Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh and its Relationship with Caregiving Burden, Social Support, and Depression

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ABSTRACT

Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh and its Relationship with Caregiving Burden, Social Support and Depression

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Background: Globally, lung cancer is the leading cause of cancer-related death, accounting for an estimated 2 million cases and 1.8 million deaths in 2018. Caregivers of lung cancer patients experience a great burden. In Bangladesh, caregivers bear the primary responsibility for caring for cancer patients, leading to a significant caregiving burden that can deteriorate their quality of life (QoL). This study aims to identify factors contributing to the quality of life among family caregivers of lung cancer patients in Bangladesh. **Methods:** The study employed a descriptive correlational design. Participants were 205 family caregivers of lung cancer patients. Caregiver's QoL was measured by the Caregivers Quality of Life Index Cancer-Singapore 15-Bangla version (CQOLC-S15-B). Caregiving burden was measured by the Zarit Burden Interview-Bangla version (ZBI-B). Social support was measured by the Multidimensional Scale of Perceived Social Support-Bangla version (MSPSS-B). Depression was measured by the Beck Depression Inventory-II-Bangla version (BDI-II-B). Data analysis was performed using IBM SPSS 27.0, with a statistical significance level of $p < .05$. Hierarchical regression analysis was conducted to identify contributing factors to QoL among family caregivers of lung cancer patients in Bangladesh.

Results: Family caregivers of lung cancer patients expressed low QoL (14.65 ± 7.61 out of 60). Primary education, low monthly family income, living in rural areas, and length of caregiving hours per day were the factors demonstrating significant associations with QoL. A high level of caregiving burden (about 94%), a low level of social support (16.88±4.60 out of 60), and a severe level of depression (about 40%) were reported. Negative correlations were identified between burden and QoL ($r=-0.38$, $p<.001$) and depression and QoL ($r=-0.17$, $p=.016$). Positive correlations were identified between social support and QoL ($r=0.30$, $p<.001$). Caregiving burden negatively contributed to QoL of caregivers ($\beta=-0.32$, $p<.001$) whereas social support positively contributed to QoL ($\beta=0.24$, $p<.001$).

Conclusion: Caregiving burden and social support were contributing factors to QoL among family caregivers of lung cancer patients. Enhancing social support and providing interventions targeting the reduction of caregiving burden would contribute to improving QoL of family caregivers of lung cancer patients.

Keywords: Family Caregivers, Lung Cancer, Quality of Life, Caregiving Burden, Social Support, Depression

I. INTRODUCTION

1.1. Background

Globally, lung cancer is the leading cause of cancer-related death, accounting for an estimated 2 million cases and 1.8 million deaths in 2018 (Thandra et al., 2021). In underdeveloped countries such as Bangladesh, the rate of cancer is high, making it a major health issue (Rahman et al., 2022). A study conducted in the National Institute of Cancer Research & Hospital in Bangladesh reported that among 1,868 lung cancer patients enrolled for cancer treatment, approximately two-thirds had an Eastern Cooperative Oncology Group (ECOG) performance score of ≥2, requiring support from caregivers (Islam et al., 2021). The nurse-to-patient ratio in Bangladesh is much lower when compared to countries with high resources, and family caregivers are playing important roles in cancer care (Park et al., 2022).

The diagnosis of lung cancer affects not only the patients but also the caregivers (Aubin et al., 2022). Caregivers of lung cancer patients experience a higher burden compared to caregivers of other types of cancer (Oliver et al., 2023). Caregivers encounter numerous obstacles and struggles in their everyday caregiving responsibilities, including physical ailments such as fatigue and pain, emotional distress like anxiety, disruptions in patient-family relationships, financial challenges stemming from prolonged treatment periods (Pramanik, 2018), as well as spiritual burdens (Kavanaugh et al., 2015).

Caregivers of lung cancer patients encounter many challenges including uncertainty (Mosher et al., 2013). Caregivers of individuals with lung cancer need reliable information in order to feel at ease with their new responsibilities, which include treatment, side effects, care services, and symptom management (Cochrane et al., 2022). The significant time consumption and handling various practical tasks, such as organizing the patient's medical care, were among the reported challenges (Mosher et al., 2013). The high level of symptoms and poor prognosis in lung cancer patients result in increased financial strain on caregivers, as well as a significant impact on their employment (Van Houtven et al., 2010; Yabroff et al., 2008).

A literature review on caregivers of cancer patients found that almost fifty percent of caregivers offer care from diagnosis through active treatment and experience decreased quality of life (QoL) due to physical, emotional, social, functional, and spiritual issues

(Guerra-Martín et al., 2023; Ochoa et al., 2020). It is of note that caregivers' QoL is specific to the context of assisting a loved one with personal care, household tasks, and other daily activities (Martin et al., 2021).

Prior studies reported negative correlation between burden and QoL. Caregivers who perceive higher levels of caregiving burden tend to experience lower levels of QoL (Abbasi et al., 2020; Cui et al., 2024; Erbay et al., 2021). Studies supported a correlation between social support and QoL. When cancer caregivers perceive higher levels of social support, their QoL was also higher (Burnette et al., 2017; Butt & Khalid, 2023). Depression has a negative correlation with the QoL of caregivers of cancer patients (Ayabakan-Cot et al., 2017; Wen et al., 2019). A negative correlation exists between caregiving burden and social support among caregivers of cancer patients (Zhang et al., 2024). Caregiver factors contributing to QoL include age (Al Ali et al., 2023; Cengiz et al., 2021; Rostami et al., 2023), gender (Lim et al., 2021; Rosa & Forones, 2022; Rostami et al., 2023), duration of caregiving (Borges et al., 2017; Eskin et al., 2021; Rostami et al., 2023), education level (Al Ali et al., 2023; Cengiz et al., 2021; Choi et al., 2016), and family income (Al Ali et al., 2023; Yihedego, 2020). Cancer patient factors contributing to QoL include Eastern

Cooperative Oncology Group (ECOG) performance status (Rostami et al., 2023), frequency of hospitalization, and relationship with the patient (Al Ali et al., 2023).

There exists a one study has explored demographic factors contributing to cancer caregiving burden and QoL (Rahaman & Chinnikatti, 2020). However, no studies have investigated QoL and its relationship with caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.

1.2. Study objectives

This study aimed to investigate QoL and its relationship with caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.

The specific objectives are as follows:

1. To describe the level of QoL, caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.
2. To examine the associations QoL, caregiving burden, social support, depression, and the characteristics of family caregivers and lung cancer patients

3. To examine the correlations among QoL, caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.
4. To identify factors contributing to quality of life among family caregivers of lung cancer patients in Bangladesh including caregiving burden, social support, depression, and characteristics of family caregivers and lung cancer patients

1.3. Definition of terms

1.3.1. Caregivers' quality of life

A caregiver's QoL differs from general QoL, which refers to the overall state of physical, mental, and social functioning and well-being. The term caregiver's QoL indicates a focus on the specific sources and responses to the range of positive and negative factors that may concurrently affect caregivers (Martin et al., 2021).

In this study, caregiver's QoL was measured by the Caregiver Quality of Life Cancer Index-S15 (CQOLC-S15) Bangla version.

1.3.2. Caregiving burden

Zarit defined “caregiving burden” as “any physical burden, psychological trouble, social, and financial responses that may happen to the family member while providing care.” (Zarit et al., 1980).

In this study, caregiving burden was measured by the Zarit Burden Interview Bangla version (Rabin et al., 2016)**.**

1.3.3. Social support

Social support refers to a caregiver’s degree of satisfaction with aspects such as closeness, social integration, caring, reassurance of worth, and availability of assistance (Zimet et al., 1988).

In this study, cancer family caregivers' social support was measured by the Bangla version of the Multidimensional Scale of Perceived Social Support (Islam, 2021).

1.3.4. Depression

Depression is defined as a symptom, a syndrome, and a disease, alongside a distinction of related notions like unhappiness and sadness. Certain studies are examined, and a conclusive definition is put forward that combines all explanatory viewpoints, depicting it as a complex disorder characterized by a lack of strengthening from the surrounding environment and challenges in adjusting to daily life (Bernard, 2018).

In this study, caregiver depression was measured with the Beck Depression Inventory-II (BDI-II) Bangla version (Alim et al., 2020).

II. LITERATURE REVIEW

2.1. Caregiver’s QoL

Lung cancer patients often experience persisting symptoms such as fatigue, cough, and dyspnea, and about one-third of lung cancer patients experience impairment of daily activities (Sung et al., 2017), which negatively changes the QoL of caregivers (Iyer et al., 2014),

The diagnosis of lung cancer affects not only the patients but also the caregivers (Aubin et al., 2022). Previous studies have identified a significant negative association between caregiving burden and QoL in advanced-stage cancer patients (Manivannan et al., 2023; Meecharoen et al., 2013). Multiple studies have identified a positive association between social support and quality of life among caregivers of cancer patients. When cancer caregivers perceive high social support, their QoL is better (Ayik & Saritas, 2022b; Burnette et al., 2017; Erbay et al., 2021)**.** Caregivers of cancer patients who have factors contributing to caregiving burden, such as physical health conditions, psychological effects, and economic effects, demonstrate increased caregiving burden and decreased QoL

(Serin et al., 2020). Caregivers with positive social relationships have higher QoL than those with negative relationships (Fumaneeshoat & Ingviya, 2020). A negative association has been found between depression and the QoL of caregivers of cancer patients (Kim, 2022; Yoon et al., 2018). Greater emotional strain is closely l to worse quality of life (QoL) in cancer caregivers (Gan et al., 2022). A recent integrative review of factors influencing cancer patients' caregivers' burden and QoL reported a moderate negative association between burden and QoL (Akter et al., 2023).

Prior studies have reported factors contributing to the QoL of caregivers. Age has been identified as a contributing factor to the QoL of caregivers. For example, elderly family caregivers of cancer patients have been found to have lower levels of QoL compared to younger caregivers (Cengiz et al., 2021; Fumaneeshoat & Ingviya, 2020; Rostami et al., 2023). Monthly family income has been associated with the QoL of caregivers of cancer patients. Higher monthly income has been related to higher levels of QoL compared to those with lower monthly income (Fumaneeshoat & Ingviya, 2020; Yihedego et al., 2020). Educational level has also been significantly positively associated with the QoL of caregivers of cancer patients (Cengiz et al., 2021; Choi et al., 2016). Marital status is another factor influencing cancer caregivers' QoL, as married caregivers often have multiple responsibilities and tasks for other family members (Eskin et al., 2021; Pio et al., 2022). The duration of caregiving significantly affects the QoL of caregivers of cancer patients (Borges et al., 2017; Eskin et al., 2021; Rostami et al., 2023).

Additionally, patients' functional impairment, anxiety, and depression have been found to influence caregiver's QoL (Borges et al., 2017; Tan et al., 2018; Wen et al., 2019). Higher stages of lung cancer were associated with higher caregiving burden and lower QoL for caregivers (Borges et al., 2017). Cancer patients performance status of the Eastern Cooperative Oncology Group (ECOG) has been identified as a significant determinant of the QoL of caregivers of cancer patients (Rostami et al., 2023). Fujinami et al (2012), reported that lung cancer caregivers faced multiple challenges due to the demands of caregiving roles, which had an impact on the QoL of caregivers.

2.2. Caregiving burden

Caregiver burden refers to the amount of stress that a caregiver perceives from taking care of a loved one or family member over time (Liu et al., 2020). Caregivers face many challenges during the provision of care for their survivors, including specific treatment decisions. A major challenge for caregivers is not understanding how treatment affects patients physically and their quality of life (Dionne-Odom et al., 2023). A systematic review shows that caregivers of cancer patients face many challenges, including financial problems, depression, loneliness, emotional and physical burdens, time management issues, loss of privacy, and sleep disturbances. Among these challenges, emotional burden is one of the key challenges for caregivers.(Keramatikerman, 2020).

In Bangladesh, family caregivers regularly stay in hospitals performing significant care tasks. Therefore, caregivers in Bangladesh are expected to experience a higher burden compared to family caregivers in high-income countries (Hogan et al., 2022)**.**). In Bangladesh, caregivers are significant resources in providing care for their cancer patients due to insufficient healthcare workers and the workload of healthcare professionals (Park et al., 2022). It is essential to understand the role and burden of caregivers of lung cancer patients.

The consequence of caregiver burden causes interruptions to caregiving responsibilities for both the caregiver and care recipient and leads to many negative influences such as decreased care provision, poorer QoL, and physical and psychological collapse (Liu et al., 2020). Prior studies have also shown that the burden on caregivers of lung cancer patients affects psychological problems such as depressive disorder with emotional reactions (Mosher et al., 2013). Many factors related to family caregivers have been identified as influencing the burden on caregivers of lung cancer patients**.** In Korea, a study with family caregivers of lung cancer patients receiving follow-up treatment in the outpatient clinic of the oncology department of the hospital found that caregiver education level, health status, financial situation, duration of caregiving, and level of depression influence the burden on family caregivers of lung cancer patients (Lee & Park, 2022). In China, a recent study revealed that family caregivers who care for young adult patients experience more burden because they have to face more challenges related to cancer. Other demographic factors such as marital status, type of treatment, and total treatment cost also affect the burden on family caregivers (Hu et al., 2018).

Prior literature has identified some factors contributing to the burden on family caregivers of lung cancer patients. For example, a systematic review of 27 studies showed that some factors contributing to increased burden on family caregivers include the stage of cancer and the quality of the spousal relationship (Cochrane et al., 2021). Another study revealed that family members caring for male lung cancer patients experienced a greater burden compared to those caring for female lung cancer patients (Tan et al., 2018)

2.3. Social support

Social support refers to physical, psychological, informational, financial, or practical compensations from people around us who play a significant role in human life, such as family members, friends, relatives, neighbors, and colleagues, as needed (Thoits, 2010) Social support is the most significant element for family caregivers' well-being in their daily life because they receive appropriate and available social resources such as cancer support groups (Litzelman et al., 2020). A positive association exists between social support and caregivers' psychological well-being, and a negative association exists between social support and the burden of caregiving. When a family member is a doctor and provides care, the burden of care is reduced by providing formal social support (Shiba et al., 2016).

In a recent systematic review that included 22 studies, significant relationships between social support and quality of life among lung cancer patients were described (Hofman et al., 2021). Family caregivers who care for cancer patients who are completely dependent on care experience a significant care burden. Nevertheless, if they feel strong social support from their family, friends, and others, the burden of caregiving is reduced (Kahriman & Zaybak, 2015; Karimollahi et al., 2022). Most caregivers were very satisfied with social support, which reduced their care-related burden and improved their QoL (Anjos et al., 2015) A study conducted in China among lung cancer patients and their caregivers found that social support is crucial for both reducing patients' psychological distress and providing necessary psychological support for caregivers (Wang et al., 2023). Prior studies among cancer patients and their caregivers revealed that perceived high levels of social support led to better QoL in both groups (Ayik & Saritas, 2022a; Butt & Khalid, 2023).

2.4. Depression

A recent study reported that over fifty percent of family caregivers for cancer patients struggled to access information and resources because they lacked time and rest, potentially leading to increased depressive symptoms (Kim & Ko, 2022). Professional psychological support can be given to family-caregivers at risk of depression to help them share their emotions and alleviate the caregiving burden. Female family caregivers who dedicated a substantial amount of time to providing care showed a notably elevated level of depression (Zhong et al., 2020). Caregiving burden had a positive association with depression symptoms among male caregivers of breast cancer (Palacio Gonzalez et al., 2021; Yuen & Wilson, 2021). Caregivers who had a positive aspect of caring reported less caregiving burden, thus positive aspect of caring could act as a preventive factor for caregiving burden (Palacio Gonzalez et al., 2021).

One study found that among lung cancer caregiving burden influencing factors, caregiver depression was related to symptoms of lung cancer (Seo & Park, 2019). Recently, a meta-analysis including fifty-six studies revealed that there was a positive association between caregiving burden and depression (Del-Pino-Casado et al., 2019). A systematic review of thirty studies among cancer caregivers summarized that patient condition, length of caregiving, caregiving burden, unemployment, spouse caregivers, and caregivers suffering from any chronic diseases were positively associated with caregivers’ depression.

There was a negative association with low education level and caregiver's age (Geng et al., 2018). A previous study conducted on depression among family caregivers of patients receiving palliative radiotherapy revealed that lung cancer caregivers felt significantly higher depression compared to caregivers of breast cancer patients (Govina et al., 2019).

Based on the above literature review, family caregivers who perceive higher social support demonstrate a higher level of QoL. Conversely, family caregivers who experience higher levels of burden and depression report lower QoL. Multiple demographic factors have been identified as related to QoL. Currently, no studies have investigated the QoL of caregivers of lung cancer patients in Bangladesh and its relationship with caregiving burden, social support, and depression. It is necessary to identify factors contributing to quality of life among family caregivers of lung cancer patients in Bangladesh including caregiving burden, social support, depression, and characteristics of family caregivers and lung cancer patients.

III. THE CONCEPTUAL FRAMEWORK

The conceptual framework of this study was based on the conceptualization of caregiving experience and caregivers' QoL (Martin et al., 2021), and literature review of factors contributing to caregivers' QoL including caregiving burden, social support, depression, and characteristics of family caregivers and cancer patients.

The concept of caregivers' QoL differs from the overall QoL which encompasses one's general physical, mental, and social well-being **(Figure 1)**.(Martin et al., 2021). Martin et al. (2021) proposed that the caregiving experience influences caregivers' quality of life through physical capacity, psychological state, social relations, and environment.

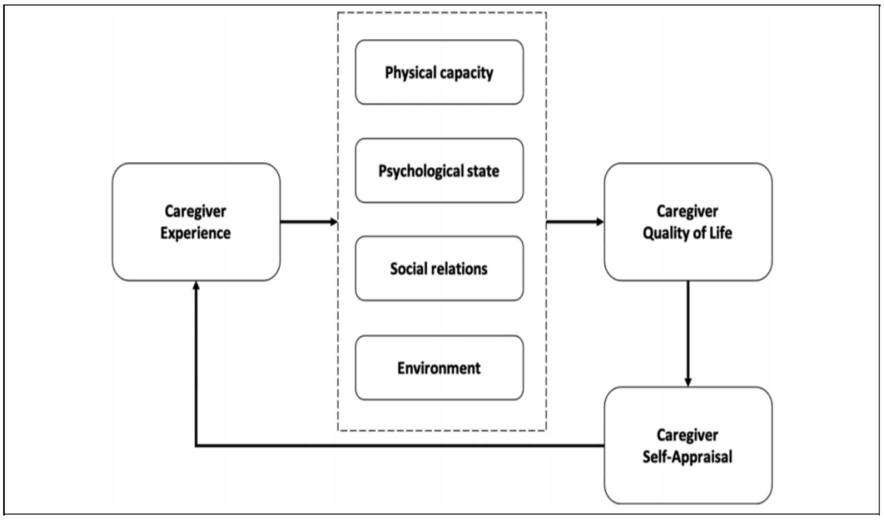

Figure 1. The original conceptualization of the caregiving experience and caregivers' quality of life

Literature review identified multiple factors contributing to caregiver QoL. Higher caregiving burden was negatively correlated with the lower QoL of family caregivers of cancer patients (Abbasi et al., 2020; Cui et al., 2024; Lin et al., 2020; Rooeintan et al., 2023)**.** There existed a positive correlation between social support and QoL. When family caregivers perceived a higher level of social support, their QoL tended to be better (Ayik & Saritas, 2022b; Burnette et al., 2017; Butt & Khalid, 2023). Studies focusing on family caregivers of cancer patients also demonstrated a negative correlation between depression and QoL (Ayabakan-Cot et al., 2017; Yoon et al., 2018).

Caregiver and cancer patient related factors were associated with the QoL of caregivers. A prior study identified older age of caregivers as a contributing factor to the QoL of caregivers (Rostami et al., 2023). Another study found that younger caregivers had lower QoL (Fumaneeshoat & Ingviya, 2020). Gender of cancer caregivers was associated with QoL; many studies found that among cancer caregivers, being female was linked to lower QoL (Cengiz et al., 2021; Koçak et al., 2022; Rooeintan et al., 2023; Rosa & Forones, 2022; Shin et al., 2019). another study found that male caregivers had lower QoL (Lim et al., 2017). Monthly family income (low-income group) was negatively associated with QoL (Fumaneeshoat & Ingviya, 2020; Yihedego et al., 2020). Area of residence (rural area) was associated with low QoL (Yihedego, 2020)**.** Educational level (low education) was negatively associated factor with the QoL of caregivers (Cengiz et al., 2021; Y. S. Choi et al., 2016). Marital status was a factor in caregivers' low QoL because married caregivers have multiple tasks for other family members (Eskin et al., 2021; Pio et al., 2022). In Bangladesh, one study found that marital status was associated with low QoL among cancer caregivers (Rahaman & Chinnikatti, 2020). Duration of caregiving (increased length of hours) was negatively associated with the QoL of caregivers of cancer patients (Borges et al., 2017; Eskin et al., 2021; Rostami et al., 2023). The relationship with patients was associated with caregivers' QoL (Al Ali et al., 2023). The ECOG performance status of cancer patients was identified as a crucial element influencing the QoL of family caregivers (Rostami et al., 2023; Silveira et al., 2018). Family caregivers who provided care for male cancer patients had poorer QoL (Warapornmongkholkul et al., 2018).

The conceptual framework of the study was presented in Figure 2. Among the factors contributing to the caregiver’s QoL, psychological state, i.e., caregiving burden and depression of family caregivers, and social relations, i.e., social support relationships were supported in the literature were included as concepts of interest. Furthermore, characteristics of family caregivers and lung cancer patients were incorporated into the model.

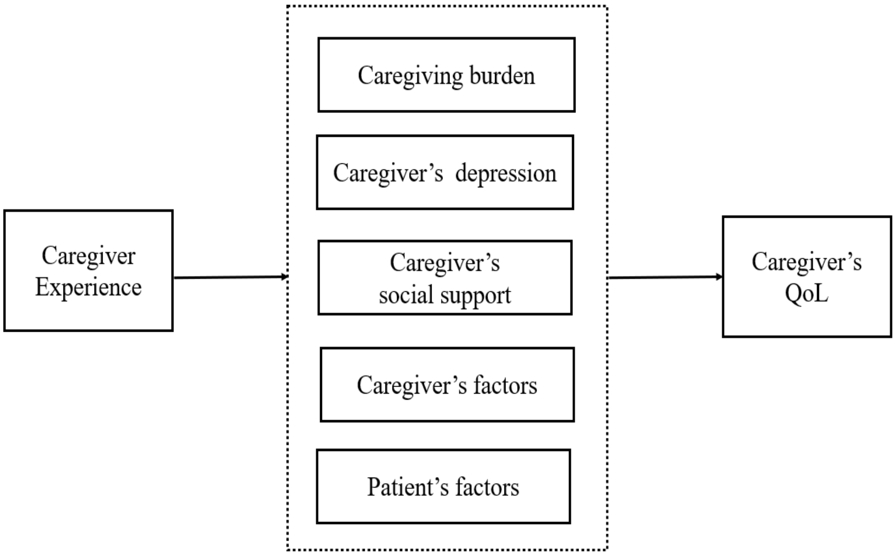

Figure 2. Conceptual framework of quality of life and contributing factors among family caregivers of lung cancer patients

IV. METHODS

4.1. Study design

A descriptive correlational study was conducted to understand the relationships between QoL, caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.

4. 2. Study setting

This study was conducted at the National Institute of Cancer Research and Hospital (NICRH), which is the largest government hospital dedicated to cancer treatment and research institute in Bangladesh. The NICRH is a 500-bed hospital. The hospital offers a range of cancer treatment facilities including chemotherapy, radiotherapy, and surgery, both inpatient and outpatient care. It is located in Mohakhali, Dhaka City, Bangladesh.

4. 3. Sample and sample size

The study included family caregivers of lung cancer patients receiving treatment at the selected hospital in Dhaka, Bangladesh. Convenient sampling was employed, involving the identification of lung cancer patients and their respective caregivers, followed by an explanation of the study's purpose to them. Sample size estimation was conducted using G-power software, considering an effect size of 0.15, α=0.05, power of 0.90, and 15 predictors for multiple regression analysis. The calculated sample size for multiple regression analysis was 171. To accommodate a 20% attrition rate, a total of 205 family caregivers of lung cancer patients were recruited.

4.3.1 Inclusion criteria

1. Primary family caregivers responsible for providing care either at home or during hospitalization.

2. Caregivers of lung cancer patients admitted to the oncology or radiology departments for treatment in the specified hospital.

3) Aged 18 years or older.

4. Capable of reading and comprehending the questionnaire in Bangla.

4.3.2 Exclusion criteria

1. Family caregivers who have been medical diagnosed with depression or other major mental disorders.
2. Family caregivers who have been diagnosed with any type of cancer

4.4. Instruments

4.4.1. Caregivers' Quality of Life (QoL)

Family caregivers' QOL was measured using the Singapore Caregiver Quality of Life Scale 15-item (SCQOLS-15) developed by Cheung et al. (2020). This scale comprises 15 items across five dimensions: Physical Well-being (PW; 3 items), Mental Well-being (MW; 3 items), Experience & Meaning (EM; 4 items), Impact on Daily Life (DL; 3 items), and Financial Well-being (FW; 2 items). Subdimensions of physical well-being, mental well-being, impact of daily living, and financial well-being included some negative items, which were recoded for analysis. Rated on a 5-point Likert-type scale (Not at All = 0, A Little = 1, Somewhat = 2, Quite a Lot = 3, and Very Much = 4), the scores range from 0 to 60, with a higher score indicating better QoL. The SCQOLS-15 demonstrated an acceptable level of internal consistency (0.76) and strong test-retest reliability (0.85)(Cheung et al., 2020). Initially developed in English, both the instruments and program manual underwent translation into Bengali for this study. In the present study, the Cronbach's alpha value of 0.88**.**

Translation process

The forward and backward translation process was utilized for translation. A team of three bilingual translators, proficient in both English and Bangla, were responsible for translating the instruments. Two faculty members with expertise in family caregivers' quality of and socio-cultural variations in Bangladesh, along with an English professor specializing in translation, participated in the translation process. The initial translation was done by two faculty members, followed by a backward translation by another English professor who was blinded to the original English version. All individuals involved in the translation process were proficient in both Bangla and English languages.

