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February, 2023

Doctoral Dissertation

Validity and Reliability of the
Mongolian Version of Functional
Assessment of Cancer Therapy-General
(FACT-G)

Graduate School of Chosun University

Department of Nursing

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ABSTRACT

Validity and Reliability of the Mongolian Version of Functional Assessment of Cancer Therapy-General (FACT-G)

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Background: The health-related quality of life (HRQOL) is an important indicator for determining the health outcomes of cancer treatment. The Functional Assessment of Cancer Therapy-General (FACT-G) scale, which was developed in the USA and validated in many countries, is widely used to measure the HRQOL in cancer patients. In Mongolia, there is no valid and reliable instrument to measure HRQOL for cancer patients. The purposes of this study was to empirically validate the FACT-G scale with Mongolian cancer patients.

Methods: This study was a methodological study. The English version of FACT-G was translated into the Mongolian language using the Functional Assessment of Chronic Illness Therapy (FACIT) translation and linguistic validation methodology. The translated Mongolian version of FACT-G was validated through content validity, item analysis, construct validity, convergent validity, and reliability using a convenience sample of 303 cancer patients recruited from four hospitals in Ulaanbaatar, Mongolia. Data were analyzed using descriptive statistics,

an exploratory factor analysis with varimax rotation to determine the factor structure. Convergent validity was assessed by calculating the correlation between FACT-G and the Functional assessment instrument the COOP/WONCA charts. The reliability of the internal consistency for the total and its subscales was assessed by Cronbach's alpha.

Results: A 4-factor, 20-item model demonstrated a satisfactory fit with significant factor loadings. The factor structure of the Mongolian version of the FACT-G scale was similar to that of the original version including the physical, social/family, emotional, and functional well-being subscales and these four factors explained 65.5% of the variance. The convergent validity was supported by a significant correlation between the FACT-G Mongolian version and the COOP/WONCA charts ($r=.69, p<.001$). Cronbach's alpha for the total scale was .93 and that of subscales ranged from .72 to .89.

Conclusion: The Mongolian version of the FACT-G scale demonstrated satisfied validity and reliability. It is an appropriate instrument to use in research and clinical settings to assess the health-related quality of life of Mongolian cancer patients. For further validation of the Mongolian version of the FACT-G, it is necessary to conduct confirmatory factor analysis and replication studies with diverse samples.

Keywords: Quality of Life; Cancer; Validation study; Mongolia

국문초록

몽골어판 암환자 건강관련 삶의 질 측정도구(FACT-G)의 타당도와 신뢰도 검증

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연구 목적: 건강 관련 삶의 질 (Health-related quality of life [HRQOL]) 은 암환자의 건강결과를 결정하는 중요한 지표이다. 미국에서 개발되어 많은 국가에서 검증된 척도인 FACT-G (Functional Assessment of Cancer Therapy-General) 는 암 환자의 HRQOL 을 측정하기 위해 널리 사용되고 있다. 몽골에는 암 환자의 HRQOL을 측정할 수 있는 타당도와 신뢰도가 검증된 도구가 없는 실정이다. 본 연구의 목적은 몽골 암 환자를 대상으로 FACT-G 척도의 타당도와 신뢰도를 검증하는 것이다.

연구방법: 본 연구는 FACT-G의 타당도와 신뢰도를 검증하기 위한 방법론적 연구이다. 영어로 개발된 FACT-G를 FACIT (Functional Assessment of Chronic Illness Therapy) 지침에 따라 몽골어로 번역하였다. 번역한 도구는 몽골의 수도인 울란바토르의 4개 병원을 통해 편의표집한 303명의 암환자를 대상으로 수집한 자료를 사용하여, 문항분석, 내용타당도, 구성타당도, 수렴타당도 및 신뢰도를 검증하였다. 수집한 자료는 기술통계, 요인의 구조를 파악하기 위해 탐색적 요인분석을 실시하였으며, 수렴타당도를 검증하기 위해 FACT-G와 COOP/WONCA Charts 점수 간

의 상관관계를 분석하였다. 전체 척도와 하위척도의 내적 일관성 신뢰도인 Cronbach's α 를 산출하였다.

연구결과: 몽골어 판 FACT-G는 20개 문항에 대한 요인분석 결과 4개 요인으로 추출되었으며, 미국에서 개발한 원도구의 신체적, 사회/가족, 정서적 및 기능적 안녕의 4개의 하위 척도와 유사한 구조를 보였으며, 추출된 4개의 요인이 HRQOL 변이의 65.5%를 설명하였다. FACT-G 몽골어 버전과 COOP/WONCA Charts 간의 상관계수는 .69 였으며, 통계적으로 유의하였다($r=.69, p<.001$). 전체 척도의 Cronbach's α 는 .93이었고, 하위 척도의 Cronbach's α 의 범위는 .72~.89 였다.

결론: 몽골어판 FACT-G 척도는 만족할 만한 타당도와 신뢰도를 보여, 몽골 암환자의 건강관련 삶의 질을 평가하기 위한 연구 및 임상에서 사용하기에 적합한 것으로 나타났다. 추후 연구에서는 확인적 요인 분석 및 다양한 표본을 통한 반복연구를 통한 재검증을 통해 몽골어판 FACT-G 도구의 추가 검정이 요구된다.

핵심어: 삶의 질; 암; 검증 연구; 몽골

I. Introduction

1.1. Background

Globally, cancer is one of the most common causes of morbidity and mortality (Nayak et al., 2017). Moreover, cancer is the leading cause of death worldwide, with nearly 10 million deaths or one in six deaths in 2020 (World Health Organization [WHO], 2020). Moreover, 49% of cancer incidents were older than 70 years old in 2019 (Roser & Ritchie, 2019). The burden of cancer will increase year by year (Sung et al., 2021) due to an increase in aging worldwide.

Mongolia, located in East Asia between Russia and China, has a population of 3.5 million, and two-thirds of the population lives in urban with a traditional semi-nomadic lifestyle (National Statistics Office of Mongolia [NSOM], 2021). Cancer is the second leading cause of mortality in Mongolia. Compare to global data, the prevalence and mortality of cancer are very high (Roser & Ritchie, 2019). Moreover, 25% of cancer cases were diagnosed as early stage 1 or 2 and 75% of cancer cases were diagnosed as late stage 3 or 4 (National Cancer Center in Mongolia [NCCM], 2021). Mongolian medical system is not good enough, early detection is impossible, lack of public health education, and has to improving the supply of higher-quality services for cancer patients (Yerramilli, Dugee, Enkhtuya, Knaul, & Demaio, (2015). In Mongolia, most cancers are diagnosed at a late stage, therefore the survival rate is low and then mortality rate is high (Chimed-Ochir et al., 2022). For example, about 80% of liver and stomach cancer, 92% of lung cancer, and 50% of breast cancer were diagnosed at terminal stages 3 and 4 (NCCM, 2020). Cancer incidence and mortality cases are increasing each year in Mongolia and it becomes a high cancer burden country (Yerramilli et al., 2015).

Cancer patients undergo multimodality treatment such as chemotherapy, surgery, radiation, based on the cancer stage. They have difficulties and experience poor quality of life due to the

side-effects of treatments, symptoms, and losses of functional ability such as physical and emotional functions (Lewandowska et al., 2020). Improvements in procedural and diagnostic techniques and the variety of treatment modalities available have increased the life expectancy of cancer patients (Cella et al., 1993). Traditionally, the outcomes of cancer treatments were included objective tumor responses and survival rate (Fayers & Machin, 2000). More recently, subjective outcome of health-related quality of life (HRQOL) have been recognized as important in determining the outcome of cancer treatments (Sitlinger & Zafar, 2018). Currently, HRQOL is essential and one of the most highlighted health issues for cancer patients by extending the life expectancy of people diagnosed with cancer (Alam et al., 2020).

To measure HRQOL of cancer patients, over the past 30 years, many researchers in nursing, psychology, and medicine have a lot of efforts to identify the conceptual structure of HRQOL and develop measurements. Consequently, HRQOL in cancer patients is generally accepted as a multidimensional assessment of how disease and treatment affect the overall function and well-being of patients (Cella, 1995). A multi-dimensional concept related to the self-report and individual level (Yanez, Pearman, Lis, Beaumont, & Cella, 2013) to physical, functional, psychological, emotional, social, and spiritual well-being (Jean et al., 2019; Jitender, Mahajan, Rathore, & Choudhary, 2018).

As the importance of HRQOL for cancer patients increased, the instruments to measure the HRQOL of cancer patients have been developed and validated (Aaronson et al., 1993; Cella et al., 1993). There are several HRQOL measurements of cancer patients developed including the European Organization for the Research and Treatment of Cancer QLQ-C30 (EORTC QLQ-C30) and the Functional Assessment Cancer Therapy (FACT-G) (Lee & Choi, 2007; Luckett et al., 2011). Generally, the EORTC QLQ-C30 limits its items to relatively objective aspects of functioning, while the FACT-G encourages patients to reflect their thoughts and feelings in general (Luckett et al., 2011).

The most widely used HRQOL measurement in cancer patient is the FACT-G, developed and validated by Cella et al. (1993) in the United States. It is generic, multidimensional and

originally designed to assess HRQOL of all types of cancer patients. FACT-G has been translated and validated into several languages, including Korean (Lee, Chun, Kang, & Lee, 2004), American (Darling, Eton, Sulman, Casson, & Cella, 2006), Chinese (Yu et al., 2000), Singaporean (Cheung, Goh, Wee, Khoo, & Thumboo, 2009), Malaysian (Thomas, Pandey, Ramdas, Sebastian, & Nair, 2004), Columbian (Sánchez, Ballesteros, & Arnold, 2011), Japanese (Fumimoto et al., 2001), Taiwanese (Chang, Lin, & Lin, 2019), Palestinian (Jabari, Nawajah, & Jabareen, 2022), Indian (Jacob et al., 2019), and Brazilian (Campos, Spexoto, Serrano, & Maroco, 2016; Ishikawa et al., 2010). The main domains of HRQOL have been identified as physical, social/family, emotional, and functional well-being.

Considering increasing cancer prevalence and mortality in Mongolia, cancer research related to HRQOL is important. However, the concept of quality of life and HRQOL are new for Mongolian health care professionals and researchers (Davaasuren et al., 2019) and there are no reliable and valid measurements exist in Mongolia. To evaluate treatment outcomes in Mongolian cancer patients, a reliable and valid measurement to assess HRQOL is needed. Moreover, humans are beings who illuminate their lives within the social or cultural contexts to which they belong (Rowell et al., 2022; Suavansri et al., 2022). HRQOL perceived by Mongolian cancer patients can be different from other cultures. Although, the reliability and validity of FACT-G used in HRQOL research of cancer patients have been well established with Western and Asian samples, but problems can emerge when researchers conduct research with different cultural groups such as Mongolian and use these same scales without a proper validation of this scale in Mongolian culture (Gere & MacDonald, 2013; Sousa, West, Moser, Harris, & Cook, 2012). Therefore, this study is necessary to validate the Mongolian version of FACT-G to measure the HRQOL of cancer patients in Mongolia.

1.2. Purpose

The purpose of this study is to evaluate the psychometric properties of the FACT-G with Mongolian cancer patients. The specific objectives are as follows:

- 1) To translate the English version of the FACT-G into the Mongolian language
- 2) To evaluate the validity and reliability of the Mongolian version of FACT-G

1.3. Definition of Term

Health-related Quality of Life (HRQOL)

Theoretical definition: HRQOL is an individual's satisfaction or happiness with domains of life that affects or is affected by health as defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Wilson & Cleary, 1995).

Operational definition: In this study, HRQOL was a score measured by Functional Assessment Cancer Therapy-General (FACT-G) developed and validated by Cella et al. (1993). This scale consists with four subscales including physical, social, family, emotional, and functional well-being.

