Majority (87.3%) were suffering from cancer for 1-12 months & rest for 13-48 months. Greater part of the patients (47.6%) were belonging to the cancer stage II, 35.2% in stage III, 12.7% stage IV, & 4.5% in stage I. Majority (49.4%) were moderately anaemic, 26.6% severely anaemic, 24.0% mildly anaemic. Most of the patients (37.1%) were receiving chemotherapy, 21.3% surgery & chemotherapy, 15.4% concurrent chemo-radiation therapy, 9.0% only radiotherapy, 7.1% surgical treatment. The better part (76.4%) were receiving treatment regularly & 23.6% were irregular. Fatigue was present in 79.4% of the patients, where 4.5% were severely fatigued, 28.5% moderately fatigued & 46.4% weary with mild fatigue. Physical wellbeing was Good among 18.7%, Fair in 36%, Average 34.1% & Bad in 11.2%. The Greater part (53.2%) patients' family- social life & financial condition was seriously hampered. The majority (65.2%) were facing extreme financial difficulties due to their physical condition & medical treatment. Mental condition was vulnerable in 43.8%. Functional wellbeing was bad in 15.7% patients, 34.8% were completely unable to work outside & to perform strenuous activities. Fatigue level was found to be associated with Sex ( $\chi^2$  test value = 16.667,  $P < 0.05$ ), Income ( $\chi^2$  test value = 8.561,  $P < 0.05$ ), and Cancer stage of the respondents ( $\chi^2$  test value = 12.457,  $P < 0.05$ ). This research presents & evaluates measures that have been used to assess the socio-economic aspects of fatigue in

cancer patients, will yield positive outcomes in them with different diagnosis undergoing different modalities of anti-neoplastic treatments along with strategies to facilitate reliable assessment of symptoms of Cancer-Related Fatigue.

## INTRODUCTION

Fatigue is the most prevalent symptom of individuals with cancer who receive radiation therapy, cytotoxic chemotherapy, or biological response modifiers (Stone P, Robinson KD, 2000). It was accepted by the International Classification of Disease (10th Revision, Clinical modification in 1999).

Cancer-related fatigue (CRF), defined by the National Comprehensive Cancer Network, NCCN) as "a distressing persistent subjective sense of physical, emotional or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity & interferes with usual functioning" ([www.nccn.org/fatigue/pdf](http://www.nccn.org/fatigue/pdf), 26 April 2009).

Cella & Colleagues defines CRF as "a subjective state of overwhelming & sustained exhaustion & decreased capacity for physical & mental work that is not relieved by rest".

The European Association of Palliative Care (EAPC) defines fatigue as "a subjective feeling of tiredness, weakness or loss of energy".

In healthy individuals, fatigue generally serves as a protective or pleasant response to physical or psychological stress. For patients with a chronic disease, however, it can become a distressing symptom (Glaus A, 1998), which negatively affects daily functioning & quality of life (Curt G, Breitbart W, 2000). It arises over a continuum, ranging from tiredness to exhaustion. But, by contrast, with the tiredness sometimes felt by a healthy individual, CRF is perceived as being of greater magnitude, disproportionate to activity or exertion, & not completely relieved by rest, leaving the patient with an overwhelming & sustained sense of exhaustion. (Glaus A, Crow R, 1996). It impairs daily functioning, profoundly affects the quality of life, self-care capabilities and desire to continue treatment. In some cases, fatigue is the most significant barrier to functional recovery in cancer patients. It is a debilitating, multi-faceted biopsychosocial symptom, which begins after diagnosis and persists long after treatments end, even when the cancer is in remission. The etiological pathophysiology underlying this is multifactorial and not well delineated. Mechanisms may include- effects of anti-neoplastic therapy on CNS, sleep, circadian rhythm, inflammatory and stress mediators, immune system activation, hormonal alterations related the effects on hypothalamus pituitary axis, early menopause, androgen deprivation in men, abnormal accumulations of muscle metabolites, dysregulation of homeostatic status of cytokines, irregularities in neuromuscular function, abnormal gene expression, inadequate ATP synthesis, serotonin dysregulation, abnormal vagal afferent nerve activation, an array of psychosocial mechanisms, including self-efficacy, causal attributions, expectancy, coping and social support.

Fatigue is an umbrella term used to describe various sensations or feelings, & a variety of expressions of reduced capacity at physical, mental, emotional & social levels (Glaus A, 1996). How CRF is related to indicators of tiredness, such as reduced energy expenditure, sleep disturbance, attention deficits, decreased endurance, & weakness, is unclear (Winningham M, Nail L, 2000). Fatigue affects the whole person- their body & mind & is a

complex symptom with physical, emotional & mental effects. Patients have variously described themselves as feeling listless, sluggish, faint, despondent, apathetic, tired, slack, indifferent & having paralyzing fatigue (Magnusson K, Moller A, 1999). CRF is the most frequently reported symptoms by cancer patients or its treatment & is almost universal in patients undergoing chemotherapy, radiation therapy, HSCT or treatment with biological response modifiers (Hofman M, Ryan JL, 2005). As the use of multi-modal treatments & dose-dense, intensity-dense treatment protocol has increased, so has the burden of CRF (NCCN).

Fatigue is also recognized as a common state in palliative care & patients with advanced cancer experience it as the most distressing symptom affecting their quality of life. The patients feel lack of energy & enthusiasm. Problems with this symptom is experienced from many months to years following completion of the treatment.

CRF include a feeling of debilitating tiredness, weakness, lethargy & malaise, where the exhaustion felt is disproportionate to the level of physical exertion & not relieved by sleep (Gutstein HB, Jean-Pierre P, 2001). CRF has a substantial negative impact (Hofman M, Ryan JL, 2007).

CRF is particularly high during & after chemotherapy treatment (Hartvig P, Bower JE, 2006). Fatigue typically rises its maximum over the first few days following chemotherapy infusions & then declines (Berger AM, Molassiotis A, 2010). Emotional distress is one of the potential contributor to post-treatment fatigue (PTF), which is particularly high among patients before chemotherapy (Montgomery GH, Watson M, 1996).

CRF is a complex multidimensional problem characterized by reduced energy & increased need for rest unrelated to recent sleep or activity that affects adversely by reducing mental & physical functioning, disturbing mood & interfering with usual activities (Butt Z, Scott JA, 2008). CRF is also emerging as a dose-limiting toxicity associated with established & newer therapies including targeted agents, such as tyrosine kinase inhibitors, that can ultimately limit the effectiveness of treatment (Cornelison M, Jabbour EJ, 2010).

CRF is not always easily differentiated from everyday fatigue without careful diagnostic evaluation. Proposed International Classification of Disease -10 (ICD 10) criteria for diagnosis of CRF are as follows:

A. 6 or more of the following present everyday or nearly everyday during same 2 weeks in the past month; at least 1 symptom is significant fatigue (#1)

1. Significant fatigue, diminished energy, increased need to rest disproportionate to any recent change in activity level
2. Generalized weakness, limb heaviness
3. Diminished concentration, attention
4. Decreased motivation, interest in usual activities
5. Insomnia or hypersomnia
6. Sleep unrefreshing or nonrestorative
7. Struggle to overcome inactivity
8. Emotional reactivity to feeling fatigued (sadness, frustration, irritability)
9. Difficulty with completing daily tasks attributed to fatigue
10. Perceived short-term memory problems
11. Postexertional malaise lasting several hours

B. Symptoms causing clinically significant distress or impairment in social, occupational, or other important areas of functioning

C. Evidence from history, physical examination, or laboratory findings that symptoms are consequence of cancer or cancer therapy

D. Symptoms not primarily consequence of co-morbid psychiatric disorders such as major depression, somatization or somatoform disorder, or delirium.

## MATERIALS AND METHODS

The study was conducted as per following methodology

**Study design:** This study was a Descriptive cross-sectional study

**Study place:** The study was conducted at

1. National Institute of Cancer Research & Hospital (NICRH), Mohakhali, Dhaka.
2. Ahsania Mission Cancer & General Hospital, Mirpur 13, Dhaka.
3. Kurmitola General Hospital, Dhaka.

**Study period:**

The total study period was 1 year, from January - December 2016. A work schedule was prepared including all the tasks in a sequence. The first 4 months were applied for literature review and strategy finalization. The subsequent months were passed for questionnaire development, pretesting, data collection, compilation and analysis, report writing, printing and submission of thesis. Literature review was simultaneously going on till final report was submitted. The daily work schedule appended as Annexure D.

**Study population:**

The patients with Cancer receiving different methods of anti-neoplastic therapy

**Inclusion criteria**

1. Confirmed tissue diagnosis of cancer
2. Age: > 15 years
3. Gender: Male and female
4. Patients receiving radiotherapy, chemotherapy and concurrent chemo-radiotherapy, surgical treatment and palliative care.

**Exclusion criteria**

1. Patients who are unwilling to participate
2. Patients who are seriously ill

**Sample size:** To determine the sample size, following formula was used:

$$n = \frac{z^2 pq}{d^2}$$

here, Z= at 95% confidence limit, the value of Z is 1.96

n= required sample size

p= estimated prevalence =50%

q= 1-p

$$\begin{aligned}d &= \text{margin of error at 5\% (Standard value of 0.05)} \\ \text{so, } n &= \{(1.96)^2 \times 0.5 \times (1-0.5)\} / (0.05)^2 \\ &= 3.8416 \times 0.5 \times 0.5 / 0.0025 \\ &= 0.9604 / 0.0025 \\ &= 384\end{aligned}$$

The calculated sample size was 384.

**Sampling technique:** Purposive sampling technique

**Research title approval:** Research proposal was presented in front of the honorable faculty members, necessary modifications were done based on their comments and suggestions and then submitted for ethical clearance to ethical review committee of the National Institute of Preventive & Social Medicine (NIPSOM). Before commencement of data collection, a request letter signed by the Director, NIPSOM and Head of the Department of Community Medicine, NIPSOM was taken for appropriate authority. Identification of the researcher and purpose of data collection were explained to the respondent and informed consent was taken before data collection. After collecting the data, a brief counseling was given to the respondents.

#### **Research Instruments**

- Pre- tested semi- structured questionnaire
- *The Functional Assessment of Cancer Therapy Fatigue Scale (FACT-F)*

The FACT-F Scale, Version 4 consists of the 28 items of the FACT general, to assess the health related quality of life, and an additional 13 items to assess fatigue. The FACT-F has high internal consistency (overall  $\alpha = 0.95$ , for fatigue subscale  $\alpha = 0.93-0.95$ )

**Developer :** Suzanne B. Yellen, David Cella

**Items of the Scale:** 41 items

#### **Domains/ Categories of the Scale:**

**5 domains:** Physical wellbeing

- Family/ Social/ Financial wellbeing
- Emotional wellbeing
- Functional wellbeing
- Fatigue

#### **Level of Fatigue**

In 0-10 scale,

- 0 indicates an absence of fatigue
- a score of 1-3 indicates the presence of mild fatigue, that does not require clinical intervention
- scores of 4-6 indicate moderate fatigue, require further evaluation
- scores 7-10 indicate severe fatigue, need clinical intervention

**Data collection technique:** Data was collected by-

### 1. Record Review

### 2. Face to face interview using the questionnaire

Initially verbal consent was obtained from each respondents following introducing and informing about the purpose, objectives and procedures of the study. Data was collected by face to face interview ensuring the privacy and confidentiality of data. Data were also collected by reviewing relevant medical records. Time required for data collection from each individuals was about 30-40 minutes. Data were collected from 10 am to 4 pm. On an average, 10 respondents were interviewed daily.

### Data processing, analysis & presentation:

#### Data processing

Data processing involves

- Categorization of the data
- Coding
- Summarizing the data
- Categorizing to detect the errors and to maintain consistency and validity
- Then these were entered into SPSS software in a computer for analysis

#### Data Analysis

The data was collected, verified and checked to exclude any error. Further validation checks for accuracy and consistency were carried out afterwards. Finally data analyzed by computer through Statistical Package for Social Science (SPSS) program (version 23) according to the variables to fulfill the objectives of this study. Described statistics were computed for socio-demographic variables. Distribution of data was checked. Data were presented in tables and graphs. Qualitative and quantitative were analyzed through proper methods.

#### Data presentation

Data was presented by tables, charts, figures, statistical inferences.

## RESULTS

### 1 Socio-demographic Characteristics of The Respondents:

#### 1.1 Distribution of The Respondents by Age Group:

**Table 1: Distribution of The Respondents by Age Group**

| Age Group    | Frequency | Percent | Statistics   |
|--------------|-----------|---------|--|
| Lowest to 35 | 78        | 29.2    | Mean = 46.11<br>Median= 46.00<br>Mode= 50<br>SD= ±16.548 |
| 36 - 55      | 107       | 40.1    |  |
| 56 - 75      | 77        | 28.8    |  |
| Above 75     | 5         | 1.9     |  |

|              |            |            |                             |
|--------------|------------|------------|-----------------------------|
| <b>Total</b> | <b>267</b> | <b>100</b> | Minimum = 16<br>Maximum= 83 |
|--------------|------------|------------|-----------------------------|

Table 1 demonstrates that, Among all of the respondents (267), the majority 107 (40.1%) were in the age group 36-55 years, followed by 78 (29.2%) belong to the age group 16-35 years, 77 (28.8%) incorporate in the age group 56-75 years and remaining 5 respondents (1.9%) encompass above 75 years. The mean age of the respondent was 46.11( $\pm$ 16.548 years), with minimum age 16 and maximum age was 83 years.

### 1.2 Distribution of The Respondents by Sex:

**Figure -1: Distribution of The Respondent by Sex**

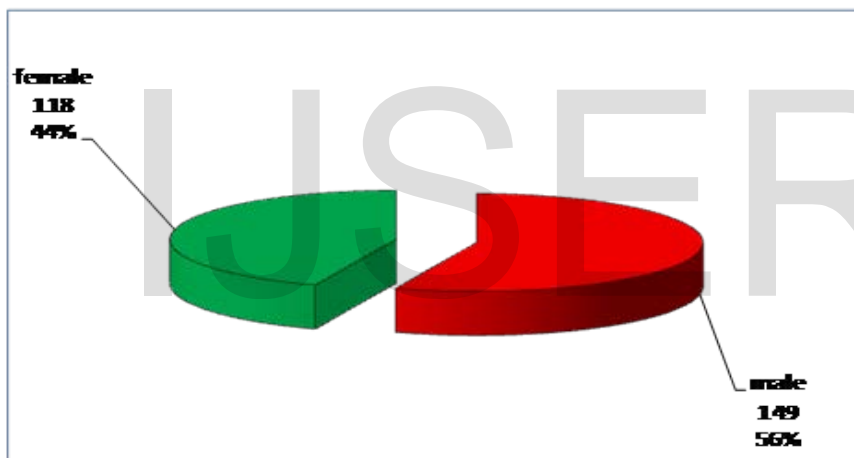


Figure 1 shows that, Out of all 267 respondents, 149 respondents (55.8%) were male and 118 (44.2%) were female.

### 1.3 Distribution of The Respondents by Religion

**Figure -2: Distribution of The Respondents by Religion**

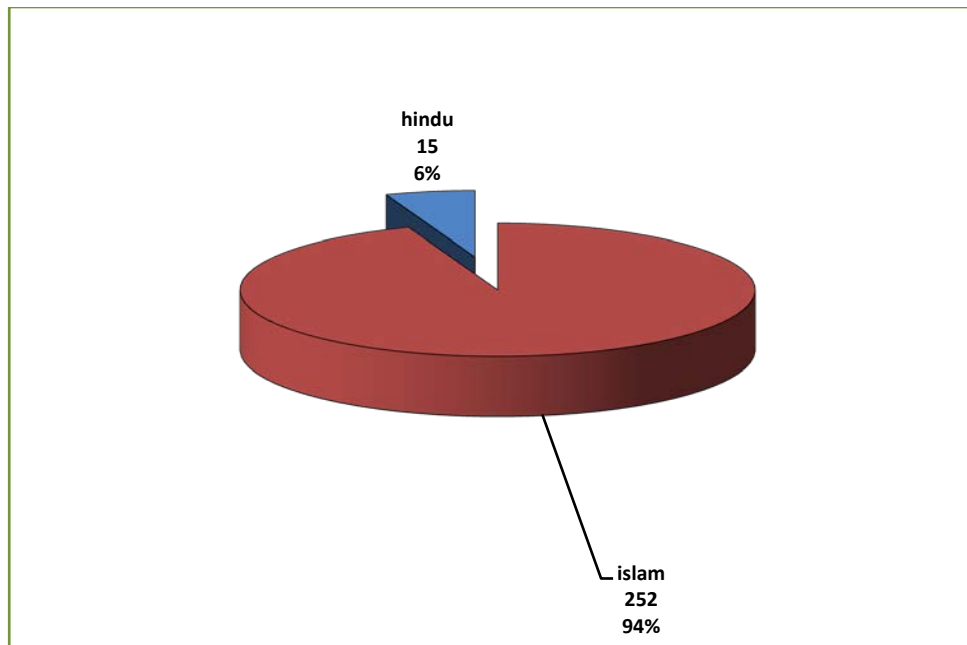


Figure 2 shows that, Among 267 respondents, the majority 252 respondents (94.4%) were Muslim and remaining 15 (5.6%) were Hindu.