Pretesting and pilot phase

The SCQOLS-15 Bangla version underwent a pilot test by 25 family caregivers of lung cancer patients. Participants included primary family caregivers of lung cancer patients who provided care both at home and in hospital settings**,** aged 18 years and above, and were proficient in understanding the Bangla version of the questionnaire. Participants were requested to provide any written comments to improve their understanding of the items**.** However, no special comments were received from the pilot phase participants. Expert faculty members reviewed the pretested and pilot phase version, and based on their feedback, the final version of the SCQOLS-15 Bangla was completed.

4.4.2. Caregiving burden

The level of caregiver burden was assessed using the Zarit Burden Scale, also known as the Zarit Burden Interview (ZBI), developed by Zarit et al., 1980, which is widely recognized for measuring caregiving burden(Zarit et al., 1980) The Bangla version, developed by(Rabin et al., 2016), was utilized for the current study. The questionnaire consists of 22 items, rated on a five-point Likert scale (0 = never, 1 = rarely, 2 = sometimes, 3 = frequently, and 4 = nearly always). The questions focus on major areas of concern for family caregivers, including the caregiver's health, psychological well-being, financial status, social involvement, and the relationship between caregivers and lung cancer patients**.** The total score ranges from 0 to 88, with scores of 0 to 20 indicating little or no burden, 21 to 40 indicating mild burden, 41 to 60 indicating moderate burden, and 61 to 88 indicating severe burden. This instrument is highly reliable and valid for assessing the burden of caregiving. In the original study by Zarit et al. (1980), the Cronbach's alpha coefficient was found to be 0.93. In the Bangla version, the Cronbach's alpha value was reported as 0.84, with a test-retest reliability of 0.89 (Rabin et al., 2016)**.** In the present study, the Cronbach's alpha value was 0.92.

4.4.3. Social support

Social support of family caregivers was measured using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS), developed by(Zimet et al., 1988). This scale is one of the most commonly used methods for assessing an individual's perceived social support and has been developed over time. It consists of 12 items, with three subscales, i.e., social support from family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant others (items 1, 2, 5, and 10). A strong positive correlation was observed between the original English version of MSPSS and the translated Bangla version (Islam, 2021), indicating that both versions measure the same concepts. The scale is a 5-point Likert-type scale, ranging from 1 to 5, with a total score of 60, where higher scores indicate higher perceived social support. In the Bangla version (BV), items of the MSPSS-BV showed good internal consistencies, with Cronbach's alphas for the total MSPSS-BV scale and its subscales being greater than 0.80 (Islam, 2021). In the present study, the Cronbach’s alpha value was 0.87.

4.4.4. Depression

Depression of family caregivers was measured using the Beck Depression Inventory-II (BDI-II). The original BDI-II English version includes 21 items for assessing the level of depression (Beck et al., 1996), and it is widely recognized. The Bangla version was developed by Alim (2020) and utilizes a four-point Likert scale, where 0 = never, 1 = sometimes, 2 = frequently, and 3 = nearly always. The resulting total scores range from 0 to 63, with score categories as follows: 1-10 score indicate normal, 11-16 score indicate mild mood disturbance, 17-20 score indicate borderline clinical depression, 21-30 score indicate moderate depression, 31-40 score indicate severe level of depression, and score over 40 indicate extreme depression. The reliability (alpha value) of the BDI-II Bangla version was 0.99(Alim et al., 2020). In this study, the Cronbach's Alpha value was 0.95.

4.4.5 Lung cancer family caregiver's and patients' characteristics

This section comprises demographic characteristics of the family caregivers, encompassing 12 items: age, gender, religion, marital status, level of education, monthly income, occupation, residency status, relationship between caregivers and patients, duration of caregiving (in months and years), hours of caregiving per day, and underlying illness.

Describes the demographic characteristics of lung cancer patients, encompassing 11 items: age, gender, religion, marital status, occupation, level of education, duration of treatment according to the Eastern Cooperative Oncology Group (ECOG) performance status scale, and type of treatment.

4.5. Data collection procedures

The data were collected from lung cancer caregivers who reside with patients either at home and or in hospitals, using the following inclusion and exclusion criteria, after obtaining written consent. Before commencing data collection, the researcher recruited a research assistant with previous research experience. The researcher organized a standard training program for the selected research assistant regarding the questionnaire to ensure consistency during data collection**.** Additionally, the researcher communicated with nursing superintendents and head nurses at the hospital's oncology unit to recruit eligible study participants. The researcher approached caregivers who closely cared for their patients. Each eligible family caregiver was provided with an instructional letter explaining the aim, benefits, and risks of participating in the study prior to data collection, and written consent was obtained from all participating family caregivers of lung cancer patients. The research assistant collected data through face-to-face interviews where each question was asked and responses were recorded in front of the participants. On average, 30 minutes were required to complete the questionnaire. Demographic data regarding lung cancer were obtained from the caregivers who participated in the study. The researcher conducted a double-check to ensure the completeness of the questionnaire. Participants who completed the questionnaire were offered a souvenir valued at approximately 2 US dollars as a token of appreciation.

4.6. Ethical consideration

Prior to the start of data collection, permission was obtained from the Institutional Review Boards (IRB) (IRB No. Exp.-NIA-OF-2023-08) at the National Institute of Advanced Nursing Education and Research (NIANER), and approval was obtained from the directors of the selected hospital (NICRH), at the oncology and radiology unit in Dhaka city, Bangladesh. All ethical procedures and guidelines required to conduct human research were followed for eligible family caregivers of lung cancer patients. It was ensured that their participation was fully voluntary, and they could withdraw from the study at any time. The participants' confidentiality and anonymity were strictly maintained using code numbers. Questionnaires answered will be kept in a locked cabinet for three years.

4.7. Data analysis

The data were analyzed using IBM SPSS 27, with the statistical significance level set at $p < .05$. Descriptive statistics were used to describe the characteristics of lung cancer patients and family caregivers, as well as their QoL, caregiving burden, social support, and depression. T-tests, ANOVA followed by post hoc Scheffé tests were performed to analyze factors associated with the QoL of caregivers, caregiving burden, social support, and depression**.** Pearson correlation analysis was utilized to identify correlations between caregiving burden, social support, depression, and QoL among caregivers of lung cancer patients. Hierarchical regression analysis was conducted to identify factors contributing to caregivers' QoL among family caregivers of lung cancer patients**.**

V. RESULTS

5.1. General characteristics of the family caregivers of lung cancer patients

The socio-demographic characteristics of the family caregivers of lung cancer patients who completed the survey are presented in Table 1. The mean age of participants was 36 years, ranging from 18 to 70 years. About half of the caregivers were female (50.7%), and most of the participants were married (84.9%). The education level of participants was primary school (29.8%) and secondary education (37.6%). Most of the participants were living in rural areas (78.5%). The average monthly family income was 21453.7 ± 24012.1 Taka (about 196.07 USD), which was lower than the average household income in Bangladesh in 2022. The total duration of providing care was on average 8 months, and daily care provided an average of 12 hours. Relationships with patients were children (58.5%) and spouse (29.8%). Most of the caregivers had no comorbidity (71.7%).

Table 1. General characteristics of the family caregivers of lung cancer patients

(*N*=205)

Variables	**Categories**	**n**	**%**	**Mean ± SD**
Age in years				36.1±11.4 (Range18~70)
Gender	Male	101	49.3	
	Female	104	50.7	
Religion	Islam	189	90.2	
	Hindu	16	7.8	
Marital status	Married	174	84.9	
	Unmarried	31	15.1	
Level of education	Primary school	61	29.8	
	Secondary school	77	37.6	
	Higher secondary	43	20.9	
	Higher education (BA and MA)	24	11.7	
Residence	Urban	28	13.7	
	Semi-urban	16	7.8	
	Rural	161	78.5	
Occupation	Agriculture	18	8.8	
	Business	28	13.7	
	Housewife	91	44.4	
	Service	45	22.0	
	Student	21	10.2	
	Others	2	1.0	
Average monthly family income (Tk)				21453.7±24012.1
Duration of care giving/ monthly				8.2±7.1
Duration of care giving/ hours				12.6±6.0

Variables	Categories	n	%	Mean ± SD
Relationship with patients	Children	120	58.5	
	Spouse	61	29.8	
	Sibling	19	9.3	
	parents	5	2.4	
Caregiver co-morbidity	No co-morbidities	147	71.7	
	Hypertension	33	7.3	
	Diabetes	15	16.1	
	Asthma	5	2.4	
	Heart diseases	3	1.5	
	Kidney diseases	2	1.0	

Note n; frequency, (%); percentage, M±SD; Mean ±standard deviation,

5.2. General characteristics of the lung cancer patients

Table 2 presents the characteristics of 205 lung cancer patients. The mean age of the patients was 57 years, ranging from 20 to 92 years. The majority of the patients were male (85.4%)**,** and most of them were married (98.0%). The performance levels of the patients were categorized based on their physical abilities; 35.6% were able to carry out ambulatory work but restricted in physical work, 19.0% were able to take care of themselves but unable to perform office work, 36.6% had limited self-care abilities, and 8.8% were completely disabled. The majority of the patients received chemotherapy treatment (70.2%).

Table 2. General characteristics of the lung cancer patients

(*N*=205)

Variables	**Categories**	**n**	**%**	**Mean ±SD**
Age in years				57.3±11.9 (Range 20~92)
Gender	Male	175	85.4	
	Female	30	14.6	
Religion	Islam	189	92.2	
	Hindu	16	7.8	
Marital status	Unmarried	4	2.0	
	Married	201	98.0	
Level of education	No formal education	83	40.5	
	Primary	60	29.3	
	Secondary	38	18.5	
	Higher secondary	21	10.2	
	Others (higher education BA-2, MBA-1)	3	1.5	
Residence	Urban	21	10.2	
	Semi-urban	13	6.3	
	Rural	171	83.4	
Duration of taking treatment in month				8.2±7.2
Frequency of hospital admission				8.5±7.6
Level of performance	Restricted physical work but ambulatory work carryout	73	35.6	
	Able to take self-care but unable to do office work	39	19.0	
	Limited self-care	75	36.6	
	Completely disabled	18	8.8	
Type of treatment (current hospitalization)	Chemotherapy	144	70.2	
	Radiotherapy	29	14.1	
	Combined	22	10.7	
	Surgery	10	4.9	

5.3. Levels of quality of life, caregiving burden, social support, and depression among family caregivers of lung cancer patients

The levels of QoL among caregivers of lung cancer patients are presented in Table 3. The total item mean score of QoL was calculated as 14.65 (SD=7.61 out of 60, which was considered a low level of QoL for caregivers of lung cancer patients. Among the subscales of caregiver's QoL, experience and meaning were the highest compared to other subscales. The item-wise caregiver's QoL scores are reported in Appendix 1.

The levels of caregiving burden among caregivers of lung cancer patients are presented in Table 3. The total mean score of caregiving burden items was calculated as 73.97 (SD=9.48), out of 88, indicating a high caregiving burden. Approximately 94% of caregivers experienced severe caregiving burden (>61), about 5% of participants scored moderate burden (41-60), and only 1% of participants scored mild burden (21-40). The item-wise caregiving burden scores are reported in Appendix 2.

The levels of social support among caregivers of lung cancer patients are presented in Table 3. The total mean score of caregiver's social support was calculated as 16.88 (SD=4.60), out of 60, which is considered a low level of social support. In the subscale of social support from family, the mean ± SD was 5.97 ± 2.31, which was slightly higher than other subscales. The item-wise social support scores are reported in Appendix 3.

The levels of depression among caregivers of lung cancer patients are presented in Table 3. The total mean score of caregiver's depressions was calculated as 38.95 (SD=12.71), out of 63, considered a severe level of depression. About 40% of participants scored severe depression (31-40) and about 37% of participants reported scores over 40, which indicated extreme depression. The item-wise depression scores are reported in Appendix 4

Table 3. Levels of quality of life, caregiving burden, social support, and depression among family caregivers of lung cancer patients

(*N*=205)

Variables	**Total Mean ±SD**	**Possible score range**	**Scale Mean ±SD**
Caregiver's Quality of life (total)	14.65 ±7.61	0-60	0.98 ±0.51
Caregiver's QoL (physical well -being) *	2.49 ±2.37	0-12	0.83 ±0.79
Caregiver's QoL (mental well -being) *	2.22 ±2.29	0-12	0.74 ±0.76
Caregiver's QOL (experience and meaning)	6.40 ±3.06	0-16	1.60 ±0.76
Caregiver' QoL (impact of daily life) *	2.88 ±2.37	0-12	0.96 ±0.79
Caregiver's QoL (financial wellbeing) *	0.66 ±1.30	0-08	0.33 ±0.65
Caregiving burden	73.97 ±9.48	0-88	
Social support	16.88 ±4.60	12-60	
Social support from family	5.97 ±2.31	4-20	
Social support from friend	5.42 ±1.70	4-20	
Social support from significant others	5.49 ±1.76	4-20	
Depression	38.95 ±12.71	0-63	

Note: QoL measurement higher score mean better QoL. Original measurements 4 dimension was negative items, which was recoded and marks with***.** Caregiving burden higher score means higher caregiving burden, social support lower score means low perceived social support, and depression higher score mean higher level

5.4. The differences quality of life, caregiving burden, social support, depression by the characteristics of family caregivers and lung cancer patients

Table 4 shows the difference between caregiver’s QoL, caregiving burden, social support, depression and general characteristics of family caregivers and lung cancer patients. The QoL of lung cancer caregivers was significantly different according to levels of education, residential areas, family income, and duration of caregiving hours per day.

There was a difference in relation to caregivers' educational level and QoL (F=4.65**,** *p*=.004**).** A post hoc test revealed that there was a significant difference between the education level of the family’s primary or higher secondary education with higher education (d>a, c). Caregivers' QoL was significantly different in relation to the area of residence (t=2.37, *p*=.021). Caregivers living in rural areas (78.5%) showed significantly lower QoL compared to those living in urban areas.

The results also demonstrated a significant difference between caregivers' income level and their QoL (t=-3.01, *p*=.004), indicating that caregivers with an income less than 26,000 taka (237.09 USD) (82.0%) had lower QoL compared to those with an income level of 26,000 taka (237.09 USD). The level of QoL was different according to caregiving hours per day (T=1.99, *p*=.048), indicating that family caregivers who provided care for their patients for more than 12 hours daily (29.3%) had significantly lower QoL than those who provided care for less than 12 hours daily.

There was a difference significantly in difference between caregiver's education level and caregiving burden (F=5.14, *p*=.002). Post hoc tests demonstrated that caregivers who received higher education experienced lower burden than those who received higher secondary education or less (a, b, c > d).

Additionally, there was a notable distinction between caregivers' residence and their burden (t=-2.97, *p*=.003). Caregivers residing in rural areas (78.5%) showed significantly higher burdens than their urban counterparts. The statistical analysis indicated a significant association between caregivers' occupation (F=2.85, *p*=.025); however, post-hoc tests found no significant difference between groups.

The difference between family income and caregivers' burden was statistically significant (t=3.57, *p*=.001). Caregivers whose family incomes were less than 26,000 taka (237.09 USD) reported higher burden. The difference in caregiving burden according to the total duration of caregiving was found to be statistically significant (t=-2.86, *p*=.005), indicating that those who provided care for less than eight months had lower burden compared to those who provided care for more than eight months. The difference between patients' performance level and caregiving burden was statistically significant (F=2.74, *p*=.044); however, post-hoc tests found no significant difference between groups.

The social support differed significantly according to the residence of caregivers (**t=**2.62**,** *p***=.**011**).** Caregivers who lived in urban areas perceived higher social support compared to those who lived in rural areas.

The level of depression among caregivers varied by age, gender, education level, residence, family income, daily caregiving hours, caregivers’ relationship with patients, patients' performance level, and frequency of hospitalization.

It was found that there was a significant difference between caregiver’s age and depression level (F=4.80, *p*=.009). A post-hoc test indicated that caregivers aged 55 years and above were significantly more depressed compared to caregivers aged 25 to 54 years (c > b). Female caregivers experienced higher depression levels compared to male caregivers (F=2.72, *p*=.007).

There was a statistically significant association between caregivers' education and depression (F=3.89, *p*<.010). A post-hoc test demonstrated that the level of depression of family caregivers with primary education was significantly different from those with higher education (a > d). In terms of residential areas and depression, caregivers living in urban areas reported lower levels of depression compared to their counterparts in rural areas (t=-3.85, *p*<.001).

There was a statistically significant difference between family caregivers' income and depression (t=2.11, *p*<.036), indicating that caregivers with an income level of more than 26,000 taka (237.09 USD) had comparatively lower levels of depression than those with an income level less than 26,000 taka (237.09 USD).

Caregivers who provided care for less than 12 hours had lower depression levels compared to those who provided care for 12 hours daily and above (t=-6.68, *p*<.001). There was a statistically significant association between caregivers’ relationship to patients and depression (F=3.35, *p*<.037); however, post-hoc tests demonstrated no significant difference between groups.

Patient's performance status and caregiver's depression were significantly difference (F=10.91, *p*<.001). Post-hoc tests indicated that caregivers of lung cancer patients with restricted physical work but ambulatory work carried out significantly with those patients who were limited in self-care. Caregivers who were caring for patients with limited self-care demonstrated higher levels of depression compared to caregivers of patients who were restricted to physical work but could carry out ambulatory work, or were able to do self-care but unable to do office work (b, c > a).

The difference between the frequency of hospitalization and depression was statistically significant. Caregivers of those who were admitted more than 8 times had a higher level of depression of about 34.6% compared to caregivers of those who were admitted 8 times or less (t=-3.74, *p*<.001).

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Table 4. The differences quality of life, caregiving burden, social support, depression by the characteristics of family caregivers and lung cancer patients

(*N*=205)

Variables	**Categories**	**n (%)**	**Caregiver's QoL**		**Caregiving burden**		**Social support**		**Depression**	
			Mean ±SD	***t/F* (*p*)**	**Mean ±SD**	***t/F* (*p*)**	**Mean ±SD**	***t/F* (*p*)**	Mean ±SD	***t/F* (*p*)**
Caregiver's age	Caregivers aged 18 to 24 years [a]	32 (16.0)	15.41 ±8.28	0.21 (.808)	73.34 ±10.18	1.54 (.216)	17.00 ±5.08	0.43 (.650)	40.31 ±14.46	4.80 **(.009)** **(c>b)**
	Caregivers aged 25 to 54 years [b]	177 (76.0)	14.47 ±7.26		73.69 ±9.55		16.75 ±4.64		37.78 ±11.99	
	Caregivers aged 55 and above [c]	16 (8.0)	14.94 ±9.85		77.94 ±6.57		17.88 ±4.57		47.69 ±13.07	
Caregiver religion	Islam	189 (92.2)	14.50 ±7.66	-0.98 (.329)	74.11 ±9.54	0.70 (.485)	16.76 ±4.64	-1.17 (0.245)	39.22 ±12.86	1.03 (.305)
	Hindu	16 (7.8)	16.44 ±7.11		72.38 ±8.83		18.19 ±5.34		35.81 ±10.59	
Caregiver's gender	Male	101 (49.3)	15.63 ± 8.09	1.84 (.068)	73.03 ±10.33	-1.40 (.162	16.63 ±3.98	-0.72 (.471)	36.53 ±13.02	-2.72 **(.007)**
	Female	104 (50.7)	13.69 ±7.03		74.88 ±8.54		17.11 ±5.31		41.30 ±12.00	
Caregiver's marital status	Married	174 (84.9)	14.65 ±7.88	0.00 (.998)	74.08 ±9.65	0.39 (.696)	16.90±4.69	0.21 (0.834)	39.19 ±12.52	0.64 (.526)
	Unmarried	31 (15.1)	14.65 ±6.02		73.35 ±8.59		16.71±4.82		37.61 ±13.91	

Variables	**Categories**	**n (%)**	**Caregiver's QoL Mean ±SD**	**Caregiver's QoL *t/F (p)***	**Caregiving burden Mean ±SD**	**Caregiving burden *t/F (p)***	**Social support Mean ±SD**	**Social support *t/F (p)***	Depression Mean ±SD	**Depression *t/F (p)***
Level of education	Primary education ^{a}	61 (29.8)	12.89 ±6.26	4.65 **(.004)** **(d>a, c)**	75.38 ±9.04	5.14 **(.002)** **(a, b, c>d)**	16.20 ±4.12	0.64 (0.59)	42.38 ±11.31	3.89 **(.010)** **(a>d)**
	Secondary education ^{b}	77 (37.6)	15.23 ±7.74		74.96 ±8.31		17.27 ±5.02		37.26 ±12.60	
	Higher secondary ^{c}	43 (21.0)	13.56 ±6.50		74.00 ±8.50		16.95 ±4.92		40.31 ±13.30	
	Higher education (BA & MA) ^{d}	24 (11.7)	19.21 ±10.21		67.17 ±12.96		17.17±4.70		33.21 ±13.20	
Caregiver's residence	Urban	44 (21.5)	17.39 ±9.04	2.37 **(.021)**	70.27 ±10.01	-2.97 **(.003)**	18.95 ±6.38	2.62 **(.011)**	33.11 ±10.95	-3.85 **(<.001)**
	Rural	161 (78.5)	13.90 ±7.03		74.98 ±9.11		16.30 ±3.96		40.55 ±12.72	
Caregiver's occupation	Housewife ^{a}	91 (44.4)	13.61 ±6.10	1.73 (.146)	74.97 ±8.68	2.85 **(.025)**	17.18 ±5.33	0.67 (.617)	41.16 ±11.54	1.87 (.117)
	Service ^{b}	45 (22.0)	16.84 ±9.22		70.73 ±11.65		16.56 ±3.28		35.62 ±13.81	
	Business ^{c}	28 (13.7)	15.86 ±7.83		72.61 ±10.41		17.64 ±4.87		37.07 ±12.35	
	Students ^{d}	21 (10.1)	14.00 ±7.34		74.29 ±6.31		16.00 ±4.89		37.14 ±14.60	
	Agriculture and day labour^{e}	20 (9.8)	13.40 ±5.42		78.30 ±6.78		16.05 ±3.89		40.90 ±12.62	
Caregiver monthly family income	Family income less than 26000 taka (237.09 USD)	168 (82.0)	13.82 ±7.14	-3.01 **(.004)**	75.34 ±8.24	3.57 **(<.001)**	16.95 ±4.19	-0.10 (.917)	39.82 ±12.78	2.11 **(.036)**
	Family income 26000 taka	37 (18.0)	18.41 ±8.65		67.84 ±12.14		16.74 ±4.57		35.00 ±11.75	

Variables	**Categories**	**n (%)**	**Caregiver's QoL**		**Caregiving burden**		**Social support**		**Depression**	
			Mean ±SD	***t/F (p)***	**Mean ±SD**	***t/F (p)***	**Mean ±SD**	***t/F (p)***	Mean ±SD	***t/F (p)***
	(237.09 USD) and above									
Duration of care giving in month	Duration of care giving bellow 8 months	145 (70.7)	14.95 ±7.63	0.89 (.377)	72.77 ±9.79	-2.86 (**.005)**	17.18 ±5.01	-0.61 (.544)	38.41 ±12.77	-0.95 (.342)
	Duration of care giving 8 months and above	60 (29.3)	13.92 ±7.59		76.87 ±8.06		17.34 ±4.76		40.27 ±12.58	
Duration of care giving hours/day	Care giving per day bellow 12 hours	145 (70.7)	15.53 ±7.67	1.99 (**.048)**	72.98 ±9.85	-1.78 (.076)	16.21 ±4.55	1.71 (.090)	34.23 ±9.80	-6.68 (<**.001)**
	Care giving per day 12 hours and above	60 (29.3)	13.40 ±7.41		75.36 ±8.81		16.58 ±4.25		45.62 ±13.40	
Caregiver's relationship with patient	Children	120 (58.5)	18.07 ±5.16	0.59 (.556)	72.73 ±9.78	2.50 (.084)	16.58 ±4.25	1.35 (.262)	37.29 ±12.96	3.35 (<**.037)**
	Spouse	61 (29.8)	17.20 ±5.06		75.66 ±8.84		17.69 ±5.63		40.20 ±11.82	
	Parents and Sibling	24 (11.7)	17.67 ±5.09		75.88 ±8.95		16.29 ±4.08		44.08 ±12.37	
Patient's level of performance	Restricted physical work but ambulatory work carryout [a]	73 (35.6)	13.68 ±5.10	1.93 (.125)	71.63 ±7.86	2.74 (**.044**)	17.54 ±5.51	0.64 (.590)	34.10 ±9.68	10.91 (<**.001**) **(b, c>a)**
	Able to take selfcare but unable to do office work [b]	39 (19.0)	17.18 ±8.86		73.92 ±10.82		15.91 ±3.66		36.13 ±12.04	
	Limited self-care [c]	75 (36.6)	14.47 ±8.36		75.80 ±10.44		18.50 ±6.33		44.77 ±13.56	
	Completely disabled [d]	18 (8.8)	13.83 ±6.71		75.94 ±6.27		16.20 ±4.12		40.50 ±12.08	

Variables	**Categories**	**n (%)**	**Caregiver's QoL**		**Caregiving burden**		**Social support**		**Depression**	
			Mean ±SD	***t/F* (*p*)**	**Mean ±SD**	***t/F* (*p*)**	**Mean ±SD**	***t/F* (*p*)**	Mean ±SD	***t/F* (*p*)**
Frequency of hospitalization	Less than 8 times	134 (65.4)	14.43 ±7.29	0.09 (.923)	73.79 ±8.97	-0.98 (.330)	17.05 ±4.67	1.65 (.104)	36.31 ±10.71	-3.74 (**<.001**)
	8 times and above	71 (34.6)	14.29 ± 8.04		73.29 ±11.78		15.92 ±3.53		43.51 ±14.56	

Note n; frequency, (%); percentage, M±SD; Mean ±standard deviation,

5.5. The correlations of quality of life, caregiving burden, social support, and depression among family caregivers of the lung cancer patient

Table 5 shows the correlations of QoL, burden, social support, and depression among family caregivers of lung cancer patients. This finding demonstrates a statistically significant negative correlation between burden and QoL (r=-0.38, *p*<.001), depression and QoL (r=-0.17, *p*=.016), as well as between social support and burden (r=-0.14, *p*=.050), social support and depression (r=-0.14, *p*<.040). Significantly positively correlation between social support and QoL (r=0.30, *p*<.001), between burden and depression (r=0.42, *p*<.001).