II. Literature Review

2.1. Cancer Prevalence

In 2020, there were about 18.1 million cancer cases worldwide. It is estimated that there will be 28.4 million cases in 2040, an increase of 47% from 2020 (Sung et al., 2021). Cancer is the leading cause of chronic disease-related death worldwide, with about 10 million people dying from cancer annually in 2020. The most common cancer worldwide is breast cancer, followed by lung cancer (12.2%), colorectal cancer (10.7%), prostate cancer (7.8%), and stomach cancer (6.0%) (WHO, 2021). The cancer incidence rate increases with age, from less than 25 per 100,000 people under the age of 20 to about 350 per 100,000 people between the ages of 45 and 49, and more than 1,000 per 100,000 people over the age of 60 (Khiari, Mallekh, Cherif, & Hsairi, 2021). According to Cancer World Data in 2019, the 5-year survival rates for all cancers have increased from 50.3 to 67% due to increasing life expectancy worldwide. Two major factors contributing to increased 5-year survival rates for cancer patients are early detection and early treatment (Roser & Ritchie, 2019).

Mongolia is 1,565 million km², located in East Asia, and has a population of 3.5 million (NSOM, 2021). Two-thirds of the population lives in urban with a traditional semi-nomadic lifestyle (NSOM, 2020). Medicine has traditionally been practiced in Mongolia by shamans, Buddhist healers, acupuncturists, bonesetter (Tsogbadrakh et al., 2020). National Cancer Center of Mongolia reported that the estimated number of new cases of cancer is 5,981 in 2021. The most common cancers in Mongolia are liver cancer (32%) followed by stomach cancer (16%), lung cancer (7.5%), esophagus cancer (5.6%), and cervical cancer (5.25%) (NCCM, 2021). Cancer is the second-leading cause of mortality in Mongolia. Compared to global data, cancer prevalence and mortality in Mongolia are very high (Roser & Ritchie, 2019). According to the

total newly registered cancer cases, 25% were diagnosed in the early stage (I or II) and 75% were diagnosed in the late stage (III or IV) (MNCC, 2021).

The Human Development Index (HDI) shows that cancer incidence and mortality are related to the development of the country. The HDI measures life expectancy by mean years of schooling, and standard of living. Regarding cancer prevalence in HDI records, the low rate of HDI countries had lower incidences but the mortality rate was twice that of high HDI countries (Sung et al., 2021). Previous studies reported that differences in cancer incidence between lower-income and higher-income countries (Bruni et al., 2016; Ott, Ullrich, Mascarenhas, & Stevens, 2011). The chronic infection-related cancers (stomach, liver, and cervical) incidence account for more than 26% of the total cancers in low-and middle-income countries (LMICs) and the high index countries are higher incidence on lifestyle-related cancers such as melanoma, colorectal, and breast cancer (Bruni et al., 2016; Ott et al., 2011). Health-related distress in cancer patients increasing most rapidly in low-income countries and in people over the age of 70 (Sleeman, Gomes, de Brito, Shamieh, & Harding, 2021). According to Human Development Report (2022), Mongolian HDI is 0.745 and that is ranked 96 of 191 countries (Chimedochir et al., 2022).

2.2. The Burden of Cancer

Cancer is a major cause of the disease burden worldwide, and it is expected that the global cancer burden will continue to increase over the next 20 years (Bray, Jemal, Grey, Ferlay, & Forman, 2012; Tran et al., 2022). Nowadays, cancer is an unmeasurable physical, emotional, and financial burden on individuals, families, communities and health system (WHO, 2020). Cancer patients often in the low quality of life due to the side-effects of cancer treatment (Smyth et al., 2016) and indicate various types of symptoms and loss of physical, emotional (Sung et al., 2021) and psychological functions (Battulga & Davaasuren, 2017). It is reported

that the burden of cancer symptoms frequently remains and under-treated (Parajuli & Hupcey, 2021). Cancer patients typically report symptoms including fatigue, pain, insomnia (Kokkonen et al., 2019), nausea, vomiting (Farrell, Pang, Kim, & Tabatabai, 2014), loss of appetite, weight loss, depression, respiratory problems and cognition impairment (Reilly et al., 2013).

In Mongolia, most cancers are diagnosed at a late stage, resulting in a low survival and a high mortality rates. Approximately 80% of stomach, esophageal, liver cancers, 92% of lung cancers, and 50% of breast cancers are diagnosed as incurable stage III or IV (NCCM, 2021). Mongolia is still double burdened by non-communicable diseases such as cancer (Nakoa et al., 2017). Mongolian cancer patients commonly observed pain, insomnia, isolation (Battulga & Davaasuren, 2017) and they need pain relief management, reduce of suffering symptoms, and comfortable death (Davaasuren, 2012).

In Mongolia, liver cancer was 17 times and stomach cancer was 4 times higher than global rates (WHO, 2020). The high incidence of hepatitis B and C and the harmful use of alcohol are the cause of liver cancer in Mongolia (Chime-Ochir et al., 2022). In 2018, South Korea, Mongolia, Japan, and China accounted for the top four countries with the highest incidence of gastric cancer per 100,000 population (Rawla & Barsouk, 2019). Lung cancer is the third leading cancer in Mongolia and it is related to high level of air pollution in Mongolia which 80 times higher than recommended safety levels set by the WHO, as power plants are consistently operating in winter time and smoke from coal fire surrounds the capital, Ulaanbaatar (Davaasuren, 2019). The biggest risk factor in the world is tobacco users and responsible for around 22% of cancer deaths (Non Communicable Disease [NCDs], 2020).

Through the several initiatives, the Mongolian Ministry of Health has recognized both the need and opportunity to reduce the burden of non-communicable diseases, including cancers. One major response was the development and implementation of a National Cancer Control Plan for 2007-2017 (NCCP) (Stjernsward, Tsogzolmaa, & Soninhishig, 2014).

2.3. Health-related Quality of Life of Cancer Patients

The WHO defined quality of life (QOL), “as a state of complete physical, mental and social well-being and not merely the absence of disease or weakness” (WHO, 1948). Center for Disease Control Prevention (CDC) clearly shows that health-related quality of life (HRQOL) depends on the overall health rank which is physical or mental last 40 years. HRQOL as targeted by cancer care is a multi-dimensional concept related to the self-report of individual level (Yanez et al, 2013) to physical, functional, psychological, emotional, social, and spiritual well-being (Jean et al., 2019; Jitender et al., 2018).

The WHO defines the primary goals of a cancer diagnosis as a cure, life extension, and improved QOL (WHO, 2020). Cella et al. (1993) observed the affective of the treatment is to increase life expectancy and long-term well-being of patients. Advances in science today have facilitated early detection and treatment of cancer, which has increased the survival rate of cancer patients (Jabari et al., 2022; Worldometer, 2022). However, QOL of cancer patient is different standard of living in personally and related with their health conditions (Brown, Lipscomb, & Snyder, 2001).

Cancer treatment is commonly linked with certain side effects depending on the type of cancer, position in body, treatment type, performance status of patients and their genomic characteristics (Jitender et al., 2018). Cancer patients need to deal with physical, psychological, and social problems during and immediately after treatment, resulting in reduced their HRQOL (Silver, Baima, & Mayer, 2013). HRQOL is important in cancer patient care due to influences in both the disease and treatment (Jabari et al., 2022). A lot of financial stress due to high medical treatment (Jitender et al., 2018) and financial burden is associated with outcomes of cancer diagnosis or treatment (Sitlinger & Zafar, 2018). Cancer survivors have an increased risk of cancer-related fatigue and psychological symptoms (Action Study Group, 2017).

Previous studies reported the cancer patients needed several well-being supports for a better quality of life (Bayarsaikhan, 2016) and the spiritual care of HRQOL is important in surviving cancer (Taleghani, Shahriari, & Alimohammadi, 2018). Cancer patients need to for daily supportive care along with depends on their symptoms (Jitender et al., 2018). Supportive and palliative care patients who started early will experience symptom relief, reduced depression, improved quality of life, survival, outcomes, and satisfaction (Bakitas et al., 2015; Bauman & Temel, 2014). Moreover, feeling of helplessness and hopelessness increased among cancer patients and family members (Mehnert et al., 2012) and they can get lots of benefit from supportive care (Jyotana & King, 2020).

HRQOL should be well organize for cancer patients and can have significant possible impacts on treatment response, reduce side effects from treatment, and improve pleasant clinical condition (Compos et al., 2016). The well-being of HRQOL is positive thinking and positive behaviors during life and represented by of life satisfaction and expression of emotion (Ruggeri et al., 2020). The QOL and psychological well-being are increasingly important for cancer patients after treatment (Tay, Wong, & Aw, 2022). The positive emotion and mood (not merely absence of negative emotion) will be happened satisfaction of life (positive functioning). Positive thinking and positive action are good respond to HRQOL of patients especially as diagnosed with cancer and it has wholly beneficial outcomes for the patient (Tod, Warnock, & Allmark, 2011).

Cancer patients and their family members have multidimensional needs due to cancer (Chow & Chen, 2018) which influences both emotionally and physically (Bultz & Carlson, 2006) Moreover, it was found that cancer patients were not satisfied with functional need of activities of daily living, physical, psychological, informational, economical (Moghaddam, Coxon, Nabarro, Hardy, & Cox, 2016), spiritual, interpersonal communication, and sexual needs (Harrison, Young, Price, Butow, & Solomon, 2009).

Differences of the conceptualization of HRQOL by cultures have been reported in previous

studies (Pagano & Gotay, 2005; Rowsell et al., 2022). Previous studies have identified that cultural differences in HRQOL may related to differences in treatment protocols, health disparities, access to health care resources, cultural views and practices, economic status, environmental factors including pollution, psycho-social issues, and cross-cultural linguistic equivalence (Action Study Group, 2017; Ma, Ba, & Wang, 2014; Rowsell et al., 2022). In particular, Southeast Asia, which is experiencing economic difficulties, related to the costs associated with cancer care, health care costs are key factor in determining HRQOL (Kimman et al., 2014).

2.4. Measurement of Health-related Quality of Life

It is very important to evaluate cancer-related symptoms and the functions of cancer patients and to measure the side effects of cancer treatment (Jitender et al., 2018). All of HRQOL instruments are a self-perceived approach to evaluating patients' view of their health conditions. Many of the symptoms and functions are not measurable with laboratory tests or imaging procedures and it is necessary to question the patients' self-reports (Osoba, 2011). QOL has a significant medical outcome measure that is important in oncology and related clinic (Juan, Wolin, & Lucía, 2011). Many questionnaires for health status, functional status and HRQOL assessment have been used all over the world as early as 1992 (NDC, 2020).

A number of measurements have been developed to assess HRQOL with two basic approaches: general (for populations) and disease-specific (for specific patients) (Wells, Russell, Haraoui, Bissonnette, & Ware, 2011). General measurements are commonly used instrument such as the 36-item short-form of Health Survey (SF-36) (Ware & Sherbourne, 1992), EuroQoL-5 Dimension (EQ-5D) (Balestroni & Bertolotti, 2012), World Health Organization-Quality of life (WHOQOL) and COOP/WONCA charts (Van Weel et al., 1993). The disease-specific measurement was used for patients who had chronic and diseases related

problem and measured health-related aspects perceived to impact an individual's QOL (Kang et al., 2018).

The measurement of HRQOL has been recognized as important in determining the outcome of cancer treatments (Lee et al., 2004; Patrick & Chiang, 2000). Measurement of patient-reported outcome (PRO) allows a comprehensive assessment of treatment benefit, and the use of PRO measures is highlighted in many treatment guidelines (Kim et al., 2020). In cancer patients, the European Organization for Research and Treatment of Cancer Quality of Life Core Questionnaire (EORTC QLQ-C30), and the Functional Assessment of Cancer Therapy-General (FACT-G) are most commonly used to measure HRQOL. EORTC-C30, and FACT-G are 'core' questionnaires that can be supplemented by a range of tumor, treatment, or symptom-specific 'elements' as needed (Lockett et al., 2011). FACIT organization established the measurement as a Functional Assessment of Cancer Therapy measure for cancer patients of the QOL. They defined the QOL as possibilities for achievement in each person's life and reflect the action of personal health and environmental factors (Cella et al., 2005).

However, the social, family well-being subscale of the FACT-G was complicated in Asian countries were observed the some culture-specific differences from Western countries (Chang et al., 2019; Lee et al., 2004; Song, Tan, Bredle, Bennett, & Northouse, 2020).