#### 1.4 Distribution of The Respondents by Marital Status:

**Figure -3: Distribution of The Respondents by Marital Status**



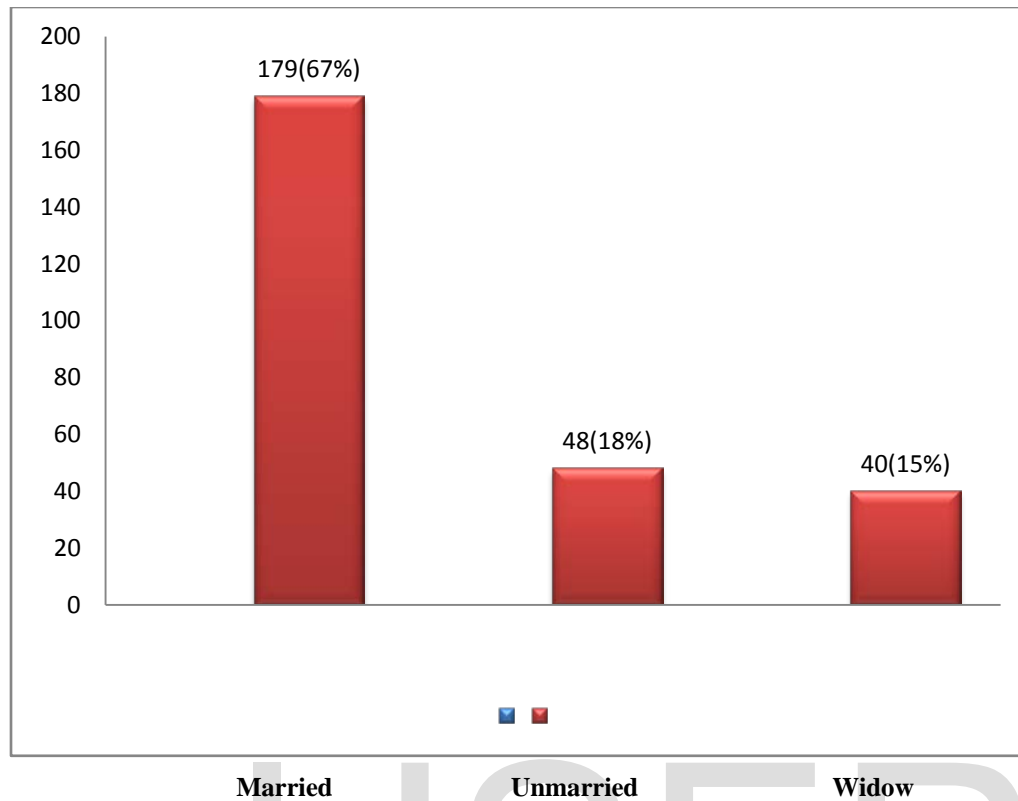


Figure 3 demonstrates that, Among all 267 respondents, 179 respondents (67%) were married, 48(18%) were unmarried and 40 respondents (15%) were widowed.

### 1.5 Distribution of The Respondents by Educational Qualifications

**Table-2: Distribution of The Respondents by Educational Qualification**

| Educational Qualification | Frequency | Percent |
|---------------------------|-----------|---------|
| Illiterate                | 35        | 13.1    |
| Class I-V                 | 42        | 15.7    |
| Class VI-X                | 18        | 6.7     |

|                   |            |            |
|-------------------|------------|------------|
| SSC / Equivalent  | 37         | 13.9       |
| HSC/ Equivalent   | 35         | 13.1       |
| Graduate          | 52         | 19.5       |
| Post Graduate     | 27         | 10.1       |
| Can put sign only | 21         | 7.9        |
| <b>Total</b>      | <b>267</b> | <b>100</b> |

Table 2 illustrates that, Among 267 respondents, the majority 52 respondents (19.5%) were Graduate, followed by 42 (15.7%) were in the Class I-V group, 37 (13.9%) were SSC passed, 35 (13.1%) were HSC passed, 35 (13.1%) were illiterate, 27 (10.1%) were Post-graduate, 21(7.9%) can put sign only, and remaining 18 respondents (6.7%) were in the class VI-X group.

### 1.6 Distribution of The Respondents by Occupation

**Table -3: Distribution of The Respondents by Occupation**

| Occupation   | Frequency  | Percent    |
|--------------|------------|------------|
| Farmer       | 26         | 9.7        |
| Service      | 40         | 15.0       |
| Business     | 31         | 11.6       |
| Day laborer  | 26         | 9.7        |
| House-wife   | 92         | 34.5       |
| Student      | 31         | 11.6       |
| Retired      | 21         | 7.9        |
| <b>Total</b> | <b>267</b> | <b>100</b> |

Table 4 shows that, Among all 267 respondents, the majority 92 respondents (34.5%) were house-wife, followed by 40 respondents (15%) were service holder, 31 (11.6%) were businessmen, 31(11.6%) were students, 26(9.7%) were day-laborer, 26(9.7%) were farmers, and remaining 21 (7.9%) were retired person.

### 1.7 Distribution of The Respondents by Monthly Income

**Table-4:Distribution of Respondents by Monthly Income**

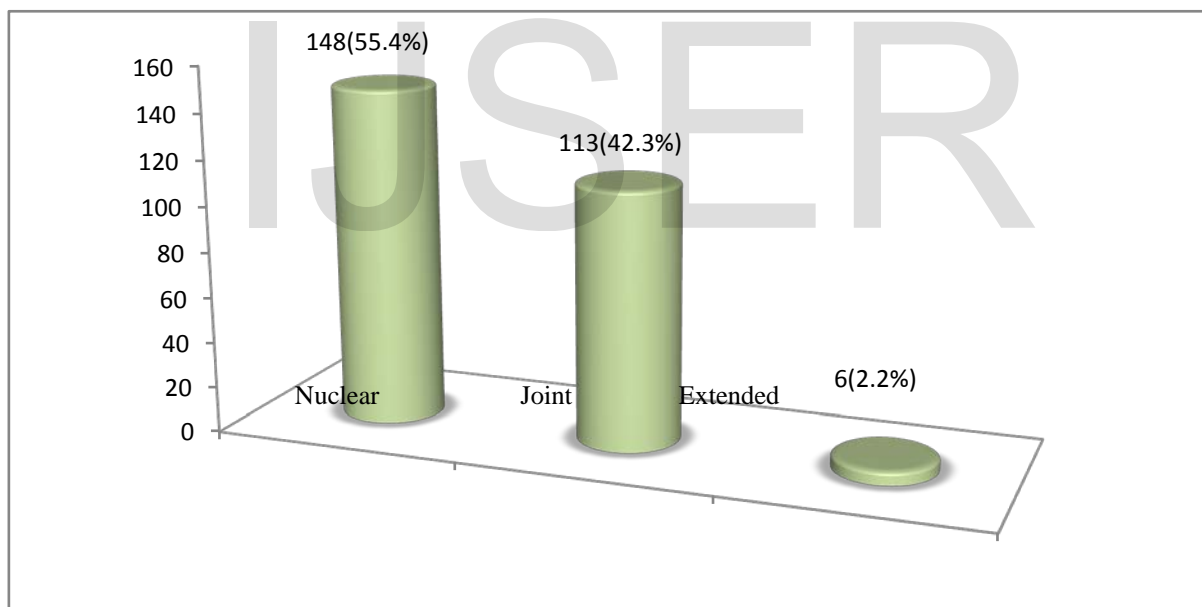
| Income group    | Frequency | Percent | Statistics     |
|-----------------|-----------|---------|----------------|
| Lowest to 25000 | 139       | 52.1    | Mean= 42333.33 |

|                 |            |            |  |
|-----------------|------------|------------|--|
| 25001 - 50000   | 75         | 28.1       | Median= 20000.00<br>Mode=50000<br>SD = $\pm 73082.283$<br>Minimum= 2000<br>Maximum= 700000 |
| 50001 - 100000  | 40         | 15.0       |  |
| 100001 - 150000 | 5          | 1.9        |  |
| 150001- 200000  | 4          | 1.5        |  |
| Above 200000    | 4          | 1.5        |  |
| <b>Total</b>    | <b>267</b> | <b>100</b> |  |

Table 4 shows that, Among 267 respondents, the majority 139 respondents (52.1%) monthly income were in 2000-25000 taka income group, followed by 75 respondents (28.1%) income were in 25001-50000 taka group, 40(15%) income in 50001-100000 group, 5 (1.9%) income were in 100001-150000 group, 4 respondents(1.5%) income were in 150001-200000 taka income group, and the remaining 4 respondents (1.5%) monthly income were above 200000 taka. The mean monthly income was 42333.33 ( $\pm 73082.283$ ) taka, with minimum income 2000 & maximum monthly income was 700000 taka.

### 1.8 Distribution of The Respondents by Family Type

**Figure - 4 : Distribution of The Respondents by Family Type**



In Figure 4, Among 267 respondents, 148 respondents (55.4%) belong to nuclear family, 113 (42.3%) incorporate in joint family and remaining 6 respondents (2.2%) encompass in extended family.

### 1.9 Distribution of the Respondents by Family Size:

**Table- 5: Distribution of The Respondents by Family Size**

| Family Size  | Frequency  | Percent    | Statistics   |
|--------------|------------|------------|--|
| 1-5          | 160        | 59.9       | Mean= 5.47<br>Median= 5.00<br>Mode=5<br>SD= ±2.189<br>Minimum= 2<br>Maximum=14 |
| 6-10         | 100        | 37.5       |  |
| 11-15        | 7          | 2.6        |  |
| <b>Total</b> | <b>267</b> | <b>100</b> |  |

Table 5 illustrates that, Among 267 respondents, 160 respondents (59.9%) family consist of 1-5 members, followed by 100 respondents (37.5%) family consist 6-10 members and remaining 7 respondents (2.6%) family have 11-15 members. The mean family size 5.47 ( $\pm 2.189$ ), with minimum family member 2 and maximum 14.

## 2. Cancer & Cancer Treatment Related Informations of Respondents:

### 2.1 Distribution of Patients According to Duration of Illness

**Table- 6: Distribution of Patients according to Duration of Illness**

| Group in months | Frequency  | Percent    | Statistics  |
|-----------------|------------|------------|---|
| 1-12            | 233        | 87.3       | Mean= 9.42<br>Median= 8.00<br>Mode= 12<br>SD= ±8.173<br>Minimum= 1<br>Maximum= 48 |
| 13-24           | 25         | 9.4        |   |
| 25-36           | 7          | 2.6        |   |
| 37-48           | 2          | 0.7        |   |
| <b>Total</b>    | <b>267</b> | <b>100</b> |   |

Table 6 shows that, Among 267 patients, the majority 233 patients (87.3%) are suffering from cancer for 1-12 months, followed by 25(9.4%) suffering for 13-24 months, 7 (2.6%) suffering for 25-36 months and remaining 2 patients(0.7%) suffering for 37-48 months, which has shown in Table - 6. The mean duration of illness is 9.42 ( $\pm 8.173$ ) months, with minimum duration 1 month & maximum duration is 48 months.

### 2.2 Distribution of the Respondents Belonging to the Cancer Stage

**Table-7: Distribution of Patients Belonging to Cancer Stage**

| Cancer Stage | Frequency | Percent | Statistics |
|--------------|-----------|---------|------------|
| I            | 12        | 4.5     | Mean= 2.56 |

|              |            |            |   |
|--------------|------------|------------|---|
| II           | 127        | 47.6       | Median= 2.00<br>Mode=2<br>SD= ± 0.770<br>Minimum= 1<br>Maximum= 4 |
| III          | 94         | 35.2       |   |
| IV           | 34         | 12.7       |   |
| <b>Total</b> | <b>267</b> | <b>100</b> |   |

Table 7 demonstrates that, Among 267 patients, the majority 127 patients (47.6%) belonging to the 2nd stage, 94(35.2%) belong to the 3rd stage, 34 patients (12.7%) belong to 4th stage, and remaining 12 patients (4.5%) belong to the 1st stage.

### 2.3 Distribution of Patients According to Organ Involvement

**Table-8: Distribution of Patients According to Organ Involvement**

| Organ Involved        | Frequency  | Percent    | Statistics  |
|-----------------------|------------|------------|---|
| Lungs                 | 38         | 14.2       | Mean= 4.70<br>Median= 4.00<br>Mode= 3<br>SD= ± 2.947<br>Minimum= 1<br>Maximum= 11 |
| Breast                | 40         | 15.0       |   |
| GIT                   | 42         | 15.7       |   |
| Genito-urinary        | 21         | 7.9        |   |
| Gynaecologic          | 27         | 10.1       |   |
| Haematologic          | 21         | 7.9        |   |
| Head-neck             | 33         | 12.4       |   |
| Brain-PNS-spinal cord | 7          | 2.6        |   |
| CUP                   | 5          | 1.9        |   |
| Sarcoma               | 28         | 10.5       |   |
| Melanoma & Skin       | 5          | 1.9        |   |
| <b>Total</b>          | <b>267</b> | <b>100</b> |   |

Table 8 shows that, Among all 267 patients, the highest 42 patients (15.7%) are affected by Gastro-intestinal Cancer, 40(15%) are suffering from breast cancer, 38(14.2%) affected by lung cancer, 33(12.4%) by Ca head-neck, 28(10.5%) affected by Soft Tissue Sarcoma, 27(10.1%) suffering from Gynaecological cancer, 21(7.9%) affected by Genito-urinary cancer, 21(7.9%) affected by Haematological cancer, 7 patients(2.6%) are suffering from Ca Brain-PNS-Spinal cord, 5 (1.9%) affected by Melanoma & Skin cancer, and remaining 5 patients(1.9%) are suffering from CUP.

### 2.4 Distribution of Patients Belonging to the Anaemia Stage

**Table-9: Distribution of Patients Belonging to Anaemia Stage**

| Anaemia Status | Frequency | Percent | Statistics |
|----------------|-----------|---------|------------|
|----------------|-----------|---------|------------|

|              |            |            |  |
|--------------|------------|------------|--|
| Mild         | 64         | 24.0       | Mean= 2.03<br>Median= 2.00<br>Mode= 2<br>SD= ± 0.712<br>Minimum= 1<br>Maximum= 3 |
| Moderate     | 132        | 49.4       |  |
| Severe       | 71         | 26.6       |  |
| <b>Total</b> | <b>267</b> | <b>100</b> |  |

Among 267 patients, 132 (49.4%) are moderately anaemic, followed by 71 (26.6%) are severely anaemic, and remaining 64 patients (24.0%) are mildly anaemic, which have shown in Table- 9.

### 2.5 Distribution of Patients by Receiving Treatment Types

**Table- 10: Distribution of Patients Receiving Treatment Type**

| Treatment Received by Patients | Frequency  | Percent    | Statistics  |
|--------------------------------|------------|------------|---|
| Chemotherapy                   | 99         | 37.1       | Mean= 3.05<br>Median= 3.00<br>Mode= 1<br>SD= ± 2.006<br>Minimum= 1<br>Maximum=9 |
| Radiotherapy                   | 24         | 9.0        |   |
| Concurrent chemo-radiation     | 41         | 15.4       |   |
| Surgery                        | 19         | 7.1        |   |
| Surgery & Chemotherapy         | 57         | 21.3       |   |
| Surgery & Radiotherapy         | 11         | 4.1        |   |
| Surgery, Chemo & Radio         | 13         | 4.9        |   |
| Surgery & oral                 | 1          | 0.4        |   |
| Oral anti-neoplastic           | 2          | 0.7        |   |
| <b>Total</b>                   | <b>267</b> | <b>100</b> |   |

Among 267 patients, The highest 99 patients (37.1%) receiving Chemotherapy, followed by 57 patients (21.3%) receiving Surgery & Chemotherapy, 41(15.4%) receiving concurrent Chemo-radiation therapy, 24(9.0%) receiving only Radiotherapy, 19(7.1%) receiving surgical treatment, 13 patients (4.9%) receiving Surgery-Chemo-radiation therapy, 11(4.1%) receiving Surgery & Radiotherapy, 2 patients (0.7%) receiving oral anti-neoplastic drugs, and remaining 1 patient(0.4%) receiving Surgical treatment & Oral anti-cancer drugs, which have shown in Table- 10.

### 2.6 Distribution of Patients by Duration of Receiving Treatment

**Table- 11: Distribution of Patients by Duration of receiving Treatment**

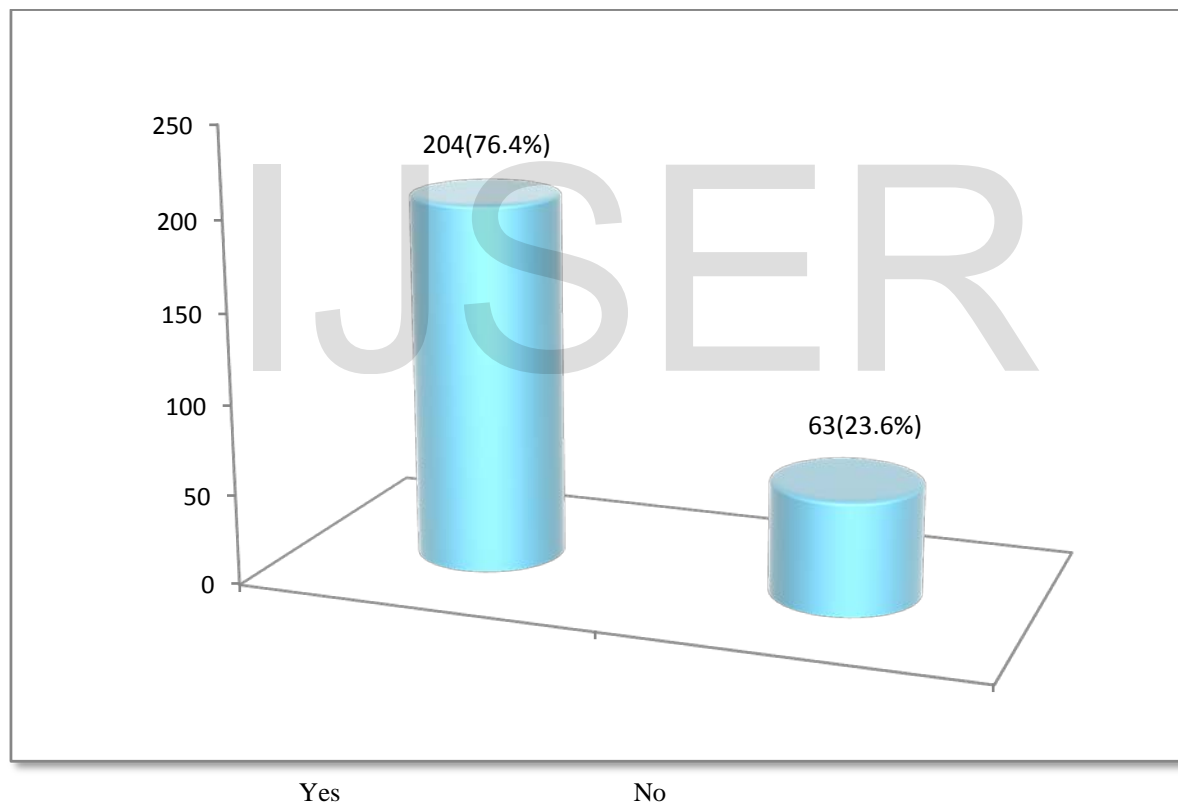
| Duration of Rx (in Months) | Frequency | Percent | Statistics |
|----------------------------|-----------|---------|------------|
|----------------------------|-----------|---------|------------|

|              |            |            |   |
|--------------|------------|------------|---|
| 1-12         | 259        | 97         | Mean= 5.46<br>Median= 3.00<br>Mode= 3<br>SD= ± 5.444<br>Minimum= 1<br>Maximum= 48 |
| 13-24        | 6          | 2.2        |   |
| 25-36        | 1          | 0.4        |   |
| 37-48        | 1          | 0.4        |   |
| <b>Total</b> | <b>267</b> | <b>100</b> |   |

Table 11 shows that, Among all 267 patients, the majority of 259 patients (97%) are receiving treatment for 1-12 months, 6(2.2%) for 13-24 months, 1(0.4%) for 25-36 months, and remaining 1 patient(0.4%) are receiving treatment for 37-48 months, which have shown in Table 11. The mean duration is 5.46 (SD ± 5.444), with minimum duration of receiving treatment is 1 month and maximum duration 48 months.