Table 5. The correlations of quality of life, caregiving burden, social support, and depression among family caregivers of the lung cancer patients

(*N*=205)

Variable	**r(*p*)**			
	QoL	**Burden**	**Social Support**	**Depression**
QoL	-			
Burden	-0.38 (<.001)	-		
Social Support	0.30 (<.001)	-0.14 (.050)	-	
Depression	-0.17 (.016)	0.42 (<.001)	-0.14 (.040)	-

5.6. Factors contributing to quality of life among family caregivers of lung cancer patients

Factors found to be significantly associated with the quality of life (QoL) among caregivers of lung cancer patients namely, caregiving burden, social support, depression, caregivers' educational level, residence, duration of daily caregiving, and monthly family income were included in the hierarchical regression analysis. Caregiving burden was found to be a significant contributor to caregivers' QoL (β= -0.32), and caregivers' social support was found to influence caregivers' QoL positively (β= 0.24). No collinearity among predictors was met with 1.03≤VIF≤1.52. (See Table 6).

Table 6. Factors contributing to quality of life among family caregivers of lung cancer patients

(***N*=205)**

Model #	**Variable**	**B**	***SE***	***β***	***95%CI***		***p***
					LL	***UL***	
1	(Constant)	28.66	4.39		20.01	37.31	<.001
	Caregiving burden	-0.29	0.06	-0.36	-0.40	-0.18	**<.001**
	Social support	0.40	0.10	0.25	0.20	0.61	**<.001**
	Depression	0.01	0.04	0.01	-0.07	0.09	.833
		R^2= 0.21, Adjusted R^2 =0.20					
2	(Constant)	24.37	5.98		12.57	36.16	<.001
	Caregiving burden	-0.25	0.06	-0.32	-0.37	-0.14	**<.001**
	Social support	0.39	0.11	0.24	0.18	0.60	**<.001**
	Depression	0.04	0.05	0.06	-0.05	0.13	.410
	Education	0.58	0.52	0.07	-0.44	1.60	.265
	Residence	-0.59	1.26	-0.03	-3.08	1.90	.641
	Duration of caregiver (hours/day)	-1.12	1.10	-0.07	-3.30	1.05	.310
	Monthly family income	2.00	1.38	0.10	-0.72	4.72	.149
		R^2= 0.23, Adjusted R^2 = 0.21					

Note: ***β;*** standardized coefficient, SE; standardized error, CI; confidence interval, LL; lower limit, UL; upper limit, VIF; A variance inflation factor

VI. DISCUSSION

This study evaluated the association of caregiver’s QoL, caregiving burden, social support, and depression among family caregivers of lung cancer patients in Bangladesh.

6.1. Levels of quality of life, caregiving burden, social support, and depression among lung cancer patients

The level of QoL among family caregivers of lung cancer patients in Bangladeshis very low. Previous studies conducted in Iran reported a significantly low level of QoL among caregivers of cancer patients (Rooeintan et al., 2023; Rostami et al., 2023).

This study found that approximately 94% of family caregivers of lung cancer patients in Bangladesh were experiencing high levels of caregiving burden. This finding is consistent with a prior study conducted in Ethiopia, which reported that 66.6% of caregivers had a higher caregiving burden(Al Ali et al., 2023). Additionally, the present study's findings are in line with a study conducted in Brazil among family caregivers of cancer patients, which reported that about 70.7% of caregivers experienced higher caregiving burden (Vale et al., 2023). Currently, there are no studies that have investigated the burden of cancer caregivers in Bangladesh. However, a recent study conducted on family caregivers of individuals with schizophrenia reported moderate to severe caregiving burden (Tabassum et al., 2023). Recently, one study conducted in Bangladesh among stroke caregivers found that most (92.8%) caregivers reported severe burdens (Haq et al., 2024).

The level of perceived social support among family caregivers of lung cancer patients was very low. This finding is consistent with a study conducted in Punjab among family caregivers of cancer patients (Maheshwari Preksha & Kaur, 2016), even though this finding is inconsistent with a previous study among caregivers of patients with gynecologic cancer (Aksu & Erenel, 2021). The variations in the findings might be attributed to differences among the countries and sociodemographic characteristics of caregivers.

Approximately 40% of family caregivers of lung cancer patients reported experiencing a severe level of depression. The present study's findings support a previous study in Iran, which focused on lung cancer patients, where about 46% of family caregivers experienced a high level of depression (Karimi Moghaddam et al., 2023). Additionally, a study conducted in Greece reported that lung cancer caregivers had a higher level of depression compared to breast cancer caregivers (Govina et al., 2019). However, there is no specific study that has assessed depression among cancer caregivers in Bangladesh.

6.2. Factors contributing to QoL of caregivers of lung cancer patients in Bangladesh

The present study identified caregiving burden and social support as major contributing factors of the QoL of family caregivers of lung cancer patients in Bangladesh. Caregiving burden negatively contributed to QoL of lung cancer caregivers. The present study findings supported a recent study conducted in Turkey, which reported lung cancer caregiving burden as having negative contributed to QoL of caregivers (Erbay Dalli & Bulut, 2024). Similarly the finding was consistent with previous study which was conducted in Iran among cancer caregivers (Abbasi et al., 2020), and Chinses family caregivers of cancer patients (Cui et al., 2024). Zhu et al. (2022) suggested providing perioperative support for caregivers of early-stage lung cancer patients might alleviate psychological distress of caregivers (Zhu et al., 2022). Healthcare professionals, especially oncology nurses, could play a key role in providing psychological support to reduce caregiving burden and improve the QoL of caregivers of cancer patients undergoing treatment for the disease.

The present study found that social support has a significant positive impact on the quality of life (QoL) of caregivers of cancer patients. This finding is consistent with prior studies among cancer caregivers, which also found that social support has a significantly positive impact on their QoL (Butt & Khalid, 2023; Wang et al., 2023). Many previous studies support that the existence of resources, such as support from family and friends, positively impacts the quality of life of caregivers of cancer patients (Burnette et al., 2017; García-Carmona et al., 2021; Hsu et al., 2019)**.** Moreover, the aforementioned study reported that higher perceived social support had a positive effect on caregivers' QoL. A scoping review on social support identified QoL as an outcome for both cancer patients and their informal caregivers (Pasek et al., 2023). Health care professionals could play key roles in enhancing social support for caregivers of cancer patients.

There was no significant contribution of depression on the quality of life (QoL) of caregivers of lung cancer patients in Bangladesh. This result was inconsistent with previous study among cancer caregivers in China, or Taiwan (Kim, 2022; Li et al., 2018; Wen et al., 2019).

The difference in findings may stem from variations in caregivers' understanding, knowledge levels regarding depression, and sociodemographic characteristics. The relationship between depression and QoL of family caregivers of cancer patients needs further study, which could help develop strategies to improve their QoL.

Although current study found statistically significant association between caregivers' characteristics (including education level, monthly family income, and residence and duration of care giving) and QoL, the final regression analysis demonstrated these factors as not significantly contributing to QoL. This finding contrasts with a previous study among cancer caregivers, which found that QoL was influenced by factors such as caregivers’ residence (rural area), low education level, duration of care, marital status, employment status, and relationship with patients (Rooeintan et al., 2023).

The above discussion recommends further evaluation of the identified contributing factors related to the QoL of caregivers of cancer patients in Bangladesh.

6.3. Limitations of the study

There are limitations in this study. First, as this was a cross-sectional survey, we cannot infer causality or the long-term effects of caregiving burden, social support, and depression on the QoL of family caregivers of lung cancer patients**.** Second, the study was conducted in urban areas of Bangladesh, whereas most caregivers come from rural areas because the site for data collection was a government specialized cancer hospital. Third, the study was conducted in a single government hospital**,** so the results may not be generalizable to private hospitals or general hospitals in other settings in Bangladesh, where cancer treatment costs are higher than in government hospitals. Finally, this study employed instruments originally developed in Western countries. This could have been a barrier to exploring factors contributing to the QoL of caregivers of cancer patients in Bangladesh**.**

6.4. Significance of the study

It is noteworthy that this was the first study to evaluate the relationships among the QoL of caregivers, caregiving burden, social support, and depression**,** and to identify the factors contributing to QoL among family caregivers of lung cancer patients in Bangladesh. The study found that caregiving burden negatively impacts QoL, whereas social support positively impacts QoL among lung cancer patients in Bangladesh**.** Factors associated with QoL include the education level of caregivers, residence in rural areas**,** low-income status, and longer duration of caregiving**.** These findings could provide a basis for healthcare practitioners and policymakers to address the burden on family caregivers, improve social support, and account for demographic factors contributing to the QoL of caregivers of cancer patients**.**

6.4.1. Implication to Nursing education

The study results could be shared with the Bangladesh Nursing and Midwifery Council (BNMC), which designs the nursing curriculum, to incorporate basic content related to family caregiving. This may include training on evaluating assessing caregiving burden and providing social support. Nursing students need to learn how to recognize signs of caregiving burden and offer the necessary support to enhance the well-being of patients and caregivers, while also understanding the socio-economic backgrounds of Bangladeshi caregivers.

6.4.2. Implication to Nursing practice

This study identified factors associated with the QoL of caregivers of lung cancer patients in Bangladesh. Caregiving burden negatively impacts QoL, whereas social support positively impacts QoL. The results of this study can serve as a blueprint for creating health interventions for caregivers. Healthcare professionals, especially nurses who play a vital role in patient care and in educating family caregivers, can implement these findings in their practice.

6.4.3. Implication to Nursing research

The study included family members who were taking care of lung cancer patients in Bangladesh. The study's findings should serve as important research evidence for improving patient care, particularly for family caregivers who play a vital role in caring for cancer survivors. Future research should focus on designing and assessing intervention programs aimed at reducing caregiving burden and enhancing social support to improve the QoL of family caregivers of cancer patients in Bangladesh**.** Moreover, it is important for future research to explore how health policies affect the well-being of caregivers.

Considering the importance of nursing education and research in Bangladesh, these areas can play a key role in enhancing the QoL for family caregivers of lung cancer patients by addressing their immediate and long-term needs.

6.5. Recommendations for future studies

This study delivers a significant and inclusive understanding of factors contributing to the QoL of family caregivers of lung cancer patients, however, there still exist abundant gaps in the literature that require more research. Additional research exploring different samples, such as caregivers of other types of cancer could provide insights into the broader context of QoL among caregivers**.** Future studies should aim to deepen our understanding of factors influencing caregivers' QoL and explore mechanisms for developing interventions**.** This study used the caregiver QoL scale originally developed in a Western context and translated for use in Bangladesh**.** Psychometric testing of the instrument in the Bangladesh context would provide a validated instrument for use. Developing interventions, such as reducing caregiving burden and enhancing social support to improve caregiver QoL**,** would be the next step. Longitudinal studies evaluating the impact of these interventions on caregiver QoL could provide further insight.

VII. CONCLUSION

This was the first study on family caregivers of lung cancer patients hospitalized in Bangladesh. Social support demonstrated a positive contribution to the QoL, whereas caregiving burden had a negative impact on the QoL of family caregivers of lung cancer patients**.** Enhancing social support and providing interventions targeting caregiving burden would contribute to improving the QoL of family caregivers of lung cancer patients. This study will contribute to developing culturally suitable interventions for family caregivers of lung cancer patients in Bangladesh. It will guide healthcare professionals and policymakers in understanding the key factors contributing to the QoL of caregivers of lung cancer patients and how to promote their QoL.

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APPENDICES

Appendix 1. Caregiver’s QOL: Item response

#	Items	Not at all 0	A little 1	Some what 2	Quite a lot 3	Very Much 4	Mean ± SD
		n (%)					
Physical wellbeing							
1	More ache and pain due to caregiving. *	1 (0.5)	11 5.3)	20 (9.8)	98 (47.8)	75 (36.6)	3.15 ±0.83
2	Poor appetite*.	1 (0.5)	5.4 (5.4)	21 (10.2)	96 (46.8)	76 (37.1)	3.15 ±0.85
3	Body weakened. *	8 (3.9)	21 (10.2)	93 (45.4)	83 (40.5)	0 (0.0)	3.22 ±0.79
Mental wellbeing							
1	Fearful of losing my family member *	0 (0.0)	10 (4.9)	15 (7.3)	56 (27.3)	124 (60.5)	3.43 ±0.83
2	Feel sad *	2 (1.0)	8 (3.9)	23 (11.2)	107 (52.2)	65 (31.7)	3.10 ±0.82
3	Feel frustrated. *	0 (0.0)	13 (6.4)	14 (6.8)	88 (42.9)	90 (43.9)	3.24 ±0.84
Experience and meaning							
1	I appreciate the positive occurrences in my life, even during challenging moments	11 (5.4)	123 (60.0)	43 (21.0)	21 (10.2)	7 (3.4)	1.46 ±0.88
2	I have encountered beneficial Transformations in my life (such as spending quality time with loved ones or) lessons learnt).	11 (5.4)	102 (49.8)	56 (27.3)	23 (11.2)	13 (6.3)	1.63 ±0.97

#	Items	Not at all 0	A little 1	Some what 2	Quite a lot 3	Very Much 4	Mean ± SD
				n (%)			
3	Care of my ill family member has brought the family closer.	9 (4.4)	111 (54.1)	60 (29.3)	13 (6.3)	12 (5.9)	1.55 ±.90
4	Led to me being Valued by other family members.	5 (2.4)	88 (42.9)	76 (37.1)	24 (11.7)	12 (5.9)	1.76 ±0.91
Impact of daily life							
1	Bothered because I cannot leave home or hospital*	3 (1.5)	9 (4.4)	29 (14.1)	107 (52.2)	57 (27.8)	3.00 ±0.86
2	Bothered that I have no time for recreation*	5 (2.4)	19 (9.3)	24 (11.7)	99 (48.3)	58 (28.3)	2.91 ±0.99
3	Not able to do what I want*	0 (0.0)	8 (3.9)	20 (9.8)	97 (47.3)	80 (39.0)	3.21 ±0.76
Financial well being							
1	Sick family member's condition is reducing savings*	0 (0.0)	4 (2.0)	14 (6.8)	29 (14.1)	158 (77.1)	3.66 ±0.69
2	Uncertain about future financial condition*	0 (0.0)	2 (1.0)	18 (8.8)	25 (12.2)	160 (78.0)	3.67 ±0.68
Total means of QoL						**14.64 ± 7.61**	

*Note *reversed for total score calculation*

Appendix 2. Caregiving burden: item response

#	Items	Never 0	Rarely 1	Some time 2	Frequently 3	Nearly always 4	Mean ± SD
				n (%)			
1	Feel that your patients ask for more help she needs?	1 (0.5)	3 (1.5)	25 (12.2)	96 (46.8)	80 (39.0)	3.22 ±0.75
2	Feel that because of the time you spend that you don't have enough time for yourself?	0 (0.0)	2 (0.9)	12 (5.9)	100 (48.8)	91 (44.4)	3.37 ±0.64
3	Feel stressed between caring patients and trying to see other responsibilities	0 (0.0)	1 (0.5)	7 (3.4)	60 (29.3)	167 (66.8)	3.62 ±0.58
4	Feel embarrassed over your relative’s behavior?	1 (0.5)	5 (2.4)	42 (20.5)	97 (47.3)	60 (29.3)	3.02 ±0.80
5	Feel angry when around your patients?	1 (0.5)	9 (4.4)	61 (29.7)	65 (31.7)	69 (33.7)	2.94 ±0.92
6	Patients currently affects your relationship with other family members or friends in a negative way	0 (0.0)	4 (2.0)	23 (11.2)	82 (40.0)	96 (46.8)	3.32 ±0.75
7	Afraid the future grips for your patients?	0 (0.0)	1 (0.5)	8 (3.9)	40 (19.5)	156 (76.1)	3.71 ±0.56
8	Feel your patients is dependent upon you?	0 (0.0)	2 (0.9)	10 (4.9)	93 (45.4)	100 (48.8)	3.43 ±0.61
9	Feel strained when around your relative?	0 (0.0)	2 (0.9)	9 (4.4)	61 (29.8)	133 (64.9)	3.59 ±0.63

#	Items	Never 0	Rarely 1	Some time 2	Frequently 3	Nearly always 4	Mean ± SD
				n (%)			
10	Feel your health has suffered because of your involvement 'with your patients?	0 (0.0)	4 (1.9)	17 (8.3)	91 (44.4)	93 (45.4)	3.33 ±.71
11	Feel that you don't have as much privacy like, because of your patients?	0 (0.0)	5 (2.4)	16 (7.8)	95 (46.4)	89 (43.4)	3.31 ±0.71
12	Feel that your social life has suffered because you are caring for your relative?	0 (0.0)	2 (1.0)	13 (6.3)	101 (49.3)	89 (43.4)	3.35 ±0.64
13	Feel uncomfortable about having friends over, because of your patients?	3 (1.5)	2 (0.9)	9 (4.4)	84 (41.0)	107 (52.2)	3.41 ±0.75
14	Feel that patients seem to expect you to take care she could depend on?	0 (0.0)	1 (0.5)	10 (4.9)	93 (45.3)	101 (49.3)	3.42 ±0.63
15	Feel that you don't have enough money to care for patients, in addition to the rest of your expenses?	1 (0.5)	1 (0.5)	6 (2.9)	55 (26.8)	142 (69.3)	3.64 ±0.62
16	Feel that you will be unable to take care of your patients much longer?	0 (0.0)	5 (2.4)	36 (17.6)	93 (45.4)	71 (34.6)	3.12 ±0.78

#	Items	Never 0	Rarely 1	Sometime 2	Frequently 3	Nearly always 4	Mean ± SD
				n (%)			
17	Feel you have lost control of your life since your patients' illness?	0 (0.0)	5 (2.4)	23 (11.2)	92 (44.9)	85 (41.5)	3.25 ±0.75
18	Wish just leave the care of your patients to someone else?	2 (1.0)	6 (2.9)	27 (13.2)	90 (43.9)	80 (39.0)	3.17 ±0.84
19	Feel uncertain about what to do about your patients?	0 (0.0)	1 (0.5)	8 (3.9)	62 (30.2)	134 (65.4)	3.60 ±0.59
20	Feel you should be doing more for your patients?	0 (0.0)	2 (0.9)	20 (9.8)	93 (45.4)	90 (43.9)	3.32 ±0.69
21	Feel you could do a better job in caring for your patients?	0 (0.0)	0 (0.0)	24 (11.7)	88 (42.9)	93 (45.4)	3.34 ±0.68
22	Overall, how burdened feel in caring for your patients?	0 (0.0)	7 (3.4)	12 (5.9)	63 (30.7)	123 (60.0)	3.47 ±.76
	Total mean of burden						**73.97±9.48**

Appendix 3. Social support: item response

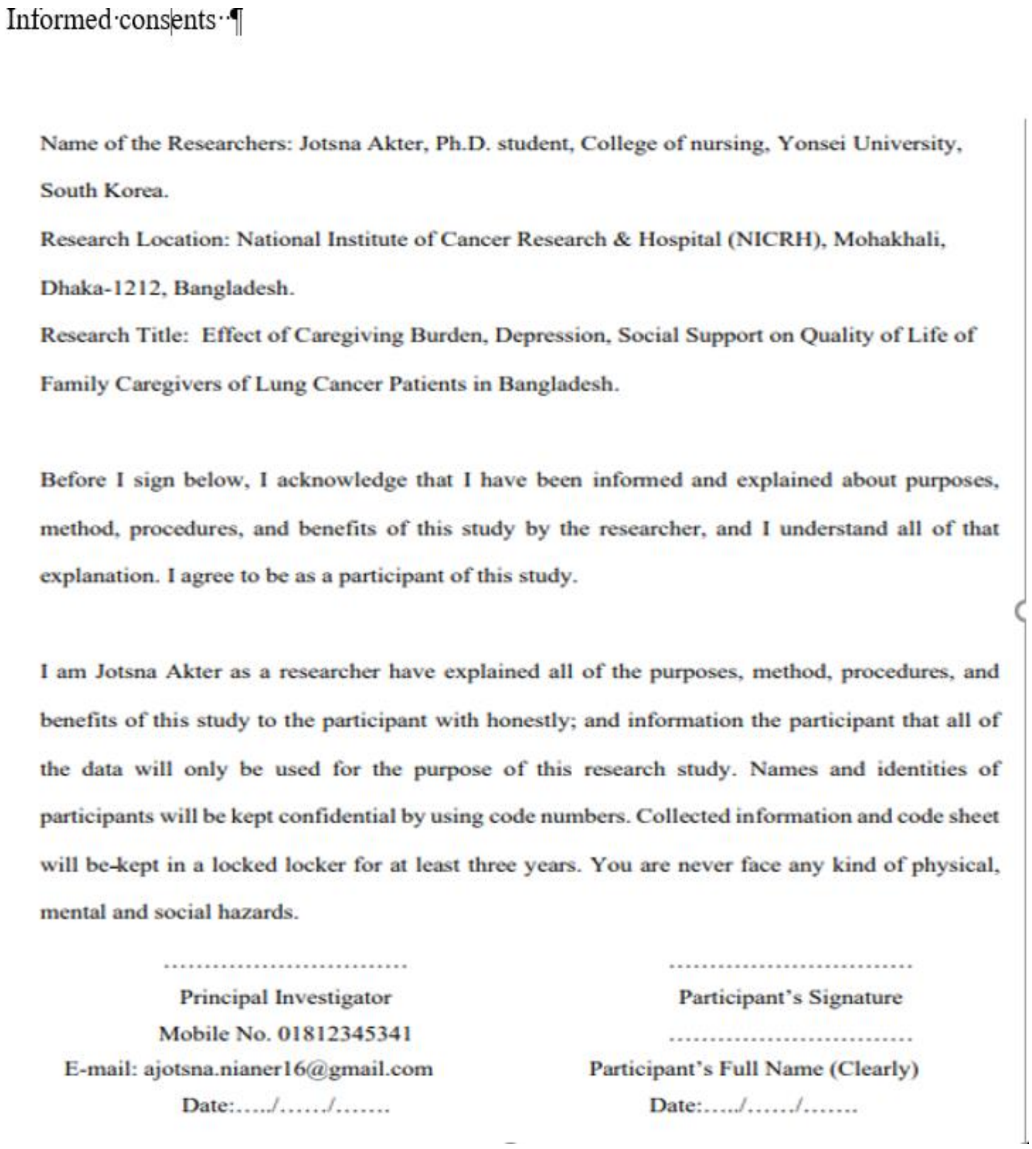
#	Items	Strongly disagree 1	Mildly disagree 2	Neutral 3 n (%)	Mildly agree 4	Strongly agree 5	Mean ± SD
1	Special person around when I am in need	140 (68.3)	50 (24.4)	14 (6.8)	1 (0.5)	0 (0.0)	1.40 ± **0**.64
2	Special person I can share joys and sorrows	143 (69.8)	52 (25.3)	10 (4.9)	0 (0.0)	0(0.0)	1.35 ±0.57
3	Family really tries to help me.	137 (66.8)	53 (25.9)	14 (6.8)	1 (0.5)	0 (0.0)	1.41 ±0.64
4	Got emotional help & support from my family	118 (57.5)	67 (32.7)	17 (8.3)	3 (1.5)	0 (0.0)	1.54 ±0.71
5	Special person who is source of comfort	141 (68.8)	57 (27.8)	7 (3.4)	0 (0.0)	0 (0.0)	1.35 ±0.54
6	Friends really try to help me	139 (67.8)	58 (28.3)	8 (3.9)	0 (0)	0 (0)	1.36 ±0.56
7	My friends when things go wrong.	138 (67.3)	60 (29.3)	7 (3.4)	0 (0.0)	0 (0.0)	1.36 ±0.55
8	Talk about my problems with my family.	126 (61.5)	56 (27.3)	20 (9.7)	3 (1.5)	0 (0.0)	1.51 ±0.73
9	Friends with I can share my joys and sorrows.	148 (72.2)	52 (25.4)	5 (2.4)	0 (0.0)	0 (0.0)	1.30 ±0.51
10	Special person in my life who cares about my feelings.	132 (64.4)	65 (31.7)	8 (3.9)	0 (0.0)	0 (0.0)	1.40 ±0.56
11	Family is willing to help me make decisions.	126 (61.5)	55 (26.8)	23 (11.2)	1 (0.5)	0 (0.0)	1.51 ±0.71
12	I can talk about my problems with my friends.	136 (66.3)	57 (27.8)	12 (5.9)	0 (0.0)	0 (0.0)	1.4 ±0.60
	Total mean of social support						**16.87±4.60**

Note-family support. # 3,4, 8, &11, friend support # 6, 7, 9, & 12, support from significant others 1, 2, 5, &10

Appendix 4. Depression: item response

#	Items	Never 0	Sometimes 1	Frequently 2	Nearly always 3	Mean ±SD
		n (%)	n (%)	n (%)	n (%)	
1	Sadness	2(1.0)	64(31.2)	100(48.8)	39(19.0)	1.86±0.72
2	Pessimism	6(2.9)	67(32.7)	82(40.0)	50(24.4)	1.86±0.82
3	Failure	13(6.3)	58(28.3)	89(43.4)	45(22.0)	1.81±0.85
4	Loss of pleasure	2(1.0)	61(29.7)	74(36.1)	68(33.2)	2.01±0.82
5	Feeling of guilty	16(7.8)	68(33.2)	66(32.2)	55(26.8)	1.78±0.93
6	Feeling of punishment	19(9.3)	44(21.4)	52(25.4)	90(43.9)	2.04±1.01
7	Disconformity with oneself	10(4.9)	51(24.9)	108(52.7)	36(17.5)	1.83±0.77
8	Self-criticism	13(6.3)	58(28.3)	85(41.5)	49(23.9)	1.83±0.86
9	Suicidal tendency	122(59.5)	75(36.6)	5(2.4)	3(1.5)	0.46±0.62
10	Crying	10(4.9)	53(25.9)	66(32.2)	76(37.1)	2.01±0.91
11	Agitation	3(1.5)	76(37.1)	63(30.7)	63(30.7)	1.91±0.86
12	Loss of interest	2(1.0)	50(24.4)	88(42.9)	65(31.7)	2.05±0.77
13	Indecision	2(1.0)	47(22.9)	95(46.3)	61(29.8)	2.05±0.75
14	Devaluation	14(6.8)	60(29.3)	80(39.0)	51(24.9)	1.82±0.89
15	Loss of energy	1(0.5)	53(25.9)	86(41.9)	65(31.7)	2.05±0.77
16	Changes in sleeping	0(0.0)	50(24.4)	80(39.0)	75(36.6)	2.12±0.77
17	Irritability	2(1.0)	57(27.8)	81(39.5)	65(31.7)	2.02±0.80
18	Changes in appetite	1(0.5)	35(17.1)	114(55.6)	55(26.8)	2.09±0.67
19	Difficulties in Concentration	2(1.0)	53(25.8)	89(43.4)	61(29.8)	2.02±0.77
20	Tiredness or fatigue	0(0.0)	62(30.3)	79(38.5)	64(31.2)	2.00±0.79
21	Loss of sexual interest	54(26.3)	74(36.1)	34(16.6)	43(21.0)	1.32±1.08
			Total mean of depression		**38.95± 12.71**	

Appendix 5. Informed consents and study explanation in English



Informed consents

Name of the Researchers: Jotsna Akter, Ph.D. student, College of nursing, Yonsei University, South Korea.