2.5. Functional Assessment of Cancer Therapy-General

FACIT (Functional Assessment of Chronic Therapy) organization established the measurement Functional Assessment of Cancer Therapy (FACT) to measure cancer patients on QOL. They defined the QOL as possibilities for success in each person's life and reflect the action of personal health and environmental factors (Cella et al., 1993). FACT-G was originally designed for use in oncology clinical trials and is a well-known instrument in cancer-related treatment evaluation and clinical interventions (Webster, Cella, & Yost, 2003). FACT-G uses a

familiar instrument for the evaluation of the HRQOL in cancer patients; the update is based on almost 10 years of experience in translation methodology through many different instruments.

Webster et al., (1993) FACIT organization explained that domains of QOL are consistently significant with the well-being concepts such as physical, social/family, emotional, and functional well-being. Physical well-being and General Physical domain included physical energy, health problem, self-care behaviors such as exercise, nutrition. Social/Family well-being and General Social domain included that family conflict and acceptance, friendship, communication and satisfaction of sex life. Emotional well-being and General Emotion domain included those expressions of emotion such as sadness, nervousness, worries and satisfaction of life (Dryman & Heimberg, 2018). Functional well-being and General Function domain included daily activities, movement, and enjoyment in life, sleeping and QOL. Skube et al. (2018).

Cella (1997) established the FACT-G instruments and developed it over four years in a 5-phase process. Psychometric tests have been assessed by focus groups, control groups and determined item generation, item review, reduction, scale construction, initial assessment of factors, internal consistency, convergent validity, discriminate validity, known groups validity, test-retest reliability, and sensitivity to change. Although the validity and reliability of FACT-G were generally good, it is reported that there are differences in validity and reliability for each country. All of the results showed that the internal consistency of Cronbach α coefficients were .89 for the total scale and ranged from .78 to .93 for subscales (Cella, 1997), and test-retest assessment coefficient mean was greater than .75, Internal consistency of the FACT-G for the total of scale's cronbach alpha was .93 and subscales ranged from .65 to .82 (Cella et al., 1993).

Previous studies reported that reliability and validity were consistently high and has been questioned whether these tools can be applied to patients of other countries (Fumimoto et al., 2001). All HRQOL instruments have a necessity to be valid and have high reliability and responsiveness (Wells et al., 2011). One of the strengths of FACT-G is that it ensures cross-

cultural relevance and is more sensitive to the psychological impacts of the illness in cultures outside of the United State (Webster et al., 2003).

FACT-G has been translated into more than 50 countries (Cella et al., 2005) including France (Coslet, Lapierre, Benhamou, & Galès, 2005), Singapore (Cheung et al., 2009), Brazil (Campos et al., 2016), Colombia (Sanchez et al., 2011), Turkey (Semri & Parvizi, 2021), Palestine (Jabari et al., 2022). Moreover, FACT-specific cancers (breast, prostate, lung, gastric cancer etc.) have been also translated into many other languages such as lung cancer in Brazil (Juliana, Jardim, Fernandes, Jamnik, & Santoro, 2010) and in Taiwan (Chang et al., 2019), breast cancer in Korea (Lee et al., 2004), gastric cancer in Spain (Debb, Arnold, Perez, & Cella, 2011).

Previous studies evaluated and demonstrated that the FACT-G is an optimal instrument to measure QOL as it has high reliability, validity and suitable for use of cancer patient. However, the conceptualization of HRQOL has been differ by countries. In previous studies, the subscales Physical well-being, Emotional well-being, and Functional well-being of the FACT-G relatively well met the standard of the original version. However, Social/Family well-being subscale of the FACT-G was complicated in Asian countries and observed some culture-specific differences from Western countries (Chang et al., 2019; Lee et al., 2004; Song et al., 2020). In China, Hong Kong, Taiwan studies presented of HRQOL may differ due to differences in language, culture, race and sexual values in each country (Chang et al., 2019; Yu & Petrini, 2010). The Social/Family well-being subscale of FACT-G observed lower scores in Korea (Lee et al., 2004) and India (Jacob et al., 2019). Possible reasons of the lower score of Social/Family well-being in Korea may related to the fact that Korean cancer patients tend to remain themselves in social isolation when diagnosed with cancer and country's strong family-oriented culture (Lee et al., 2004). However, S/FWB observed a higher score in Palestinian study (Jabari et al., 2013) and this study identified that cultural influences on communication, decision-making, response to symptoms, treatment choices, emotional expression, and all

aspects of life were viewed in the context of religion. The Emotional well-being subscale of FACT-G observed lower scores in Taiwan (Chang et al., 2018) and in Brazil (Compos et al., 2016; Lee et al., 2004). A Taiwanese study (Chang et al., 2018) demonstrated that the possible reasons of low emotional well-being may related to the late diagnosis of cancer and having more older patients with more comorbidities in Taiwan.

III. Methods

3.1. Design

This study was a methodological study to translate the English version of the FACT-G into the Mongolian language and to evaluate the validity and reliability of the Mongolian version of FACT-G.

3.2. Subjects

Participants were 303 cancer patients who recruited from four hospitals including two inpatient settings (national cancer center and hospice) and two out-patient settings (district hospital and family health care center) located in Ulaanbaatar, the capital city of Mongolia. The rationale to calculate sample size was to satisfy the requirement for the sample size to be 10 times number of items for exploratory factor analysis (EFA) (Cappelleri & Bushmakin, 2014). The original version of FACT-G included 27 items. Considering the dropout rate of the subjects, about 10% more subjects were recruited that those actually needed for EFA. The inclusion criteria of subjects were as follows: 1) currently diagnosed with any type of cancer (diagnosed by over 6 months); 2) aged 18 years or older; 3) understand the Mongolian language; 4) condition to answer the question; 5) voluntarily agree to participate this study. The exclusion criteria were the patients with cognitive impairment and those whose condition was poor that they could not respond.

3.3. Measurement

In this study, a questionnaire with 42 items including demographic and health related characteristics (9 items), FACT-G (27 items), and COOP-WONCA charts (6 items) was used (Appendix 1, 2).

3.3.1. Demographic and Cancer-related Characteristics

As demographic characteristics, 5 items including age (years), gender, marital status, education level, and institution were measured. For cancer-related characteristics, 4 items including primary cancer type, time of diagnosis of cancer, treatment of cancer, and performance status were measured. The performance status of a patient is the assessment of the level of function and competence of self-care (Azama et al., 2019). Eastern cooperative oncology group (ECOG) scale developed by Oken et al. (1982) was used to measure performance status. It is a simple measure of functional status that determined the patient's ability to tolerate treatment in serious illness and how the disease affects the patient's abilities of daily living. It is a 5-point scale ranging scores from 0 to 4 (0=ambulatory without physical symptoms, 1=fully ambulatory with some symptoms, 2=requiring <50% awake time to rest), 3=requiring \geq 50% awake time to rest, and 4=bedridden. Higher score indicated that have higher risk of chemotherapy toxicity and poor outcome.

3.3.2. Functional Assessment of Cancer Therapy-General

Functional Assessment of Cancer Therapy-General (FACT-G) is a well-validated HRQOL measurement specific that is specific to cancer patients (Cella et al., 1993; Cella, 1997). It was continuously updated and refined to measure HRQOL in clinical and research settings in oncology, and translated and validated to more than 50 languages (Cella et al., 2005).

The latest version 4 of FACT-G consists of a total of 27 items with 5-point Likert scale with each item scored on 0 to 4 (0=not at all; 1- a little bit, 2=somewhat; 3=quite a bit, and 4=very much). It measured four domains of HRQOL including Physical well-being (PWB, seven items), Social/Family well-being (SFWB, seven items), Emotional well-being (EWB, six items), and Functional well-being (FWB, seven items). Subjects respond to each item to report their QOL during the past week. The responses are summed to calculate a total FACT-G score and each subscale scores. Negatively worded items were reversely coded prior to summing. The possible total score is ranged from 0 to 108 with the highest scores reflecting higher level of HRQOL. Validity and reliability of this instrument have been reported with good validity and reliability. The Cronbach's alpha for total scale was .89 ranged from .78 to .93 for subscales (Cella, 1997).

3.3.3. COOP/WONCA Chart

To evaluate convergent validity, the COOP/WONCA chart developed by Nelson et al. (1990) was used. Functional status is the level of actual performance or ability to perform, in self-care or being able to perform a role at a given moment or time period (WONCA Classification Committee, 1990). Functional status is an aspect of health and eventually an aspect of quality of life (Van Weel et al., 1993).

The COOP-WONCA charts, a self-administered questionnaire, measure six aspects of functional status including physical fitness, feelings, daily activities, social activities, changes in health and overall health. It has been mainly been used to determine functional ability of patients with chronic diseases. Subjects are asked to use a time scale of the past 2 weeks. Each item is rated on the 5-point likert from 1 (no limitation at all) to 5 (severely limited). For "change in health" score, a score 1 means much better and a score of 5 means much worse (Kinnersley, Peters, & Stott, 1994). The COOP/WONCA charts, has been proven to be a valid, and reliable instrument in daily practice (Kinnersley et al., 1994; Stavem & Jodalen, 2002).

The convergent validity was demonstrated by correlation with SF-36 ($r=.62$) and test-retest reliability was greater than .75 (Van Weel, 1993). The test-retest reliability of the original Dartmouth version was satisfactory, as ranged from .78 to .98 for elderly patients and ranged from .73 to .98 for low income patients (Nelson et al., 1990).

The permission from FACIT organization to use and translate into the Mongolian language of FACT-G was obtained prior to study (Appendix 3). The ECOG scale and the COOP-WONCA charts are open for public use.

3.4. Procedures and Data Collection

3.4.1. Translation

After received permission to use and translate from English to Mongolian, translation was conducted using the FACIT translation and linguistic validation methodology (Bonomi et al., 1996; Eremenco, Cella, & Arnold, 2005). This process included 6 steps including forward translation, reconciliation stage, back-translation, reviews and proofreading, the FACIT organization formatting, and cognitive interview and pilot test. The process was conducted from September, 2021 to May, 2022. Translation flow chart is attached in Appendix 4.

As a step 1, the English version was translated by two independent bilingual and bicultural translators (T1 and T2). The two translators were a professional nurse (T1) and a professional English translator (T2).

As a step 2, the third independent translator (T3), a nursing professor, reconciles the two forward translations by selecting the better of the two forward translations and resolving discrepancies between them. Three items did not reach an agreement. For example: GP3 (Because of my physical condition, I have trouble meeting the needs of my family) GP7 (I am forced to spend time in bed) and GF3 (I am able to enjoy life). To reach an agreement these

three items were reconciled and changed organization of sentence so that the best appropriate words, and phrases, and understandable for the target population.

As a step 3, this reconciled version is blindly back-translated by a native English-speaking translator fluent in the Mongolian (T4) who was not involved in any of the previous steps of the translation process. The back translator (T4) was a Mongolian student who lives in English speaking country for many years and bilingual and bicultural translator.

As a step 4, three independent bilingual reviewers (R1, R2, R3), two nursing professors and an English language teacher, review the back-translations for discrepancies with the English version and to assess equivalence to the English version. The reviewer considers the importance of the words and phrases best selected for cancer patients and the best way the sentence's meaning is interpreted. Proofreading process after 3 reviewers completed the conduct with two proofreaders the forward translation was and the back translation rechecked in both languages. The proofreaders were conducted by two nursing professors including a Korean and Mongolian. Korean professor compared English version and the back translation, and Mongolian professor compared with forward translation and back translation. Some sentences and words changed to best choices following comments and feedback from 3 reviewers and two proofreaders. Examples of changes were presented in Table 1.

Table 1. Change Sentences of Words after Reviewer and Proofreader

Back translation version	After review
I have been nauseous (GP2)	I have nausea
I am worried (GP5)	I am bothered
I can feel my illness (GP6)	I feel ill
I am forced to stay in bed (GP7)	I am forced to spent in bed
Overcoming this illness (GE2)	Coping with my illness
I am worried (GE5)	I worry
I will deteriorate (GE6)	Getting worse

As a step 5, the established first Mongolian version of the FACT-G instrument is sent to the FACIT coordinator team. FACIT staffs evaluate by a language coordinator, experienced translator who are familiar with the intent of the items, to produce a final translation of the instrument. An example for GP2 is attached in Appendix 5.

After that, this final translation is then formatted into the appropriate template by FACIT staff and then final grammatical and formatting errors are corrected by the language coordinator and another independent proofreader. FACIT translation team give comments for 6 items for the FACT-G Mongolian version (GP1, GS5, GS6, GE6, GF1, and GF2) and these comments were mostly grammatical and formatting errors as presented in Table 2.