**4.2.7 Distribution of Patients Receiving Treatment Regularly or not**

**Figure -5: Distribution of Patients Receiving Treatment Regularly or Not**



Among 267 patients, the majority of 204 patients (76.4%) are receiving treatment regularly, and remaining 63 (23.6%) are irregular in receiving treatment, which have shown in Figure- 5.

**2.8 Distribution of Patients Received Treatment Beside Hospital Treatment**

**Figure- 6: Distribution of Patients Received Treatment Beside Hospital Treatment**



Among 267 patients, majority 230 patients (86.1%) did not receive any treatment beside hospital treatment, but remaining 37 patients (13.9%) received other treatments, which have shown in Figure- 6.

**2.9 Distribution of Patients Receiving Other Types of Treatment**

**Table-12: Distribution of Patients Receiving Other Types of Treatment**

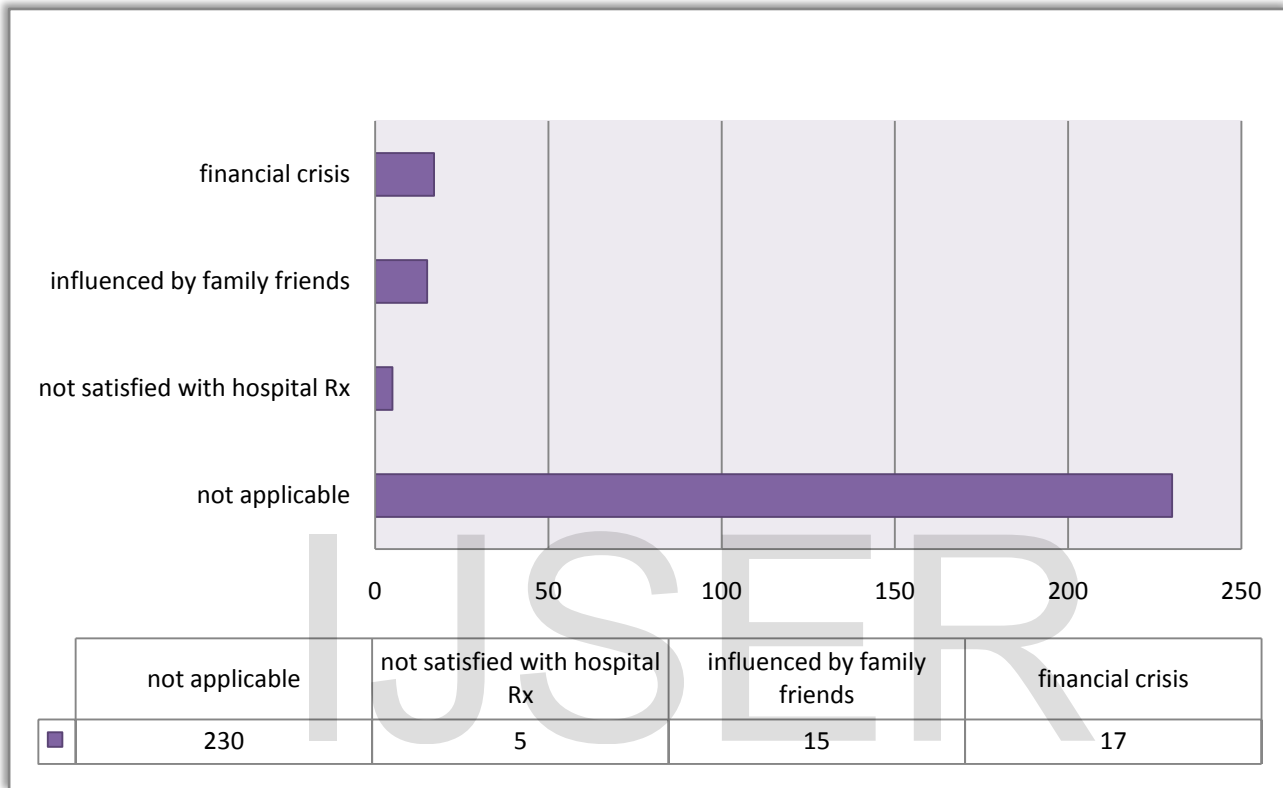
| Other types of Treatment | Frequency  | Percent    | Statistics  |
|--------------------------|------------|------------|---|
| Not applicable           | 230        | 86.1       | Mean= 1.19<br>Median= 1.0<br>Mode= 1<br>SD= ± 0.520<br>Minimum= 1<br>Maximum= 3 |
| Homeopathy               | 22         | 8.2        |   |
| Ayurvedic/ Unani         | 15         | 5.6        |   |
| <b>Total</b>             | <b>267</b> | <b>100</b> |   |

Table 12 shows that, Among 267 patients, majority 230 patients (86.1%) never received any treatment beside hospital treatment, but 22 patients (8.2%) received homeopathy, and 15 (5.6%) received ayurvedic/ unani treatment.

**2.10 Distribution of Patients According to Reasons of Taking Other Treatments:**



**Figure- 7: Distribution of Patients According to Reasons of Taking Other Treatments**



Among 267 patients, the majority of 230 patients (86.1%) never took other treatments, 17 patients (6.4%) received other treatment due to Financial Crisis, 15 (5.6%) received influenced by their family and friends, and remaining 5 patients (1.9%) received other treatment because they are not satisfied with hospital treatment, which have shown in Figure- 7.

### 3 Patients' Physical Wellbeing Related Informations

#### 3.1 Distribution of Patients having Lack of Energy

**Figure 8: Distribution of Patients Having Lack of Energy**

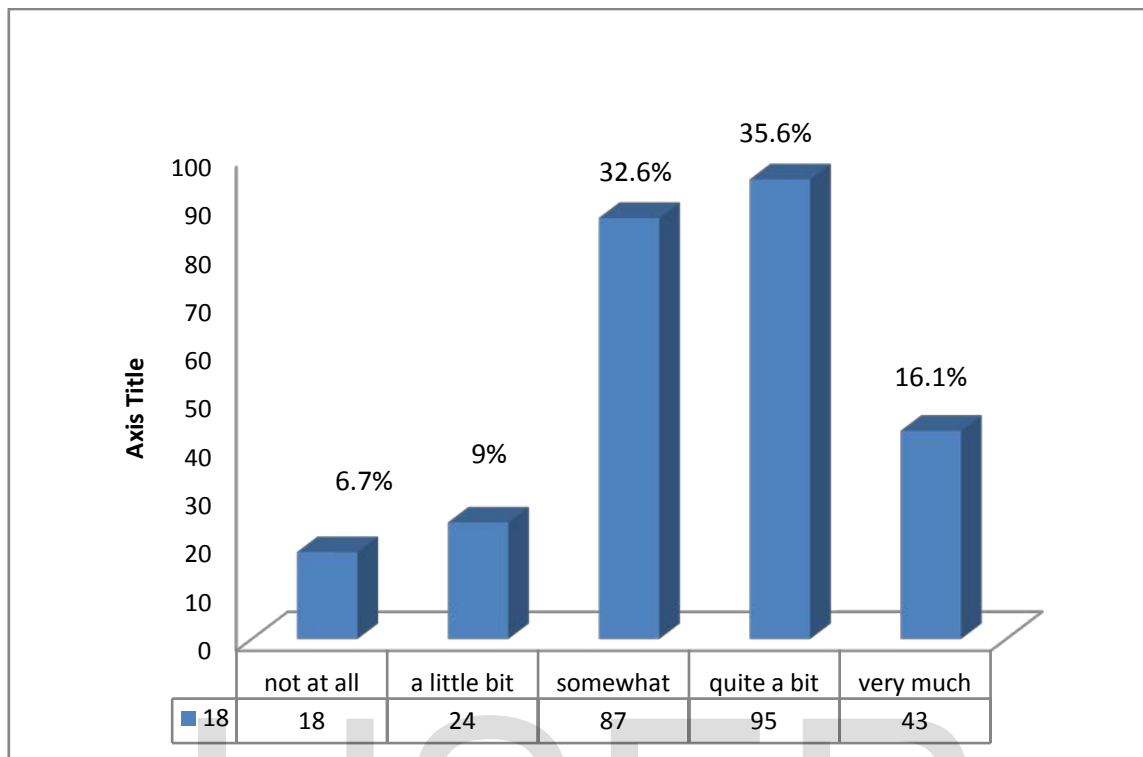
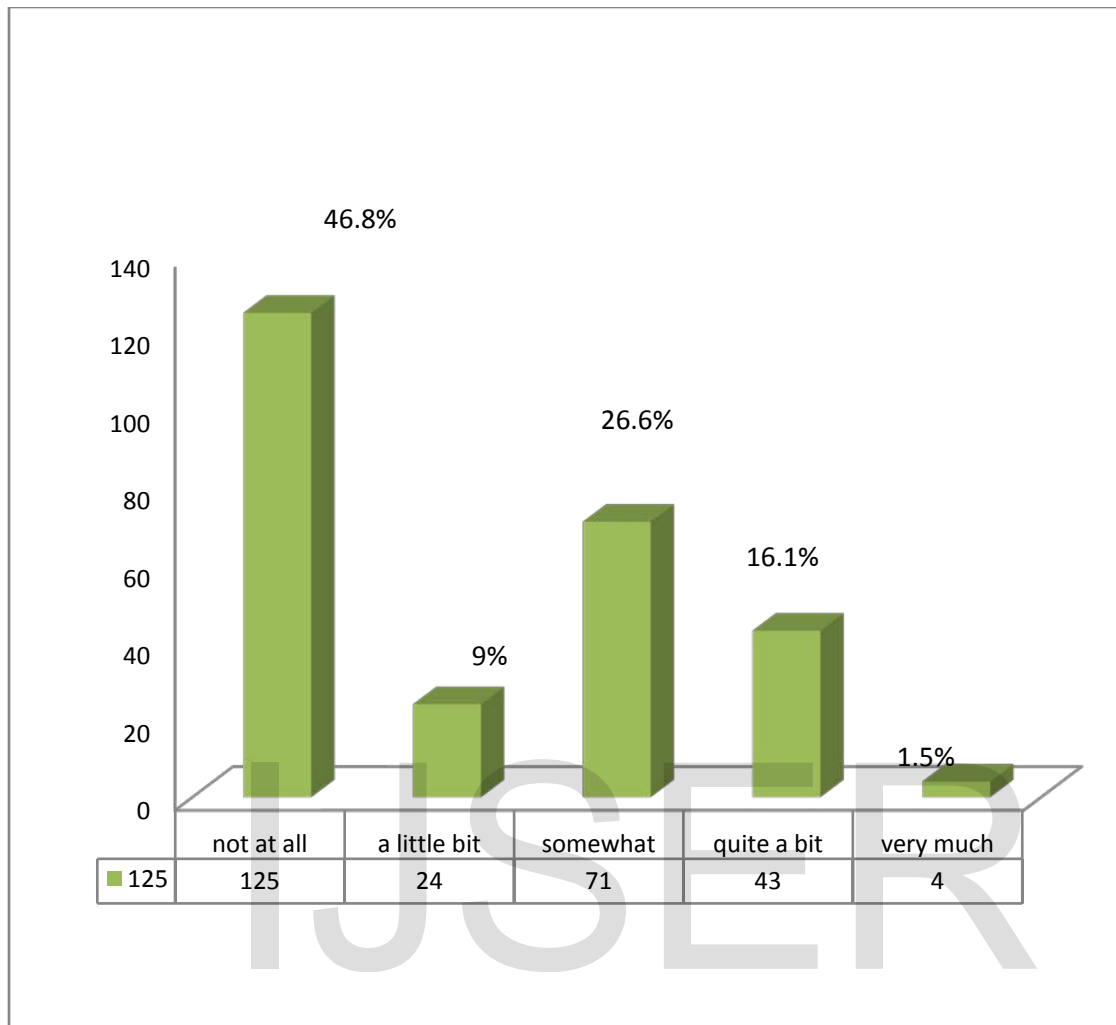


Figure 8 illustrates that, Among 267 patients, majority 95 patients (35.6%) feel lack of energy/ tiredness Quite a bit, 87 patients (32.6%) feel to some extent, 43(16.1%) extremely, 24(9%) feel tolerably, and 18 patients (6.7%) hardly feel lack of energy.

### 3.2 Distributions of Patients Feel Nauseated:

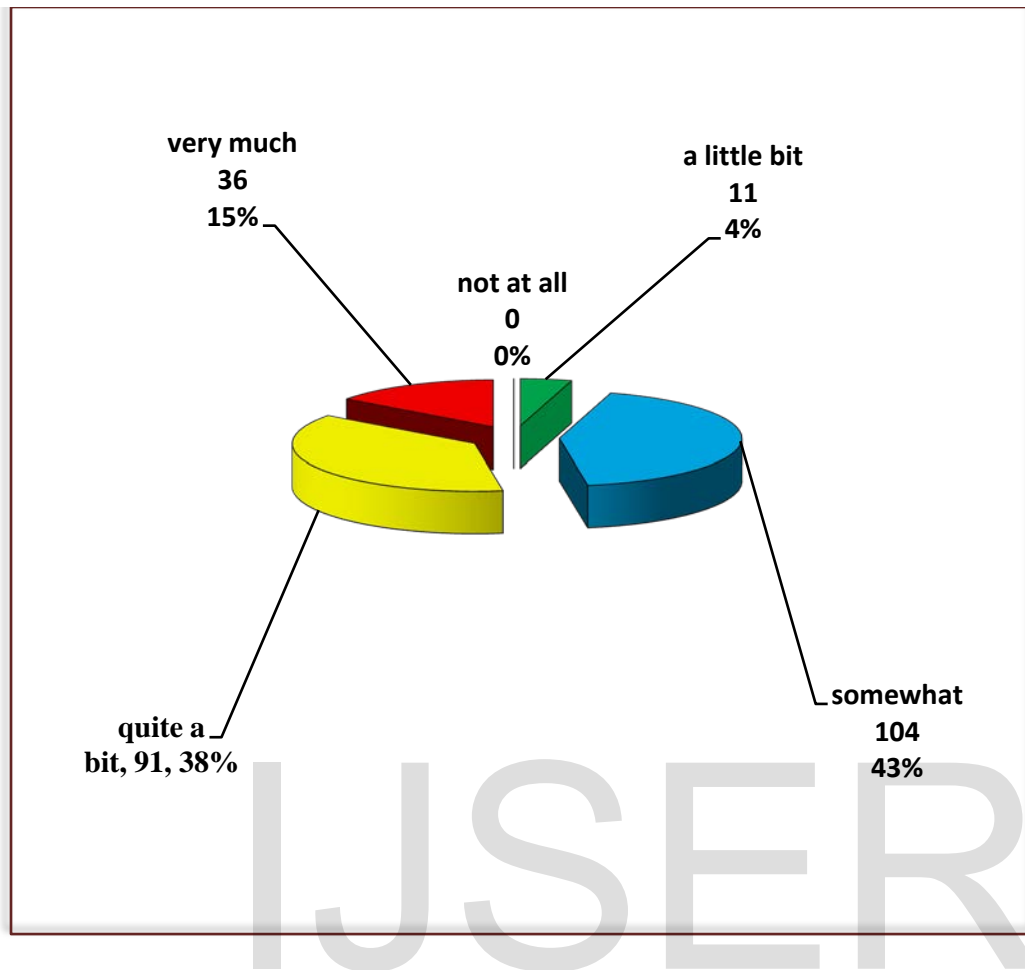
**Figure 9: Distribution of Patients Feel Nauseated**



Among 267 patients, 125 patients (46.8%) feel nauseated not the slightest bit, 71(26.6%) feel to a certain degree, 43(16.1%) feel nauseated quite a bit, 24(9%) feel scarcely, and only 4 patients (1.5%) are extremely nauseated, which have shown in Figure 9.