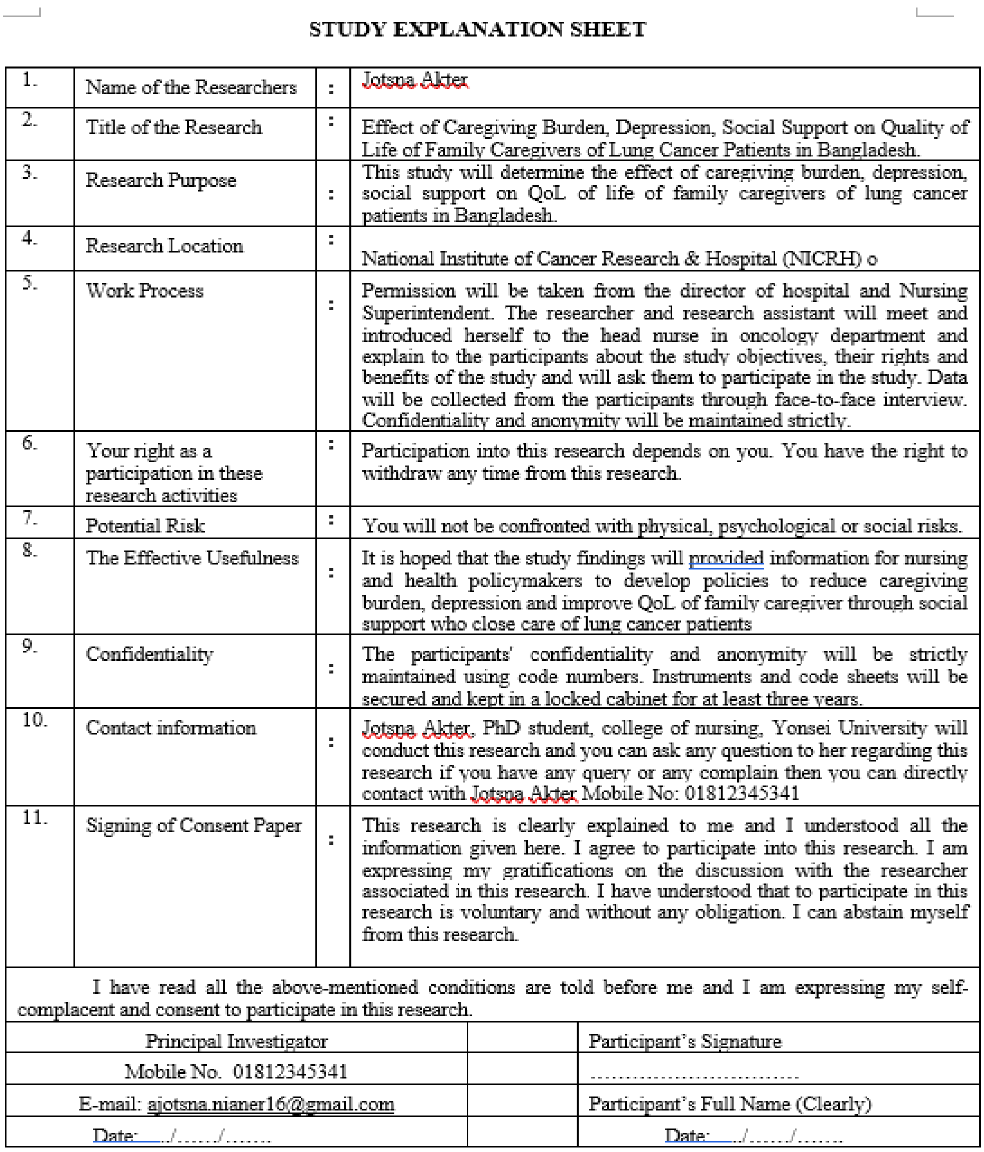
Research Location: National Institute of Cancer Research & Hospital (NICRH), Mohakhali, Dhaka-1212, Bangladesh.

Research Title: Effect of Caregiving Burden, Depression, Social Support on Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh.

Before I sign below, I acknowledge that I have been informed and explained about purposes, method, procedures, and benefits of this study by the researcher, and I understand all of that explanation. I agree to be as a participant of this study.

I am Jotsna Akter as a researcher have explained all of the purposes, method, procedures, and benefits of this study to the participant with honestly; and information the participant that all of the data will only be used for the purpose of this research study. Names and identities of participants will be kept confidential by using code numbers. Collected information and code sheet will be-kept in a locked locker for at least three years. You are never face any kind of physical, mental and social hazards.

....	....
Principal Investigator	Participant's Signature
Mobile No. 01812345341	....
E-mail: ajotsna.nianer16@gmail.com	Participant's Full Name (Clearly)
Date:…../……/…….	Date:…../……/…….



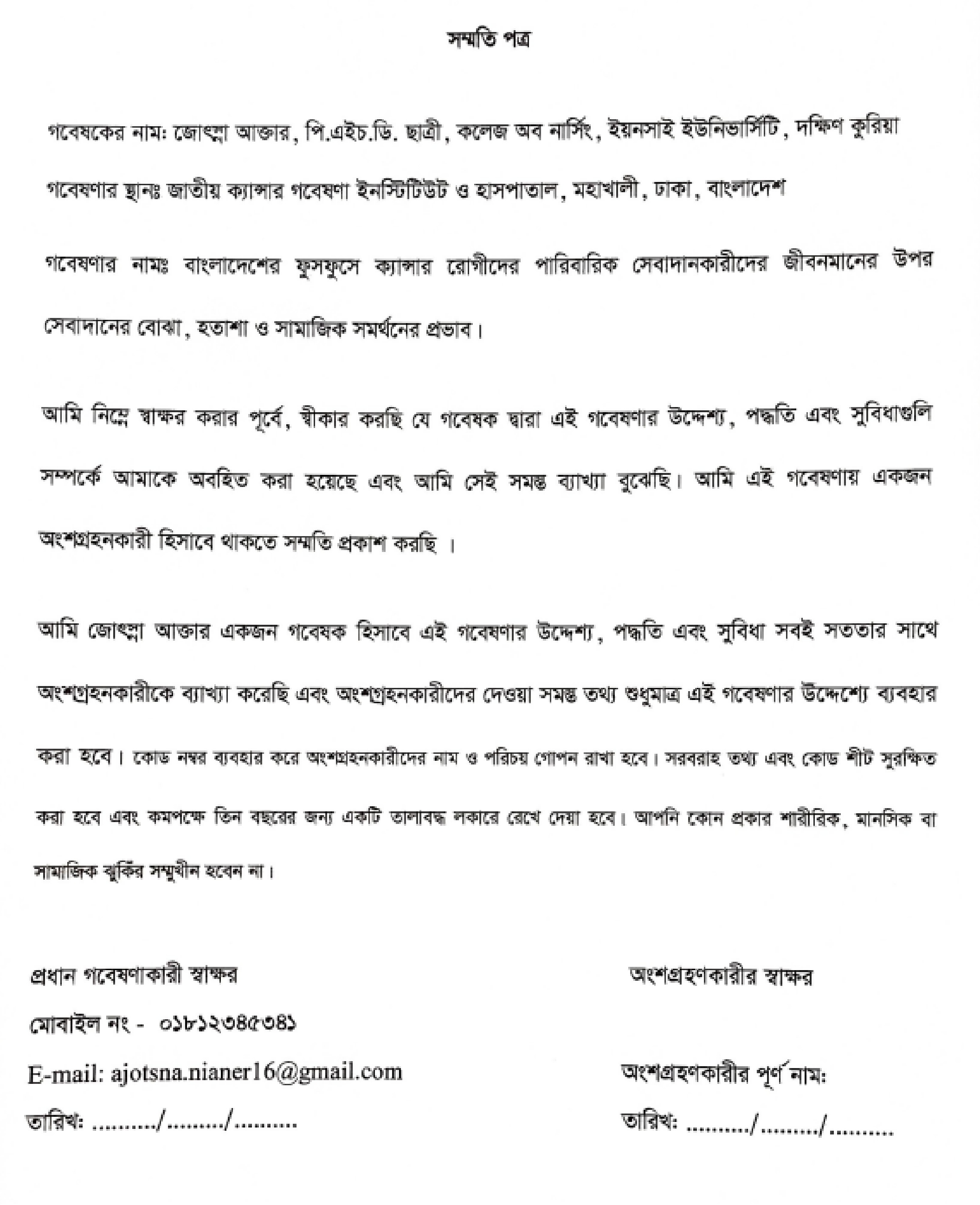
STUDY EXPLANATION SHEET

1.	Name of the Researchers	:	Jotsna Akter
2.	Title of the Research	:	Effect of Caregiving Burden, Depression, Social Support on Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh.
3.	Research Purpose	:	This study will determine the effect of caregiving burden, depression, social support on QoL of life of family caregivers of lung cancer patients in Bangladesh.
4.	Research Location	:	National Institute of Cancer Research & Hospital (NICRH) o
5.	Work Process	:	Permission will be taken from the director of hospital and Nursing Superintendent. The researcher and research assistant will meet and introduced herself to the head nurse in oncology department and explain to the participants about the study objectives, their rights and benefits of the study and will ask them to participate in the study. Data will be collected from the participants through face-to-face interview. Confidentiality and anonymity will be maintained strictly.
6.	Your right as a participation in these research activities	:	Participation into this research depends on you. You have the right to withdraw any time from this research.
7.	Potential Risk	:	You will not be confronted with physical, psychological or social risks.
8.	The Effective Usefulness	:	It is hoped that the study findings will provided information for nursing and health policymakers to develop policies to reduce caregiving burden, depression and improve QoL of family caregiver through social support who close care of lung cancer patients
9.	Confidentiality	:	The participants' confidentiality and anonymity will be strictly maintained using code numbers. Instruments and code sheets will be secured and kept in a locked cabinet for at least three years.
10.	Contact information	:	Jotsna Akter, PhD student, college of nursing, Yonsei University will conduct this research and you can ask any question to her regarding this research if you have any query or any complain then you can directly contact with Jotsna Akter Mobile No: 01812345341
11.	Signing of Consent Paper	:	This research is clearly explained to me and I understood all the information given here. I agree to participate into this research. I am expressing my gratifications on the discussion with the researcher associated in this research. I have understood that to participate in this research is voluntary and without any obligation. I can abstain myself from this research.

I have read all the above-mentioned conditions are told before me and I am expressing my self-complacent and consent to participate in this research.

Principal Investigator		Participant's Signature
Mobile No. 01812345341		....
E-mail: ajotsna.nianer16@gmail.com		Participant's Full Name (Clearly)
Date: ../....../.......		Date: ../....../.......

Appendix 6. Informed consents and study explanation in Bangla



সম্মতি পত্র

গবেষকের নামঃ জোৎস্না আক্তার, পি.এইচ.ডি. ছাত্রী, কলেজ অব নার্সিং, ইয়নসাই ইউনিভার্সিটি, দক্ষিণ কুরিয়া

গবেষণার স্থানঃ জাতীয় ক্যান্সার গবেষণা ইনস্টিটিউট ও হাসপাতাল, মহাখালী, ঢাকা, বাংলাদেশ

গবেষণার নামঃ বাংলাদেশের ফুসফুসে ক্যান্সার রোগীদের পারিবারিক সেবাদানকারীদের জীবনমানের উপর সেবাদানের বোঝা, হতাশা ও সামাজিক সমর্থনের প্রভাব।

আমি নিম্নে স্বাক্ষর করার পূর্বে, স্বীকার করছি যে গবেষক দ্বারা এই গবেষণার উদ্দেশ্য, পদ্ধতি এবং সুবিধাগুলি সম্পর্কে আমাকে অবহিত করা হয়েছে এবং আমি সেই সমস্ত ব্যাখ্যা বুঝেছি। আমি এই গবেষণায় একজন অংশগ্রহনকারী হিসাবে থাকতে সম্মতি প্রকাশ করছি ।

আমি জোৎস্না আক্তার একজন গবেষক হিসাবে এই গবেষণার উদ্দেশ্য, পদ্ধতি এবং সুবিধা সবই সততার সাথে অংশগ্রহনকারীকে ব্যাখ্যা করেছি এবং অংশগ্রহনকারীদের দেওয়া সমস্ত তথ্য শুধুমাত্র এই গবেষণার উদ্দেশ্যে ব্যবহার করা হবে। কোড নম্বর ব্যবহার করে অংশগ্রহনকারীদের নাম ও পরিচয় গোপন রাখা হবে। সরবরাহ তথ্য এবং কোড শীট সুরক্ষিত করা হবে এবং কমপক্ষে তিন বছরের জন্য একটি তালাবদ্ধ লকারে রেখে দেয়া হবে। আপনি কোন প্রকার শারীরিক, মানসিক বা সামাজিক ঝুঁকির সম্মুখীন হবেন না।

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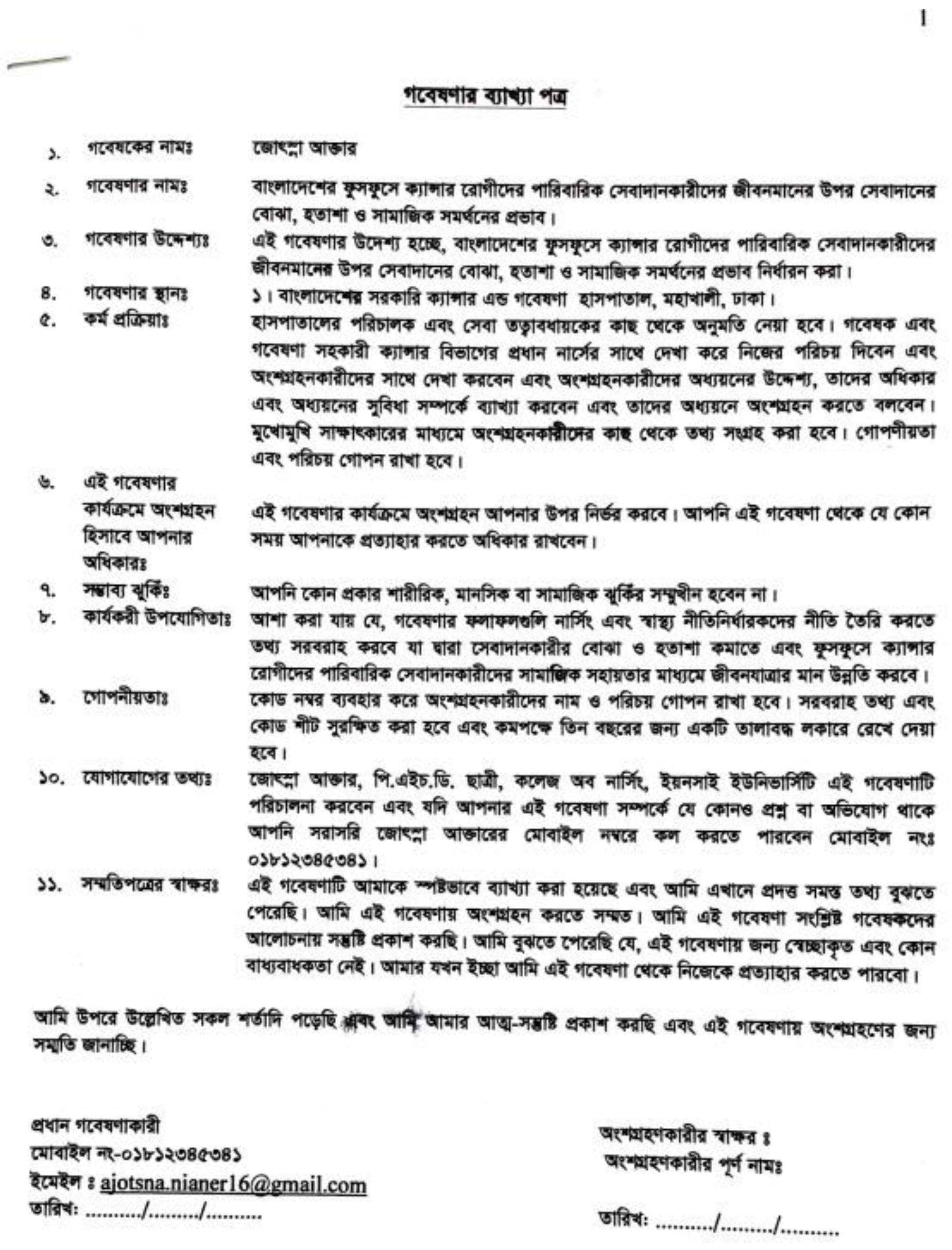
তারিখঃ ..../........./..........

অংশগ্রহণকারীর স্বাক্ষর

অংশগ্রহণকারীর পূর্ণ নামঃ
তারিখঃ ..../........./..........



গবেষণার ব্যাখ্যা পত্র

১.	গবেষকের নামঃ	জোৎস্না আক্তার
২.	গবেষণার নামঃ	বাংলাদেশের ফুসফুসে ক্যান্সার রোগীদের পারিবারিক সেবাদানকারীদের জীবনমানের উপর সেবাদানের বোঝা, হতাশা ও সামাজিক সমর্থনের প্রভাব।
৩.	গবেষণার উদ্দেশ্যঃ	এই গবেষণার উদেশ্য হচ্ছে, বাংলাদেশের ফুসফুসে ক্যান্সার রোগীদের পারিবারিক সেবাদানকারীদের জীবনমানের উপর সেবাদানের বোঝা, হতাশা ও সামাজিক সমর্থনের প্রভাব নির্ধারন করা।
৪.	গবেষণার স্থানঃ	১। বাংলাদেশের সরকারি ক্যান্সার এন্ড গবেষণা হাসপাতাল, মহাখালী, ঢাকা।
৫.	কর্ম প্রক্রিয়াঃ	হাসপাতালের পরিচালক এবং সেবা তত্ত্বাবধায়কের কাছ থেকে অনুমতি নেয়া হবে। গবেষক এবং গবেষণা সহকারী ক্যান্সার বিভাগের প্রধান নার্সের সাথে দেখা করে নিজের পরিচয় দিবেন এবং অংশগ্রহনকারীদের সাথে দেখা করবেন এবং অংশগ্রহনকারীদের অধ্যয়নের উদ্দেশ্য, তাদের অধিকার এবং অধ্যয়নের সুবিধা সম্পর্কে ব্যাখ্যা করবেন এবং তাদের অধ্যয়নে অংশগ্রহন করতে বলবেন। মুখোমুখি সাক্ষাৎকারের মাধ্যমে অংশগ্রহনকারীদের কাছ থেকে তথ্য সংগ্রহ করা হবে। গোপণীয়তা এবং পরিচয় গোপন রাখা হবে।
৬.	এই গবেষণার কার্যক্রমে অংশগ্রহন হিসাবে আপনার অধিকারঃ	এই গবেষণার কার্যক্রমে অংশগ্রহন আপনার উপর নির্ভর করবে। আপনি এই গবেষণা থেকে যে কোন সময় আপনাকে প্রত্যাহার করতে অধিকার রাখবেন।
৭.	সম্ভাব্য ঝুঁকিঃ	আপনি কোন প্রকার শারীরিক, মানসিক বা সামাজিক ঝুঁকির সম্মুখীন হবেন না।
৮.	কার্যকরী উপযোগিতাঃ	আশা করা যায় যে, গবেষণার ফলাফলগুলি নার্সিং এবং স্বাস্থ্য নীতিনির্ধারকদের নীতি তৈরি করতে তথ্য সরবরাহ করবে যা দ্বারা সেবাদানকারীর বোঝা ও হতাশা কমাতে এবং ফুসফুসে ক্যান্সার রোগীদের পারিবারিক সেবাদানকারীদের সামাজিক সহায়তার মাধ্যমে জীবনযাত্রার মান উন্নতি করবে।
৯.	গোপনীয়তাঃ	কোড নম্বর ব্যবহার করে অংশগ্রহনকারীদের নাম ও পরিচয় গোপন রাখা হবে। সরবরাহ তথ্য এবং কোড শীট সুরক্ষিত করা হবে এবং কমপক্ষে তিন বছরের জন্য একটি তালাবদ্ধ লকারে রেখে দেয়া হবে।
১০.	যোগাযোগের তথ্যঃ	জোৎস্না আক্তার, পি.এইচ.ডি. ছাত্রী, কলেজ অব নার্সিং, ইয়নসাই ইউনিভার্সিটি এই গবেষণাটি পরিচালনা করবেন এবং যদি আপনার এই গবেষণা সম্পর্কে যে কোনও প্রশ্ন বা অভিযোগ থাকে আপনি সরাসরি জোৎস্না আক্তারের মোবাইল নম্বরে কল করতে পারবেন মোবাইল নংঃ ০১৮১২৩৪৫৩৪১।
১১.	সম্মতিপত্রের স্বাক্ষরঃ	এই গবেষণাটি আমাকে স্পষ্টভাবে ব্যাখ্যা করা হয়েছে এবং আমি এখানে প্রদত্ত সমস্ত তথ্য বুঝতে পেরেছি। আমি এই গবেষণায় অংশগ্রহন করতে সম্মত। আমি এই গবেষণা সংশ্লিষ্ট গবেষকদের আলোচনায় সন্তুষ্টি প্রকাশ করছি। আমি বুঝতে পেরেছি যে, এই গবেষণায় জন্য স্বেচ্ছাকৃত এবং কোন বাধ্যবাধকতা নেই। আমার যখন ইচ্ছা আমি এই গবেষণা থেকে নিজেকে প্রত্যাহার করতে পারবো।

আমি উপরে উল্লেখিত সকল শর্তাদি পড়েছি এবং আমি আমার আত্ম-সন্তুষ্টি প্রকাশ করছি এবং এই গবেষণায় অংশগ্রহণের জন্য সম্মতি জানাচ্ছি।

প্রধান গবেষণাকারী
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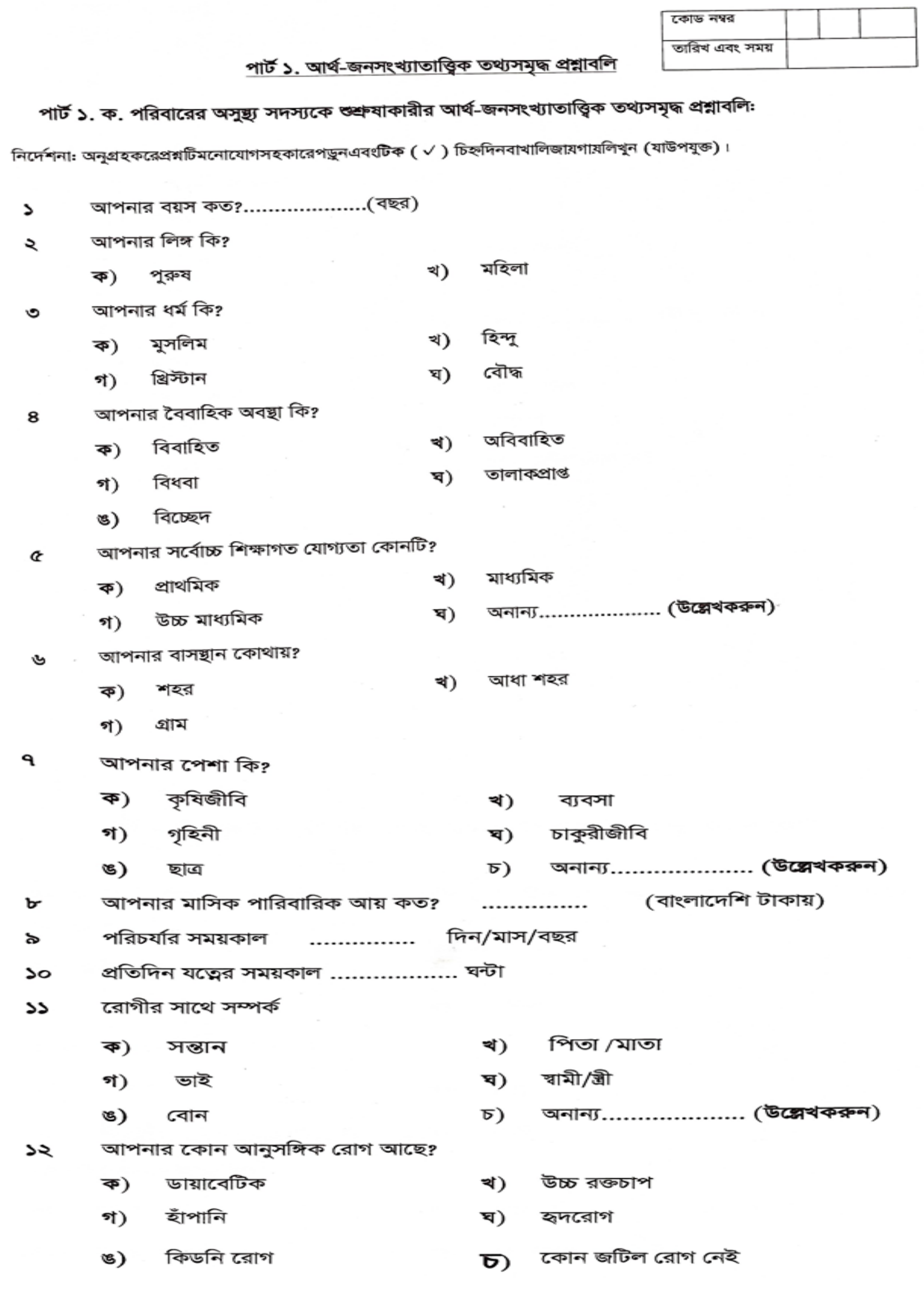
ইমেইল ঃ ajotsna.nianer16@gmail.com
তারিখ: ………/………/……….