Table 2. Comments for the Translation from FACIT Organization

Item	Original	Back translation	FACIT comments
GP1	I have a lack of energy	I do not have enough energy	“lack of energy”.
GS5	I am satisfied with family communication about my illness	I am content with the talks about my illness with my family	Changed “talks” to “communication”
GS6	I feel close to my partner (or the person who is my main support)	I am close with my partner (or my main supporter),	Changed “my main supporter” to “my main support”
GE6	I worry that my condition will get worse,	I worry about my condition will getting worse	Changed “getting” to “get”
GF1	I am able to work (include work at home)	I can work (house chores included)	Changed “house chores” to work at home
GF2	My work (including work at home) is fulfilling	I think I can do my job (house chores included),	Changed “I am fulfilled with my work”?

As a final step, step 6, the pilot test and in-depth interview were conducted with 10 cancer patients recruited from a family health care center, Ulaanbaatar in Mongolia, on May, 2022. The inclusion criteria for the participants in this step were the same as those for the main study. Participants were completed the translated version of FACT-G and after completion of the questionnaire for each participant, the researcher conduct cognitive interview by online for

about 30 minutes using the guidelines from FACIT organization (Appendix 6, 7). To assess the clarity and relevance of items, participants were asked how they understand and responded to each item of the translated version FACT-G during cognitive interview. As results of the pilot study and cognitive interview, all items were easy to understand and no difficulty to response for the participants except one item, GP5 (I am bothered by side effects of treatment). Upon completion of the pilot test and cognitive interview, the results were submitted to the FACIT organization. FACT organization reviewed it and provided the following comment: GP5 have a problematic word is “bothered”. Some of patients do not understand clearly and perceived that meaning of “bothered” as “feeling tired, impatient, bored, and feeling like stopping the treatment, suffering. However, “to be bothered” means “to be distressed, disturbed, or troubled by a symptom” that has already occurred, implying both physical and emotional disturbance. Base of this comment, GP5 has been changed to suitable word. The word "bothered" translated to "залхаж байна" in the pilot test that was confused for Mongolian cancer patients was changed to as "ядарч туйлдаж байна" because that is more understandable for Mongolian. Thereby the final translation was completed after have modification of GP5. Finally, it was approved for use in Mongolian cancer patients on June, 2022 (Appendix 8, 9).

3.4.2. Content Validity

Content validity testing was conducted using the guideline of Yusoff (2019). Eight content validity experts including four professionals in oncology who working in national cancer center of the Mongolia and four are nursing professors who working at the Mongolian National University of Medical Science examined content validity (Appendix 10). Theoretical and operational definition of HRQOL has been presented to experts. The content validity experts were requested to rate the relevance, language clarity (comprehensibility), the completeness (comprehensiveness), and scaling response of each item on a 4-point scale, relevance (1=strongly not relevant, 2=not relevant, 3=relevant, 4=strongly relevant) and for

comprehensibility, comprehensiveness, and scaling response (1=strongly not agree, 2=not agree, 3=agree, 4=strongly agree) has been used for scoring individual items (Goswarni et al., 2020) (Appendix 11, 12). It was conducted on July, 2022.

3.4.3. Validation of the Mongolian version of FACT-G

To validate the Mongolian version of FACT-G, construct validity (exploratory factor and convergent validity) and reliability were examined. The sample consisted of 303 cancer patients from 4 hospitals. The researcher contacted the director of nursing departments in each and obtained permission to recruit participants (Appendix 13). The four trained researchers from each hospital identified potential participants contacted in the admission word or during regular check-ups with ambulatory services. Data were collected using a self-administered questionnaire, which took approximately 12 to 15 minutes to complete. The research assistant or caregivers were assisted participants if they need to write and read for the data collection. Data were collected from July to September, 2022.

. Ethical Consideration

This study was reviewed and approved by the Institutional Review Board of Chosun University (Approval No: 2-1041055-AB-N-01-2021-72; Appendix 14, 15). The researcher explained the purposes and procedures of the study to the director of the nursing department. The researcher or trained research assistants visited each institution and distributed the questionnaires to the participants. Participants were informed that they had no obligation to participate in the study and could withdraw their participation at any time. They also explained the purposes and procedures of the study to ensure participants' confidentiality and anonymity

to potential participants. Written informed consent was obtained from all participants. Moreover, participants were informed that their decision to participate in the study did not affect their status. Upon completion of the questionnaire, participants received a small gift as a reward for their participating of the study.

. Data Analysis

Data were analyzed using the SPSS 26.0 (SPSS Inc, Chicago, IL, USA). The following statistical methods were used for data analysis:

- 1) Descriptive statistics were calculated to describe the demographic and cancer-related characteristics of the participants and the scores of each item of the FACT-G Mongolian version.
- 2) The content validity was calculated by item content validity index (I-CVI) and scale content validity index (S-CVI). The criteria of content validity were (1) I-CVI $>.83$ for 6-8 experts (Lynn, 1986), (2) S-CVI $\geq .80$ (Pilot & Beck, 2006; Yusoff, 2019)
- 3) Descriptive statistics were used to check the missing responses and to check normality of data. The item deletion criterion of missing response was $>15\%$ (De Vet, Terwee, Mokkink, Knol, & Heimberg, 2011).
- 4) Item analysis was conducted including skewness, kurtosis, floor effect, ceiling effect, and item-total correlations (ITC). In the item analysis, the criteria were 1) absolute skew value >2 or an absolute kurtosis value >7 (Kim, Chung, Amtmann, Revicki, & Cook, 2013), 2) floor and ceiling effect as a lower than $>30\%$ (Kane, 2006). 3) ITC $<.30$ or $>.70$ (De Vaus, 2004; Nunnally & Bernstein, 1994,).
- 5) Construct validity was evaluated by exploratory factor analysis (EFA) using principal component analysis (PCA) with varimax rotation. For factor analysis, the Kaiser–Meyer–Olkin (KMO) test (cutoff $\geq .50$) and Bartlett’s test of sphericity (cutoff $<.05$) were

conducted to justify the suitability of data (Tabachnicka & Fidell, 2013). The scree test and “the eigenvalues greater than 1” rule were used for the factor retention. The criteria were (1) factor loading $<.50$ (Strickland, 2003), (2) communality (h^2) $<.50$ (Osborne & Costello, 2009), (3) cross loading: loading value difference between two factors $<.10$ (Çokluk & Koçak, 2016; Seo & Lang, 2018), and items met the criteria, those items were deleted. Finally, factors at least 3 items on each factor were retained (Costello & Osborne, 2005). Correlations between subscales were assessed by Pearson’s correlation coefficients.

- 6) The convergent validity was evaluated by calculating Pearson’s correlation coefficient between the total score of Mongolian version of FACT-G and the total score of functional assessment instrument the COOP/WONCA charts (cutoff $>.50$) (De Vet et al., 2011).
- 7) The internal consistency of reliability for the total and subscales were assessed by Cronbach’s alpha (cutoff $\geq.70$) (Nunnally & Bernstein, 1994)

IV. Results

4.1. Demographic and Cancer-related Characteristics of Participants

A total of 303 cancer patients were participated in this study. The mean age of participants was 56.09 (± 13.28) ranged from 20 to 90 years old. Over half of the participants in this study were women ($n=177$, 58.4%) and most of participants ($n=239$, 78.9%) were married. Almost half of the participants ($n=130$, 43%) had education level lower than secondary school. Number of participants in each hospital was 132 at National Cancer Center of Mongolia (43.6%), 130 at district hospital (42.9%), 25 at family health care center (8.2%) and 16 at hospice (5.3) (Table 3).

Liver cancer was the leading cancer ($n=69$, 22.8%) in this study followed by stomach ($n=57$, 18.8%), cervical ($n=43$, 14.2%), and breast ($n=27$, 8.9%). The mean length of time since diagnosis was 34.7 months (± 40.39) and 33.7% ($n=102$) were less than 12 months and 12% ($n=40$) were more than 60 months. The most common treatment used was chemotherapy (77.5%) followed by surgical treatment (57.4 %).

The mean score of Performance status of Eastern Cooperative Oncology Group (ECOG) was 1.62 (± 1.25) ranged from 0 to 4. As presented in Table 4, 22.1% ($n=67$) of participants reported their performance status as 0 (normal activity), 29.0% ($n=88$) reported as 1 (some symptom), 22.2% as 2 (bed rest <50% of day), 17.8% ($n=54$) as 3 (bed rest $\geq 50\%$ of day), and 8.9% ($n=4$) reported their performance status as 4 (bedridden) (Table 4).

Table 3. Demographic Characteristics of the Participants (N=303)

Characteristics	Category	n	(%)	M±SD
Gender	Male	126	(41.6)	
	Female	177	(58.4)	
Age (year)	≤ 40	33	(10.9)	56.09±13.28
	40-59	137	(45.2)	
	60-69	87	(28.7)	
	70-79	37	(12.2)	
	≥ 80	9	(3.0)	
Marital status	Married	239	(78.9)	
	Single	64	(21.1)	
Education level	Primary school	23	(7.6)	
	Secondary school	107	(35.3)	
	Diploma	87	(28.7)	
	Bachelor or higher	86	(28.4)	
Institution	National Cancer Center	132	(43.6)	
	District hospital	130	(42.9)	
	Family Health Care Center	25	(8.2)	
	Hospice	16	(5.3)	

M: mean, SD: standard deviation,

Table 4. Cancer-related Characteristics of Participants (N=303)

Characteristics	Category	n	(%)	M±SD
Type of Cancer	Liver	69	(22.8)	
	Stomach	57	(18.8)	
	Lung	10	(3.3)	
	Esophagus	16	(5.3)	
	Cervix	43	(14.2)	
	Breast	27	(8.9)	
	Pancreas	11	(3.6)	
	Colorectal	20	(6.6)	
	Ovarian	7	(2.3)	
	Head & Neck	11	(3.6)	
	Bone	5	(1.7)	
	Brain	3	(1.0)	
	Lymphoma	6	(2.0)	
	Kidney	4	(1.3)	
	Others	14	(4.6)	
Length of time since diagnosis (month)	6-12	102	(33.7)	34.7±40.39
	13-24	63	(20.8)	
	25-48	74	(24.4)	
	49-60	20	(6.6)	
	≥61	44	(14.5)	
Treatment after diagnosed	Surgery	78	(25.7)	
	Chemotherapy	23	(7.6)	
	Radiotherapy	4	(1.3)	
	Palliative care	20	(6.7)	
	Surgery + Chemotherapy	118	(38.9)	
	Surgery + Radiotherapy	19	(6.3)	
	Chemo + Radio	13	(4.3)	
	Surgery + chemo +Radio	20	(6.6)	
	Others	8	(2.6)	
Performance status	Normal activity (0)	67	(22.1)	1.62±1.25
	Some symptom (1)	88	(29.0)	
	Bed rest<50% of day (2)	67	(22.2)	
	Bed rest≥50% of day (3)	54	(17.8)	
	Bedridden (4)	27	(8.9)	

M: mean, SD: standard deviation

4.2. Validity

4.2.1. Content Validity

In this study, the I-CVIs ranged from .88 to 1.00 and the S-CVIs ranged from .98 to 1.00 for all four domains of content validity. The S-CVI for the relevance domain was .99; for the language clarity (comprehensibility) domain was .98, the completeness (comprehensiveness) domain was .98; the response ratings domain was 1.00.

Based on the criteria of I-CVI $\geq .83$ with 6-8 experts (Lynn, 1986), and S-CVI $\geq .80$ was generally valid (Grant & Davis, 1997; Pilot & Beck, 2004; Yusoff, 2019), all 27 items were retained for further analysis (Appendix 16).

4.2.2. Item Analysis

Missing data, mean, standard deviation, skewness and kurtosis, ceiling and floor effects, and item-total correlation (ITC) were examined. Except for GS7, no strong items of missing responses were observed (I am satisfied with my sex life), which had a very high percentage of missing (20%). The percentage of missing responses for each item should consider when making decisions for item retention. Based on the recommendation of DeVet et al. (2011), items with more than 15% missing should be deleted, revised, or replaced, GS7 (item14) was deleted for further analysis, thereby the remaining 26 items were used for item analysis in this study (Table 5).