### 3.3 Distributions of Patients Facing Trouble In Meeting Needs of Family:

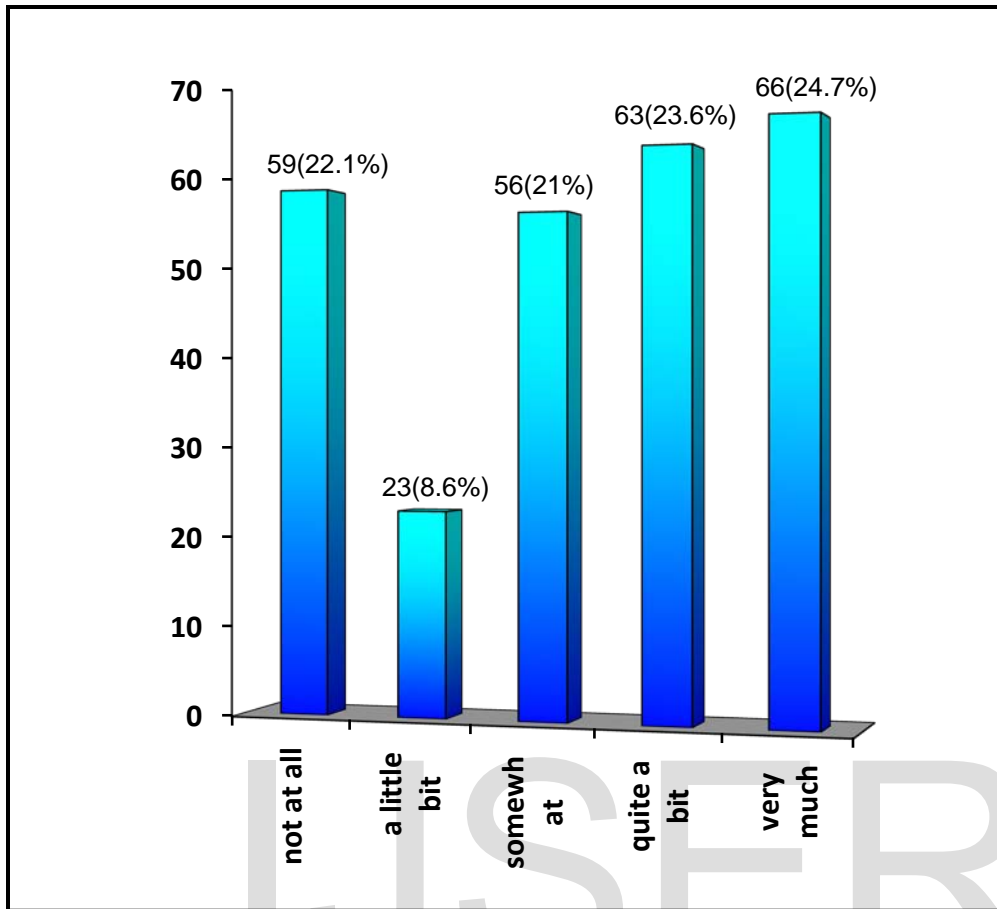
**Figure 10: Distribution of Patients Facing Trouble In Meeting Needs of Family**



Among 267 patients, 104 (39%) facing trouble in meeting needs of their family to a certain degree, 91(34.1%) face quite a bit, 36(13.5%) facing trouble very much, 25(9.4%) slightly, and remaining 11 (4.1%) temperately facing trouble in meeting needs of their family, which have been shown in Figure 10.

### 3.4 Distributions of Patients having Pain always:

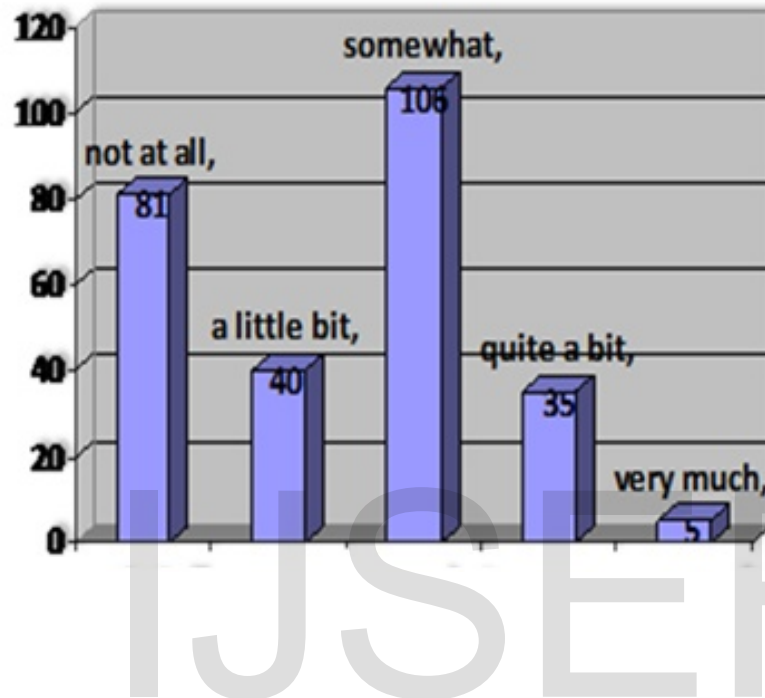
**Figure 11: Distribution of Patients Having Pain Always**



Among 267 patients, the highest 66 patients (24.7%) feel pain extremely all the time, 63(23.6%) Quite a bit, 59(22.1%) feel pain always not at the least, 56(21.0%) to some extent, and 23(8.6%) barely feel pain, which have shown in Figure 11.

### 3.5 Distribution of Patients Bothered by Side-effects of Treatment:

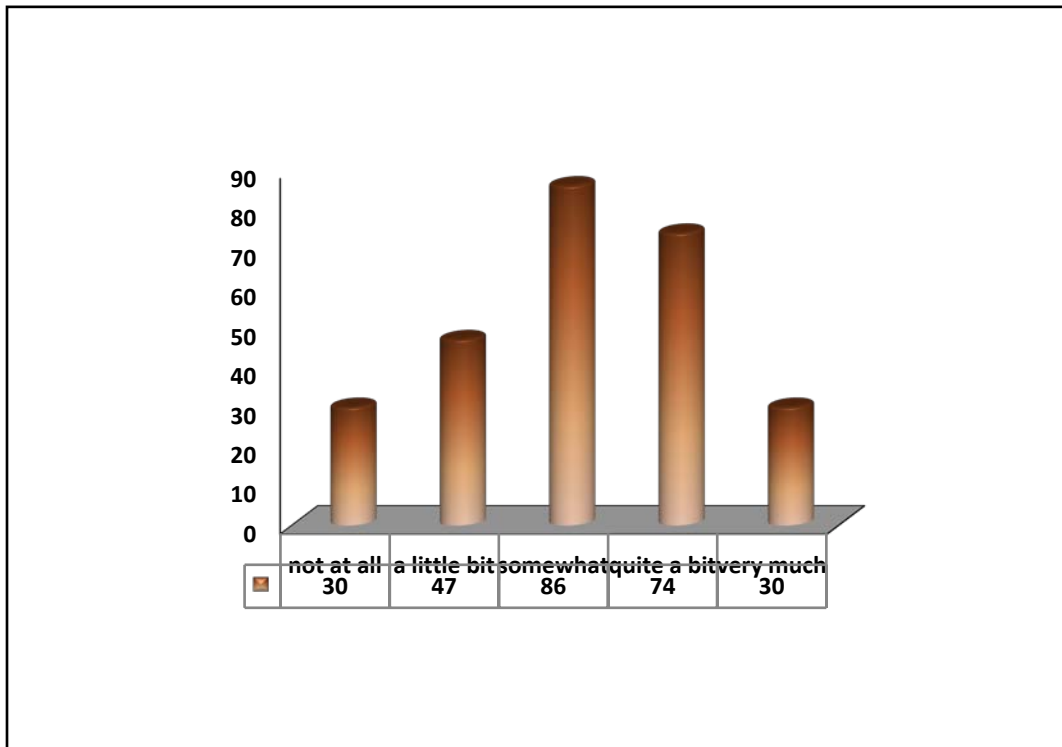
**Figure 12: Distribution of Patients Bothered By Side-Effects of Treatment**



Among 267 patients, 106 patients (39.7%) bothered by side-effects of treatment to a certain degree, 81(30.3%) hardly, 40(15%) slightly, 35(13.1%) quite a bit, and 5 (1.9%) extremely, which have shown in Figure 12.

### 3.6 Distributions of Patients Feel Ill all The Time:

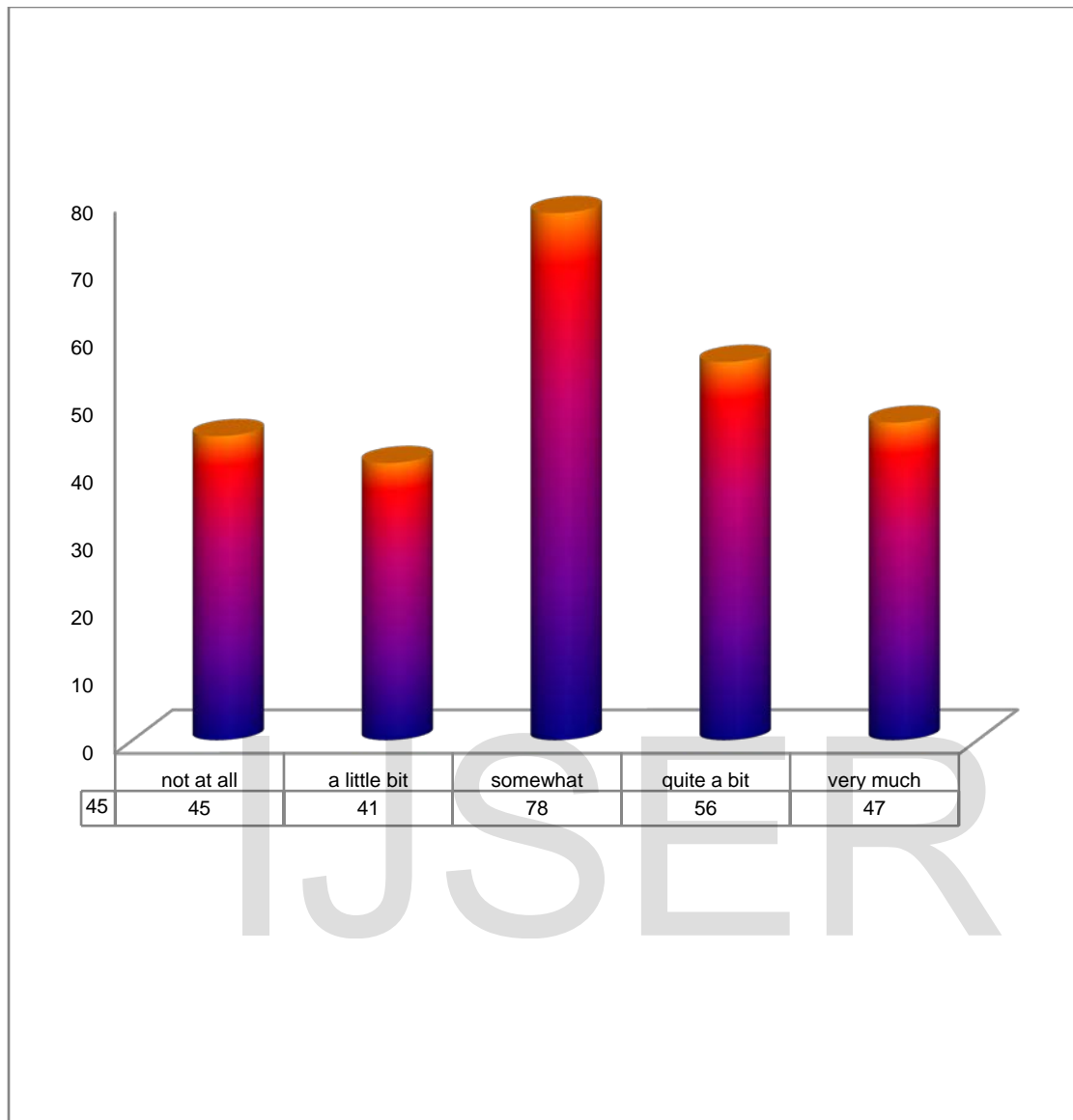
**Figure 13: Distribution of Patients Feel Ill All The Time**



Among 267 patients, 86(32.2%) somewhat feel ill all the time , 74(27.7%) feel quite a bit, 47(17.6%) feel ill always in moderation, 30 (11.2%) hardly, and remaining 30 patients ( 11.2%) always feel ill extremely, which have shown in Figure 13.

### 3.7 Distribution of Patients are Forced to Spend Time in Bed All the Day:

Figure 14: Distribution of Patients Forced to Spend Time in Bed All the Day



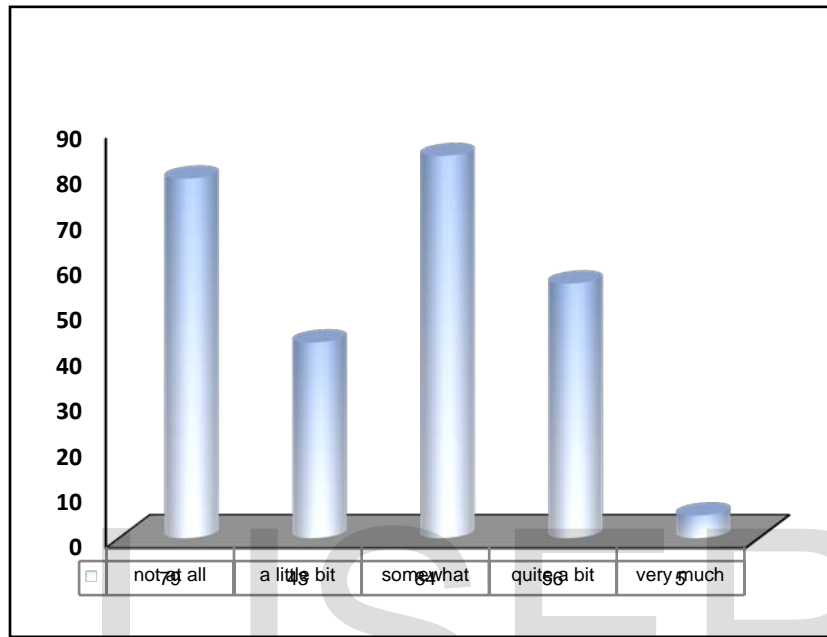
Among 267 patients, 78 (29.2%) forced to spend time in bed all the day to a certain degree, 56(21.0%) quite a bit, 47(17.6%) extremely, 45(16.9%) spend time in bed not the slightest bit, and 41(15.4%) forced to spend time in bed passably, shown in Figure 14.

#### 4.0 Patients' Family/Social/Financial Wellbeing Related Informations:

##### 4.1 Distribution of Patients having Closeness to Friends:



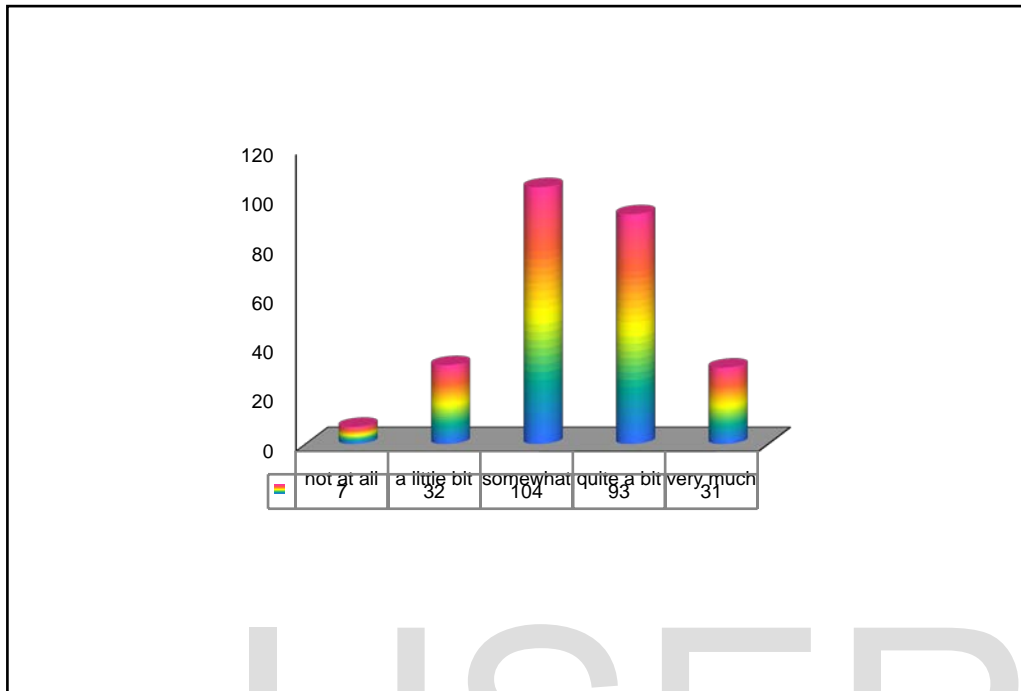
**Figure 15: Distribution of Patients Having Closeness to Friends**



Among 267 patients, 84(31.5%) are somewhat close to their friends, 79(29.6%) not at all, 56(21%) having closeness to their friends quite a bit, 43(16.1%) are a little bit close to their friends, and remaining 5 (1.9%) are very much close to their friends, which have shown in Figure 15.

#### 4.2 Distribution of Patients Get Emotional Support from Family

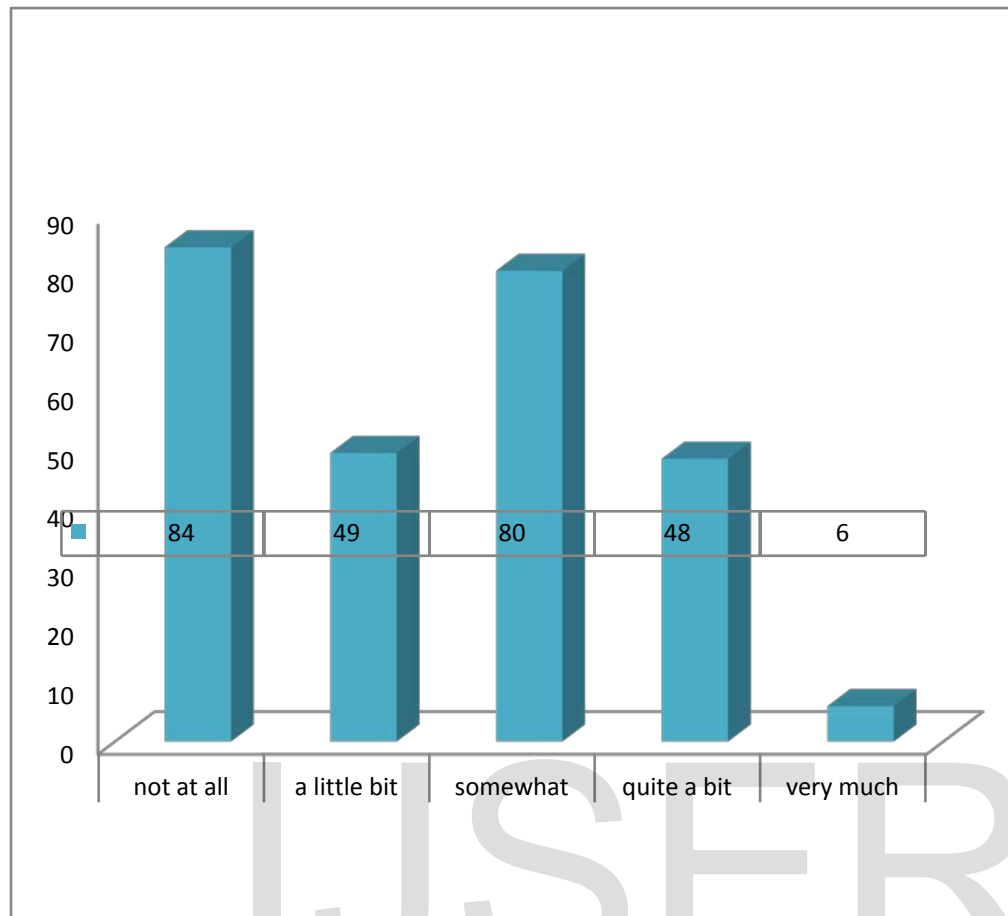
**Figure 16: Distribution of Patients Get Emotional Support From Family:**



Among 267 patients, 104(39%) get emotional support from their family to some extent, 93(34.8%) quite a bit, 32(12%) get emotional support in moderation, 31(11.6%) get very much support, and remaining 7(2.6%) don't get any emotional support from family, which have shown in Figure 16.