অংশগ্রহণকারীর স্বাক্ষর ঃ
অংশগ্রহণকারীর পূর্ণ নামঃ

তারিখ: ………/………/……….

Appendix 7. Questionnaires Bangla



কোড নম্বর			
তারিখ এবং সময়			

পার্ট ১. আর্থ-জনসংখ্যাতাত্ত্বিক তথ্যসমৃদ্ধ প্রশ্নাবলি

পার্ট ১. ক. পরিবারের অসুস্থ্য সদস্যকে শুশ্রূষাকারীর আর্থ-জনসংখ্যাতাত্ত্বিক তথ্যসমৃদ্ধ প্রশ্নাবলি:

নির্দেশনা: অনুগ্রহকরেপ্রশ্নটিমনোযোগসহকারেপড়ুনএবংটিক (✓) চিহ্নদিনবাখালিজায়গায়লিখুন (যাউপযুক্ত) ।

১ আপনার বয়স কত?....................(বছর)

২ আপনার লিঙ্গ কি?
ক) পুরুষ
খ) মহিলা

৩ আপনার ধর্ম কি?
ক) মুসলিম
খ) হিন্দু
গ) খ্রিস্টান
ঘ) বৌদ্ধ

৪ আপনার বৈবাহিক অবস্থা কি?
ক) বিবাহিত
খ) অবিবাহিত
গ) বিধবা
ঘ) তালাকপ্রাপ্ত
ঙ) বিচ্ছেদ

৫ আপনার সর্বোচ্চ শিক্ষাগত যোগ্যতা কোনটি?
ক) প্রাথমিক
খ) মাধ্যমিক
গ) উচ্চ মাধ্যমিক
ঘ) অনান্য.................... **(উল্লেখকরুন)**

৬ আপনার বাসস্থান কোথায়?
ক) শহর
খ) আধা শহর
গ) গ্রাম

৭ আপনার পেশা কি?
ক) কৃষিজীবি
খ) ব্যবসা
গ) গৃহিনী
ঘ) চাকুরীজীবি
ঙ) ছাত্র
চ) অনান্য..................... **(উল্লেখকরুন)**

৮ আপনার মাসিক পারিবারিক আয় কত? .... (বাংলাদেশি টাকায়)

৯ পরিচর্যার সময়কাল .... দিন/মাস/বছর

১০ প্রতিদিন যত্নের সময়কাল .... ঘন্টা

১১ রোগীর সাথে সম্পর্ক
ক) সন্তান
খ) পিতা /মাতা
গ) ভাই
ঘ) স্বামী/স্ত্রী
ঙ) বোন
চ) অনান্য..................... **(উল্লেখকরুন)**

১২ আপনার কোন আনুসঙ্গিক রোগ আছে?
ক) ডায়াবেটিক
খ) উচ্চ রক্তচাপ
গ) হাঁপানি
ঘ) হৃদরোগ
ঙ) কিডনি রোগ
চ) কোন জটিল রোগ নেই

পার্ট ১. খ. ফুসফুসে ক্যান্সার রোগীর আর্থ-জনসংখ্যাতাত্ত্বিক তথ্যসমৃদ্ধ প্রশ্নাবলি

নির্দেশনা ঃ অনুগ্রহ করে প্রশ্নটি মনোযোগ সহকারে পড়ুন এবং টিক (✓) চিহ্ন দিন বা খালি জায়গায় লিখুন (যা উপযুক্ত)।

১ আপনার বয়স কত?....................(বছর)

২ আপনার লিঙ্গ কি?

ক) পুরুষ খ) মহিলা

৩ আপনার ধর্ম কি?

ক) মুসলিম খ) হিন্দু
গ) খ্রিস্টান ঘ) বৌদ্ধ

৪ আপনার বৈবাহিক অবস্থা কি?

ক) অবিবাহিত খ) বিবাহিত
গ) বিধবা ঘ) তালাকপ্রাপ্ত
ঙ) বিচ্ছেদ

৫ আপনার সর্বোচ্চ শিক্ষাগত যোগ্যতা কোনটি?

ক) নিরক্ষর খ) প্রাথমিক বিদ্যালয়
গ) মাধ্যমিক ঘ) উচ্চ মাধ্যমিক
ঙ) অনান্য.................... **(উল্লেখ করুন)**

৬ আপনার বাসস্থান কোথায়?

ক) শহর খ) আধা শহর
গ) গ্রাম

৭ আপনার পেশা কি?

ক) কৃষিজীবি খ) ব্যবসা
গ) গৃহিনী ঘ) চাকুরীজীবি
ঙ) ছাত্র চ) অনান্য .... (উল্লেখ করুন)

৮ চিকিৎসা গ্রহনের সময়কাল .... দিন/মাস/বছর ।

৯ আপনি চিকিৎসার জন্য কতবার হাসপাতালে ভর্তি হয়েছেন? ....

১০ কর্মক্ষমতার ধাপ:

ক) গ্রেড- ১ শারীরিকভাবে কঠোর ক্রিয়াকলাপে সীমাবদ্ধ তবে চলন্ত এবং হালকা বা বসে থাকা প্রকৃতির কাজ সম্পাদন করতে সক্ষম, যেমন - হালকা ঘরের কাজ বা আফিসের কাজ ।

খ) গ্রেড- ২ চলাফেরা এবং নিজের সমস্ত যত্ন নিতে সক্ষম কিন্তু কোনো কাজ পরিচালনা করতে অক্ষম, প্রায় ৫০% এর বেশি কাজ করতে সক্ষম ।

গ) গ্রেড- ৩ শুধুমাত্র সীমিত স্ব-যত্ন করতে সক্ষম; কাজের সময়ের ৫০% এর বেশি সময় বিছানা বা চেয়ারে সীমাবদ্ধ ।

ঘ) গ্রেড- ৪ সম্পূর্ণভাবে অক্ষম; নিজের যত্নও করতে পারে না; সম্পূর্ণভাবে বিছানা বা চেয়ারে সীমাবদ্ধ ।

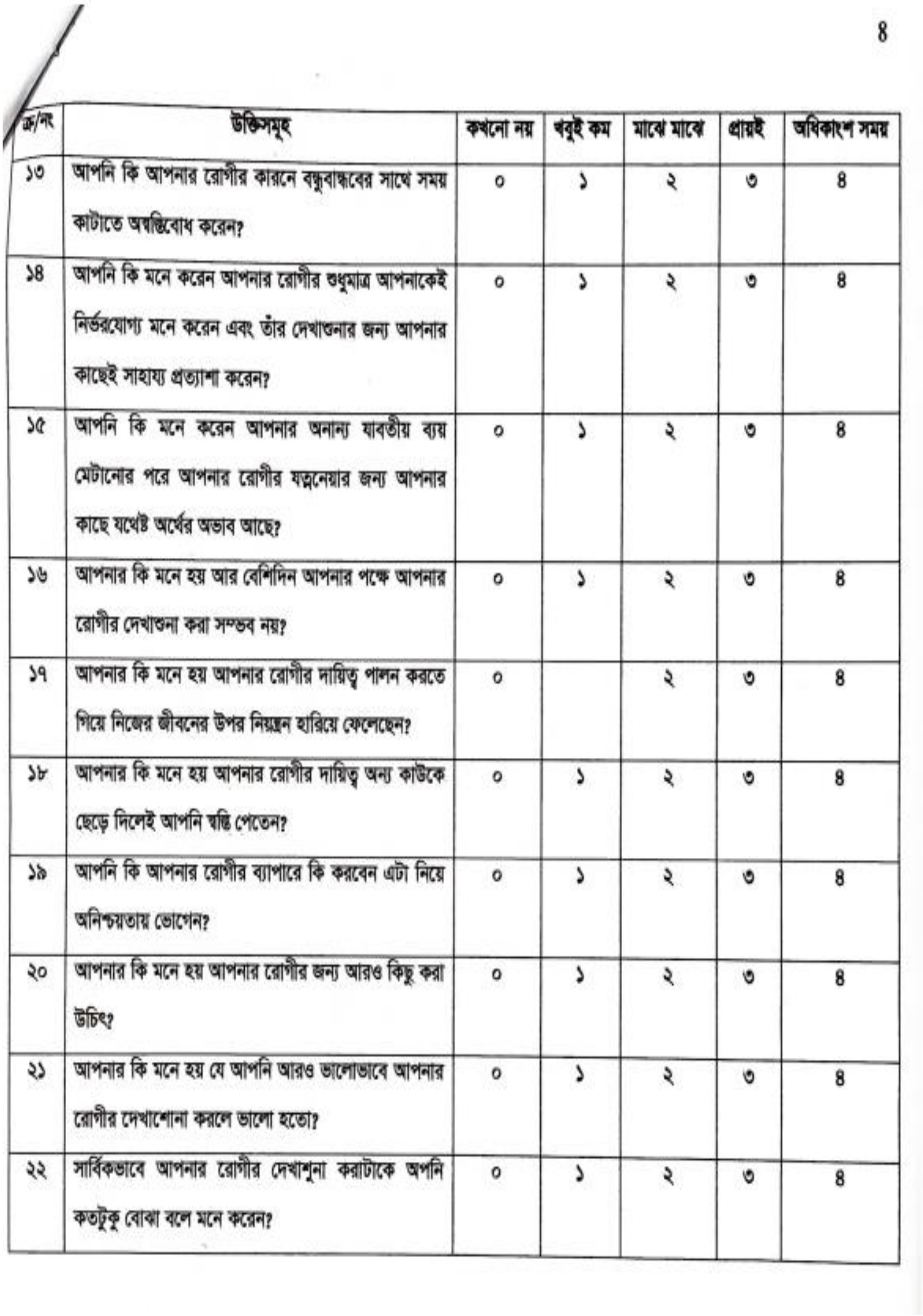
১১ চিকিৎসার ধরন ঃ

ক) সার্জারি খ) রেডিওথেরাপি
গ) কেমোথেরাপি ঘ) সম্মিলিত
ঙ) অনান্য

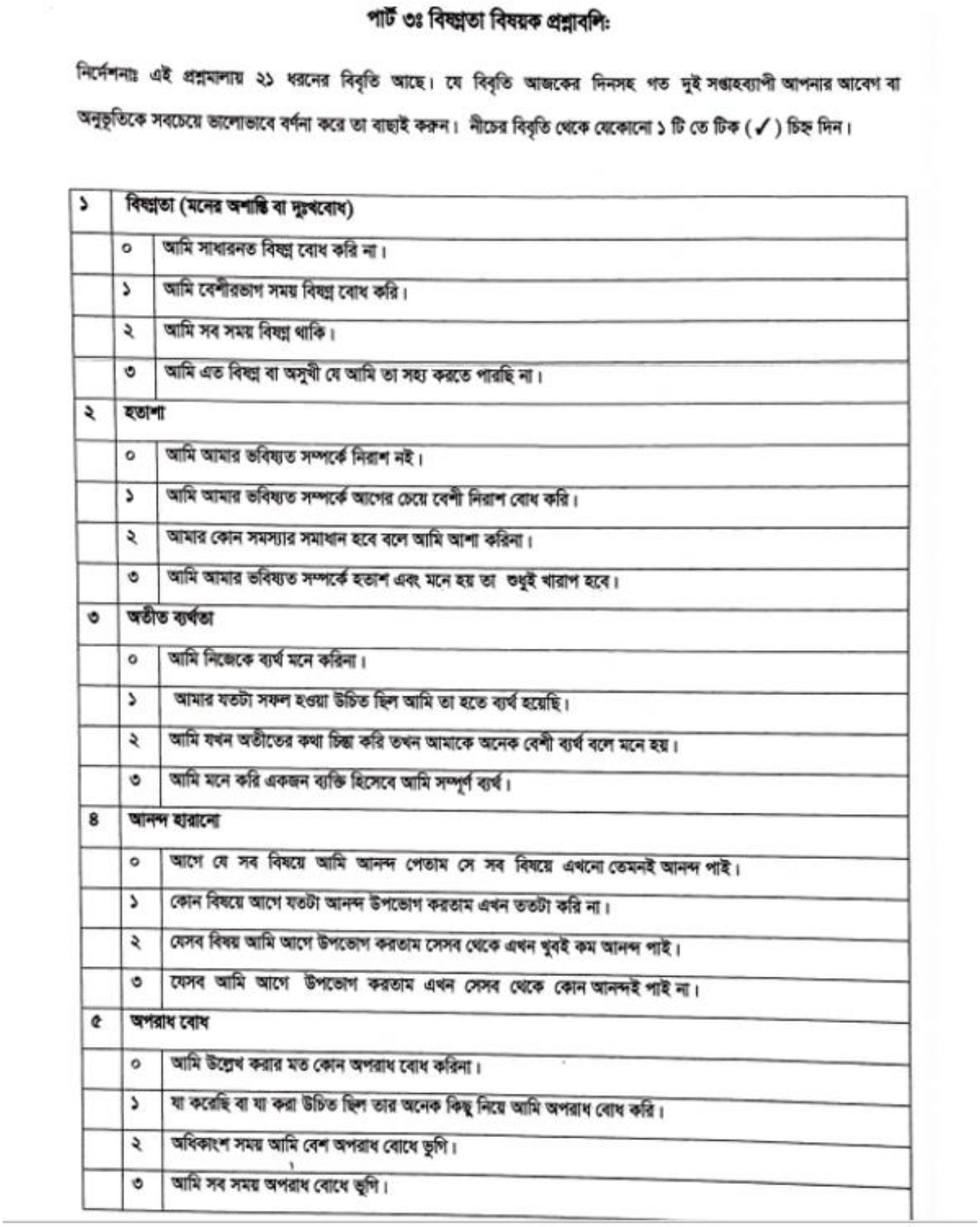
পার্ট ২ঃ জারিট শুশ্রুষাকারী বারডেন স্কেল বিষয়ক প্রশ্নাবলিঃ

নির্দেশনাঃ নিম্নলিখিত বক্তব্যগুলির তালিকা থেকে একজনের পরিচর্যা করতে গিয়ে কেমন বোধ করেন। প্রতিটি বিবৃতির সাথে অনুভূতি প্রকাশের জন্য কখনো নয়, খুবই কম, মাঝে মাঝে, প্রায়ই এবং অধিকাংশ সময় এই শব্দগুলি দেয়া আছে। এখানে সঠিক বা ভুল উত্তর বলে কিছু নেই। নীচের বিবৃতি থেকে যেকোনো ১ টি তে টিক (✓) চিহ্ন দিন।

ক্র/নং	উক্তিসমূহ	কখনো নয়	খুবই কম	মাঝে মাঝে	প্রায়ই	অধিকাংশ সময়
১	আপনি কি মনে করেন আপনার রোগী আপনার কাছে তার প্রয়োজনের চেয়ে বেশী সাহায্য চান?	০	১	২	৩	৪
২	আপনি কি মনে করেন আপনার রোগীকে সময় দেবার কারনে আপনার নিজের জন্য যথেষ্ট সময় পাচ্ছেন না?	০	১	২	৩	৪
৩	আপনার রোগীর যত্ন নেয়ার পাশাপাশি পারিবারিক ও কর্মস্থলের অনান্য দায়িত্ব পালন করতে গিয়ে আপনি কি মানসিক চাপ অনুভব করেন?	০	১	২	৩	৪
৪	আপনি কি আপনার রোগীর ব্যবহারে কখনও বিব্রতবোধ করেন?	০	১	২	৩	৪
৫	আপনার রোগীর সাথে থাকার সময় আপনি কি রাগ অনুভব করেন?	০	১	২	৩	৪
৬	আপনি কি মনে করেন ইদানিং আপনার রোগীর কারনে আপনার পরিবারের অনান্য সদস্য অথবা বন্ধুবান্ধবের সাথে সম্পর্কে নেতিবাচক প্রভাব পড়ছে?	০	১	২	৩	৪
৭	আপনি কি আপনার রোগীর ভবিষ্যৎ নিয়ে শঙ্কিত?	০	১	২	৩	৪
৮	আপনার কি মনে হয় আপনার রোগী আপনার উপর নির্ভরশীল হয়ে আছেন?	০	১	২	৩	৪
৯	আপনার রোগীর আশেপাশে থাকলে আপনি কি অতিরিক্ত চাপ অনুভব করেন?	০	১	২	৩	৪
১০	আপনি কি মনে করেন আপনার রোগীর সেবা-যত্ন করতে গিয়ে আপনার স্বাস্থ্য খারাপ হয়ে যাচ্ছে?	০	১	২	৩	৪
১১	আপনার কি মনে হয় আপনার রোগীর কারনে আপনি নিজের মত করে একা সময় কাটাতে পারছেন না?	০	১	২	৩	৪
১২	আপনার কি মনে হয় আপনার রোগীর কারনে আপনার সামাজিক জীবন ক্ষতিগ্রস্ত হচ্ছে?	০	১	২	৩	৪



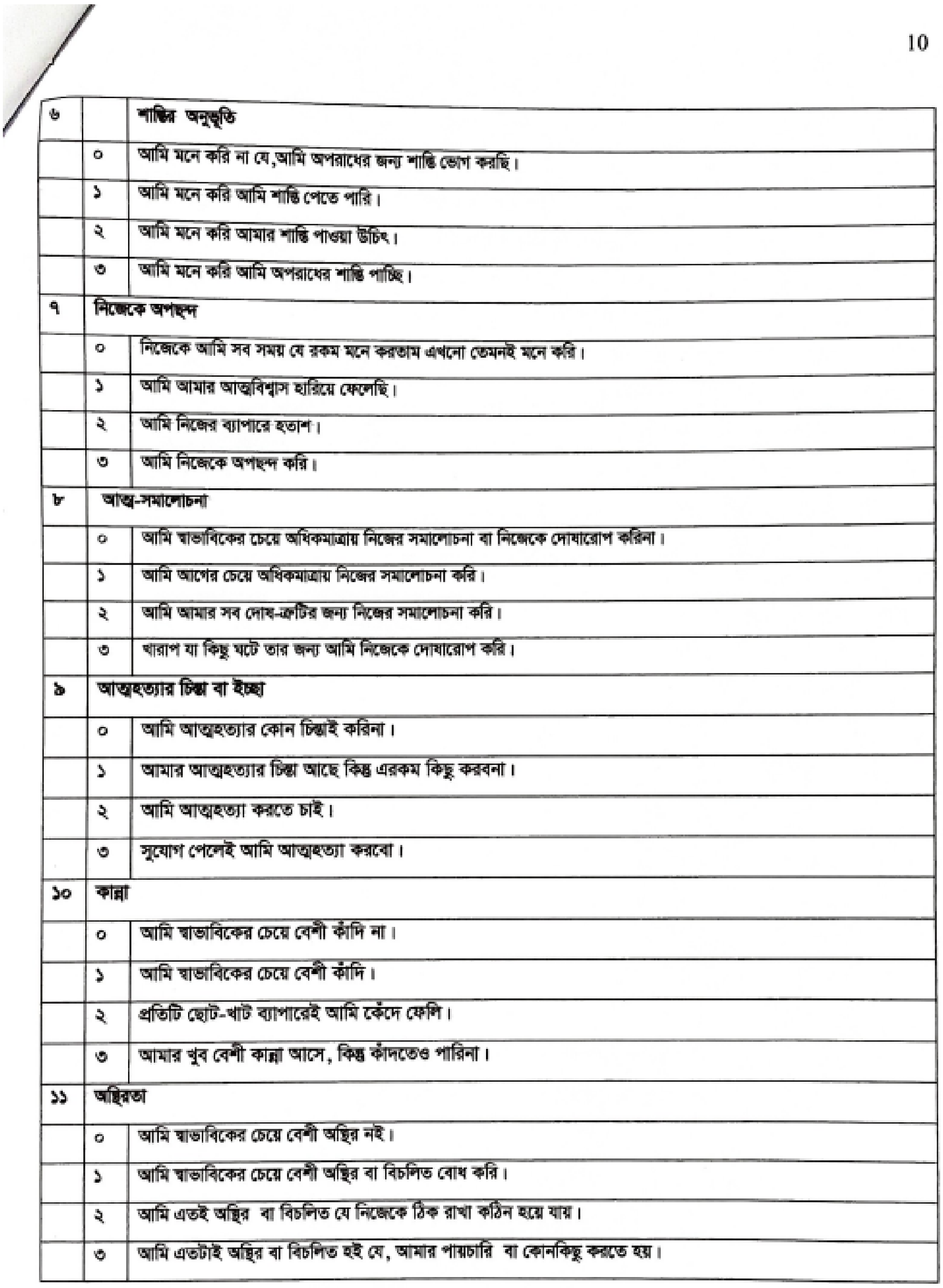
ক্র/নং	উক্তিসমূহ	কখনো নয়	খবুই কম	মাঝে মাঝে	প্রায়ই	অধিকাংশ সময়
১৩	আপনি কি আপনার রোগীর কারনে বন্ধুবান্ধবের সাথে সময় কাটাতে অস্বস্তিবোধ করেন?	০	১	২	৩	৪
১৪	আপনি কি মনে করেন আপনার রোগীর শুধুমাত্র আপনাকেই নির্ভরযোগ্য মনে করেন এবং তাঁর দেখাশুনার জন্য আপনার কাছেই সাহায্য প্রত্যাশা করেন?	০	১	২	৩	৪
১৫	আপনি কি মনে করেন আপনার অনান্য যাবতীয় ব্যয় মেটানোর পরে আপনার রোগীর যত্ননেয়ার জন্য আপনার কাছে যথেষ্ট অর্থের অভাব আছে?	০	১	২	৩	৪
১৬	আপনার কি মনে হয় আর বেশিদিন আপনার পক্ষে আপনার রোগীর দেখাশুনা করা সম্ভব নয়?	০	১	২	৩	৪
১৭	আপনার কি মনে হয় আপনার রোগীর দায়িত্ব পালন করতে গিয়ে নিজের জীবনের উপর নিয়ন্ত্রন হারিয়ে ফেলেছেন?	০		২	৩	৪
১৮	আপনার কি মনে হয় আপনার রোগীর দায়িত্ব অন্য কাউকে ছেড়ে দিলেই আপনি স্বস্তি পেতেন?	০	১	২	৩	৪
১৯	আপনি কি আপনার রোগীর ব্যাপারে কি করবেন এটা নিয়ে অনিশ্চয়তায় ভোগেন?	০	১	২	৩	৪
২০	আপনার কি মনে হয় আপনার রোগীর জন্য আরও কিছু করা উচিৎ?	০	১	২	৩	৪
২১	আপনার কি মনে হয় যে আপনি আরও ভালোভাবে আপনার রোগীর দেখাশোনা করলে ভালো হতো?	০	১	২	৩	৪
২২	সার্বিকভাবে আপনার রোগীর দেখাশুনা করাটাকে অপনি কতটুকু বোঝা বলে মনে করেন?	০	১	২	৩	৪



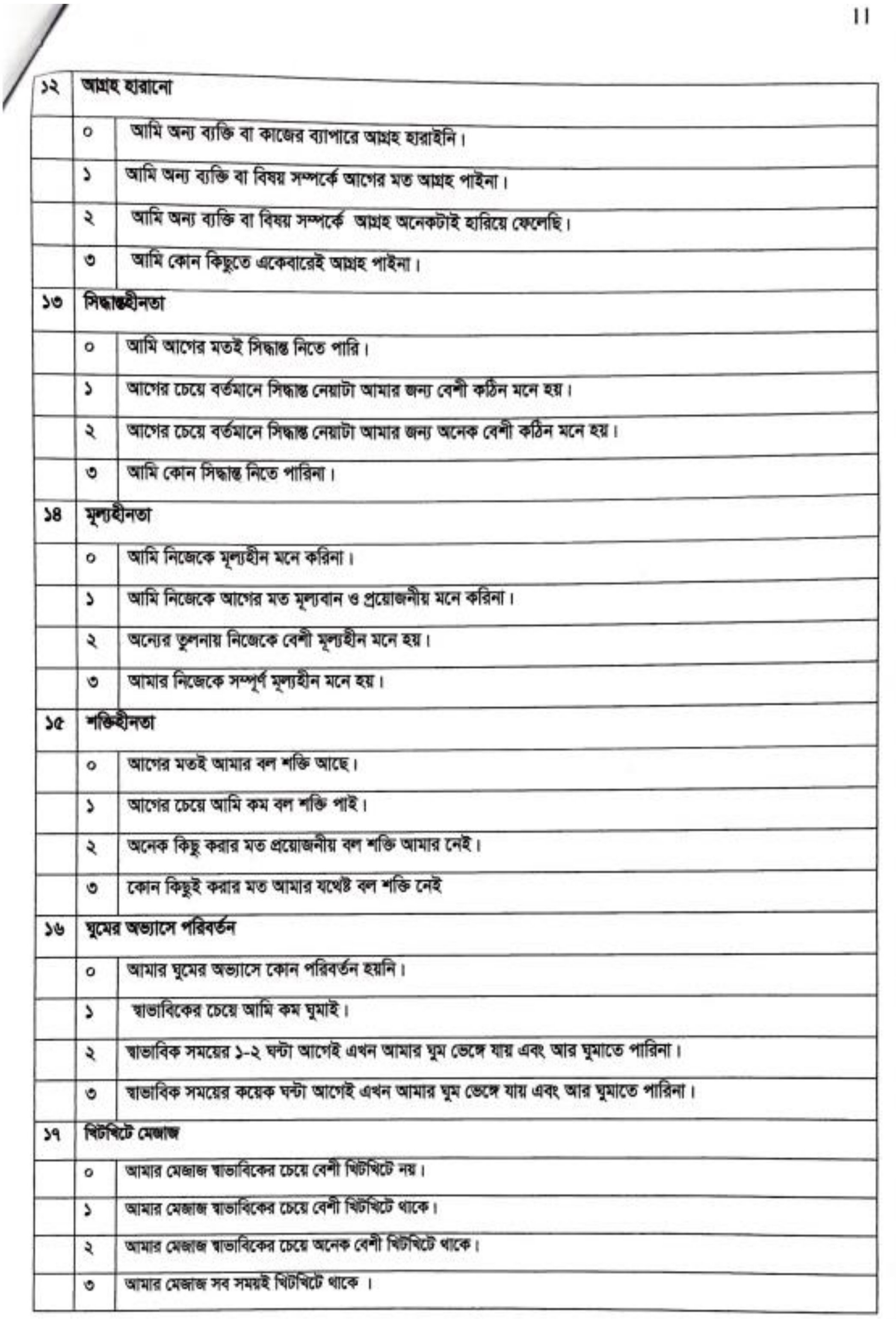
পার্ট ৩ঃ বিষণ্ণতা বিষয়ক প্রশ্নাবলিঃ

নির্দেশনাঃ এই প্রশ্নমালায় ২১ ধরনের বিবৃতি আছে। যে বিবৃতি আজকের দিনসহ গত দুই সপ্তাহব্যাপী আপনার আবেগ বা অনুভূতিকে সবচেয়ে ভালোভাবে বর্ণনা করে তা বাছাই করুন। নীচের বিবৃতি থেকে যেকোনো ১ টি তে টিক (✓) চিহ্ন দিন।