The mean score and standard deviation of each item were calculated. A mean score (near 2.5) of items as close to the center of the range as possible is acceptable. In this study, items ranged from 1.78 to 3.30 (SD=0.06-1.35). The absolute value of skewness and kurtosis recorded an absolute skew value from -.72 to .18, and an absolute kurtosis value from -1.01 to .94. Considering either the absolute skewness value >2 or the absolute kurtosis >7 were used

as criteria for determining significant non-normality (Kim, 2013), the normal distribution was assumed.

The floor and ceiling effects were assessed as the the proportion of respondents who scored at floor (minimum score) and ceiling (maximum score), respectively. A threshold of >30% was defined as a floor or ceiling effect (Kane, 2006). The floor effects varied from 2.0 to 24.6%, and that was lower than 30% (Kane, 2006). No floor effect occurred. The ceiling effect varied from 5.3 to 47.2%. Eight out of 26 items reported a ceiling effects, which were higher than 30% including GS2 (I get emotional support from my family), GS4 (My family has accepted my illness), GS5 (I am satisfied with family communication about my illness), GS6 (I feel close my partner (or the person who is my main support), GE3 (I am losing hope in the fight against my illness), GE4 (I feel nervous), GE5 (I worry about dying), GE6 (I worry that my condition will get worse). If the ceiling effect is greater than the criteria (>30%), it should be considered to delete those items. However, if all the items that showed the ceiling effect were deleted, the remaining items in the two subscales (factor 2 and factor 3) were two items each. Moreover, considering those items are important items that is valid for measuring HRQOL of cancer patient, and this study is not a study to develop new instrument, but a study to verify the validity and reliability of an existing instrument, thereby these items were retained to maintain the theoretical framework of the scale (Costello & Osborne, 2005).

The corrected Item-total correlation (ITC) coefficient was computed by using each item's scores and the sum of all remaining items on the scale (reliability analysis with scale if item deleted). The ITC items within .30 to .70 can be considered as recommended by (De Vaus, 2004; Nunnally & Bernstein, 1994). In this study, the ITC coefficients ranged from -.122 to .690. Four items did not meet the criterion for ITC of >.30 including GP1 (I have a lack of energy), GS4 (My family has accepted my illness), GS6 (I feel close my main supporter), and GF4 (I have accepted my illness). Those 4 items were removed as those were judged to have a low contribution to the instrument. Therefore, the remaining 22 items were used for further

analysis for exploratory factor analysis in this study.

Table 5. Item Analysis (N= 303)

Items	Mean ±SD	Skewness	Kurtosis	Floor Effect (%)	Ceiling Effect (%)	ITC
(0-28)	14.98±5.78					
GP1 I have a lack of energy*	1.78±1.06	0.18	-0.68	10.6	5.3	.12
GP2 I have a nausea*	2.50±1.11	-0.41	-0.60	4.6	20.1	.52
GP3 Because of my PC, I have a trouble meeting the needs of my family*	2.04±1.28	0.03	-1.01	13.5	17.5	.60
GP4 I have a pain*	2.29±1.18	-0.25	-0.87	7.6	16.5	.61
GP5 I am bothered by side effects of treatment*	2.28±1.24	-0.18	-0.97	8.9	21.1	.58
GP6 I fell ill*	1.78±1.26	0.18	-0.98	18.8	11.2	.48
GP7 I am forced to spend time in bed*	2.29±1.29	-0.22	-1.02	10.6	22.4	.64
Social, Family well-being (0-28)	18.77±4.56					
GS1 I feel close to my friends	2.33±1.16	-0.18	-0.85	5.9	18.5	.61
GS2 I get emotional support from my family	3.17±0.86	-0.72	-0.18	3.0	42.9	.38
GS3 I get support from my friend	2.34±1.18	-0.18	-0.78	6.9	20.5	.44
GS4 My family has accepted my illness	3.13±1.03	-1.11	0.51	2.0	47.2	.06
GS5 I am satisfied with family communication about my illness	3.30±0.86	-1.04	0.37	3.0	52.5	.34
GS6 I feel close my partner (or the person who is my main support)	3.08±1.02	-1.17	0.94	3.0	41.6	.29
Emotional well-being (0-24)	15.99±5.46					
GE1 I feel sad*	2.47±1.12	-0.30	-0.65	4.6	21.1	.62
GE2 I am satisfied with how I am coping with my illness	2.60±1.08	-0.54	-0.13	5.3	22.4	.37
GE3 I am losing hope in the fight against my illness*	2.83±1.21	-0.66	-0.66	4.3	41.3	.59
GE4 I feel nervous*	2.73±1.18	-0.67	-0.37	5.9	33.0	.69
GE5 I worry about dying*	2.68±1.35	-0.71	-0.75	10.2	38.0	.58
GE6 I worry that my condition will get worse*	2.66±1.28	-0.58	-0.78	7.6	35.6	.68
Functional well-being (0-28)	16.55±5.90					
GF1 I am able to work (include work at home)	1.90±1.24	0.10	-0.86	15.8	12.9	.59
GF2 My work (include work at home) is fulfilling	2.12±1.26	-0.08	-1.02	11.9	16.8	.63
GF3 I am able to enjoy life	2.61±1.11	-0.33	-0.76	3.0	26.4	.65
GF4 I have accepted my illness	2.54±1.16	-0.64	-0.35	7.6	21.5	.23
GF5 I am sleeping well	2.59±1.04	-0.42	-0.51	2.6	20.5	.52
GF6 I am enjoying the things I usually do for fun	2.16±1.11	-0.02	-0.76	6.3	13.2	.61
GF7 I am content with the quality of my life right now	2.64±1.16	-0.52	-0.54	5.3	28.4	.67
Total (0-108)	65.95 ±16.88					

ITC < .30 or have ceiling effect in bold.

*Physical well-being (1-7), Emotional well-being (1, 3-6) reversed items, SD: standard deviation, ITC: item total correlation.

4.2.3. Construct Validity

1) Structural Validity (Exploratory Factor Analysis)

EFA calculated on the 22-item instrument was conducted. The Kaiser-Meyer-Olkin (KMO) test value for the factor analysis was .92, and χ^2 value for the Bartlett's test of sphericity was 3520.87 ($p < .001$). As presented in Table 6, two items reported factor loading $< .50$ and the communality $< .50$: one is (GS5: I am satisfied with family communication about my illness) on Factor 2 and another one is (GE2: I am satisfied with how I am coping with my illness) in Factor 4. Except one item (GE2), all the items were extracted in each sub-scale (physical well-being, Social/family well-being, emotional well-being, and functional-wellbeing) of the original scale developed in the USA. In the original scale, GE2 is included on emotional well-being domain but in the result of EFA with 22 items, it was loaded on functional-welling domain. Moreover, GE2 is cross loaded in Factor 2 and factor 4 by the criteria of loading value difference between two factors $< .10$ (Çokluk & Koçak et al, 2010; Seo & Lang, 2018) of item deletion (Table 6).

Table 6. Exploratory Factor Analysis of the 22 items (N=303)

Factor name (Mean±SD)	Domains/ Items (range)	1	2	3	4	Communalities
Physical well-being (13.20±5.89)	6 (0-24)					
	GP4/Item4	.79	.18	.26	-.01	.73
	GP7/Item7	.79	.19	.23	.09	.72
	GP5/Item5	.75	.08	.27	.09	.65
	GP2/Item2	.73	.12	.17	.07	.57
	GP3/Item3	.66	.24	.27	.07	.60
	GP6/Item6	.63	.04	.39	.01	.55
Social/family well-being (11.14±3.01)	4 (0-16)					
	GS3/Item10	.23	.06	.10	.81	.73
	GS1/Item8	.20	.25	.32	.69	.68
	GS2/Item9	-.03	.27	.04	.69	.56
	GS5/Item12	-.17	.39	.10	.47	.41
Emotional well-being (13.39±5.06)	5 (0-20)					
	GE5/Item19	.21	.13	.79	.14	.70
	GE4/Item18	.36	.21	.71	.19	.71
	GE1/Item15	.38	.19	.70	.05	.67
	GE6/Item20	.39	.21	.70	.14	.69
	GE3/Item17	.28	.20	.68	.10	.58
Functional well-being (16.62±5.92)	7 (0-28)					
	GF5/Item25	.14	.78	.11	.04	.64
	GF3/Item23	.11	.74	.32	.20	.70
	GF6/Item26	.24	.68	.12	.22	.58
	GF2/Item22	.36	.68	.06	.20	.63
	GF7/Item27	.17	.66	.37	.18	.63
	GF1/Item21	.47	.62	-.02	.14	.62
	GE2/Item16	-.13	.49	.29	.20	.38
Number of items (54±35)	22 (0-88)	6	7	5	4	
Eigen value		8.59	2.53	1.43	1.15	
Explained variance (%)		19.5	17.0	15.8	9.9	
Total (%)	62.3					
Cronbach alpha	.92	.89	.86	.88	.72	

Communality <.50 or cross loading item (differences factor loadings between factors < .10) in bold

Therefore, EFA with 20 items was repeated after deleting two items (GS5, GE2). The Kaiser-Meyer-Olkin (KMO) test value for the factor analysis was .92, and χ^2 value for the Bartlett's test of sphericity was 3325.64 ($p < .001$). Therefore, the obtained data were suitable for a factor analysis. As the result of EFA, a four-factor solution was extracted using factor extraction criteria of eigenvalues greater than 1.0 and scree plot. The total variance explained the four factors were 65.5%.

The final Mongolian version of FACT-G scale consisted of 20 items, all items were extracted in each subscale of the original scale including six items on Factor 1 (named as Physical well-being), three items for Factor 2 (named as Social/Family well-being), five items on Factor 3 (named as Emotional well-being), and 6 items on Factor 4 (named as Functional well-being). The communality of all items was good with a level ranged from .51 and .79. Factor loading for each item ranged from .65 to .86 and the item loadings for the extracted factors are presented in Table 7.

Table 7. Exploratory Factor Analysis of the 20 items (N=303)

Factor name (Mean±SD)	Domains/ Items (range)	1	2	3	4	Communalities
Physical well-being (13.20±5.89)	6 (0-24)					
	GP4/Item4	.79	.21	.26	-.01	.74
	GP7/Item7	.78	.22	.23	.11	.72
	GP5/Item5	.76	.11	.25	.10	.67
	GP2/Item2	.72	.15	.16	.08	.58
	GP3/Item3	.66	.26	.27	.08	.58
	GP6/Item6	.65	.05	.37	.04	.56
Social/family well-being (7.8±2.58)	3 (0-12)					
	GS3/Item10	.18	.08	.11	.86	.79
	GS1/Item8	.14	.27	.34	.71	.72
	GS2/Item9	-.05	.28	.05	.65	.51
Emotional well-being (13.39±5.06)	5 (0-20)					
	GE5/Item19	.20	.12	.80	.12	.71
	GE4/Item18	.34	.22	.72	.19	.72
	GE1/Item15	.36	.19	.71	.05	.69
	GE6/Item20	.36	.22	.71	.15	.69
	GE3/Item17	.26	.20	.68	.12	.59
Functional well-being (14.01±5.38)	6 (0-24)					
	GF5/Item25	.09	.80	.15	.02	.66
	GF3/Item23	.07	.74	.33	.20	.70
	GF6/Item26	.17	.71	.16	.22	.61
	GF2/Item22	.31	.70	.08	.21	.63
	GF7/Item27	.14	.65	.39	.18	.62
	GF1/Item21	.41	.66	.01	.15	.62
Number of items (48±45)	20 (0-80)	6	6	5	3	
Eigen value		8.38	2.18	1.41	1.14	
Explained variance (%)		20.2	17.9	17.5	9.9	
Total variance (%)	65.5					
Cronbach alpha	.93	.89	.87	.88	.72	

Communality <.50 or cross loading item (differences factor loadings between factors <.10) in bold

Inter-subscale correlations were calculated. As shown in Table 8, the highest correlation was observed between Factor 1 (Physical well-being) and Factor 3 (Emotional well-being) ($r=.66$, $p<.001$) and the lowest correlation was observed between Factor 1 (Physical well-being) and Factor 2 (Social/family well-being) ($r=.32$, $p<.001$). Except the correlation between Factor 1 and Factor 2, all inter-scale correlations between factors were $>.40$.