#### 4.3 Distribution of Patients Get Emotional Support from Friends:

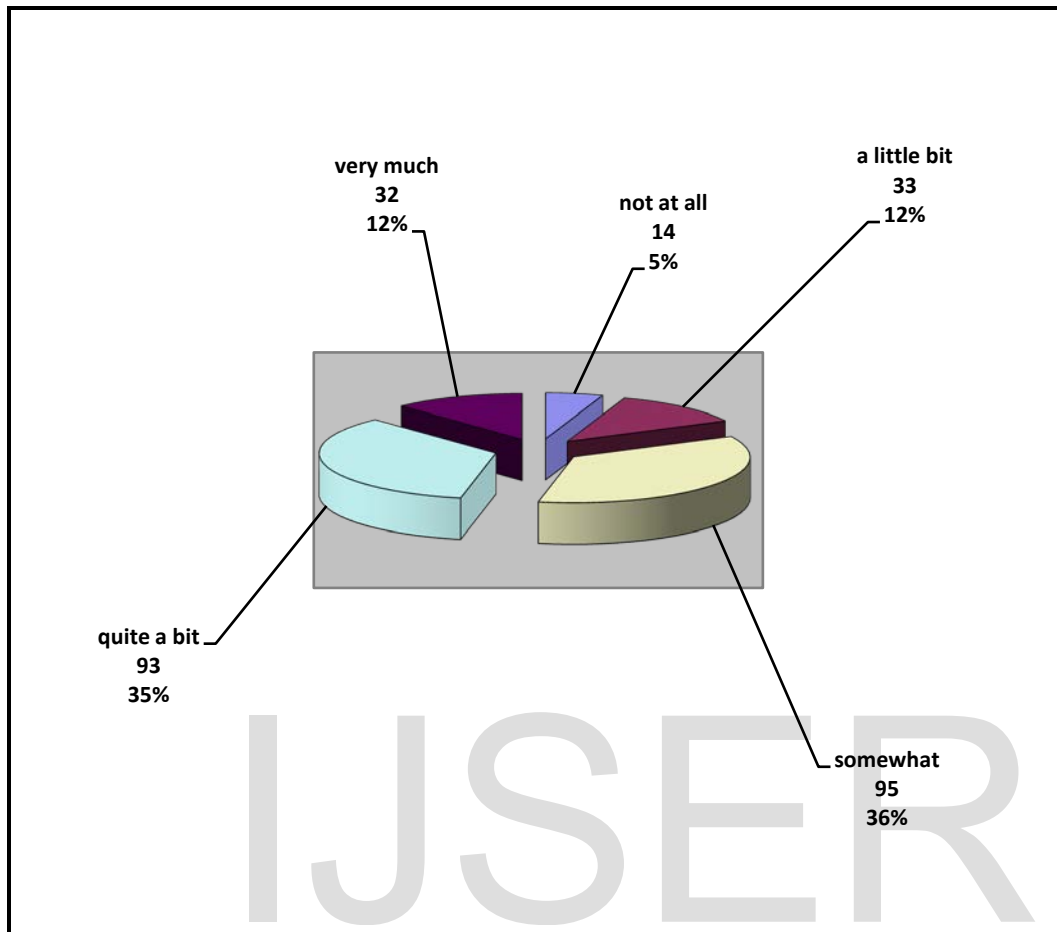
Figure 17: Distribution of Patients Get Emotional Support From Friends



Among 267 patients, 84 (31.5%) don't get any support from their friends, 80(30%) get support to a certain degree, 49(18.4%) hardly get support, 48(18%) quite a bit, and 6(2.2%) get very much support from friends, which have shown in Figure 17.

#### 4.4 Distribution of Patients Limit Social Activities because of Their Physical Condition:

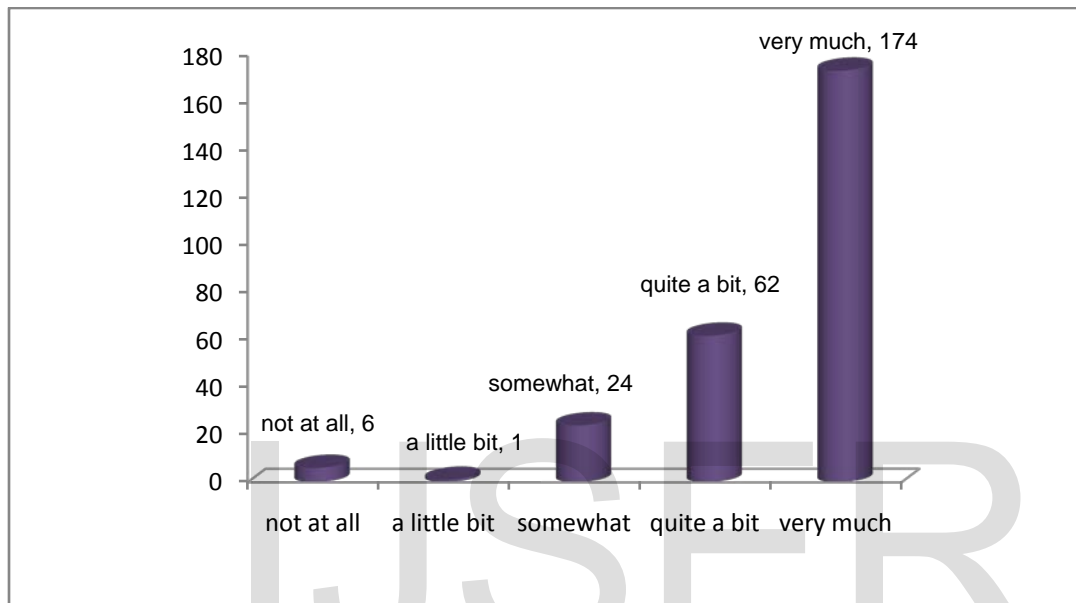
**Figure 18: Distribution of Patients Forced To Limit Social Activities Due to Physical Condition**



Among 267 patients, 95(35.6%) have forced to limit their social activities to some extent, 93(34.8%) quite a bit, 33(12.4%) temperately, 32(12%) extremely limit social activities due to their physical condition, and 14 (5.2%) not at all, which have shown in Figure 18.

#### 4.5 Distribution of Patients Facing Financial Difficulties due to Their Physical Condition & Medical Treatment:

**Figure 19: Distribution of Patients Facing Financial Difficulties Due to Physical Condition & Medical Treatment**

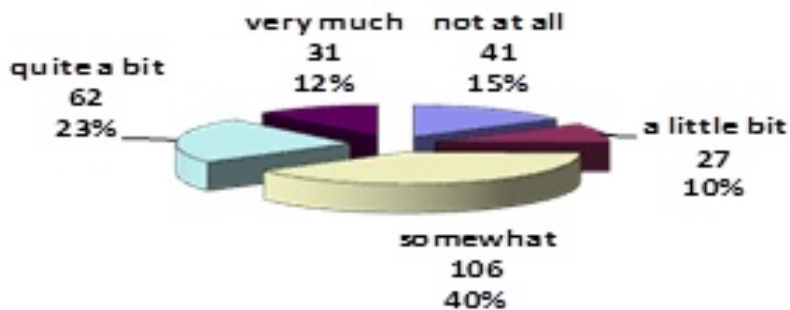


Among 267 patients, the majority of 174 patients (65.2%) facing extreme financial difficulties, 62(23.2%) quite a bit, 24(9.0%) to some extent, 1(0.4%) a little bit, and 6(2.2%) don't have any financial difficulties, which shown in Figure 19.

## 5.0 Patients' Emotional Wellbeing Related Informations:

### 5.1 Distribution of the Patients Feel Sad All The Day Long:

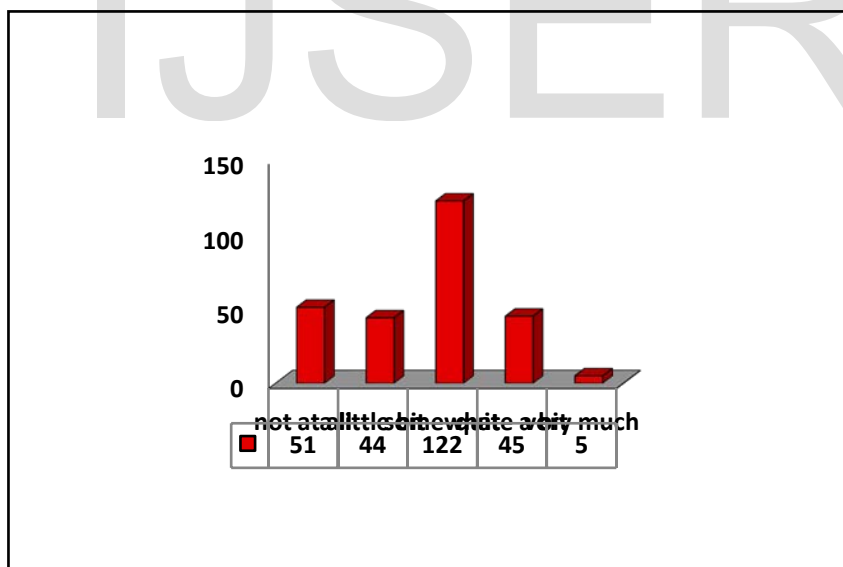
**Figure 20: Distribution of the Patients Feel Sad All The Day Long**



Among 267 patients, 106(39.7%) feel upset all the time to a certain degree, 62(23.2%) quite a bit, 41(15.4%) slightly, 31(11.6%) extremely, and 27(10.1%) scarcely feel sad all the day long, which have shown in Figure 20.

**5.2 Distribution of The Patients Satisfied About Coping With Their Illness:**

**Figure 21: Distribution of The Patients Satisfied About Coping With Their Illness**



Among 267 patients, 122(45.7%) somewhat satisfied about coping with their illness, 51(19.1%) satisfied not at all, 45(16.9%) satisfied quite a bit, 44(16.5%) little a bit, and remaining 5(1.9%) very much satisfied about coping with their illness, which have shown in Figure 21.

**5.3 Distribution of The Patients Losing Hope In The Fight Against Cancer:**

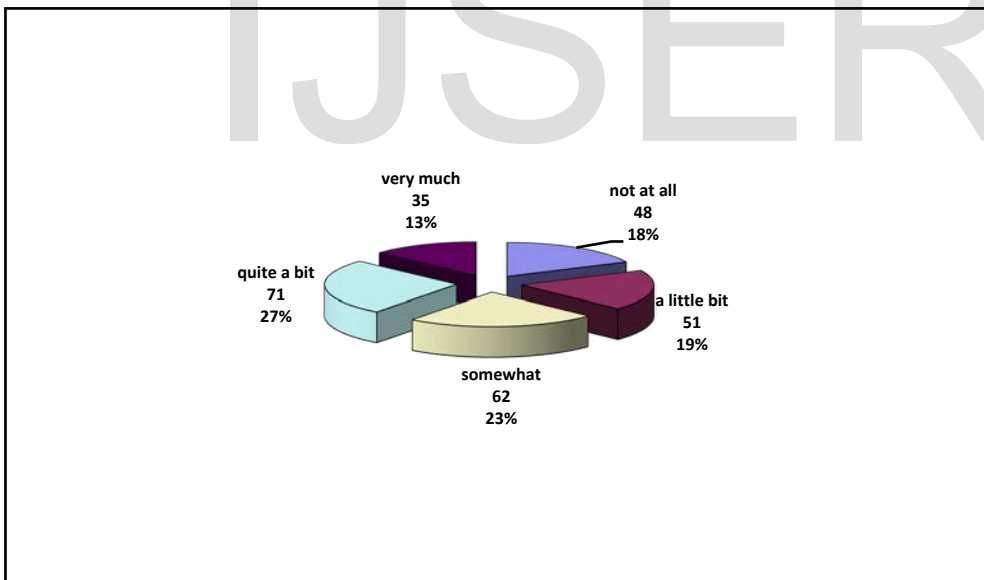
**Figure 22: Distribution of The Patients Losing Hope In The Fight Against Cancer**



Out of all 267 patients, 69 patients (25.8%) losing hope quite a bit, 67(25.1%) to some extent, 60(22.5%) not in the least, 51(19.1%) temperately, and remaining 20 (7.5%) losing hope extremely in the fight against cancer, which have shown in Figure 22.

#### 5.4 Distribution of The Patients Feel Always Worried About Dying:

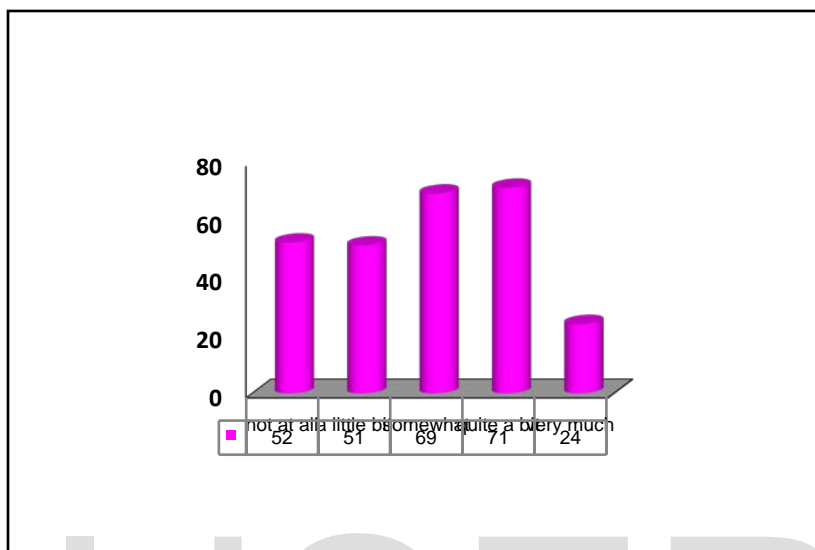
Figure 23: Distribution of The Patients Feel Always Worried About Dying



Out of 267 patients, the majority 71patients (26.6%) always worried about dying quite a bit, 62(23.2%) to a certain degree, 48(18.0%) not at all, 51(19.1%) tolerably, and 35(13.1%) extremely feel worried about dying all the time, which have shown in Figure 23.

#### 5.5 Distribution of The Patients Scared About Their Condition Will Get Worse:

**Figure 24: Distribution of The Patients Scared About Their Condition Will Get Worse**



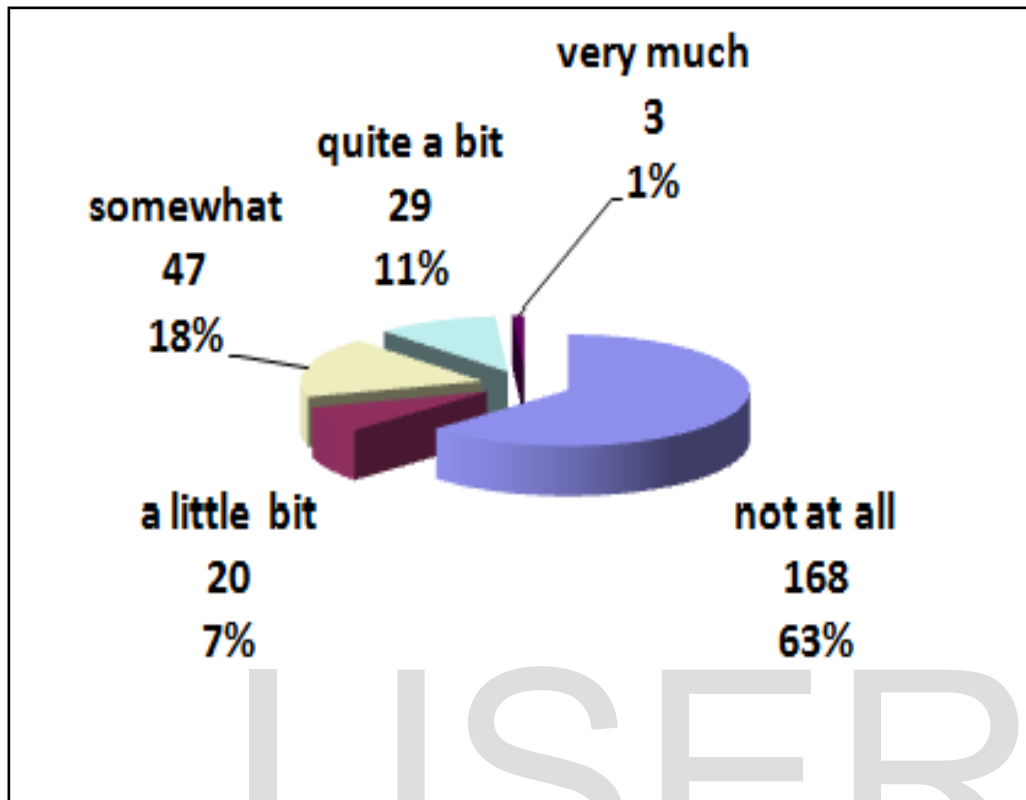
Among 267 patients, 71 (26.6%) quite a bit scared that their physical condition will get worse, 69 (25.8%) somewhat scared, 52 (19.5%) slightly scared, 51 (19.1%) a little bit scared, and 24 (9%) extremely scared about their physical condition will get worse, shown in Figure 24.