১	**বিষণ্ণতা (মনের অশান্তি বা দুঃখবোধ)**	
	০	আমি সাধারনত বিষণ্ণ বোধ করি না।
	১	আমি বেশীরভাগ সময় বিষণ্ণ বোধ করি।
	২	আমি সব সময় বিষণ্ণ থাকি।
	৩	আমি এত বিষণ্ণ বা অসুখী যে আমি তা সহ্য করতে পারছি না।
২	**হতাশা**	
	০	আমি আমার ভবিষ্যত সম্পর্কে নিরাশ নই।
	১	আমি আমার ভবিষ্যত সম্পর্কে আগের চেয়ে বেশী নিরাশ বোধ করি।
	২	আমার কোন সমস্যার সমাধান হবে বলে আমি আশা করিনা।
	৩	আমি আমার ভবিষ্যত সম্পর্কে হতাশ এবং মনে হয় তা শুধুই খারাপ হবে।
৩	**অতীত ব্যর্থতা**	
	০	আমি নিজেকে ব্যর্থ মনে করিনা।
	১	আমার যতটা সফল হওয়া উচিত ছিল আমি তা হতে ব্যর্থ হয়েছি।
	২	আমি যখন অতীতের কথা চিন্তা করি তখন আমাকে অনেক বেশী ব্যর্থ বলে মনে হয়।
	৩	আমি মনে করি একজন ব্যক্তি হিসেবে আমি সম্পূর্ণ ব্যর্থ।
৪	**আনন্দ হারানো**	
	০	আগে যে সব বিষয়ে আমি আনন্দ পেতাম সে সব বিষয়ে এখনো তেমনই আনন্দ পাই।
	১	কোন বিষয়ে আগে যতটা আনন্দ উপভোগ করতাম এখন ততটা করি না।
	২	যেসব বিষয় আমি আগে উপভোগ করতাম সেসব থেকে এখন খুবই কম আনন্দ পাই।
	৩	যেসব আমি আগে উপভোগ করতাম এখন সেসব থেকে কোন আনন্দই পাই না।
৫	**অপরাধ বোধ**	
	০	আমি উল্লেখ করার মত কোন অপরাধ বোধ করিনা।
	১	যা করেছি বা যা করা উচিত ছিল তার অনেক কিছু নিয়ে আমি অপরাধ বোধ করি।
	২	অধিকাংশ সময় আমি বেশ অপরাধ বোধে ভুগি।
	৩	আমি সব সময় অপরাধ বোধে ভুগি।



৬		**শাস্তির অনুভূতি**
	০	আমি মনে করি না যে,আমি অপরাধের জন্য শাস্তি ভোগ করছি।
	১	আমি মনে করি আমি শাস্তি পেতে পারি।
	২	আমি মনে করি আমার শাস্তি পাওয়া উচিৎ।
	৩	আমি মনে করি আমি অপরাধের শাস্তি পাচ্ছি।
৭	**নিজেকে অপছন্দ**	
	০	নিজেকে আমি সব সময় যে রকম মনে করতাম এখনো তেমনই মনে করি।
	১	আমি আমার আত্মবিশ্বাস হারিয়ে ফেলেছি।
	২	আমি নিজের ব্যাপারে হতাশ।
	৩	আমি নিজেকে অপছন্দ করি।
৮	**আত্ম-সমালোচনা**	
	০	আমি স্বাভাবিকের চেয়ে অধিকমাত্রায় নিজের সমালোচনা বা নিজেকে দোষারোপ করিনা।
	১	আমি আগের চেয়ে অধিকমাত্রায় নিজের সমালোচনা করি।
	২	আমি আমার সব দোষ-ত্রুটির জন্য নিজের সমালোচনা করি।
	৩	খারাপ যা কিছু ঘটে তার জন্য আমি নিজেকে দোষারোপ করি।
৯	**আত্মহত্যার চিন্তা বা ইচ্ছা**	
	০	আমি আত্মহত্যার কোন চিন্তাই করিনা।
	১	আমার আত্মহত্যার চিন্তা আছে কিন্তু এরকম কিছু করবনা।
	২	আমি আত্মহত্যা করতে চাই।
	৩	সুযোগ পেলেই আমি আত্মহত্যা করবো।
১০	**কান্না**	
	০	আমি স্বাভাবিকের চেয়ে বেশী কাঁদি না।
	১	আমি স্বাভাবিকের চেয়ে বেশী কাঁদি।
	২	প্রতিটি ছোট-খাট ব্যাপারেই আমি কেঁদে ফেলি।
	৩	আমার খুব বেশী কান্না আসে, কিন্তু কাঁদতেও পারিনা।
১১	**অস্থিরতা**	
	০	আমি স্বাভাবিকের চেয়ে বেশী অস্থির নই।
	১	আমি স্বাভাবিকের চেয়ে বেশী অস্থির বা বিচলিত বোধ করি।
	২	আমি এতই অস্থির বা বিচলিত যে নিজেকে ঠিক রাখা কঠিন হয়ে যায়।
	৩	আমি এতটাই অস্থির বা বিচলিত হই যে, আমার পায়চারি বা কোনকিছু করতে হয়।



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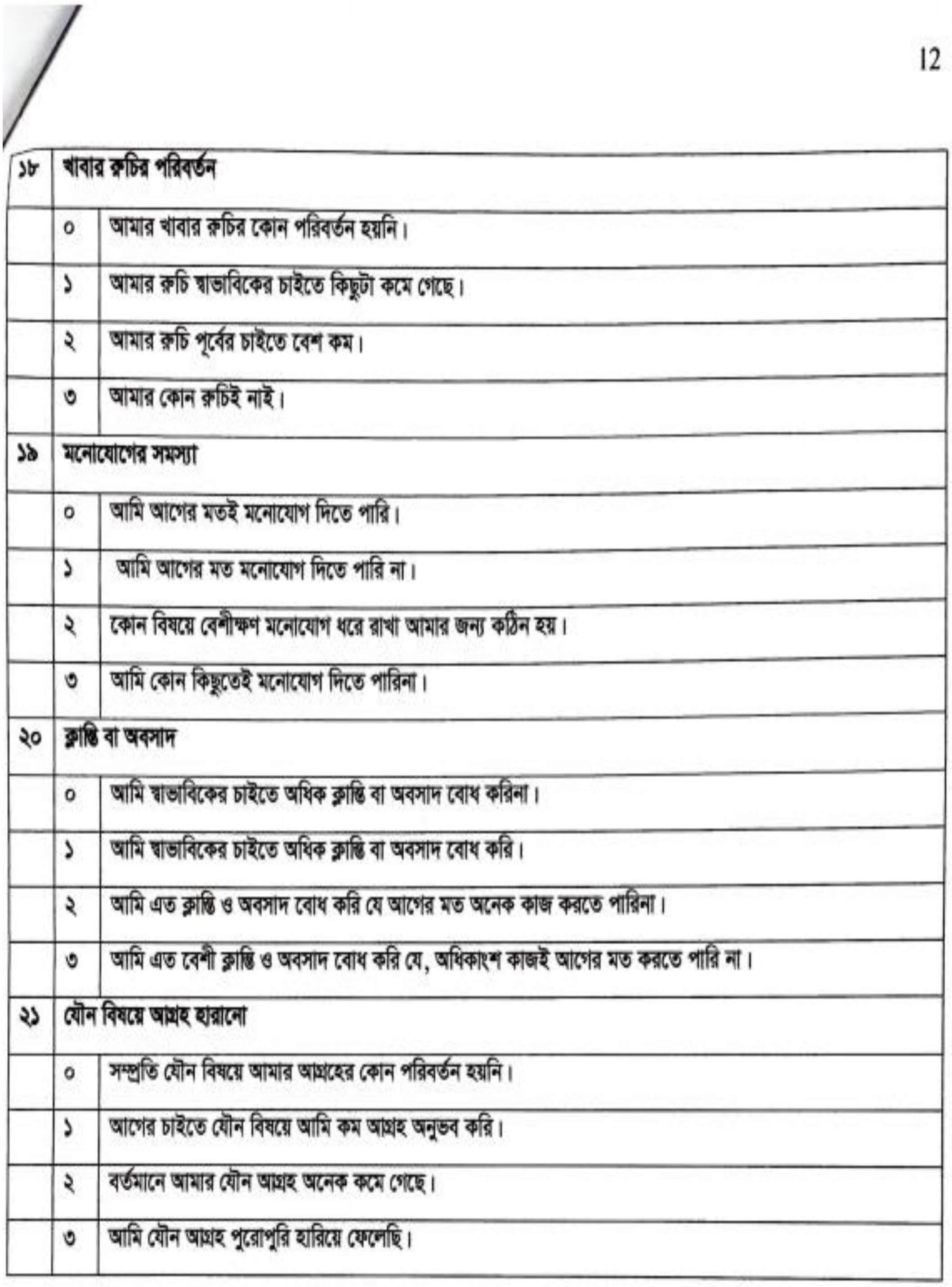
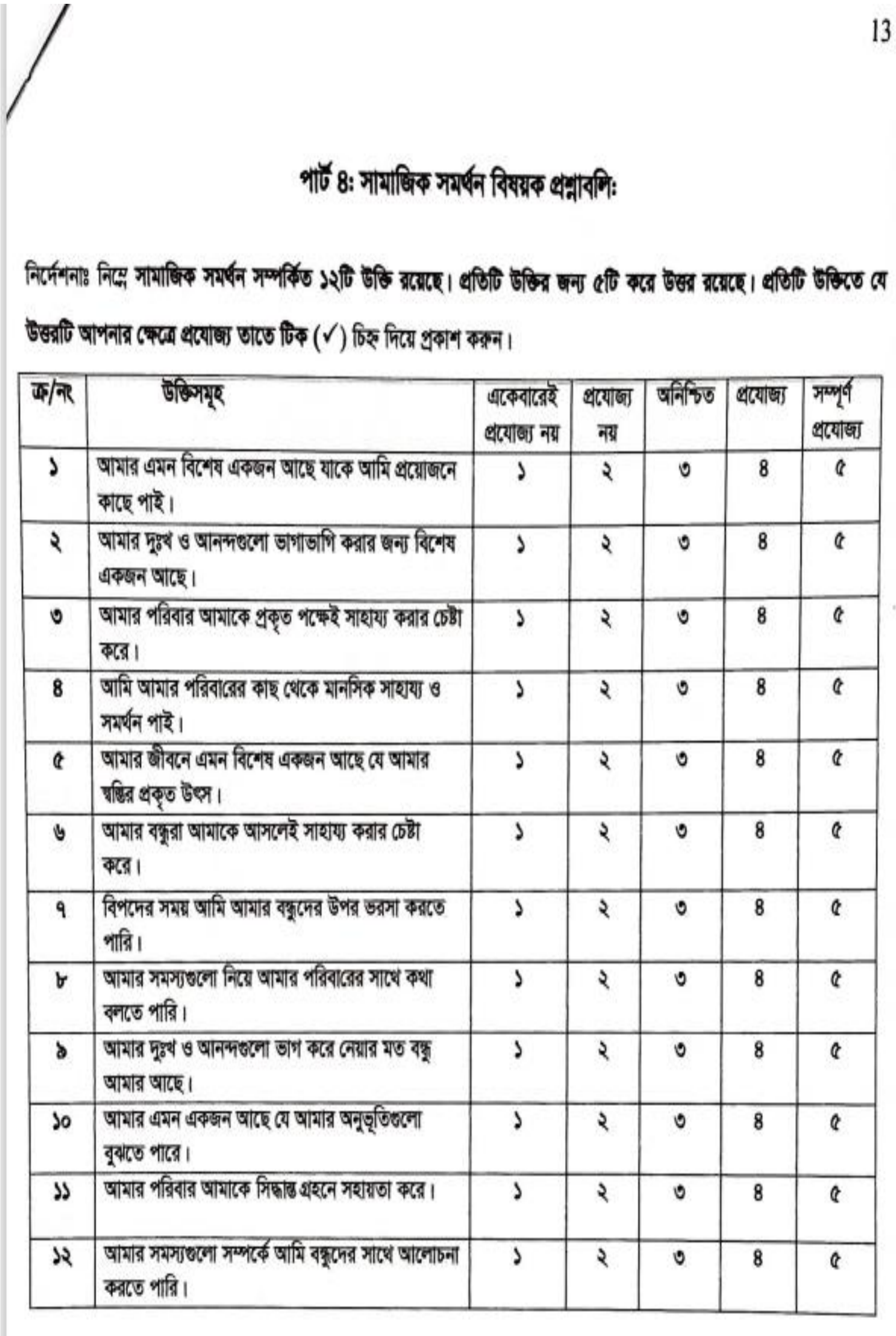
১২	**আগ্রহ হারানো**	
	০	আমি অন্য ব্যক্তি বা কাজের ব্যাপারে আগ্রহ হারাইনি।
	১	আমি অন্য ব্যক্তি বা বিষয় সম্পর্কে আগের মত আগ্রহ পাইনা।
	২	আমি অন্য ব্যক্তি বা বিষয় সম্পর্কে আগ্রহ অনেকটাই হারিয়ে ফেলেছি।
	৩	আমি কোন কিছুতে একেবারেই আগ্রহ পাইনা।
১৩	**সিদ্ধান্তহীনতা**	
	০	আমি আগের মতই সিদ্ধান্ত নিতে পারি।
	১	আগের চেয়ে বর্তমানে সিদ্ধান্ত নেয়াটা আমার জন্য বেশী কঠিন মনে হয়।
	২	আগের চেয়ে বর্তমানে সিদ্ধান্ত নেয়াটা আমার জন্য অনেক বেশী কঠিন মনে হয়।
	৩	আমি কোন সিদ্ধান্ত নিতে পারিনা।
১৪	**মূল্যহীনতা**	
	০	আমি নিজেকে মূল্যহীন মনে করিনা।
	১	আমি নিজেকে আগের মত মূল্যবান ও প্রয়োজনীয় মনে করিনা।
	২	অন্যের তুলনায় নিজেকে বেশী মূল্যহীন মনে হয়।
	৩	আমার নিজেকে সম্পূর্ণ মূল্যহীন মনে হয়।
১৫	**শক্তিহীনতা**	
	০	আগের মতই আমার বল শক্তি আছে।
	১	আগের চেয়ে আমি কম বল শক্তি পাই।
	২	অনেক কিছু করার মত প্রয়োজনীয় বল শক্তি আমার নেই।
	৩	কোন কিছুই করার মত আমার যথেষ্ট বল শক্তি নেই
১৬	**ঘুমের অভ্যাসে পরিবর্তন**	
	০	আমার ঘুমের অভ্যাসে কোন পরিবর্তন হয়নি।
	১	স্বাভাবিকের চেয়ে আমি কম ঘুমাই।
	২	স্বাভাবিক সময়ের ১-২ ঘন্টা আগেই এখন আমার ঘুম ভেঙ্গে যায় এবং আর ঘুমাতে পারিনা।
	৩	স্বাভাবিক সময়ের কয়েক ঘন্টা আগেই এখন আমার ঘুম ভেঙ্গে যায় এবং আর ঘুমাতে পারিনা।
১৭	**খিটখিটে মেজাজ**	
	০	আমার মেজাজ স্বাভাবিকের চেয়ে বেশী খিটখিটে নয়।
	১	আমার মেজাজ স্বাভাবিকের চেয়ে বেশী খিটখিটে থাকে।
	২	আমার মেজাজ স্বাভাবিকের চেয়ে অনেক বেশী খিটখিটে থাকে।
	৩	আমার মেজাজ সব সময়ই খিটখিটে থাকে ।



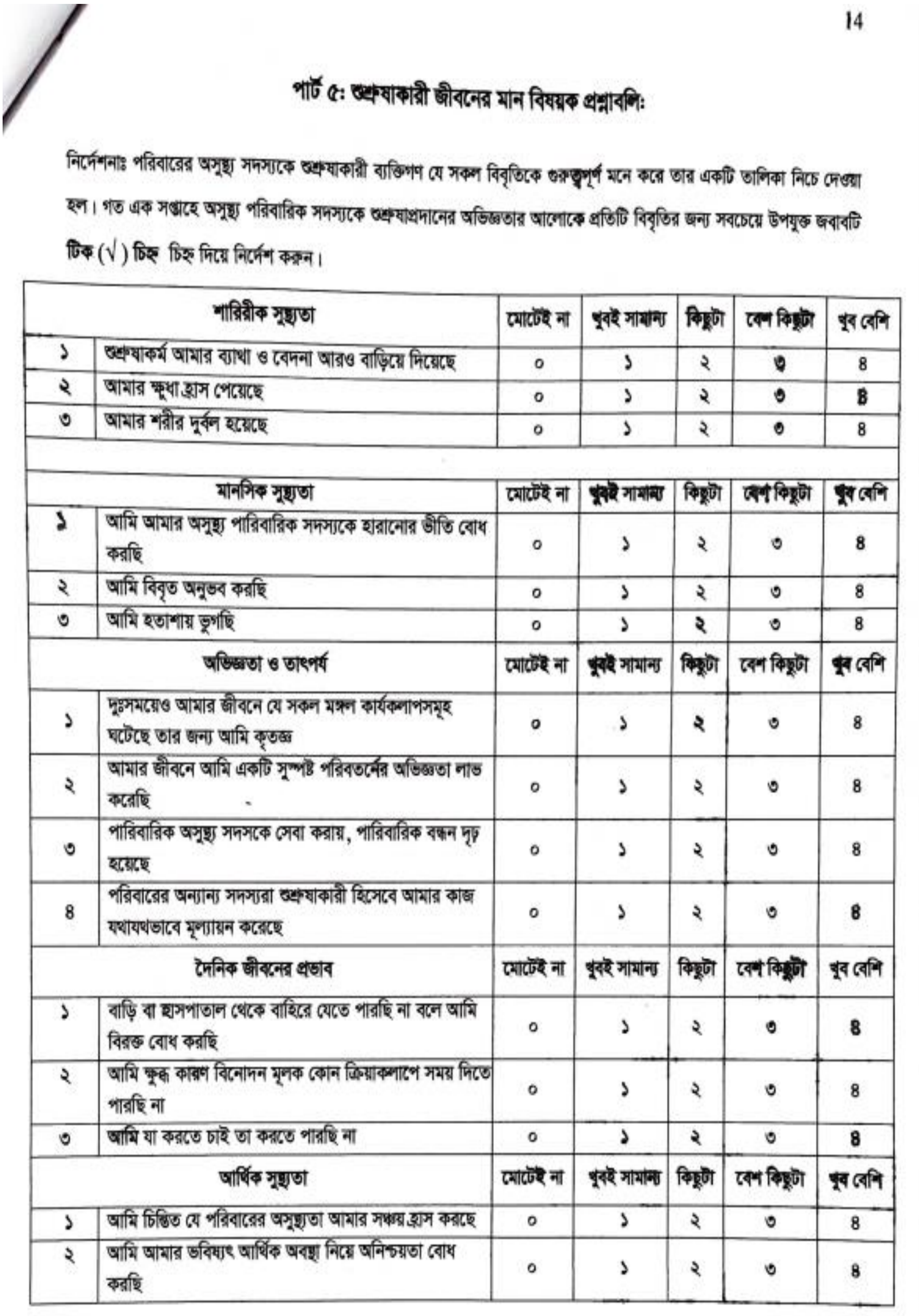
১৮	**খাবার রুচির পরিবর্তন**	
	০	আমার খাবার রুচির কোন পরিবর্তন হয়নি।
	১	আমার রুচি স্বাভাবিকের চাইতে কিছুটা কমে গেছে।
	২	আমার রুচি পূর্বের চাইতে বেশ কম।
	৩	আমার কোন রুচিই নাই।
১৯	**মনোযোগের সমস্যা**	
	০	আমি আগের মতই মনোযোগ দিতে পারি।
	১	আমি আগের মত মনোযোগ দিতে পারি না।
	২	কোন বিষয়ে বেশীক্ষণ মনোযোগ ধরে রাখা আমার জন্য কঠিন হয়।
	৩	আমি কোন কিছুতেই মনোযোগ দিতে পারিনা।
২০	**ক্লান্তি বা অবসাদ**	
	০	আমি স্বাভাবিকের চাইতে অধিক ক্লান্তি বা অবসাদ বোধ করিনা।
	১	আমি স্বাভাবিকের চাইতে অধিক ক্লান্তি বা অবসাদ বোধ করি।
	২	আমি এত ক্লান্তি ও অবসাদ বোধ করি যে আগের মত অনেক কাজ করতে পারিনা।
	৩	আমি এত বেশী ক্লান্তি ও অবসাদ বোধ করি যে, অধিকাংশ কাজই আগের মত করতে পারি না।
২১	**যৌন বিষয়ে আগ্রহ হারানো**	
	০	সম্প্রতি যৌন বিষয়ে আমার আগ্রহের কোন পরিবর্তন হয়নি।
	১	আগের চাইতে যৌন বিষয়ে আমি কম আগ্রহ অনুভব করি।
	২	বর্তমানে আমার যৌন আগ্রহ অনেক কমে গেছে।
	৩	আমি যৌন আগ্রহ পুরোপুরি হারিয়ে ফেলেছি।



পার্ট ৪: সামাজিক সমর্থন বিষয়ক প্রশ্নাবলি:

নির্দেশনাঃ নিম্নে সামাজিক সমর্থন সম্পর্কিত ১২টি উক্তি রয়েছে। প্রতিটি উক্তির জন্য ৫টি করে উত্তর রয়েছে। প্রতিটি উক্তিতে যে উত্তরটি আপনার ক্ষেত্রে প্রযোজ্য তাতে টিক (✓) চিহ্ন দিয়ে প্রকাশ করুন।

ক্র/নং	উক্তিসমূহ	একেবারেই প্রযোজ্য নয়	প্রযোজ্য নয়	অনিশ্চিত	প্রযোজ্য	সম্পূর্ণ প্রযোজ্য
১	আমার এমন বিশেষ একজন আছে যাকে আমি প্রয়োজনে কাছে পাই।	১	২	৩	৪	৫
২	আমার দুঃখ ও আনন্দগুলো ভাগাভাগি করার জন্য বিশেষ একজন আছে।	১	২	৩	৪	৫
৩	আমার পরিবার আমাকে প্রকৃত পক্ষেই সাহায্য করার চেষ্টা করে।	১	২	৩	৪	৫
৪	আমি আমার পরিবারের কাছ থেকে মানসিক সাহায্য ও সমর্থন পাই।	১	২	৩	৪	৫
৫	আমার জীবনে এমন বিশেষ একজন আছে যে আমার স্বস্তির প্রকৃত উৎস।	১	২	৩	৪	৫
৬	আমার বন্ধুরা আমাকে আসলেই সাহায্য করার চেষ্টা করে।	১	২	৩	৪	৫
৭	বিপদের সময় আমি আমার বন্ধুদের উপর ভরসা করতে পারি।	১	২	৩	৪	৫
৮	আমার সমস্যাগুলো নিয়ে আমার পরিবারের সাথে কথা বলতে পারি।	১	২	৩	৪	৫
৯	আমার দুঃখ ও আনন্দগুলো ভাগ করে নেয়ার মত বন্ধু আমার আছে।	১	২	৩	৪	৫
১০	আমার এমন একজন আছে যে আমার অনুভূতিগুলো বুঝতে পারে।	১	২	৩	৪	৫
১১	আমার পরিবার আমাকে সিদ্ধান্ত গ্রহনে সহায়তা করে।	১	২	৩	৪	৫
১২	আমার সমস্যাগুলো সম্পর্কে আমি বন্ধুদের সাথে আলোচনা করতে পারি।	১	২	৩	৪	৫