Table 8. Inter-subscale Correlations

FACT-G Mon	<i>r</i> (<i>p</i>)			
	F1	F2	F3	F4
Physical well-being (F1)	1	.32 (<.001)	.66 (<.001)	.51 (<.001)
Social/Family well-being (F2)		1	.43 (<.001)	.51 (<.001)
Emotional well-being (F3)			1	.54 (<.001)
Functional well-being (F4)				1

2) Convergent Validity

There was a significant positive correlation between FACT-G and the COOP /WONCA charts ($r=.69$, $p<0.01$), which exceeded .50 (cutoff $\geq .50$).

4.3. Reliability

After EFA analysis Mongolian version of FACT-G scale determined 20 items from 27 items. The reliability of FACT-G Mongolian version of 20 items was calculated by Cronbach's alpha. The Cronbach's alpha determined a total of FACT-G, Physical well-being, Social/family well-being, Emotional well-being, Functional well-being and .93 .89, .87, .88, and .72, respectively (Table 9).

Table 9. Reliability

Subscales	Mongolian version of FACT-G	
	Number of items	Cronbach's α
Physical well-being (F1)	6	.89
Social Family well-being (F2)	3	.72
Emotional well-being (F3)	5	.88
Functional well-being (F4)	6	.87
FACT-G Mongolian version Total	20	.93

V. Discussion

FACT-G is a widely used HRQOL scale of cancer patients. This study translated the FACT-G into Mongolia and evaluated the validity and reliability of the FACT-G scale of Mongolian cancer patients. The Mongolian version of the FACT-G scale, which consisted with 20 items, demonstrated good validity and reliability in this study. Moreover, the factor structure of the

Mongolian version of the FACT-G scales similar to the original version as four factors.

In the process of translation, all items were easy to understand and there was no difficulty to response for the participants except one item, GP 5 (I am bothered by side effects of treatment). In GP 5 question (I am bothered by side effects of treatment), the word “bothered” may not be of common use in Mongolian daily life. This problem consistent with a Brazilian study (Fregnani et al., 2013). This result confirmed the importance of translation process to use a measurement before use in other sociocultural contexts.

In this study one item, GS7 (I am satisfied with my sex life), reported 20% of missing responses and deleted for evaluating validation of the Mongolian version of FACT-G. Before proceeding to exploratory factor analysis, it is important to review the dataset for missing data (Guvendir & Ozkan, 2022) and if missing data is higher than 15%, it is recommended that remove that item prior to conducting EFA (DeVet et al., 2011). Missing data on this item has been reported on previous studies (Chang et al., 2019; Yost et al., 2013; Yu et al., 2010). There may be the possible reasons that related to missing responses of this item. It may be due to the sensitive nature of this question related to their sex life. Another possible reason may relate to Asian culture considering similar results on Taiwanese study (Chang et al., 2019) and Chinese study (Yu et al., 2010). However, studies that conducted in the USA (Yost et al, 2013) and UK (Smith, Wright, Selby, & Velikova, 2007) also have many missing responses. Therefore, further studies need to explore the reasons for missing data and to find out the alternative way to assess their satisfaction of sexual life because it is part of the QOL.

In this study, no floor effect was observed but ceiling effect was observed in 8 items including 4 items in social/family well-being domain (GS2, GS4, GS5, and GS6) and 4 items in emotional well-being domain (GE3, GE4, GE5, and GE6). Items with floor or ceiling effect may be less informative because those items limited variability (Badejo et al., 2022; Yost et al., 2013). The reasons of ceiling effects need to be identified. One possible reason may be social desirability bias, a tendency to underreport undesirable attitudes and behaviors. Badejo et al. (2022) reported that patient-reported experiences measures have strong ceiling effects and lack variability. Items in FACT-G, typically for social/family well-being and emotional well-being may be the items which can have social desirability bias. Social desirability bias in social/family well-being may relate to the traditional family support system for the caregiving in Mongolia (Enkhbayar, 2021). Badejo et al. (2022) suggest that adjusting the levels of social desirability bias can reduce ceiling effects and increase variance in patient-reported experience measures. Moreover, Kim and Jung (2015) recommended that deletion of items which have ceiling and floor effects due to lack of variability. Therefore, it is recommended that researchers consider the discriminatory power of items that observed the ceiling effects before using this scale in the future, and decide whether to use it according to the subject, and suggested replication with diverse samples.

The mean FACT-G total score in this study was 65.95 ± 16.98 , which means that the level of HRQOL for Mongolian cancer patients is low. There is no study to investigate HRQOL in Mongolia thereby no comparable with previous Mongolian study. Patient-related outcomes may also vary depending on national health delivery systems, race, and culture (Edrington et al., 2009; Lebaron, Beck, Maurer, Black, & Palat, 2014). Mongolia, as a low-middle income country (LMICs), HRQOL of cancer patients was lower than those of developed countries and similarly low with other LMICs. Previous study identified that low socio-economic status; especially financial difficulty is the most important predictor of lower HRQOL (Gangane, Khairkar, Hurtig, & San Sebastián, 2017; Jacob et al., 2019; Sharma & Purkayastha, 2017).

Therefore, oncology nurses in Mongolia need to have more attention to HRQOL of cancer patients.

EFA was conducted to evaluate the factor structure of FACT-G is equivalent when it applied in Mongolian cancer patients. In this study, 4 factors extracted from the EFA paralleled with those of physical, social/family, emotional, and functional well-being subscales reported by Cella (1997). These four factors explained 65.5% of the total variance of the 20 item Mongolian version of FACT-G. It is a result that satisfies the explanatory total variance criterion $>50\%$ of EFA (Terwee et al., 2012). There was a difference of explained variance of four factors: The highest subscale was physical well-being (20.2%) followed by functional well-being (17.9%), emotional well-being (17.5%), and social/family well-being (9.9%). The result of the highest explained variance of physical well-being is consistent with previous studies conducted by other countries (Cella et al., 1993; Chang et al., 2018; Yu et al., 2000). Therefore, the FACT-G can be considered as a conceptually cross-cultural equivalent measure for Mongolian cancer patients.

The Mongolian version of FACT-G included 20 items out of 27 items of the original version. Seven items in original version were not included: one item for each subscale of physical well-being (GP1: I have a lack of energy), emotional well-being (GE2: I am satisfied with how I am coping with my illness) and functional well-being (GF4: I have accepted my illness) subscale, respectively, four items from social/family well-being (GS4: My family has accepted my illness; GS5: I am satisfied with family communication about my illness; GS6: I feel close my partner or the person who is my main supporter; GS7: I am satisfied with my sex life). The possible reason of not loading GE2 may be this item is not meaningful for emotional well-being of Mongolian cancer patients as consistent with previous Asian studies including Korean breast cancer patients (Lee et al., 2004), Chinese mixed cancer patients (Yu et al., 2000) and Japanese lung cancer patients (Fumimoto et al., 2001), different with American cancer patients reported by Cell et al. (1993). This finding may be related to cultural differences between Western and Asian cancer patients, which should be further investigated as

Lee et al. (2004) suggested.

In factor 2 (social/family well-being), 4 items in original version were not loaded in the Mongolian version and only three items including (GS1: I feel close to my friends), (GS2: I get emotional support from my family), and (GS3: I get support from my friends) were remained, and those items were about family and friend or interpersonal relationship with friend. Moreover, the Cronbach's alpha of this subscale (.72) was relative lower than other subscales. The results of previous studies have also been reported inconsistent results that the construct of social/family well-being subscale may differ depending on by culture (Fumimoto et al., 2001; Lee et al., 2004; Yu et al., 2000). Moreover, a study of Chinese mixed cancer patients (Cheung et al., 2005) noted that the social or family domains of HRQOL can be highly changeable. Therefore, further studies are needed to investigate the construct of social/family well-being is differs by culture.

The inter-subscale correlations in this study identified that there was moderate relationship between physical well-being and emotional well-being subscales in Mongolian cancer patients and it is the strongest relationship between factors. Similar results have been reported for Korean breast cancer patients (Lee et al., 2004), Japanese lung cancer patients (Fumimoto et al., 2001), Brazilian mixed cancer patients (Ishikawa et al., 2009). This result confirmed that the physical well-being and emotional well-being is related each other.

To test convergent validity of Mongolian version of FACT-G, the correlation between the FACT-G and the COOP/WONCA charts covering core QOL functional domains (physical fitness, feelings, daily activities, social activities, changes in health and overall health) was examined and identified correlation coefficient as .69 which is greater than the cutoff $>.50$ (De Vet et al., 2011). Although, the COOP/WONCA charts were developed and used to assess general function and were aimed at primary care, and not specific to cancer patients, previous studies have demonstrated that it is also appropriate to measure HRQOL for cancer patients (Hoopman, Terwee, & Aaronson, 2008). Therefore, the convergent validity of the Mongolian version of FACT-G was satisfied.

The internal consistencies of the overall scale and subscales of the Mongolian version of FACT-G were over the Cronbach's alpha cutoff value of .70 (Nunnally, & Bernstein, 1994). Cronbach's alpha for overall scale was .93 and it is higher than a study in the USA, which reported the Cronbach's alpha as .89 (Cella, 1997), Cronbach's alpha values for subscales in this study were ranged from .72 to .89, which are lower than those (ranged from .78 to .93) reported in USA study (Cella, 1997). The possible one reason of lower Cronbach's alpha for the subscales in this study may related to the fewer items than those of original English version for each subscale. Only internal consistency was tested for reliability in this study, to increase confidence in the findings of this study, future studies need to be included the test-retest reliability, stability reliability.

The FACT-G instrument was developed for cancer patients in general and in specific cancer assessment tool. The FACIT organization has many scales including general, specific, treatment-specific, condition-specific and non-cancer specific measures (Webster et al., 2003). The current study used mixed cancer patients for FACT-General. Further studies should be following the psychometric test for specific leading cancer such as liver, stomach, lung, and cervical cancer in Mongolia.

Although this study validated the Mongolian version of FACT-G with Mongolian cancer patients, limitations need to be considered. First, this study was conducted in the capital city, Ulaanbaatar, using convenience sampling. Therefore, the generalizability of this study is limited. However, rural areas in Mongolia lack adequate medical facilities for the treatment of cancer patients, so many cancer patients tend to hospitals in the capital city, Ulaanbaatar. Second, an item that related to sexual life in this study reported high missing responses and removed that item for EFA. In further studies, considering sensitive nature of this question related to sexual life, researchers need to find out the alternative way to assess their satisfaction of sexual life. Third, due to mature of self-administered questionnaire used in this study, the possibility of responding to social desirability cannot be rule out, Modes of data collection by

questionnaire may impact on social desirability bias (Bowling, 2005). In future studies, considering the potential effects of modes of data collection by questionnaire on the response obtained, strategies to reduce social desirability bias are needed.

VI. Conclusion

This study translated the English version of the FACT-G into the Mongolian language and evaluated the validity and reliability of the Mongolian version of FACT-G with Mongolian cancer patients. A 4-factor, 20-item model demonstrated a satisfactory fit for significant factor loadings. The factor structure of the Mongolian version of the FACT-G was similar to that of the original version including the physical, social/family, emotional, and functional well-being subscales and these four factors were explained 65.5% of the variance. The convergent validity between the FACT-G Mongolian version and the COOP/WONCA charts was significant ($r=.69, p<.001$). Cronbach's alpha for the total scale was .93 and the subscales ranged from .72 to .89.

The Mongolian version of the FACT-G scale demonstrated good validity and reliability. It is an appropriate instrument to use in research and clinical settings to assess the quality of life of Mongolian cancer patients. For further validation of the Mongolian version of the FACT-G, future studies need to test the psychometric properties of the scale including test-retest reliability, discriminant validity, and confirmatory factor analysis to increase confidence the findings of this study. Moreover, replication studies with diverse samples are needed.

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Appendix 1. Questionnaire (English)

Informed consent form to participate in research

Research title: operties of the Mongolian version of Functional Assessment of Cancer Therapy-General (FACT-G)

The purposes of this study are to evaluate the psychometric properties test of the Mongolian version of the “Functional assessment of cancer therapy”-General (FACT-G).