## **6.0 Patients' Functional Wellbeing Related Informations:**

### **6.1 Distribution of The Patients Feel Difficulties In Concentration:**



**Figure 25: Distribution of The Patients Feel Difficulties In Concentration**



Out of 267 respondents, 168(62.9%) hardly feel difficulties in concentration, 47(17.6%) to some extent, 29(10.9%) quite a bit, 20(7.5%) a little bit, and remaining 3(1.1%) extremely feel difficulties in concentrating things, which have shown in Figure 25.

## 6.2 Distribution of The Patients Having Difficulties In Remembering Things:

**Figure 26: Distribution of The Patients Having Difficulties In Remembering Things**

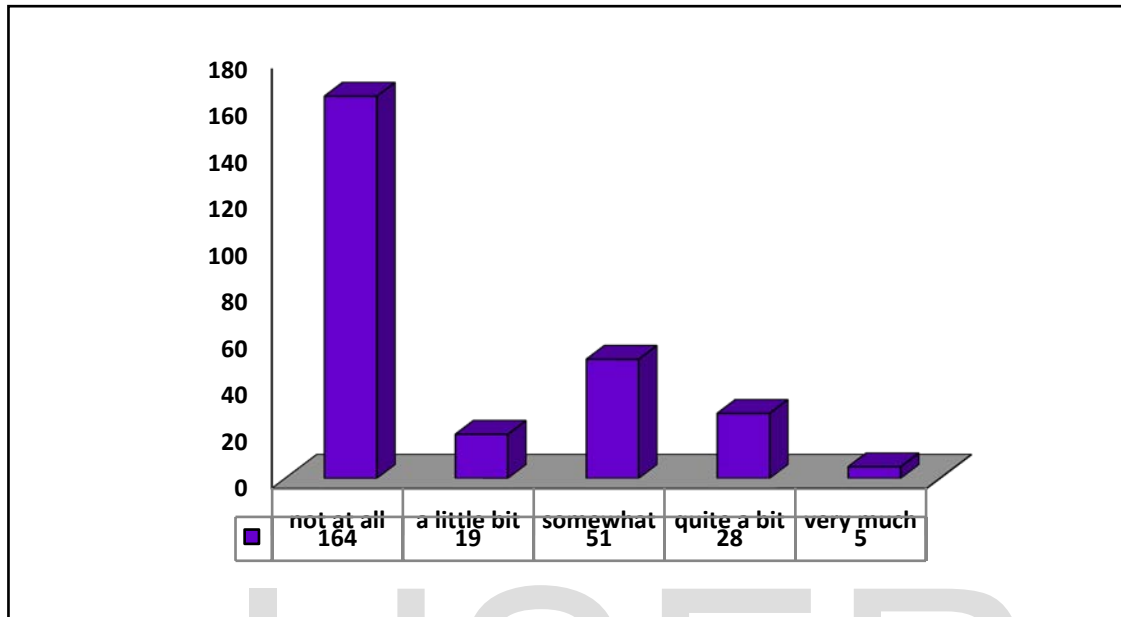
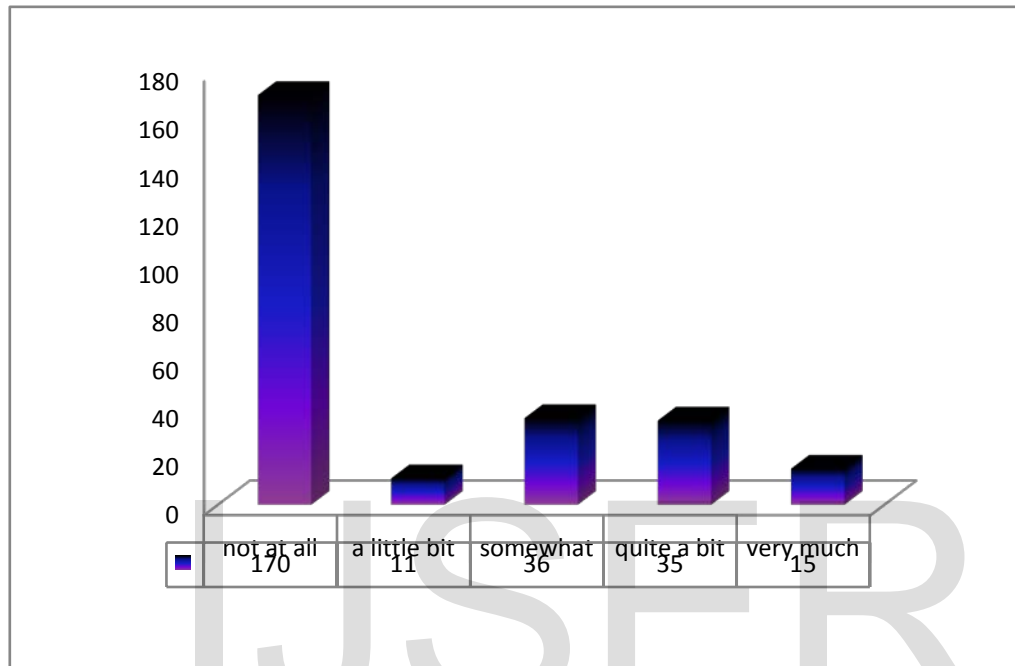


Figure 26 illustrates that, Out of 267 patients, the majority of 164(61.4%) having no difficulties in remembering things, 51(19.1%) feel somewhat difficulties, 28(10.5%) face very much difficulties, 19(7.1%) hardly feel difficulties, and remaining 5(1.9%) extremely facing difficulties in remembering things.

### 6.3 Distribution of The Patients Face Troubled Talking:

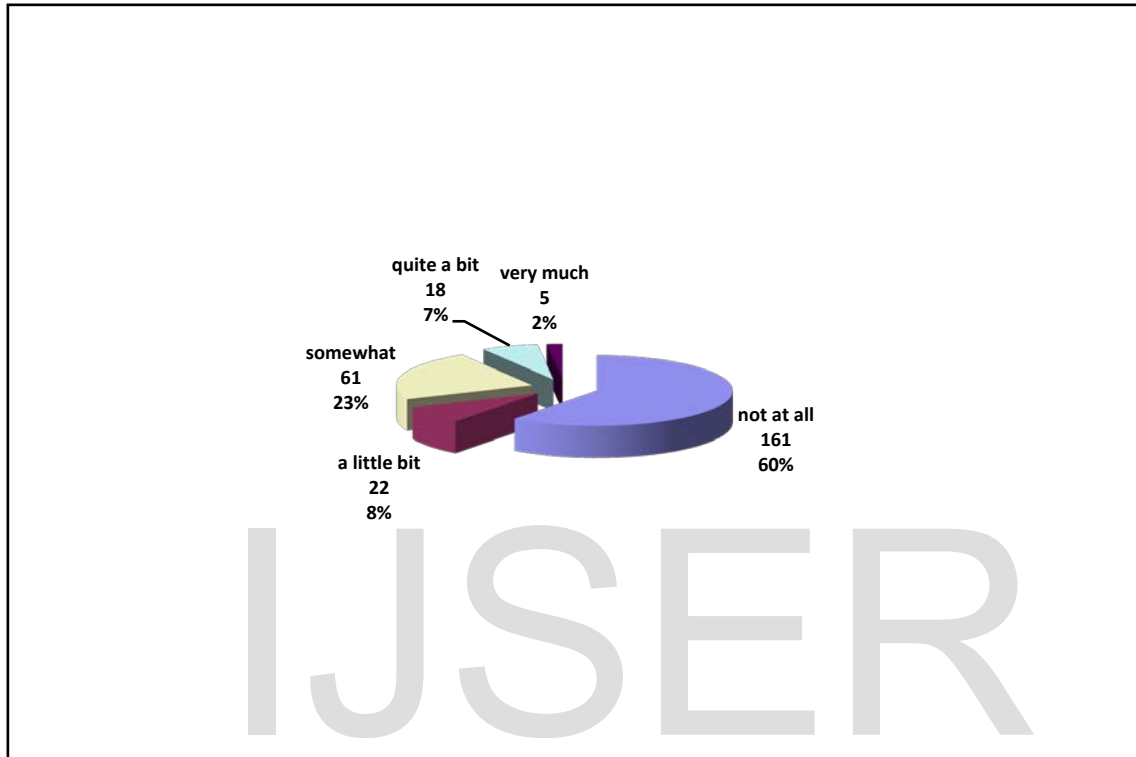
**Figure 27: Distribution of The Patients Face Troubled Talking**



Out of 267 respondents, 170(63.7%) don't face any trouble in talking, 36(13.5%) feel to some extent, 35(13.1%) quite a bit, 11(4.1%) not in the least, and 15(5.6%) face very much trouble while talking, which have shown in Figure 27.

#### **6.4 Distribution of The Patients Make More Mistakes Than Usual:**

**Figure 28: Distribution of The Patients Make More Mistakes Than Usual**



Out of all 267 patients, 161(60.3%) make mistakes not at all, 61(22.8%) to a certain degree, 22(8.2%) slightly, 18(6.7%) quite a bit, and 5(1.9%) extremely make mistakes that is more than usual, shown in Figure 28.

## 7.0 Assessment of Fatigue Level Using FACT-F SCALE:

### 7.1 Assessment of Level of Fatigue Among Cancer Patients

Figure- 29 :Level of Fatigue In Cancer Patients

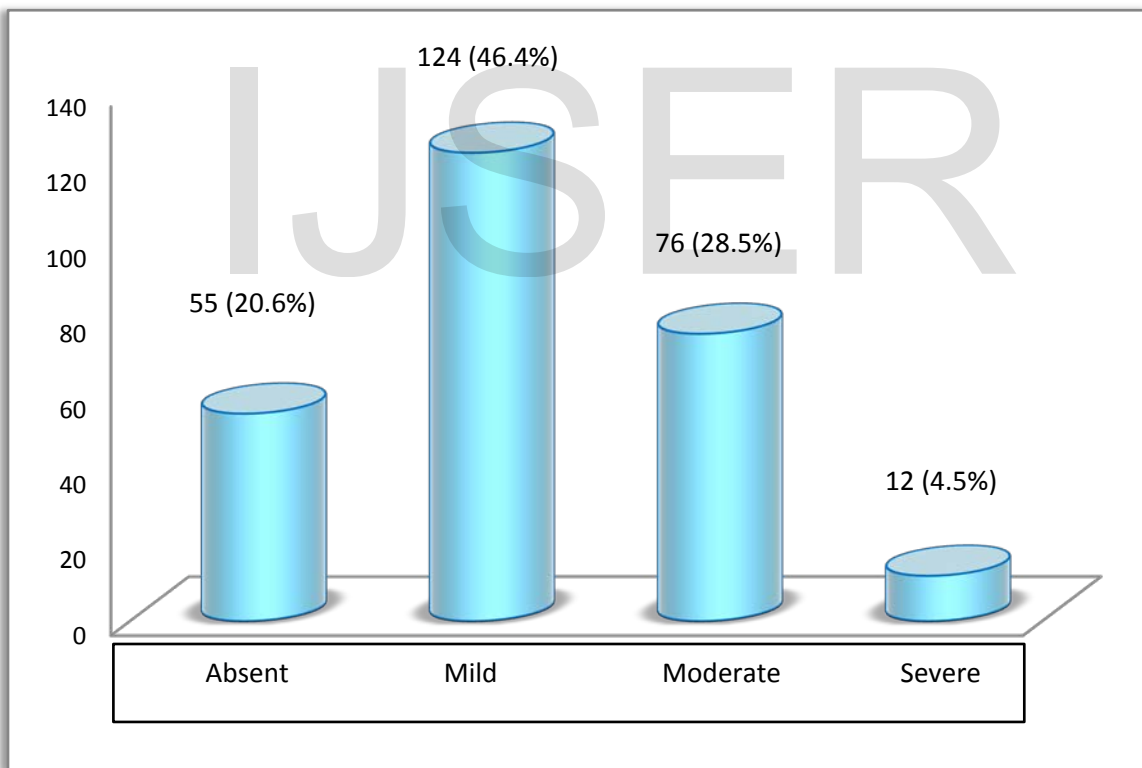
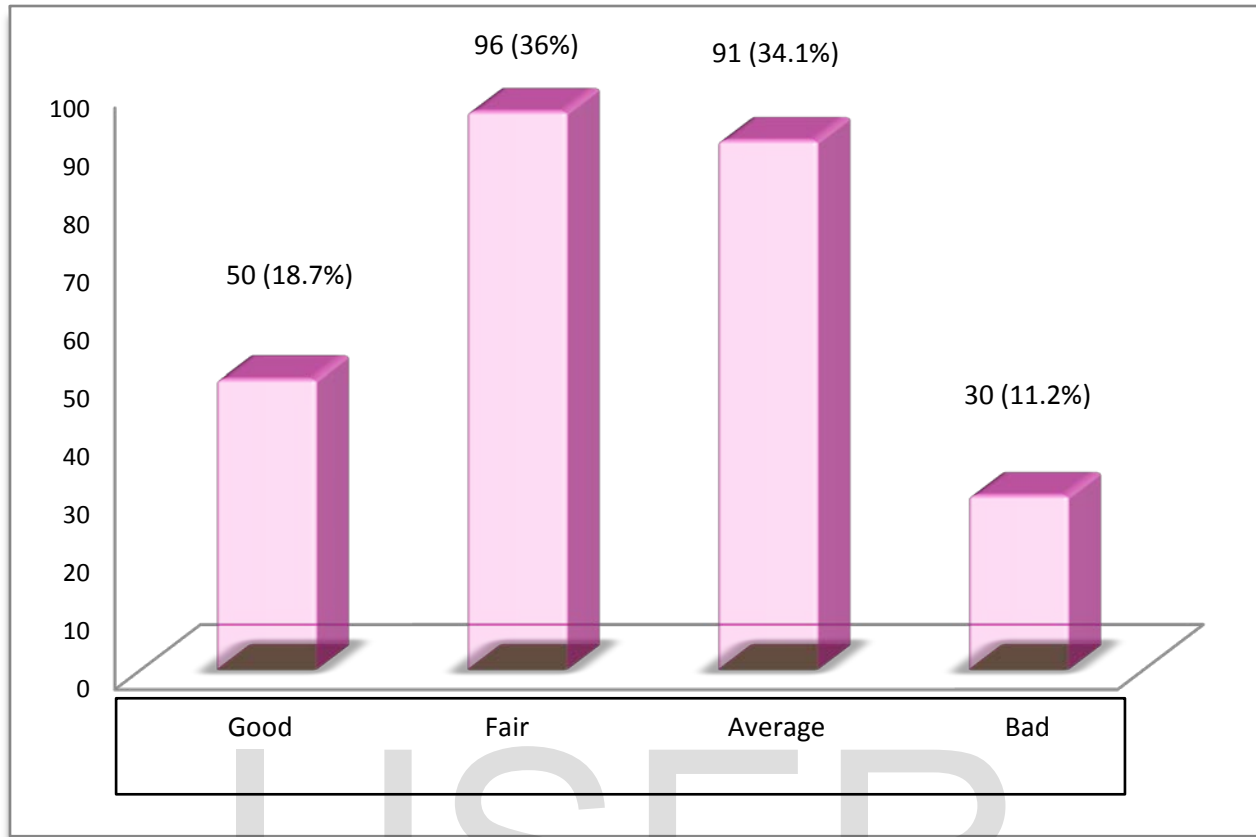


Figure 29 demonstrates that, Out of all 267 cancer patients, 12 patients (4.5%) severely fatigued, 76 (28.5%) moderately fatigued, 124 (46.4%) are weary with mild fatigue, and fatigue is absent in 55 patients (20.6%).

## 7.2 Physical well being Pattern in Cancer Patients

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**Figure-30: Distribution of Pattern of Physical Wellbeing of Respondents**

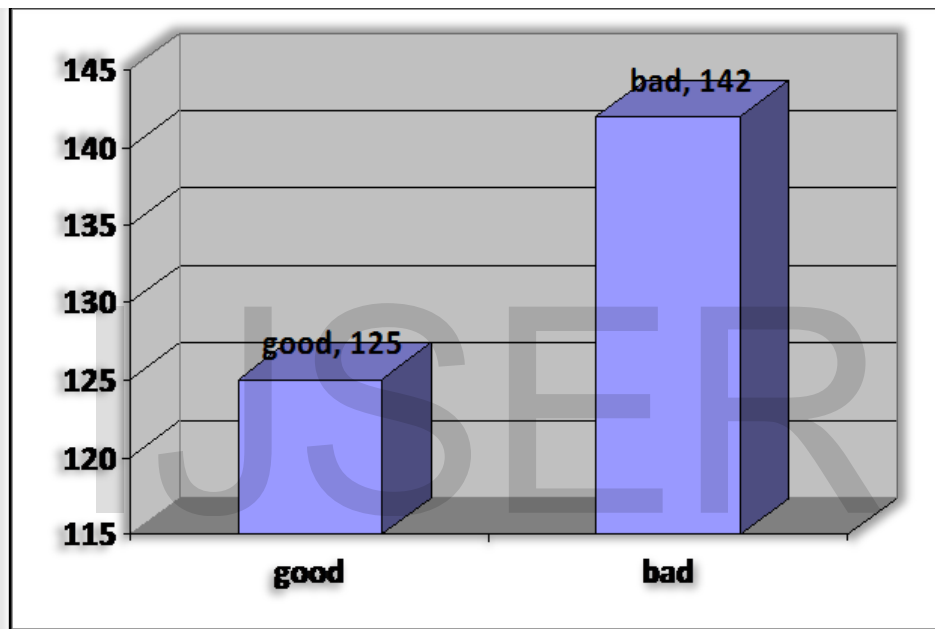


Out of 267 patients, Physical wellbeing is Good among 50 patients (18.7%), and Fair in 96 (36%), and Average in 91 patients (34.1%), Bad in 30 patients (11.2%), shown in Figure 30.