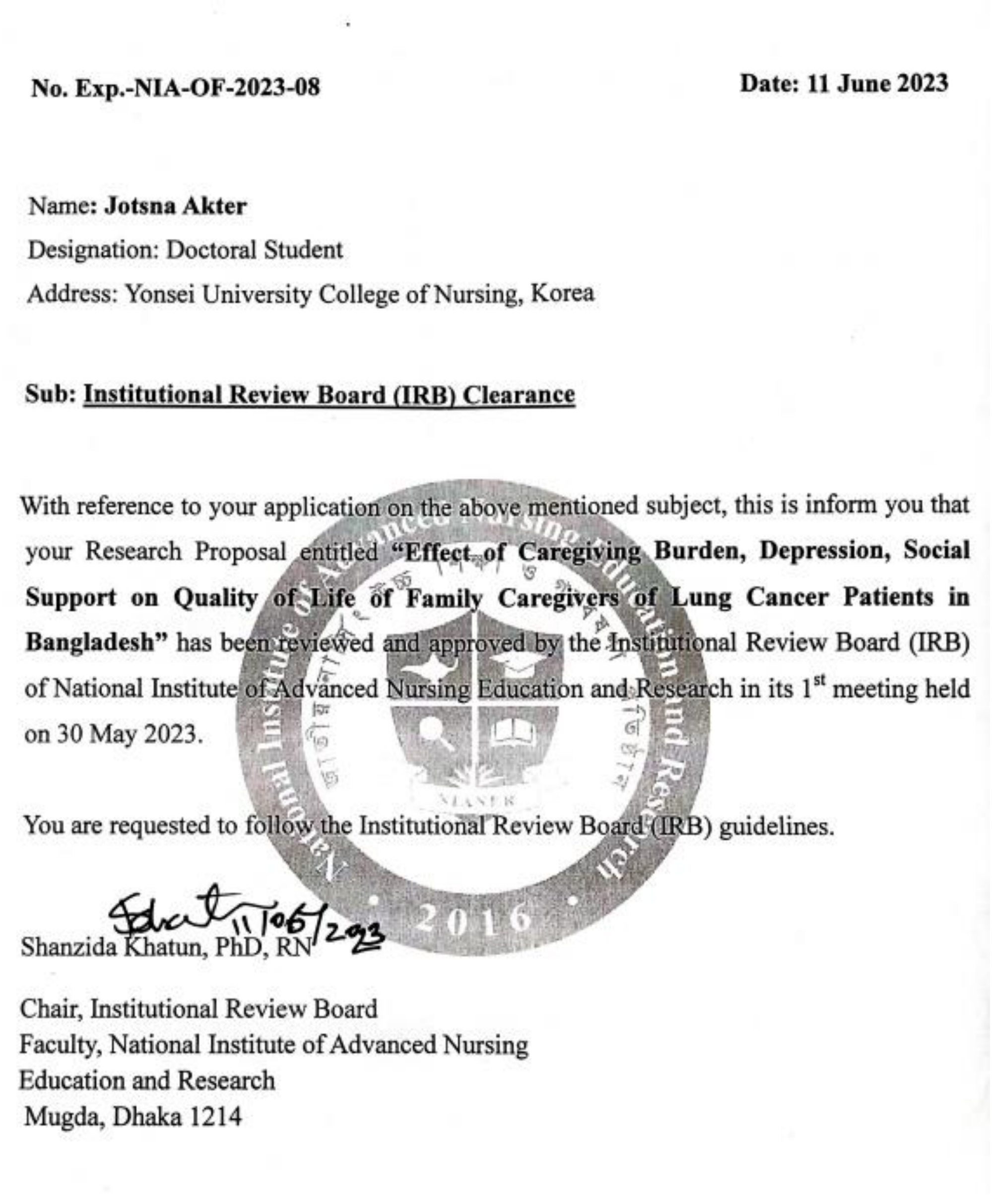


পার্ট ৫: শুশ্রুষাকারী জীবনের মান বিষয়ক প্রশ্নাবলি:

নির্দেশনাঃ পরিবারের অসুস্থ্য সদস্যকে শুশ্রুষাকারী ব্যক্তিগণ যে সকল বিবৃতিকে গুরুত্বপূর্ণ মনে করে তার একটি তালিকা নিচে দেওয়া হল। গত এক সপ্তাহে অসুস্থ্য পরিবারিক সদস্যকে শুশ্রুষাপ্রদানের অভিজ্ঞতার আলোকে প্রতিটি বিবৃতির জন্য সবচেয়ে উপযুক্ত জবাবটি টিক (√) চিহ্ন চিহ্ন দিয়ে নির্দেশ করুন।

	শারিরীক সুস্থ্যতা	মোটেই না	খুবই সামান্য	কিছুটা	বেশ কিছুটা	খুব বেশি
১	শুশ্রুষাকর্ম আমার ব্যাথা ও বেদনা আরও বাড়িয়ে দিয়েছে	০	১	২	৩	৪
২	আমার ক্ষুধা হ্রাস পেয়েছে	০	১	২	৩	৪
৩	আমার শরীর দুর্বল হয়েছে	০	১	২	৩	৪
	মানসিক সুস্থ্যতা	মোটেই না	খুবই সামান্য	কিছুটা	বেশ কিছুটা	খুব বেশি
১	আমি আমার অসুস্থ্য পারিবারিক সদস্যকে হারানোর ভীতি বোধ করছি	০	১	২	৩	৪
২	আমি বিবৃত অনুভব করছি	০	১	২	৩	৪
৩	আমি হতাশায় ভুগছি	০	১	২	৩	৪
	অভিজ্ঞতা ও তাৎপর্য	মোটেই না	খুবই সামান্য	কিছুটা	বেশ কিছুটা	খুব বেশি
১	দুঃসময়েও আমার জীবনে যে সকল মঙ্গল কার্যকলাপসমূহ ঘটেছে তার জন্য আমি কৃতজ্ঞ	০	১	২	৩	৪
২	আমার জীবনে আমি একটি সুস্পষ্ট পরিবতর্নের অভিজ্ঞতা লাভ করেছি	০	১	২	৩	৪
৩	পারিবারিক অসুস্থ্য সদসকে সেবা করায়, পারিবারিক বন্ধন দৃঢ় হয়েছে	০	১	২	৩	৪
৪	পরিবারের অন্যান্য সদস্যরা শুশ্রুষাকারী হিসেবে আমার কাজ যথাযথভাবে মূল্যায়ন করেছে	০	১	২	৩	৪
	দৈনিক জীবনের প্রভাব	মোটেই না	খুবই সামান্য	কিছুটা	বেশ কিছুটা	খুব বেশি
১	বাড়ি বা হাসপাতাল থেকে বাহিরে যেতে পারছি না বলে আমি বিরক্ত বোধ করছি	০	১	২	৩	৪
২	আমি ক্ষুব্ধ কারণ বিনোদন মূলক কোন ক্রিয়াকলাপে সময় দিতে পারছি না	০	১	২	৩	৪
৩	আমি যা করতে চাই তা করতে পারছি না	০	১	২	৩	৪
	আর্থিক সুস্থ্যতা	মোটেই না	খুবই সামান্য	কিছুটা	বেশ কিছুটা	খুব বেশি
১	আমি চিন্তিত যে পরিবারের অসুস্থ্যতা আমার সঞ্চয় হ্রাস করছে	০	১	২	৩	৪
২	আমি আমার ভবিষ্যৎ আর্থিক অবস্থা নিয়ে অনিশ্চয়তা বোধ করছি	০	১	২	৩	৪

Appendix 8. The Institutional Review Board approval letter



No. Exp.-NIA-OF-2023-08 **Date: 11 June 2023**

Name: **Jotsna Akter**
Designation: Doctoral Student
Address: Yonsei University College of Nursing, Korea

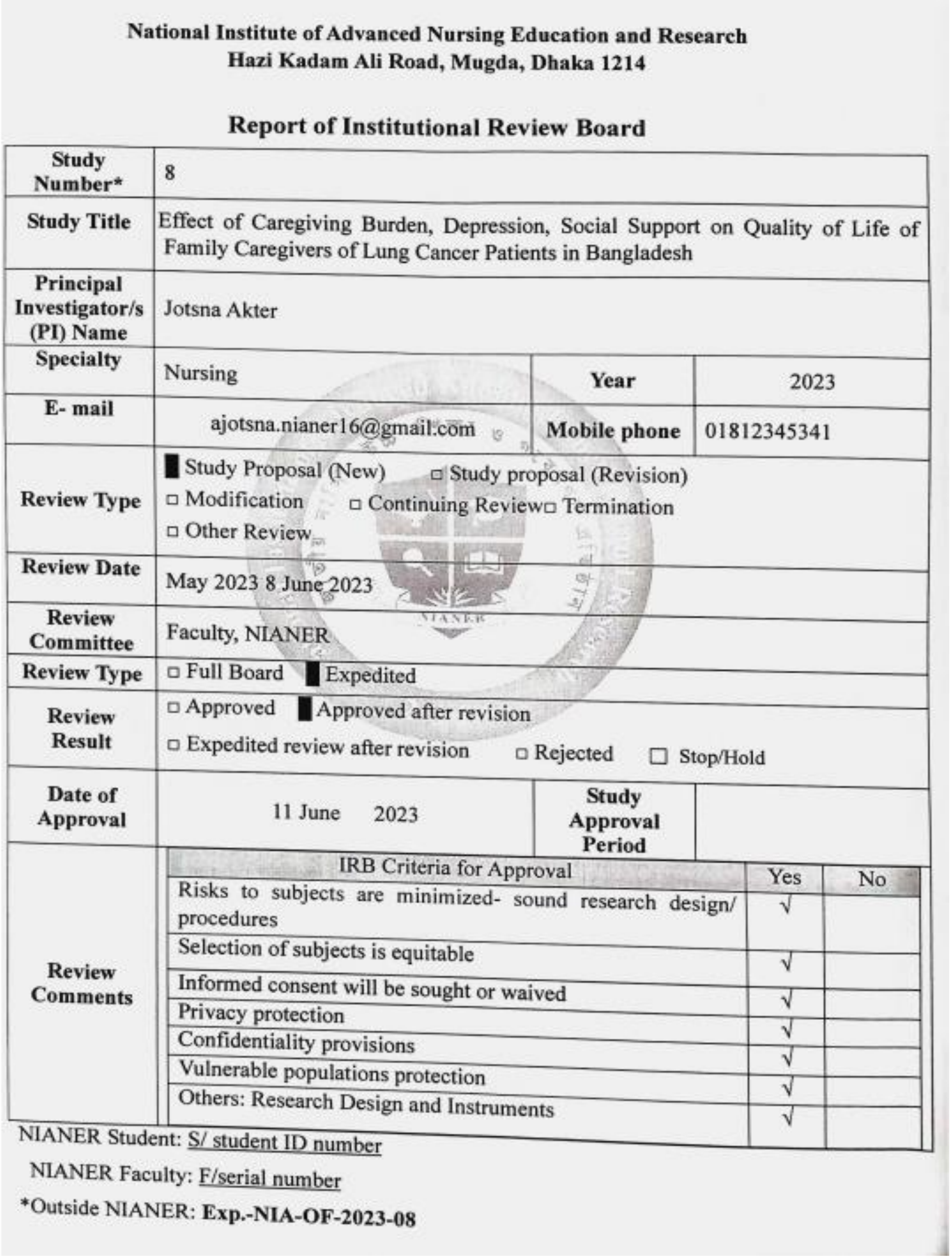
Sub: Institutional Review Board (IRB) Clearance

With reference to your application on the above mentioned subject, this is inform you that your Research Proposal entitled **"Effect of Caregiving Burden, Depression, Social Support on Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh"** has been reviewed and approved by the Institutional Review Board (IRB) of National Institute of Advanced Nursing Education and Research in its 1st meeting held on 30 May 2023.

You are requested to follow the Institutional Review Board (IRB) guidelines.

11/06/2023
Shanzida Khatun, PhD, RN

Chair, Institutional Review Board
Faculty, National Institute of Advanced Nursing
Education and Research
Mugda, Dhaka 1214



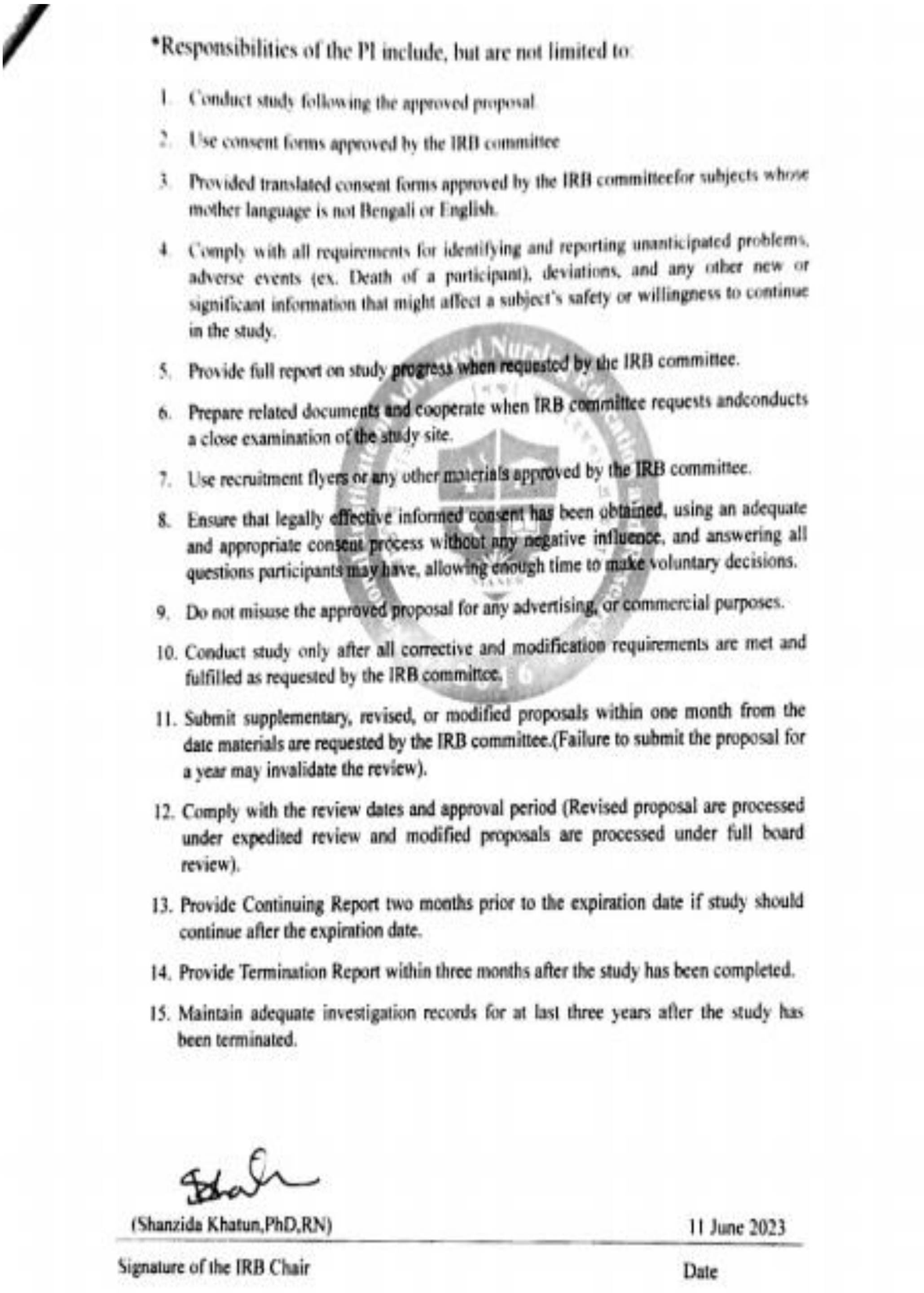
National Institute of Advanced Nursing Education and Research
Hazi Kadam Ali Road, Mugda, Dhaka 1214

Report of Institutional Review Board

Study Number*	8		
Study Title	Effect of Caregiving Burden, Depression, Social Support on Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh		
Principal Investigator/s (PI) Name	Jotsna Akter		
Specialty	Nursing	**Year**	2023
E- mail	ajotsna.nianer16@gmail.com	**Mobile phone**	01812345341
Review Type	■ Study Proposal (New) ☐ Study proposal (Revision) ☐ Modification ☐ Continuing Review☐ Termination ☐ Other Review		
Review Date	May 2023 8 June 2023		
Review Committee	Faculty, NIANER		
Review Type	☐ Full Board ■ Expedited		
Review Result	☐ Approved ■ Approved after revision ☐ Expedited review after revision ☐ Rejected ☐ Stop/Hold		
Date of Approval	11 June 2023	**Study Approval Period**	
Review Comments			

IRB Criteria for Approval	Yes	No
Risks to subjects are minimized- sound research design/ procedures	√	
Selection of subjects is equitable	√	
Informed consent will be sought or waived	√	
Privacy protection	√	
Confidentiality provisions	√	
Vulnerable populations protection	√	
Others: Research Design and Instruments	√	

NIANER Student: <u>S/ student ID number</u>
NIANER Faculty: <u>F/serial number</u>
*Outside NIANER: **Exp.-NIA-OF-2023-08**



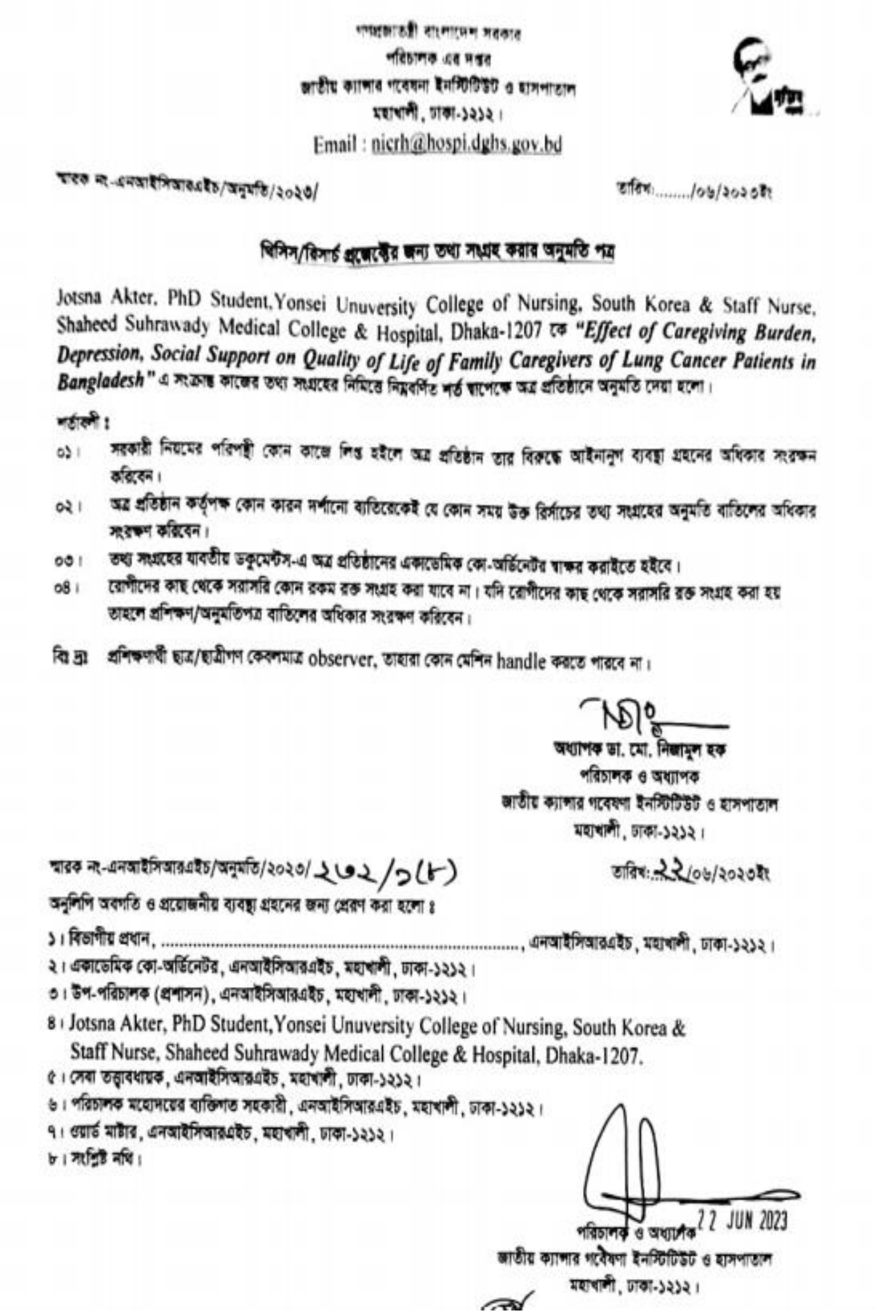
*Responsibilities of the PI include, but are not limited to:

1. Conduct study following the approved proposal.
2. Use consent forms approved by the IRB committee
3. Provided translated consent forms approved by the IRB committeefor subjects whose mother language is not Bengali or English.
4. Comply with all requirements for identifying and reporting unanticipated problems, adverse events (ex. Death of a participant), deviations, and any other new or significant information that might affect a subject's safety or willingness to continue in the study.
5. Provide full report on study progress when requested by the IRB committee.
6. Prepare related documents and cooperate when IRB committee requests andconducts a close examination of the study site.
7. Use recruitment flyers or any other materials approved by the IRB committee.
8. Ensure that legally effective informed consent has been obtained, using an adequate and appropriate consent process without any negative influence, and answering all questions participants may have, allowing enough time to make voluntary decisions.
9. Do not misuse the approved proposal for any advertising, or commercial purposes.
10. Conduct study only after all corrective and modification requirements are met and fulfilled as requested by the IRB committee.
11. Submit supplementary, revised, or modified proposals within one month from the date materials are requested by the IRB committee.(Failure to submit the proposal for a year may invalidate the review).
12. Comply with the review dates and approval period (Revised proposal are processed under expedited review and modified proposals are processed under full board review).
13. Provide Continuing Report two months prior to the expiration date if study should continue after the expiration date.
14. Provide Termination Report within three months after the study has been completed.
15. Maintain adequate investigation records for at last three years after the study has been terminated.

(Shanzida Khatun,PhD,RN) 11 June 2023

Signature of the IRB Chair Date

Appendix 9. Data collection permission letter from NICRH



গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিচালক এর দপ্তর
জাতীয় ক্যান্সার গবেষণা ইনস্টিটিউট ও হাসপাতাল
মহাখালী, ঢাকা-১২১২।
Email : nicrh@hospi.dghs.gov.bd

স্মারক নং-এনআইসিআরএইচ/অনুমতি/২০২৩/ তারিখ:......./০৬/২০২৩ইং

থিসিস/রিসার্চ প্রজেক্টের জন্য তথ্য সংগ্রহ করার অনুমতি পত্র

Jotsna Akter, PhD Student,Yonsei Unuversity College of Nursing, South Korea & Staff Nurse, Shaheed Suhrawady Medical College & Hospital, Dhaka-1207 কে ***"Effect of Caregiving Burden, Depression, Social Support on Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh"*** এ সংক্রান্ত কাজের তথ্য সংগ্রহের নিমিত্তে নিম্নবর্ণিত শর্ত সাপেক্ষে অত্র প্রতিষ্ঠানে অনুমতি দেয়া হলো।

শর্তাবলী :

০১। সরকারী নিয়মের পরিপন্থী কোন কাজে লিপ্ত হইলে অত্র প্রতিষ্ঠান তার বিরুদ্ধে আইনানুগ ব্যবস্থা গ্রহনের অধিকার সংরক্ষন করিবেন।

০২। অত্র প্রতিষ্ঠান কর্তৃপক্ষ কোন কারন দর্শানো ব্যতিরেকেই যে কোন সময় উক্ত রির্সাচের তথ্য সংগ্রহের অনুমতি বাতিলের অধিকার সংরক্ষণ করিবেন।

০৩। তথ্য সংগ্রহের যাবতীয় ডকুমেন্টস-এ অত্র প্রতিষ্ঠানের একাডেমিক কো-অর্ডিনেটর স্বাক্ষর করাইতে হইবে।

০৪। রোগীদের কাছ থেকে সরাসরি কোন রকম রক্ত সংগ্রহ করা যাবে না। যদি রোগীদের কাছ থেকে সরাসরি রক্ত সংগ্রহ করা হয় তাহলে প্রশিক্ষণ/অনুমতিপত্র বাতিলের অধিকার সংরক্ষণ করিবেন।

বি.দ্র: প্রশিক্ষণার্থী ছাত্র/ছাত্রীগণ কেবলমাত্র observer, তাহারা কোন মেশিন handle করতে পারবে না।

অধ্যাপক ডা. মো. নিজামুল হক
পরিচালক ও অধ্যাপক
জাতীয় ক্যান্সার গবেষণা ইনস্টিটিউট ও হাসপাতাল
মহাখালী, ঢাকা-১২১২।