Benefit of this study

1. This study will be the first psychometric evaluation test of a health-related quality of life instrument in Mongolia.
2. The Mongolian version of FACT-G will be used to test the health-related quality of life of Mongolian cancer patients.
3. It will help increase the overall knowledge and awareness of the health-related quality of life among Mongolian cancer patients and will contribute to increase the health-related quality of Mongolian cancer patients.

The contents of the questionnaire will be kept confidential and we promise that it will not be used for other purposes except for this research purpose.

I am invite you part of this study because you are diagnosed by cancer. It will be very helpful for cancer patients of quality of life. This study has no risk factors for the participants and it takes 15-20 minutes spend for to fill out of questionnaire. Participants do not want to complete the questionnaire during the survey you can stop at any time. If you have any help for read the questions and write the answers the researcher will be help you.

I am voluntarily agreed to participate in the study.

Reseacher: Delgersuren Gelegjamts

Characteristics of participants (*Please choose answer then circle*)

Demographic characteristics

1. How old are you (years old)
2. What is your gender?
1) Male 2) Female
3. Are you married?
Married
Divorced/Separated
Single
Widowed
Other ()
4. What is your final education level?
Less than high school
High school
College and University bachelor degree
Higher than bachelor's degree

5. Health related characteristics

- What is your primary tumor site?
- Liver
 - Stomach
 - Lung
 - Esophagus
 - Cervix
 - Other (write down please) _____
6. When did you diagnosed? (.....year..... month)
 7. Do you know what stage of your cancer?

- 1) I stage
 - 2) II stage
 - 3) III stage
 - 4) IV stage
8. What treatment did you have?
Surgery
Chemotherapy
Radiotherapy
Surgery +Chemo
Surgery+ Radio therapy
No treatment
Other (_____)

9. ECOG Performance Status

- Fully active, ambulatory with physical symptom (0)
- Fully ambulatory with some symptom (1)
- Requiring more than 50% awake time to rest (2)
- Requiring less than 50% awake time to rest (3)
- Bedridden (4)

Physical well-Being		Not at all	A little bit	Some what	Quite a bit	Very much
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have a nausea	0	1	2	3	4
GP3	Because of my physical condition, I have a trouble meeting the needs of my family	0	1	2	3	4
GP4	I have a pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I fell ill	0	1	2	3	4
GP7	I am forced to spend time in bed	0	1	2	3	4
Social/ Family Well-Being		Not at all	A little bit	Some what	Quite a bit	Very much
GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friend	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close my partner (or the person who is my main support)	0	1	2	3	4
Q1: Regardless of your current level of sexual activity, please answer the following question, If you prefer not to answer it, please mark this box <input type="checkbox"/> and go to the next section						
GS7	I am satisfied with my sex life	0	1	2	3	4
Emotional Well-Being		Not at all	A little bit	Some what	Quite a bit	Very much
GE1	I feel sad	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness	0	1	2	3	4
GE3	I am losing hope in the fight against my illness	0	1	2	3	4
GE4	I feel nervous	0	1	2	3	4
GE5	I worry about dying	0	1	2	3	4
GE6	I worry that my condition will get worse	0	1	2	3	4
Functional Well-Being		Not at all	A little bit	Some what	Quite a bit	Very much
GF1	I am able to work (include work at home)	0	1	2	3	4
GF2	My work(include work at home)is fulfilling	0	1	2	3	4
GF3	I am able to enjoy life	0	1	2	3	4
GF4	I have accepted my illness	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun	0	1	2	3	4
GF7	I am content with the quality of my life right now	0	1	2	3	4

	Variables	No		
1	Physical fitness	1	Very heavy	
		2	Heavy	
		3	Moderate	
		4	light	
		5	Very light	
2	Feelings	1	Not at all	
		2	slightly	
		3	moderately	
		4	Quite a bit	
		5	Extremely	
3	Daily activities	1	No difficulty at all	
		2	A little bit difficult	
		3	Some difficult	
		4	Much difficult	
		5	Could not do	
4	Social activities	1	Not at all	
		2	Slightly	
		3	Moderately	
		4	Quite a bit	
		5	Extremely	
5	Change in Health	1	Much better	
		2	A little better	
		3	About the same	
		4	A little worse	
		5	Much worse	
6	Overall health	1	Excellent	
		2	Very good	
		3	Good	
		4	Fair	
		5	Poor	

. Questionnaire (Mongolian)

Судалгаанд оролцогч танд таниулах зөвшөөрлийн хуудас №

Судалгааны сэдэв: Хорт хавдрын эмчилгээний үйл ажиллагааны үнэлгээ - ерөнхий (ХЭҮҮ-Е) асуумжийн Монгол хувилбарыг гаргаж психометрийн шинж чанарыг тодорхойлох нь

Судалгааны зорилго: Монголын хорт хавдартай иргэдийн эмчилгээний үйл ажиллагааг үнэлж, асуумжийн психометрийн шинж чанарыг үнэлэхэд оршино. Тодорхой 2 зорилтыг дэвшүүлж байна.

1) "FACT-G" асуумжийн Англи хэл дээрхи хувилбарыг Монгол хэлрүү /ХЭҮҮ-Е/ хөрвүүлэх

"FACT-G" асуумжийн Монгол хувилбарын хүчин төгөлдөр ба үнэн байдал (Validity), найдвартай ба зөв байдлыг (Reliability) үнэлэх

Судалгааны ач холбогдол:

1. Энэхүү судалгаанд ашиглах олон улсад хүлээн зөвшөөрөгдсөн стандарт асуумж нь онгол улсад анх удаа судлагдаж буй эрүүл мэндтэй холбоотой асуумж юм.

2. Энэ асуумжийн монгол хэл дээрхи хувилбарыг боловсруулснаар хавдраар өвдсөн хүний амьдралын чанарыг үнэлэх боломжтой болно.

3. Энэхүү судалгаа нь монголын хорт хавдартай хүний эрүүл мэндтэй холбоотой ухамсар, ойлголт болон мэдлэгийг дээшлүүлэхээс гадна тэдний амьдралын чанарыг сайжруулахад хувь нэмэр оруулах болно.

Энэ судалгаатай хамааралтай таны хувийн мэдээллийг чандлан хадгалах ба энэхүү судалгаанаас өөр зорилгоор ашиглахгүй гэдгээ амлаж байна. Таныг судалгаанд оролцохыг чин сэтгэлээсээ урьж байна. Энэхүү судалгаа нь хорт хавдартай хүний амьдралын чанарыг тодорхойлоход чухал үүрэгтэй болно. Судалгаанд оролцоноор танд ямар нэгэн сөрөг нөлөө үзүүлэхгүй ба асуумжид хариулахад 10-15 минут зарцуулна.

Хэрэв та асуултанд хариулахад төвөгтэй бөгөөд дуусгаж чадахгүй бол судалгааг зогсоож болно. Мөн та унших болон бичихэд төвөгтэй байвал судлаач болон таны асран хамгаалагч туслаж болно.

Би сайн дураараа өөрийн хүсэлтээр энэхүү судалгаанд оролцох болно.

Зөвшөөрсөн гарын үсэг

Судалгаанд оролцсон он сар өдөр

Судлаач: Гэлэгжамц Дэлгэрсүрэн

Баярлалаа. Танд эрүүл энхийг хүсье!

Хүн ам зүйн асуулт (га өөрт тохирох хариултыг сонгоно уу?)

1. Таны төрсөн он сар хэд вэ? (.....онсар.)
2. Таны хүйс 1. Эрэгтэй 2. Эмэгтэй
3. Таны гэр бүлийн байдал
 1. Гэрэлсэн
 2. Салсан
 3. Ганц бие
 4. Бэлбэсэн
 5. Бусад (_____)
4. Таны боловсролын төвшин
 1. Ерөнхий боловсролоос доош
 2. Ерөнхий боловсрол
 3. Коллеж,
 4. Баклавар түүнээс дээш
- Эрүүл мэндтэй холбоотой асуумжууд**
5. Таны анх оношлогдсон хавдрын байрлал
 1. Элэгний хавдар
 2. Ходоодны хавдар
 3. Уушигний хавдар
 4. Улаанхоолойн хавдар
 5. Умайн хүзүүн хавдар
 6. Бусад (энд бичнэ үү) _____
6. Та хэзээ оношлогдсон бэ? (.....он.....сар)
7. Та хавдрын хэддүгээр үе шатанд байгаа бэ?
 1. I үе шат
 2. II үе шат
 3. III үе шат
 4. IV үе шат
8. Та ямар ямар эмчилгээ хийлгэсэн бэ?
 1. Мэс заслын эмчилгээ
 2. Хими эмчилгээ
 3. Туяа эмчилгээ
 4. Мэс засал + Хими эмчилгээ
 5. Мэс засал + Туяа эмчилгээ
 6. Одоогоор эмчилгээгүй байна
 7. Бусад (_____)
9. Таны биеийн ерөнхий байдал ямар байна бэ?
 1. Хэвийн, идвэхтэй, амбулторт үйлчлүүлдэг, биед шинж тэмдэг илэрсэн (0)
 2. Амбултороор бүрэн үйлчилгээтэй, зарим шинж тэмдэг илэрсэн (1)
Өдөрт сэрүүн үедээ 50% иас бага хувьд нь орондоо хэвтэж амрах шаардлагатай (2)
 4. Өдөрт сэрүүн үедээ 50% дээш хувьд нь орондоо хэвтэх шаардлагатай (3)
 5. Орноос босож чадахгүй байгаа (4)

Сүүлийн 7 хоногтой холбоотой өөрийн хариултаа илэрхийлэхдээ мөр тус бүрт нэг тоог дугуйлах юмуу тэмдэглэгээ хийнэ үү.

	<u>БИЕМАХБОДЫН САЙН САЙХАН -БАЙДАЛ</u>	Огт үгүй	Бага ээрэг	Зарим талаар	Нэл ээд	Маш их
GP1	Би эрч хүч муутай, тамир сул байна	0	1	2	3	4
GP2	Миний дотор муухай оргидог	0	1	2	3	4
GP3	Би биеийн байдлаасаа болоод гэр бүлийнхээ хэрэгцээг хангахад бэрхшээлтэй байдаг	0	1	2	3	4
GP4	Би өвдөлттэй байгаа	0	1	2	3	4
GP5	Би эмчилгээний гаж нөлөөнөөс ядарч туйлдаж байна	0	1	2	3	4
GP6	Би өвчтэй гэдгээ мэдэрдэг	0	1	2	3	4
GP7	Би орондоо хэвтэж цаг өнгөрөөж байна	0	1	2	3	4

	<u>НИЙГЭМ/ГЭР БҮЛИЙН САЙН САЙХАН-БАЙДАЛ</u>	Огт үгүй	Бага ээрэг	Зарим талаар	Нэл ээд	Маш их
GS1	Би найзуудтайгаа дотно байдаг	0	1	2	3	4
GS2	Би гэр бүлээсээ сэтгэл хөдлөлийн дэмжлэг авдаг	0	1	2	3	4
GS3	Би найз нөхөдөөсөө дэмжлэг авдаг	0	1	2	3	4
GS4	Манай гэр бүлийнхэн миний өвчнийг хүлээн зөвшөөрсөн	0	1	2	3	4
GS5	Манай гэр бүлийнхэн миний өвчний талаар ойлгож сэтгэл хангамжтай харьцдаг чаддаг	0	1	2	3	4
GS6	Би хамтрагчтайгаа ойр дотно байдаг (эсвэл намайг дэмжиж буй гол хүн)	0	1	2	3	4
Q1	<i>Таны одоогийн бэлгийн үйл ажиллагааны түвшинээс хамааралгүй, асуултын дагуу хариулна уу. Хэрвээ та энд хариулахыг хүсэхгүй бол энэ хайрцагт тэмдэглэгээ хийгээд дараагийн асуулт руу шилжинэ үү.</i>					
GS7	Би бэлгийн амьдралдаа сэтгэл хангалуун байдаг	0	1	2	3	4

Сүүлийн 7 хоногтой холбоотой өөрийн хариултаа илэрхийлэхдээ мөр тус бүрт нэг тоог дугуйлах юмуу тэмдэглэгээ хийнэ үү.