### 7.3 Familial/Social/Financial Wellbeing Pattern in Cancer Patients

**Figure- 31: Distribution of Pattern of Family/Social/Financial**

**Wellbeing of Patients**



Out of 267 respondents, the majority of 142 patients (53.2%) family-social life, & financial condition has seriously hampered, and 125 (46.8%) are able to maintain a tolerably good condition, shown in Figure 31.

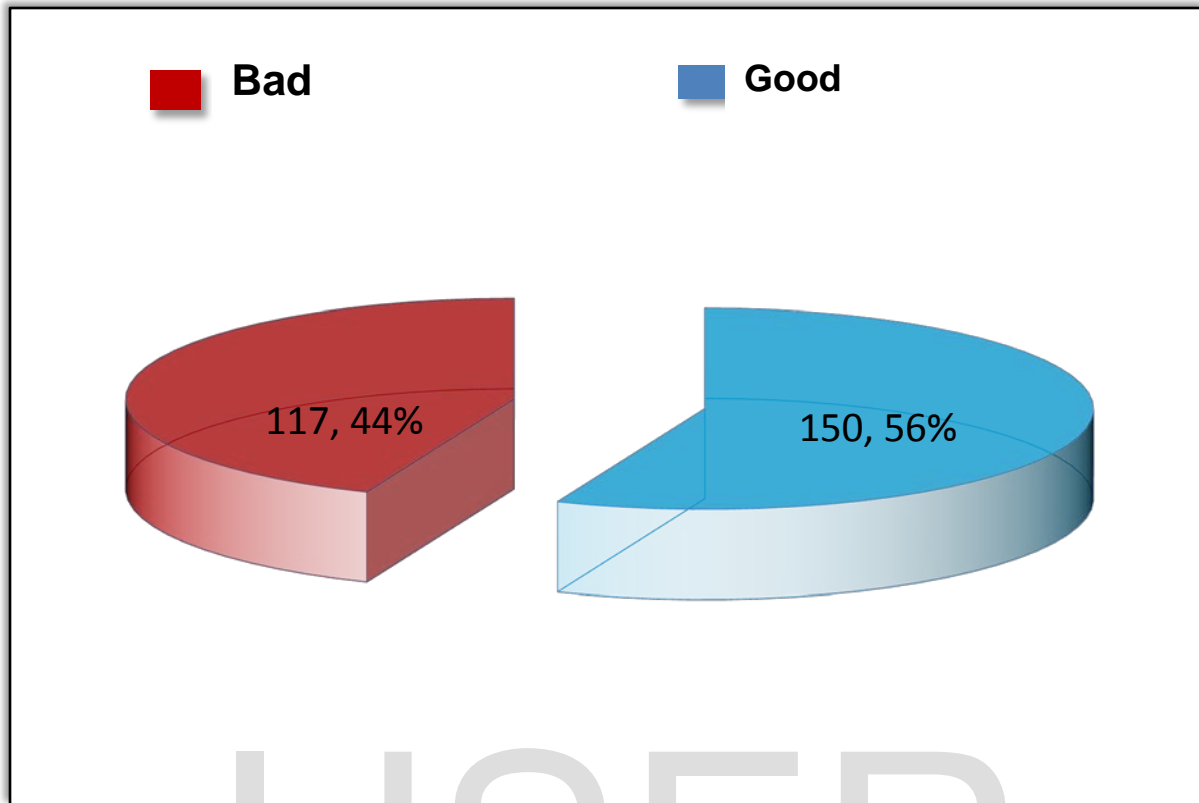


#### 7.4 Emotional Wellbeing Pattern in Cancer Patients:

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Figure- 32: Distribution of Emotional

Wellbeing Pattern in Patients



Among 267 Patients, 150 (56.2%) are emotionally stable and mental condition is vulnerable in 117 (43.8%) patients, shown in Figure 32.

### 7.5 Functional Wellbeing Pattern in Cancer Patients

**Figure- 33: Distribution of Functional  
Wellbeing Pattern among respondents**



Among 267 patients, 225 (84.3%) functional wellbeing pattern is good , and 42 (15.7%) are bad, shown in Figure 33.

**8. Association between Fatigue level and Sex group of the Respondents:**

**Table - 13 :Association between Fatigue level and Sex group of the Respondents:**

| Sex group    | Fatigue Level     |                         |                   | Total               | Statistics                                   |
|--------------|-------------------|-------------------------|-------------------|---------------------|--|
|              | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |  |
| Male         | 21 (15.2%)        | 62 (44.9%)              | 55 (39.9%)        | 138 (100.0%)        | $\chi^2$ test=<br>16.667<br>df= 2<br>P=0.000 |
| Female       | 34 (29.1%)        | 62 (53.0%)              | 21 (17.9%)        | 117 (100.0%)        |  |
| <b>Total</b> | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |  |

Table 13 illustrates that, Out of 138 male respondents, fatigue was absent in 21 (15.2%), mild to moderate fatigue found in 62 (44.9%), and severe fatigue in 55 (39.9%). Out of 117 female patients, fatigue absent in 34 (29.1%), mild to moderate fatigue in 62 (53.0%), and severe fatigue in 21 (17.9%). Fatigue level was found to be associated with sex of the respondents, (P < 0.05, pulled from  $\chi^2$  test).

**9. Association between Fatigue level and Education of the Respondents:**

**Table- 14 : Association between Fatigue level and Education of the Respondents**

| Education group | Fatigue Level     |                         |                   | Total               | Statistics                                |
|-----------------|-------------------|-------------------------|-------------------|---------------------|---|
|                 | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |   |
| Up to SSC level | 29 (23.2%)        | 57 (45.6%)              | 39 (31.2%)        | 125 (100.0%)        | $\chi^2$ test= 0.925<br>df= 2<br>P= 0.630 |
| Above SSC level | 26 (20.0%)        | 67 (51.5%)              | 37 (28.5%)        | 130 (100.0%)        |   |
| <b>Total</b>    | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |   |

Table 14 demonstrates that, Out of 125 respondents, whose education level was up to SSC level, Severe fatigue was found in 39 (31.2%), mild & moderate fatigue in 57 (45.6%), fatigue was absent in 29 (23.2%). Out of 130 respondents, whose education level was above SSC level, severe fatigue found in 37 (28.5%), mild & moderate fatigue in 67 (51.5%), absent in 26 (20.0%). Fatigue level was not found to be associated with Educational qualifications of the respondents, ( $P > 0.05$ , pulled from  $\chi^2$  test).

**10. Association between Fatigue level and Income of the Respondents:**

**Table- 15 : Association between Fatigue level and Income of the Respondents**

| Income group             | Fatigue Level     |                               |                   | Total               | Statistics  |
|--------------------------|-------------------|-------------------------------|-------------------|---------------------|---|
|                          | Absent<br>fatigue | Mild &<br>moderate<br>fatigue | Severe<br>fatigue |                     |   |
| Within 50,000<br>taka    | 40 (19.7%)        | 94 (46.3%)                    | 69 (34.0%)        | 203 (100.0%)        | $\chi^2$ test=<br>8.561<br><br>df= 2<br><br>P=0.014 |
| Taka 50,001<br>and above | 15 (28.8%)        | 30 (57.7%)                    | 7 (13.5%)         | 52 (100.0%)         |   |
| <b>Total</b>             | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>            | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |   |

Table 15 shows that, Among 203 respondents, who were within 50,000 taka income group, fatigue absent in 40 (19.7%), mild & moderate fatigue in 94 (46.3%), severe fatigue present in 69 (34.0%). Out of 52 respondents, who were taka 50,001 & above income group, fatigue absent in 15 (28.8%), mild & moderate fatigue in 30 (57.7%), severe fatigue in 7 (13.5%). Fatigue level was found to be associated with Income with the respondents ( $P < 0.05$ , Pulled from  $\chi^2$  test).

**11. Association between Fatigue level and Duration of Illness:**

**Table- 16 : Association between Fatigue level and Duration of Illness**

| Duration of Illness group | Fatigue Level     |                         |                   | Total               | Statistics                                |
|---------------------------|-------------------|-------------------------|-------------------|---------------------|---|
|                           | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |   |
| 1-12 months               | 50 (22.4%)        | 105 (47.1%)             | 68 (30.5%)        | 223 (100.0%)        | $\chi^2$ test= 1.752<br>df= 2<br>P= 0.416 |
| 13-48 months              | 5 (15.6%)         | 19 (59.4%)              | 8 (25.0%)         | 32 (100.0%)         |   |
| <b>Total</b>              | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |   |

Table 16 shows that, Among 223 patients, who are suffering from cancer for 1-12 months, fatigue absent in 50 (22.4%), mild to moderately fatigued are 105 (47.1%), severely fatigued 68 (30.5%). Among 32 patients,

whose disease duration is from 13-48 months, fatigue absent in 5 (15.6%), mild & moderate fatigue present in 19 (59.4%), severe fatigue in 8 (25.0%). Fatigue level was not found to be associated with Duration of their illness, ( $P > 0.05$ , pulled from  $\chi^2$  test).

**12. Association between Fatigue level and Duration of Treatment:**

**Table- 17 : Association between Fatigue level and Duration of Treatment**

| Duration of Treatment group | Fatigue Level     |                         |                   | Total               | Statistics                                      |
|-----------------------------|-------------------|-------------------------|-------------------|---------------------|---|
|                             | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |   |
| 1-12 months                 | 54 (21.8%)        | 119 (48.0%)             | 75 (30.2%)        | 248 (100.0%)        | Fisher's Exact Test= 1.174<br>df =2<br>P= 0.606 |
| 13-48 months                | 1 (14.3%)         | 5 (71.4%)               | 1 (14.3%)         | 7 (100.0%)          |   |
| <b>Total</b>                | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |   |

Table 17 illustrates that, Out of 248 patients, who are receiving treatment for 1-12 months, in them fatigue absent in 54 (21.8%), mild & moderate fatigue in 119 (48.0%), severe fatigue in 75 (30.2%). Out of 7 patients, who are receiving treatment for 13-48 months, fatigue absent in 1 (14.3%), mild & moderate fatigue present in 5 (71.4%), severe fatigue found in 1 (14.3%). Fatigue level was not found to be associated with Duration of treatment of the patients ( $P < 0.05$ , Pulled from Fishers Exact test).

**13. Association between Fatigue level and Cancer Stage of the Patients:**



**Table- 18 :Association between Fatigue level and Cancer Stage of the Patients**

| Cancer Stage<br>group | Fatigue Level     |                                  |                   | Total               | Statistics                                   |
|-----------------------|-------------------|----------------------------------|-------------------|---------------------|--|
|                       | Absent<br>fatigue | Mild<br>&<br>moderate<br>fatigue | Severe<br>fatigue |                     |  |
| Stage I,II            | 38 (28.4%)        | 67 (50.0%)                       | 29 (21.6%)        | 134 (100.0%)        | $\chi^2$ test=<br>12.457<br>df= 2<br>P=0.002 |
| Stage III, IV         | 17 (14.0%)        | 57 (47.1%)                       | 47 (38.8%)        | 121 (100.0%)        |  |
| <b>Total</b>          | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>               | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |  |

Table 18 shows that, Among 134 patients, who are in Cancer Stage I & II group, fatigue absent in 38 (28.4%), mild & moderate fatigue present in 67 (50.0%), severe fatigue in 29 (21.6%). Out of 121 patients, who are in Stage III & IV, fatigue absent in 17 patients (14.0%), mild to moderately fatigued are 57 (47.1%), severely fatigued 47 (38.8%). Fatigue level was found to be associated with Cancer Stage of the patients, ( $P < 0.05$ , pulled from  $\chi^2$  test).

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#### 14. Association between Fatigue level and Anaemia Stage of the Patients:

Table- 19 : Association between Fatigue level and Anaemia Stage of the Patients:

| Anaemia stage group        | Fatigue Level     |                         |                   | Total               | Statistics                                   |
|----------------------------|-------------------|-------------------------|-------------------|---------------------|--|
|                            | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |  |
| Mild anaemia               | 13 (21.3%)        | 35 (57.4%)              | 13 (21.3%)        | 61 (100.0%)         | $\chi^2$ test=<br>3.205<br>df= 2<br>P= 0.201 |
| Moderate to severe anaemia | 42 (21.6%)        | 89 (45.9%)              | 63 (32.5%)        | 194(100.0%)         |  |
| <b>Total</b>               | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |  |

Table 19 illustrates that, Out of 61 patients, who are mildly anaemic, fatigue is absent in 13 (21.3%) of them, mild & moderate fatigue present in 35 (57.4%), severe fatigue in 13 (21.3%). Among 194 patients, who are moderate to severely anaemic, fatigue absent in 42 (21.6%), mild to moderate fatigue in 89 (45.9%), and severe fatigue present in 63 (32.5%). Fatigue level was not found to be associated with Anaemia stage of the patients, (P >0.201, pulled from  $\chi^2$  test)

**15. Association between Fatigue level and Different Modalities of Anti-Neoplastic Treatment:**

**Table- 20 : Association between Fatigue level and Different Modalities of Anti-Neoplastic Treatment**

| Different Treatment groups           | Fatigue Level     |                         |                   | Total               | Statistics                                   |
|--------------------------------------|-------------------|-------------------------|-------------------|---------------------|--|
|                                      | Absent fatigue    | Mild & moderate fatigue | Severe fatigue    |                     |  |
| Chemo, radio, concurrent chemo-radio | 35 (22.9%)        | 73 (47.7%)              | 45 (29.4%)        | 153 (100.0%)        | $\chi^2$ test=<br>0.389<br>df= 2<br>P= 0.823 |
| Surgery & allied                     | 20 (19.6%)        | 51 (50.0%)              | 31 (30.4%)        | 102 (100.0%)        |  |
| <b>Total</b>                         | <b>55 (21.6%)</b> | <b>124 (48.6%)</b>      | <b>76 (29.8%)</b> | <b>255 (100.0%)</b> |  |

Table 20 demonstrates that, Among 153 patients, who are receiving Chemotherapy, Radiotherapy & concurrent chemo-radiation therapy, fatigue absent in 35 (22.9%), mild & moderate fatigue present in 73 (47.7%), severe fatigue in 45 (29.4%). In other hand, who are receiving Surgical treatment & Allied, In them, fatigue absent in 20 (19.6%), mild to moderately fatigued are 51 (50.0%), and severely fatigued are 31 (30.4%). Fatigue level was not found to be associated with Different modalities of Anti-Neoplastic treatment, ( $P > 0.05$ , pulled from  $\chi^2$  test).

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## DISCUSSION

A cross-sectional study was carried out at National Institute of Cancer Research & Hospital, Mohakhali, Dhaka, Ahsania Mission Cancer & General Hospital, Mirpur, Dhaka, and Kurmitola General Hospital, Dhaka, Bangladesh from January - December 2016. The main objective of the study was to assess the level of fatigue in cancer patients using Functional Assessment of Cancer Therapy Fatigue Scale (FACT-F), to identify different types of cancer among the respondents, to determine the type and pattern of cancer among patients receiving

different modalities of anti- cancer treatment, and to assess the socio-demographic characteristics among the respondents.

Patients' sex was significantly related with the level of fatigue. Out of all 267 respondents, 55.8% were male and 44.2% were female.

Among all the respondents (267), the majority (40.1%) were in the age group 36-55 years, followed by 29.2% belong to the age group 16-35 years, 28.8% incorporate in the age group 56-75 years and 1.9% encompass above 75 years. The mean age of the respondent was 46.11(SD  $\pm$ 16.548 years), with minimum age 16 and maximum age was 83 years.

Among 267 respondents, the majority (94.4%) were Muslim and remaining 5.6% were Hindu.

67% were married, 18% were unmarried and 15% were widowed.

The majority (19.5%) were Graduate, followed by 15.7% were in the Class I-V group, 13.9% were SSC passed, 13.1% were HSC passed, 13.1% were illiterate, 10.1% were Post-graduate, 7.9% can put sign only, and remaining 6.7% were in the class VI-X group.

Among all 267 respondents, the majority (34.5%) were house-wife, followed by 15% were service holder, 11.6% were businessmen, 11.6% were students, 9.7% were day-laborer, 9.7% were farmers, and remaining 7.9% were retired person. Most of the respondents (52.1%) monthly income within 2000-25000 taka income group, followed by 28.1% income were in 25001-50000 taka group, 15% income in 50001-100000 group, 1.9% income were in 100001-150000 group, 1.5% income were in 150001-200000 taka income group, and the remaining 1.5% monthly income were above 200000 taka. The mean monthly income was 42333.33 (SD  $\pm$  73082.283 )taka, with minimum income 2000 & maximum 700000 taka.

Among 267 respondents, majority (55.4%) belong to single family, 42.3% incorporate in joint family and remaining 2.2%encompass in extended family. 59.9% family consist of 1-5 members, followed by 37.5%

family consist 6-10 members and remaining 2.6% family have 11-15 members. The mean family size 5.47 (SD  $\pm$  2.189), with minimum family member 2 and maximum 14.

Among 267 patients, the majority (87.3%) are suffering from cancer for 1-12 months, followed by 9.4% suffering for 13-24 months, 2.6% suffering for 25-36 months and remaining 0.7% suffering for 37-48 months.

The mean duration of illness is 9.42 (SD  $\pm$ 8.173) months, with minimum duration 1 month & 48 months.

The majority (47.6%) belonging to the Cancer stage II, 35.2% belong to the stage III, 12.7% belong to stage IV, and remaining 4.5% belong to the stage I.

Among all 267 patients, the highest (15.7%) are affected by Gastro-intestinal Cancer, 15% are suffering from breast cancer, 14.2% affected by lung cancer, 12.4% by Ca head-neck, 10.5% affected by Soft Tissue Sarcoma, 10.1% suffering from Gynaecological cancer, 7.9% affected by Genito-urinary cancer, 7.9% affected by Haematological cancer, 2.6% are suffering from Ca Brain-PNS-Spinal cord, 1.9% affected by Melanoma & Skin cancer, and remaining 1.9% are suffering from CUP.