স্মারক নং-এনআইসিআরএইচ/অনুমতি/২০২৩/২৬২/১(৮) তারিখ:২২/০৬/২০২৩ইং

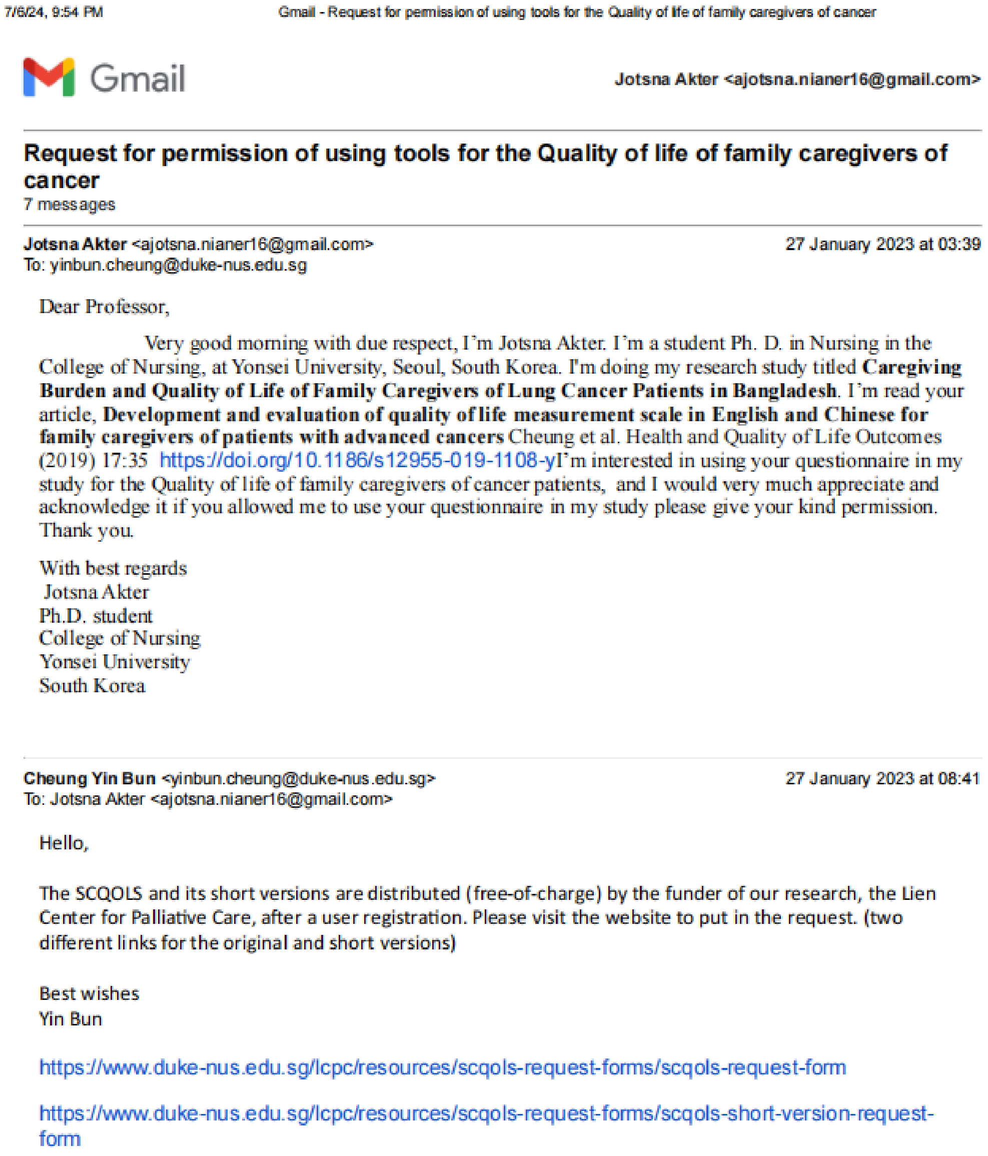
অনুলিপি অবগতি ও প্রয়োজনীয় ব্যবস্থা গ্রহনের জন্য প্রেরণ করা হলো ঃ

১। বিভাগীয় প্রধান, ..., এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
২। একাডেমিক কো-অর্ডিনেটর, এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
৩। উপ-পরিচালক (প্রশাসন), এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
৪। Jotsna Akter, PhD Student,Yonsei Unuversity College of Nursing, South Korea & Staff Nurse, Shaheed Suhrawady Medical College & Hospital, Dhaka-1207.
৫। সেবা তত্ত্বাবধায়ক, এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
৬। পরিচালক মহোদয়ের ব্যক্তিগত সহকারী, এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
৭। ওয়ার্ড মাষ্টার, এনআইসিআরএইচ, মহাখালী, ঢাকা-১২১২।
৮। সংশ্লিষ্ট নথি।

22 JUN 2023

পরিচালক ও অধ্যাপক
জাতীয় ক্যান্সার গবেষণা ইনস্টিটিউট ও হাসপাতাল
মহাখালী, ঢাকা-১২১২।

Appendix 10. Permission to use instruments



7/6/24, 9:54 PM Gmail - Request for permission of using tools for the Quality of life of family caregivers of cancer

Gmail **Jotsna Akter <ajotsna.nianer16@gmail.com>**

Request for permission of using tools for the Quality of life of family caregivers of cancer
7 messages

Jotsna Akter <ajotsna.nianer16@gmail.com> 27 January 2023 at 03:39
To: yinbun.cheung@duke-nus.edu.sg

Dear Professor,

Very good morning with due respect, I'm Jotsna Akter. I'm a student Ph. D. in Nursing in the College of Nursing, at Yonsei University, Seoul, South Korea. I'm doing my research study titled **Caregiving Burden and Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh**. I'm read your article, **Development and evaluation of quality of life measurement scale in English and Chinese for family caregivers of patients with advanced cancers** Cheung et al. Health and Quality of Life Outcomes (2019) 17:35 https://doi.org/10.1186/s12955-019-1108-yI'm interested in using your questionnaire in my study for the Quality of life of family caregivers of cancer patients, and I would very much appreciate and acknowledge it if you allowed me to use your questionnaire in my study please give your kind permission. Thank you.

With best regards
Jotsna Akter
Ph.D. student
College of Nursing
Yonsei University
South Korea

Cheung Yin Bun <yinbun.cheung@duke-nus.edu.sg> 27 January 2023 at 08:41
To: Jotsna Akter <ajotsna.nianer16@gmail.com>

Hello,

The SCQOLS and its short versions are distributed (free-of-charge) by the funder of our research, the Lien Center for Palliative Care, after a user registration. Please visit the website to put in the request. (two different links for the original and short versions)

Best wishes
Yin Bun

https://www.duke-nus.edu.sg/lcpc/resources/scqols-request-forms/scqols-request-form

https://www.duke-nus.edu.sg/lcpc/resources/scqols-request-forms/scqols-short-version-request-form

7/6/24, 9:56 PM Gmail - Request for permission

Gmail **Jotsna Akter <ajotsna.nianer16@gmail.com>**

Request for permission
6 messages

Jotsna Akter <ajotsna.nianer16@gmail.com> 1 March 2022 at 13:18
To: drfarzanarabin@yahoo.com

Dear sir,

Assalamualaikum sir, this is Jotsna Akter, I was a nurse teacher in Bangladesh, Now I am a Ph.D. student at Yonsei University, South Korea, I am interested to study the **Caregiving Burden and Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh**. I am very glad and respectful to you, I read your published paper. **Adaptation, linguistic and clinimetric validation of the Bangla version of the Zerit Burden Interview, these tools are** very important for Bangladesh. I firmly request if you give me permission to use these tools it will be very supportive and help me to continue my study.

With best regards

Jotsna Akter

Ph. D. student, Yonsei University, South Korea

---

farzana rabin <drfarzanarabin@yahoo.com> 2 March 2022 at 22:09
Reply-To: farzana rabin <drfarzanarabin@yahoo.com>
To: ajotsna.nianer16@gmail.com

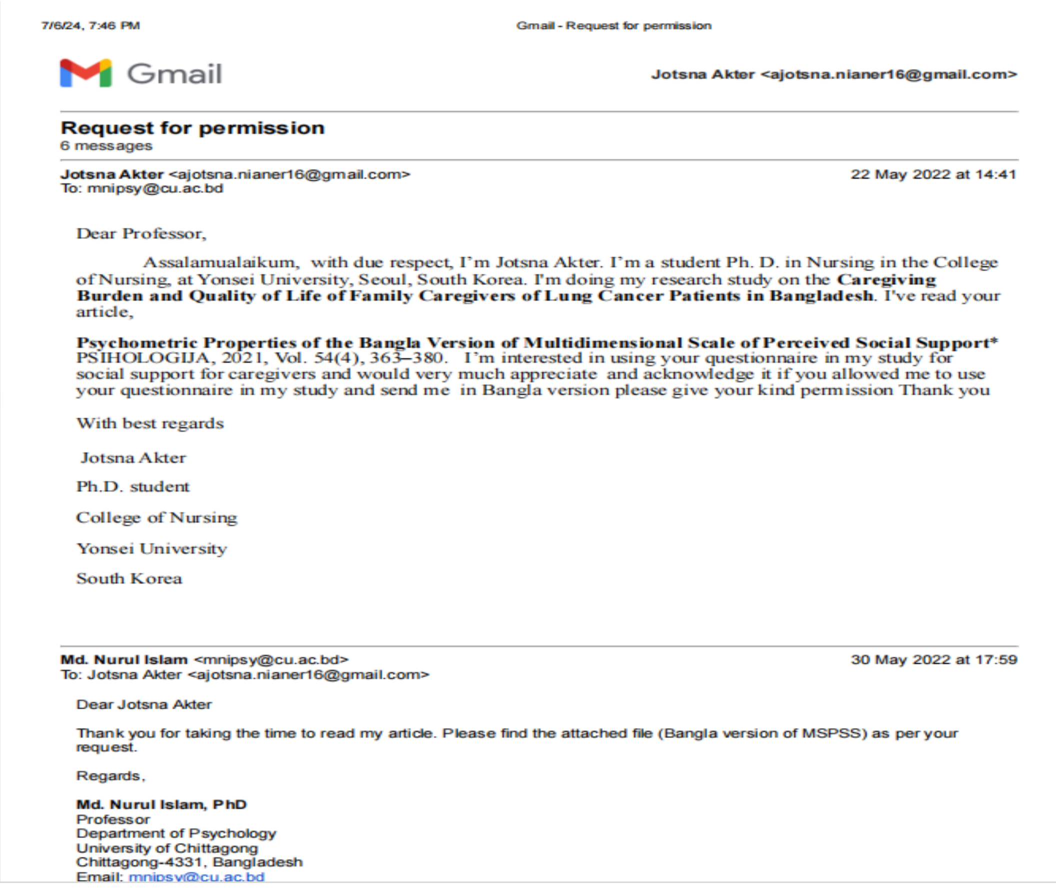
Dear Jostna Akter,

You can use this tool for your study with due acknowledgement.

Best wishes.
Dr. Farzana Rabin
Associate Professor & Head
Department of Psychiatry
Holy Family Red Crescent Medical College
Dhaka.

Sent from Yahoo Mail on Android
[Quoted text hidden]

Jotsna Akter <ajotsna.nianer16@gmail.com> 3 March 2022 at 00:58
To: farzana rabin <drfarzanarabin@yahoo.com>



7/6/24, 7:46 PM Gmail - Request for permission

Gmail **Jotsna Akter <ajotsna.nianer16@gmail.com>**

Request for permission
6 messages

Jotsna Akter <ajotsna.nianer16@gmail.com> 22 May 2022 at 14:41
To: mnipsy@cu.ac.bd

Dear Professor,

Assalamualaikum, with due respect, I'm Jotsna Akter. I'm a student Ph. D. in Nursing in the College of Nursing, at Yonsei University, Seoul, South Korea. I'm doing my research study on the **Caregiving Burden and Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh**. I've read your article,

Psychometric Properties of the Bangla Version of Multidimensional Scale of Perceived Social Support* PSIHOLOGIJA, 2021, Vol. 54(4), 363–380. I'm interested in using your questionnaire in my study for social support for caregivers and would very much appreciate and acknowledge it if you allowed me to use your questionnaire in my study and send me in Bangla version please give your kind permission Thank you

With best regards

Jotsna Akter

Ph.D. student

College of Nursing

Yonsei University

South Korea

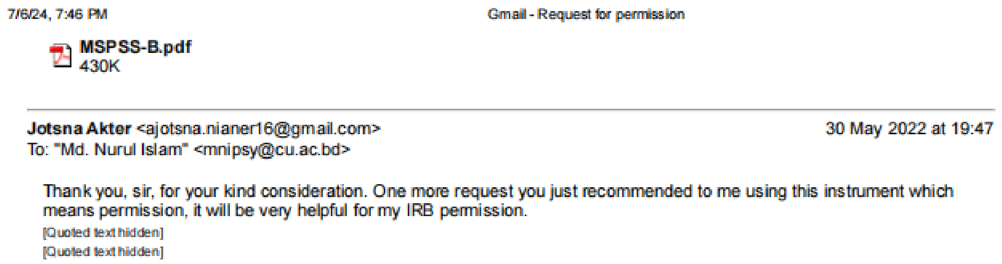
Md. Nurul Islam <mnipsy@cu.ac.bd> 30 May 2022 at 17:59
To: Jotsna Akter <ajotsna.nianer16@gmail.com>

Dear Jotsna Akter

Thank you for taking the time to read my article. Please find the attached file (Bangla version of MSPSS) as per your request.

Regards,

Md. Nurul Islam, PhD
Professor
Department of Psychology
University of Chittagong
Chittagong-4331, Bangladesh
Email: mnipsy@cu.ac.bd

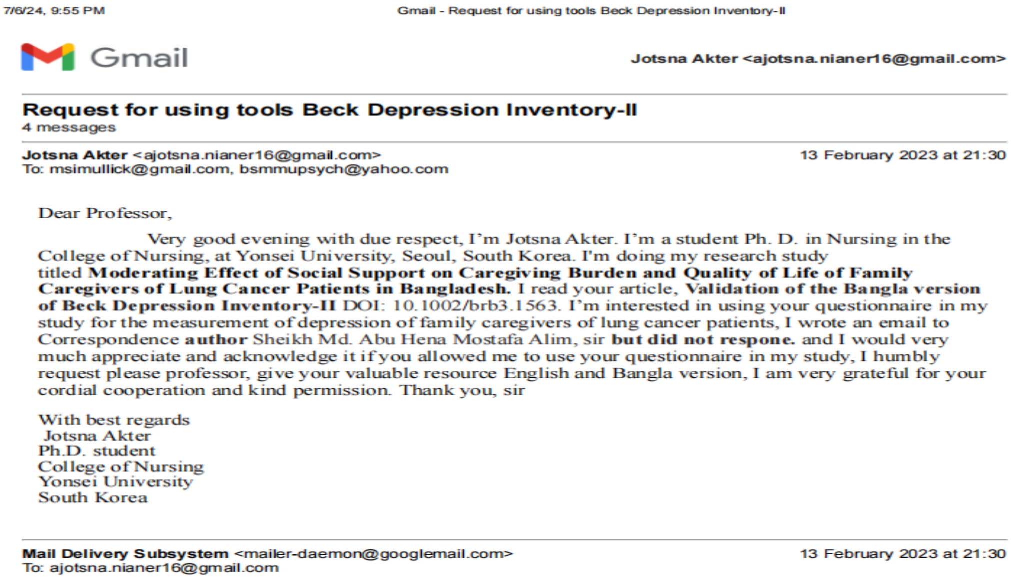


7/6/24, 7:46 PM Gmail - Request for permission

MSPSS-B.pdf
430K

Jotsna Akter <ajotsna.nianer16@gmail.com> 30 May 2022 at 19:47
To: "Md. Nurul Islam" <mnipsy@cu.ac.bd>

Thank you, sir, for your kind consideration. One more request you just recommended to me using this instrument which means permission, it will be very helpful for my IRB permission.
[Quoted text hidden]
[Quoted text hidden]



7/6/24, 9:55 PM Gmail - Request for using tools Beck Depression Inventory-II

Gmail Jotsna Akter <ajotsna.nianer16@gmail.com>

Request for using tools Beck Depression Inventory-II
4 messages

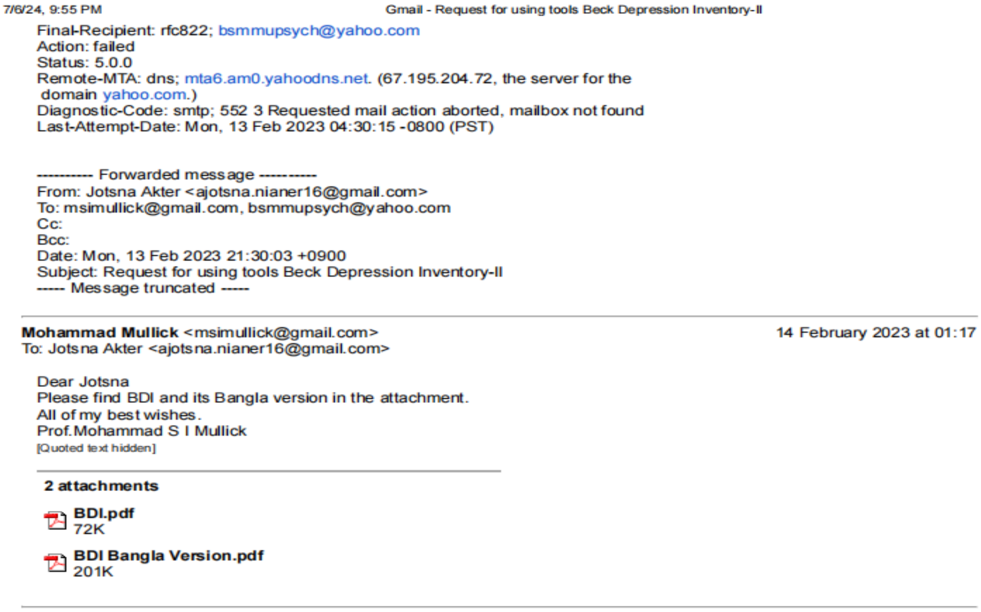
Jotsna Akter <ajotsna.nianer16@gmail.com> 13 February 2023 at 21:30
To: msimullick@gmail.com, bsmmupsych@yahoo.com

Dear Professor,

Very good evening with due respect, I'm Jotsna Akter. I'm a student Ph. D. in Nursing in the College of Nursing, at Yonsei University, Seoul, South Korea. I'm doing my research study titled **Moderating Effect of Social Support on Caregiving Burden and Quality of Life of Family Caregivers of Lung Cancer Patients in Bangladesh.** I read your article, **Validation of the Bangla version of Beck Depression Inventory-II** DOI: 10.1002/brb3.1563. I'm interested in using your questionnaire in my study for the measurement of depression of family caregivers of lung cancer patients, I wrote an email to Correspondence **author** Sheikh Md. Abu Hena Mostafa Alim, sir **but did not respone.** and I would very much appreciate and acknowledge it if you allowed me to use your questionnaire in my study, I humbly request please professor, give your valuable resource English and Bangla version, I am very grateful for your cordial cooperation and kind permission. Thank you, sir

With best regards
Jotsna Akter
Ph.D. student
College of Nursing
Yonsei University
South Korea

Mail Delivery Subsystem <mailer-daemon@googlemail.com> 13 February 2023 at 21:30
To: ajotsna.nianer16@gmail.com



7/6/24, 9:55 PM Gmail - Request for using tools Beck Depression Inventory-II

Final-Recipient: rfc822; bsmmupsych@yahoo.com
Action: failed
Status: 5.0.0
Remote-MTA: dns; mta6.am0.yahoodns.net. (67.195.204.72, the server for the domain yahoo.com.)
Diagnostic-Code: smtp; 552 3 Requested mail action aborted, mailbox not found
Last-Attempt-Date: Mon, 13 Feb 2023 04:30:15 -0800 (PST)

---------- Forwarded message ----------
From: Jotsna Akter <ajotsna.nianer16@gmail.com>
To: msimullick@gmail.com, bsmmupsych@yahoo.com
Cc:
Bcc:
Date: Mon, 13 Feb 2023 21:30:03 +0900
Subject: Request for using tools Beck Depression Inventory-II
----- Message truncated -----

Mohammad Mullick <msimullick@gmail.com> 14 February 2023 at 01:17
To: Jotsna Akter <ajotsna.nianer16@gmail.com>

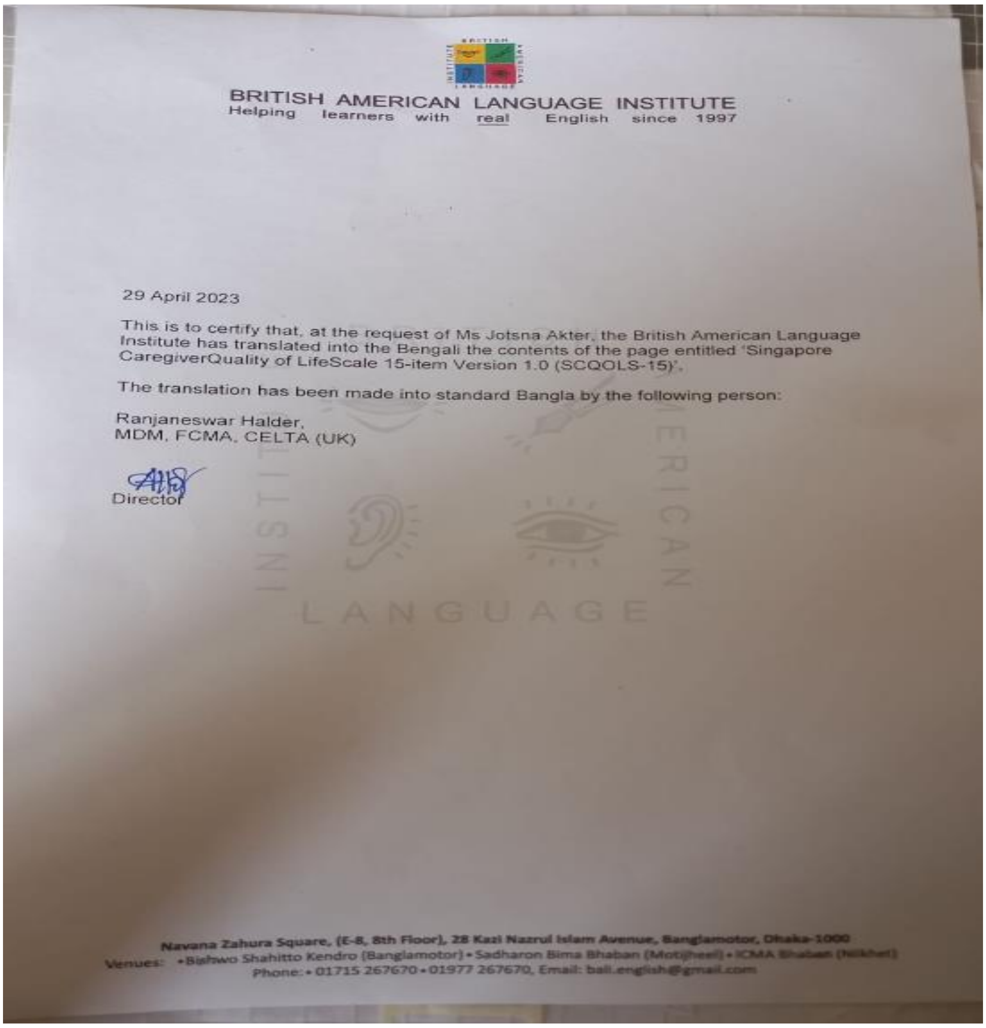
Dear Jotsna
Please find BDI and its Bangla version in the attachment.
All of my best wishes.
Prof.Mohammad S I Mullick
[Quoted text hidden]

2 attachments

BDI.pdf
72K

BDI Bangla Version.pdf
201K

Appendix 11. Caregivers QoL measurement Bangla translation certificate



BRITISH AMERICAN LANGUAGE INSTITUTE
Helping learners with real English since 1997

29 April 2023

This is to certify that, at the request of Ms Jotsna Akter, the British American Language Institute has translated into the Bengali the contents of the page entitled 'Singapore CaregiverQuality of LifeScale 15-item Version 1.0 (SCQOLS-15)'.

The translation has been made into standard Bangla by the following person:

Ranjaneswar Halder,
MDM, FCMA, CELTA (UK)

Director

Navana Zahura Square, (E-8, 8th Floor), 28 Kazi Nazrul Islam Avenue, Banglamotor, Dhaka-1000
Venues: • Bishwo Shahitto Kendro (Banglamotor) • Sadharon Bima Bhaban (Motijheel) • ICMA Bhaban (Nilkhet)
Phone: • 01715 267670 • 01977 267670, Email: bali.english@gmail.com

Abstract in Korean

폐암 환자 가족 돌봄제공자의 삶의 질과 돌봄부담감, 사회적 지지 및 우울의 관련성

조스나 악터

연세대학교 대학원 간호학과

배경: 폐암은 전 세계적으로 암 관련 사망의 주요 원인으로 2018 년 기준 180 만명이 사망한 것으로 보고되고 있다. 방글라데시에서는 암 진단시 가족 돌봄제공자가 암 환자를 돌보는 일차적 역할을 하고 있으며, 이로 인해 상당한 간병 부담이 발생하여 돌봄제공자의 삶의 질에 영향을 미친다. 본 연구는 방글라데시 폐암 환자 가족 돌봄제공자의 삶의 질에 기여하는 요인을 규명하는 것을 목표로 하였다.

방법: 본 연구는 서술적 상관관계 연구로 폐암 환자의 가족 돌봄제공자 205 명이 연구에 참여하였다. 돌봄제공자의 삶의 질은 암 돌봄제공자 삶의

질 지수-싱가포르 15-방글라데시어 버전(CQOLC-S15-B)으로 측정되었다. 돌봄부담감은 Zarit Burden Interview 방글라데시어 버전(ZBI-B)으로 측정되었다. 사회적 지지는 사회적 지지 척도(MSPSS-B) 방글라데시어 버전으로 측정되었다. 우울은 Beck Depression Inventory-II 방글라데시어 버전(BDI-II-B)으로 측정되었다. 자료분석은 IBM SPSS 27.0 을 사용하여 위계적 회귀 분석을 시행하였다.

결과: 폐암 환자의 가족 돌봄제공자는 낮은 수준의 삶의 질을 보고하였다(14.65 ± 7.61/총점 60 점). 초등교육, 낮은 월 가계 소득, 농촌 지역 거주, 하루 돌봄에 소요하는 시간은 삶의 질과 유의미한 연관성을 보여주는 요인이었다. 가족돌봄제공자의 약 94%에서 높은 수준의 돌봄부담감이 확인되었고, 사회적 지지는 낮았으며(16.88±4.70/총점 60 점), 약 40%의 돌봄제공자에서 심각한 수준의 우울이 확인되었다. 돌봄부담감과 삶의 질($r=-0.38$, $p<.001$), 우울과 삶의 질($r=-0.17$, $p=.016$)간 음의 상관관계가 확인되었고, 사회적 지지와 삶의 질 사이에는 양의 상관관계가 확인되었다($r=0.30$, $p<.001$). 돌봄부담감은 가족 돌봄제공자의 삶의 질에 부정적으로 영향을 미친 반면($\beta=-0.32$, $p<.001$),

사회적 지지는 삶의 질에 긍정적으로 기여하는 요인이었다(β=0.24, $p<.001$).

결론: 본 연구를 통해 방글라데시 폐암 환자 가족 돌봄제공자의 돌봄부담감과 사회적 지지가 가족 돌봄제공자의 삶의 질에 영향을 미치는 요인임을 규명하였다. 가족 돌봄제공자의 돌봄부담감 감소를 목표로 하는 간호중재 제공과 사회적 지지 강화는 폐암 환자 가족 돌봄제공자의 삶의 질 향상에 기여하게 될 것이다.

핵심되는 말: 가족 돌봄제공자, 폐암, 삶의 질, 돌봄부담감, 사회적 지지, 우울