In current study, all of 267 patients were anaemic, among them 49.4% are moderately anaemic, followed by 26.6% are severely anaemic, and remaining 24.0% are mildly anaemic, this findings support the findings of others studies, which shows that, anaemia is the most frequent manifestation of fatigued patients with cancer (Cella D, Littlewood TJ, Yellen SB, 2001). In an assessment of 2719 patients, receiving chemotherapy in the centres in UK, chemotherapy induced anaemia in adults reported that the highest anaemia arose in lungs, gynaecological, genitourinary tumors, with incidence of 50-60% (Groopman J, Itri L, 2010).

Among 267 patients, The majority patients (37.1%) receiving Chemotherapy, followed by 21.3% receiving Surgery & Chemotherapy, 15.4% receiving concurrent Chemo-radiation therapy, 9.0% receiving only Radiotherapy, 7.1% receiving surgical treatment, 4.9% receiving Surgery-Chemo-radiation therapy, 4.1%

receiving Surgery & Radiotherapy, 0.7% receiving oral anti-neoplastic drugs, and remaining 0.4% receiving Surgical treatment & Oral anti-cancer drugs.

The majority (97%) are receiving treatment for 1-12 months, 2.2% for 13-24 months, 0.4% for 25-36 months, and remaining 0.4% are receiving treatment for 37-48 months, The mean duration is 5.46 (SD  $\pm$  5.444), with minimum duration of receiving treatment is 1 month and maximum 48 months.

Among 267 patients, the majority 76.4% are receiving treatment regularly, and remaining 23.6% are irregular in receiving treatment. Majority 86.1% did not receive any treatment beside hospital treatment, but 13.9% received other treatments, where 8.2% received homeopathy, and 5.6% received ayurvedic/ unani treatment. 6.4% received other treatment due to financial Crisis, 5.6% influenced by their family and friends, and remaining 1.9% received other treatment because they are not satisfied with hospital treatment.

The current study revealed that, out of all 267 cancer patients, Fatigue is present in 80% patients, where 4.5% are severely fatigued, 28.5% moderately fatigued, 46.4% are weary with mild fatigue, and fatigue is absent in 20.6%. This is almost similar to the study done by Stone P & Hardy J in 1960, which showed that, 75% of patients with various solid tumors had a significantly increased fatigue. CRF is estimated to affect 70-90% of cancer patients (Prue G, Rankin J, 2006). 95% of patients who are scheduled to receive chemo or radiotherapy expect to experience some degree of fatigue during treatment (Hofman M, Morrow GR, 2007). Incidence rates for CRF in the clinical trial setting tend to be in the range of 70-80% (Lawrence DP, Kupelnick B, 2004). More than 80% of outpatients receiving chemo or radiotherapy reported some degree of CRF (Hickok JT, Morrow GR, 1996).

In current study, Physical wellbeing is Good among 18.7%, and Fair in 36%, and Average in 34.1%, Bad in 11.2%.



Among 267 patients, majority (35.6%) feel lack of energy/ tiredness Quite a bit, 32.6% feel to some extent, 16.1% extremely, 9.0% feel tolerably, and 6.7% hardly feel lack of energy. 46.8% feel nauseated not the slightest bit, 26.6% feel to a certain degree, 16.1% feel nauseated quite a bit, 9% feel scarcely, and 1.5% are extremely nauseated. Among 267 patients, 39% facing trouble in meeting needs of their family to a certain degree, 34.1% face quite a bit, 13.5% facing trouble very much, 9.4% slightly, and remaining 4.1% temperately facing trouble in meeting needs of their family. The majority (24.7%) feel pain extremely all the time, 23.6% Quite a bit, 22.1% feel pain always not at the least, 21.0% to some extent, and 8.6% barely feel pain. Among 267 patients, 39.7% bothered by side-effects of treatment to a certain degree, 30.3% hardly, 15% slightly, 13.1% quite a bit, and 1.9% extremely. 32.2% somewhat feel ill all the time , 27.7% feel quite a bit, 17.6% feel ill always in moderation, 11.2% hardly, and remaining 11.2% always feel ill extremely. Among 267 patients, 29.2% forced to spend time in bed all the day to a certain degree, 21.0% quite a bit, 17.6% extremely, 16.9% spend time in bed not the slightest bit, and 15.4% forced to spend time in bed passably.

In current study, the majority (53.2%) family-social life, & financial condition has seriously hampered, and 46.8% are able to maintain a tolerably good condition. 31.5% are somewhat close to their friends, 29.6% not at all, 21% having closeness to their friends quite a bit, 16.1% are a little bit close to their friends, and only 1.9% are very much close to their friends.

Among 267 patients, 39% get emotional support from their family to some extent, 34.8% quite a bit, 12% get emotional support in moderation, 11.6% get very much support, and remaining 2.6% don't get any emotional support from family. Most of the patients (31.5%) don't get any support from their friends, 30% get support to a certain degree, 18.4% hardly get support, 18% quite a bit, and only 2.2% get very much support from friends.

Among 267 patients, the majority 35.6% have forced to limit their social activities to some extent, 34.8% quite

a bit, 12.4% temperately, 12% extremely limit social activities due to their physical condition, and only 5.2% not at all.

The majority (65.2%) facing extreme financial difficulties, 23.2% quite a bit, 9.0% to some extent, 0.4% a little bit, and only 2.2% don't have any financial difficulties.

The current study reveals, among 267 Patients, 56.2% are emotionally stable and mental condition is vulnerable in 43.8% patients. Most of the patients, (39.7%) feel upset all the time to a certain degree, 23.2% quite a bit, 15.4% slightly, 11.6% extremely, and 10.1% scarcely feel sad all the day long. Among 267 patients, 45.7% somewhat satisfied about coping with their illness, 19.1% satisfied not at all, 16.9% satisfied quite a bit, 16.5% little a bit, and remaining 1.9% very much satisfied about coping with their illness. 25.8% losing hope in the fight against cancer quite a bit, 25.1% to some extent, 22.5% not in the least, 19.1% temperately, and remaining 7.5% losing hope extremely in the fight against cancer. The majority 26.6% always worried about dying quite a bit, 23.2% to a certain degree, 18.0% not at all, 19.1% tolerably, and 13.1% extremely feel worried about dying all the time. 26.6% quite a bit scared about that their physical condition will get worse, 25.8% somewhat scared, 19.5% slightly scared, 19.1% a little bit scared, and 9.0% extremely scared about their condition will get worse. These findings are seems to be similar to the previous studies done by Broeckel JA, Bower JE, Dimeo F, Stone P in 1998 & 1999. Fatigue affects the whole person- their body and mind, and is a complex symptom with physical, emotional and mental effects (Glaus A, Magnusson K, 1996). CRF is associated with psychological factors, such as anxiety & depression (Mock V, Dow KH, Gaston-Johansson F, 2000), difficulty sleeping (Berger AM, Farr L, Akechi T, 2010), full time employment status (Akechi T, Kugaya A, 2010), and low degrees of physical functioning (Mock V, McCorkle R, 2000). Fatigue is linked to high amounts of some unmanaged symptoms, especially pain (Blesch K, Paice J). The psychological factors

associated with fatigue are well documented (Curran SL, Servaes P, 2004). The relationship between fatigue & low mood is an established entity (Blesch KS, Paice JA, 2007).

In current study, among 267 patients, 84.3% functional wellbeing pattern is good , and 15.7% are bad.

62.9% hardly feel difficulties in concentration, 17.6% to some extent, 10.9% quite a bit, 7.5% a little bit, and remaining 1.1% extremely feel difficulties in concentrating things. The majority 61.4% having no difficulties in remembering things, 19.1% feel somewhat difficulties, 10.5% face very much difficulties, 7.1% hardly feel difficulties, and remaining 1.9% extremely facing difficulties in remembering things. 63.7% don't face any trouble in talking, 13.5% feel to some extent, 13.1% quite a bit, 4.1% not in the least, and 5.6% face very much trouble while talking. 60.3% make mistakes not at all, 22.8% to a certain degree, 8.2% slightly, 6.7% quite a bit, and 1.9% extremely make mistakes that is more than usual.

Among 267 patients, the majority (34.8%) completely unable to perform strenuous activity, followed by 31.1% unable quite a bit, 30.3% unable to a certain degree, 2.2% a little bit unable, and only 1.5% not at all.

Majority (30%) have forced to limit household jobs to some extent, 19.9% quite a bit, 18% seldomly, 14.2% hardly, and remaining 18.0% forced to extremely limit household jobs. Among 267 patients, the majority (34.8%) are completely unable to work outside, followed by, 29.6% unable quite a bit, 27% unable to some extent, 5.6% barely, and remaining only 3% not a slightest bit unable to work outside. Also in previous studies, CRF has been shown to have a significant effect on employment and financial status. Curt & coworkers report that, of 177 patients currently employed, 77% lost at least one day at work as a result of fatigue, with over 75% forced to change their conditions of employment as a result of fatigue they experienced (Curt G, Breitbart W, 2000).

The current study shows that, 63.7% suffering from dyspnoea not at all, 18% suffer to some extent, 9.7% quite a bit, 3.4% a little bit, and rest 5.2% suffering from shortness of breath very much. 38.2% suffering from

anorexia not at all, 25.5% somewhat feel anorexia, 22.5% quite a bit, 4.1% slightly, and 9.7% are suffering from extreme anorexia. 35.2% facing troubled sleeping to a certain degree, 30.7% not at all, 19.1% quite a bit, 7.5% tolerably, and 7.5% facing extremely troubled sleeping. 87.3% don't having diarrhoea, 1.5% suffer a little bit, 1.5% to some extent, 2.2% suffer quite a bit, and rest 7.5% suffer severe diarrhoea. Out of all 267 cancer patients, the highest (34.5%) feel tensed always to a certain degree, 22.5% not at all, 13.5% tolerably, 22.1% quite a bit, and rest 7.5% remain severely tensed all the time. 59.6% feel chest pain not at all, 4.1% scarcely, 21% somewhat feel chest pain all the time, 11.2% quite a bit, and rest 4.1% feel severe chest pain always. 7.5% feel listless not at all, 18.4% a little bit, 36% to some extent, 23.2% quite a bit, and 15% feel extremely listless. 37.8% don't get cachexic, 7.5% a little bit, 20.2% to a certain degree, 25.1% quite a bit, and 9.4% have got severely cachexic. Study done by Kurzrock R, Inui A in 1998 revealed same findings and showed that cancer-related cachexia is one of the contributory factors for the development of fatigue, cytokines, which accumulate as a by-product of cellular damage and destruction, interfere with the hypothalamic control of hunger & mediate the development of cachexia, fatigue also induced by loss of nutrients as a result of anorexia, nausea, vomiting or hypermetabolism.

The current study reveals, 57.7% having alopecia not at all, 6.4% in moderation, 10.9% to some extent, 18.0% quite a bit, and rest 7.1% have developed severe baldness. Among 267 cancer patients, 13.9% feel worn-out not at all, 20.6% feel slightly, 31.8% to a certain degree, 19.5% quite a bit, and 14.2% have imposed in an extremely worn-out condition. These findings of the current study is similar to previous studies, which showed fatigue can affect all dimensions of a person's life (Fortner, Tauer, 2010). It is multidimensional with physical, psychological, social and spiritual aspects (Kirshbaum, Piper). Fears of disease recurrence 77%, energy level 57%, difficulties in remembering 43%, feeling anxious 42%, difficulties with medical insurance 41%, poor sleep 39%, feeling depressed 37% (Andrykowskiet, 2010). Another study shows chronic widespread pain and lower self-efficacy was associated with fatigue (Smith, Strachan, 2007). Hofman & coworkers found that, in patients receiving anti-cancer therapy, over 50% reported some degree of fatigue (Hofman M, Morrow GR, 2007). In 2000, Curt GA, Breitbart W found that, 76% experienced fatigue for at least a few days a month during their

last course of chemotherapy, 54% experienced nausea, 23% depression, and 20% experienced pain. Other study done by Curt T & Breitbart W consisted of 379 patients with cancer and a history of chemotherapy, 91% patients with fatigue, which prevented a 'normal' life and 88% felt that fatigue had changed their daily routine. Abnormalities in energy metabolism, hormonal changes, chronic stress responses, anxiety and depressive disorders, anaemia & altered sleep pattern may lead to CRF (Stone P, Ruckdeschel JC, Bruera E, 1999) & CRF occur as a consequence of cancer related symptoms such as pain, nausea, dyspnoea (Jacobsen PB, Donovan KA, 1999).

In current study, Fatigue level was found to be associated with sex of the respondents,  $\chi^2$  value = 16.667,  $P < 0.05$ ). Out of 138 male respondents, fatigue was absent in 21 (15.2%), mild to moderate fatigue found in 62 (44.9%), and severe fatigue in 55 (39.9%). Out of 117 female patients, fatigue absent in 34 (29.1%), mild to moderate fatigue in 62 (53.0%), and severe fatigue in 21 (17.9%).

Fatigue level was not found to be associated with Educational qualifications of the respondents,  $\chi^2$  value = 0.925,  $P > 0.05$ ). Out of 125 respondents, whose education level was up to SSC level, Severe fatigue was found in 39 (31.2%), mild & moderate fatigue in 57 (45.6%), fatigue was absent in 29 (23.2%). Out of 130 respondents, whose education level was above SSC level, severe fatigue found in 37 (28.5%), mild & moderate fatigue in 67 (51.5%), absent in 26 (20.0%).

Fatigue level was found to be associated with Income with the respondents,  $\chi^2$  value = 8.561,  $P < 0.05$ ). Among 203 respondents, who were within 50,000 taka income group, fatigue absent in 40 (19.7%), mild & moderate fatigue in 94 (46.3%), severe fatigue present in 69 (34.0%). Out of 52 respondents, who were taka 50,001 & above income group, fatigue absent in 15 (28.8%), mild & moderate fatigue in 30 (57.7%), severe fatigue in 7 (13.5%).

Fatigue level was not found to be associated with Duration of their illness,  $\chi^2$  test = 1.752,  $P > 0.05$ ). Among 223 patients, who are suffering from cancer for 1-12 months, fatigue absent in 50 (22.4%), mild to moderately fatigued are 105 (47.1%), severely fatigued 68 (30.5%). Among 32 patients, whose disease duration is from 13-48 months, fatigue absent in 5 (15.6%), mild & moderate fatigue present in 19 (59.4%), severe fatigue in 8 (25.0%).

Fatigue level was not found to be associated with Duration of treatment of the patients (Fishers exact test value = 1.174,  $P > 0.05$ ). Out of 248 patients, who are receiving treatment for 1-12 months, in them fatigue absent in 54 (21.8%), mild & moderate fatigue in 119 (48.0%), severe fatigue in 75 (30.2%). Out of 7

patients, who are receiving treatment for 13-48 months, fatigue absent in 1 (14.3%), mild & moderate fatigue present in 5 (71.4%), severe fatigue found in 1 (14.3%).

Fatigue level was found to be associated with Cancer Stage of the patients,  $\chi^2$  test value = 12.457,  $P < 0.05$ ). Among 134 patients, who are in Cancer Stage I & II group, fatigue absent in 38 (28.4%), mild & moderate fatigue present in 67 (50.0%), severe fatigue in 29 (21.6%). Out of 121 patients, who are in Stage III & IV, fatigue absent in 17 patients (14.0%), mild to moderately fatigued are 57 (47.1%), severely fatigued 47 (38.8%). This is similar to the study done by Given CW, Given B in 2001, which showed that, clinical stage was associated with extent of fatigue and pain, and the tumor stage is associated with degree of fatigue.

Fatigue level was not found to be associated with Anaemia stage of the patients,  $\chi^2$  value = 3.205,  $P > 0.05$ ). Out of 61 patients, who are mildly anaemic, fatigue is absent in 13 (21.3%) of them, mild & moderate fatigue present in 35 (57.4%), severe fatigue in 13 (21.3%). Among 194 patients, who are moderate to severely anaemic, fatigue absent in 42 (21.6%), mild to moderate fatigue in 89 (45.9%), and severe fatigue present in 63 (32.5%).

Fatigue level was not found to be associated with Different modalities of Anti-Neoplastic treatment, ( $\chi^2$  test value = 0.389,  $P > 0.05$ ). Among 153 patients, who are receiving Chemotherapy, Radiotherapy & concurrent chemo-radiation therapy, fatigue absent in 35 (22.9%), mild & moderate fatigue present in 73 (47.7%), severe fatigue in 45 (29.4%). In other hand, who are receiving Surgical treatment & Allied, In them, fatigue absent in 20 (19.6%), mild to moderately fatigued are 51 (50.0%), and severely fatigued are 31 (30.4%).

## 1 CONCLUSION

Cancer-related fatigue is a highly prevalent and distressing symptom experienced by the majority of patients both during treatment for cancer and in the period following completion of treatment. CRF profoundly affects patients' abilities to perform activities associated with daily living and limits their personal and social roles within their family and community, resulting in a significant decrement in overall QOL. CRF is also associated with significant levels of psychological distress, and it imposes a financial burden by limiting a patient's ability to work effectively. This economic effect can extend to caregivers and family members, who may have to reduce their working hours in order to provide care for a patient with CRF. Although fatigue is the most prevalent symptom reported by cancer patients, the assessment and management of this distressing side-effect of cancer and cancer treatment has been limited. This paucity of work is related to many factors, including a lack of understanding of the mechanisms responsible for cancer-related fatigue, a lack of awareness by cancer-care providers of the importance of the problem, and a lack of evidence-based interventions to manage the condition. The underlying cause of CRF are poorly understood and further research is warranted in order to develop effective, patient-centered management strategies and to improve QOL and other outcomes. Effective interventions to reduce CRF both during and following treatment are urgently needed and have the potential to improve physical functioning, QOL, emotional

and psychological health, and to relieve some of the financial burden that a diagnosis of cancer can bring. Nevertheless, the science related to cancer-related fatigue is developing rapidly, research-based clinical practice guidelines for fatigue management and awareness by health-care professionals of the importance of this disruptive symptom is greater than ever.

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