	<u>СЭТГЭЛ ХӨДЛӨЛИЙН САЙН САЙХАН-БАЙДАЛ</u>	Огт үгү й	Бага зэрэг	Зарим талаар	Нэл ээд	Маш их
GE1	Би уйтгар, гунигтай болсон	0	1	2	3	4
GE2	Би өвчнөө хэрхэн даван туулж байгаадаа сэтгэл хангалуун байдаг	0	1	2	3	4
GE3	Би энэ өвчинтэй тэмцэх итгэлээ алдаж байна	0	1	2	3	4
GE4	Би бухимдаж байна	0	1	2	3	4
GE5	Би үхнэ гэдэгт санаа зовдог	0	1	2	3	4
GE6	Миний биеийн байдал цаашид илүү дордоно гэж санаа зовдог	0	1	2	3	4

	<u>ҮЙЛ АЖИЛЛАГААНЫ САЙН САЙХАН - БАЙДАЛ</u>	Огт үгү й	Бага зэрэг	Зарим талаар	Нэл ээд	Маш их
GF1	Би ажил хийж чадна (гэрт хийх ажил орно)	0	1	2	3	4
GF2	Би ажилдаа (гэрийн ажил орно) сэтгэл хангалуун байдаг	0	1	2	3	4
GF3	Би амьдралаас таашаал авч чаддаг	0	1	2	3	4
GF4	Би өвчнөө хүлээн зөвшөөрч эвлэрсэн	0	1	2	3	4
GF5	Би сайн унтаж амарч байгаа	0	1	2	3	4
GF6	Би ихэвчлэн юмыг хөгжилтэйгээр хийж таашаал авдаг	0	1	2	3	4
GF7	Би яг одоогоор амьдралынхаа чанарт сэтгэл хангалуун байна	0	1	2	3	4

“COOP-WONCA” Суурь эрүүл мэндийн үйл ажиллагааны үнэлгээний асуумж . Сүүлийн 2 долоо хоногийн хугацааг бодож асуултанд хариулаарай. Та тохирох хариултын ард (√) тэмдэглэгээ хийнэ үү.

	Асуултууд	No		
1	Биеийн хөдөлгөөн	1	Маш хүнд	
		2	Хүнд	
		3	Дунд зэрэг	
		4	Хөнгөн	
		5	Их хөнгөн	
2	Мэдрэмж, сэтгэл хөдлөл	1	Үргэлж биш	
		2	Бага зэрэг	
		3	Хааяа, дунд зэрэг	
		4	Нэлээд	
		5	Маш их	
3	Өдөр тутмын идвэхтэй үйл ажиллагаа	1	Хэцүү биш	
		2	Бага зэрэг хэцүү	
		3	Заримдаа хэцүү	
		4	Маш хэцүү	
		5	Хийж чадахгүй	
4	Нийгмийн идвэхтэй байдал	1	Үргэлж биш	
		2	Бага зэрэг	
		3	Хааяа	
		4	Нэлээд	
		5	Маш их	
5	Таны эрүүл мэндийн өөрчлөлт	1	Их дээрдсэн	
		2	Бага зэрэг дээрдсэн	
		3	Бараг адилхан байгаа	
		4	Бага зэрэг муудсан	
		5	Их муудсан	
6	Ерөнхий эрүүл мэндийн байдал	1	Маш сайн байна	
		2	Их сайн байна	
		3	Сайн байна	
		4	Тийм ч сайн биш	
		5	Муу байна	

Appendix 3. FACT Licensing Agreement



PROVIDING A VOICE FOR PATIENTS WORLDWIDE

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Name ("Licensee"): Delgersuren Gelegjamts

Measurement: FACT-G

Language(s): English

Study Title ("Study"): none given

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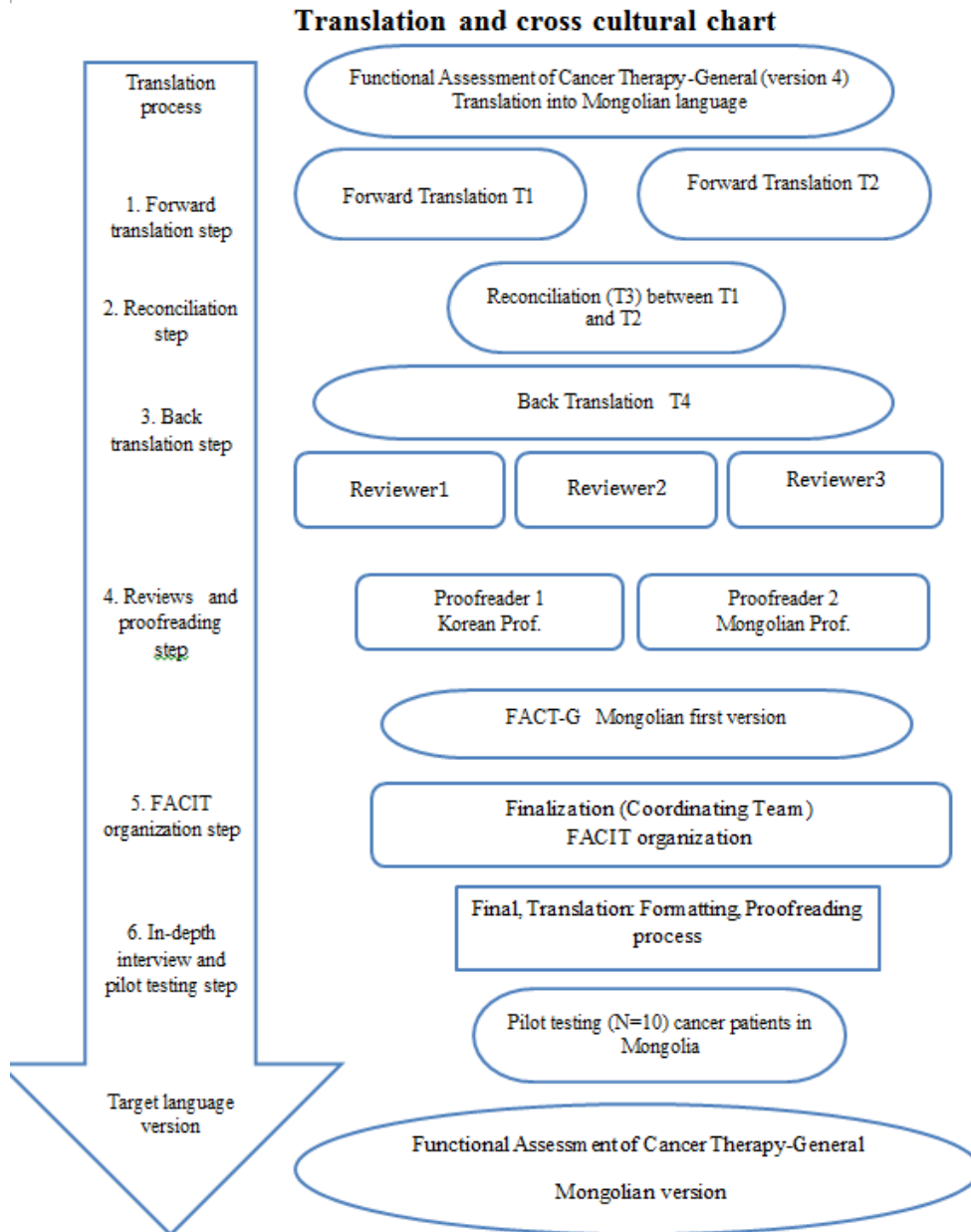
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Signature:  _____
Golegjamts Delgerjarm (Oct 21, 2020 09:12 GMT+9)

Appendix 4. Translation Process (Flow Chart)



Appendix 5. An Example of the Translation Process (GP2)

GP2	
Eng	I have nausea
Fwd 1	Миний дотор муухай оргидог
Fwd 2	Миний дотор муухай оргидог
REC	Миний дотор муухай оргидог
BT	I have nausea
FACIT Comments	Based on the BT, Rec looks acceptable. Do you agree?
Rev	REC
Final	Миний дотор муухай оргидог
Literal BT of Final	Му, nausea, have
Polished BT of Final	I have nausea
Harmo Issues	(for FACIT/LC use only!)
Post Harmo Final	If different from original final. Please add rows below and provide “Polished” and “Literal” BT’s
Post Proofing Final	If different from original final. Please add rows below and provide “Polished” and “Literal” BT’s
Summary of Translation Issues	(For FACIT/LC use only!)
Debrief. Notes	(For FACIT/LC use only!)
Summary of Testing Issues	(for FACIT/LC use only!)
Post Test Final	If different from original final. Please add rows below and provide “Polished” and “Literal” BT’s

Appendix 6. Consent Form for In-Depth Interview Participants

Research title: Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment of Cancer Therapy-General (FACT-G)

The purposes of this study are to evaluate the psychometric properties test of the Mongolian version of the “Functional assessment of cancer therapy”-Generel (FACT-G).

Benefit of this study

1. This study will be the first psychometric evaluation test of a health-related quality of life instrument in Mongolia.
2. The Mongolian version of FACT-G will be used to test the health-related quality of life of Mongolian cancer patients.
3. It will help increase the overall knowledge and awareness of the health-related quality of life among Mongolian cancer patients and will contribute to increase the health-related quality of Mongolian cancer patients.

Cognitive interview guidelines following the FACIT organization guideline (Benjamin Arnold and Lilia).

The contents of the personal information will be kept confidential and we promise that it will not be used for other purposes except for this research purpose.

I am invite you part of this study because you are diagnosed by cancer. It will be very helpful for cancer patients of quality of life. This study has no risk factors for the participant, and it takes about 30-45 minutes for interview discussion following the questions. If participants tired to complete the interview, you can stop at any time.

I am voluntarily agreeing to participate in this study for in-dept interview.

Signature:

Interview date:

Reseacher: Delgersuren Gelegjamts

Appendix 7. In-depth Interview Guidelines (English & Mongolian)

	English Source	Монгол хувилбар
DEMOGRAPHIC INFORMATION	Pilot testing site (Please include location, city, country)	Туршилтын тест авах газар (улс, хот, байрлал хамаарна)
	Date of interview - dd/mm/yyyy	Ярилцлага хийх өдөр он/сар/өдөр
	Language	Хэл
	Year of birth	Төрсөн он
	Age at time of interview	Ярилцлага авах үеийн нас
	What is your age range? (Choose from the numbers below)	Та аль насны аль ангилалд хамаарах вэ? (доороос сонгох)
	1. 18 – 25 years old	1. 18-25 настай
	2. 26 – 35 years old	2. 26-35 настай
	3. 36 – 45 years old	3. 36-45 настай
	4. 46 – 55 years old	4. 46-55 настай
	5. 56 – 65 years old	5. 56-65 настай
	6. 66 – 75 years old	6. 66-75 настай
	7. 76 years or older	7. 76 түүнээс дээш
	Gender (Choose "Female"/"Male")	Хүйс ("Эмэгтэй" /"Эрэгтэй" сонгох.)
	MALE	ЭРЭГТЭЙ
	FEMALE	ЭМЭГТЭЙ
	Country of birth	Төрсөн улс
Activity Level (Please ask the patient to rate his or her current activity level based on the following descriptions.)	Үйл ажиллагааны түвшин (доорхи тодорхойлолт дээр тулгуурлан өвчтөнөөс одоогийн үйл ажиллагааны байдлыг асууж оноо өгнө үү)	
0. Normal activity, without symptoms	0. Хэвийн үйл ажиллагаатай, ямар нэгэн шинж тэмдэггүй	

	1. Some symptoms, but do not require bed rest during waking day	1. Зарим шинж тэмдэгтэй, гэхдээ сэрүүн үедээ орондоо амрах шаардлагагүй
	2. Require bed rest for less than 50% of waking day	2. Сэрүүн үедээ 50% иас бага хувьд нь орондоо хэвтэж амрах шаардлагатай
	3. Require bed rest for more than 50% of waking day	3. Сэрүүн үедээ 50% иас дээш хувьд нь орондоо хэвтэж амрах шаардлагатай
	4. Unable to get out of bed	4. Орноос босож чадахгүй байгаа
	Patient meets all specified criteria (Choose "YES"/"NO")	Өвчтөн бүх шалгууруудыг хангаж байна ("ТИЙМ"/ "ҮГҮЙ" сонгох)
	What is the highest level in school that you completed? (Choose from the numbers below)	Таны төгссөн сургуулийн хамгийн өндөр боловсролын зэрэг юу вэ? (доорхи дугаараас сонгох)
	1. 5th grade or less	1. 5 ангийн боловсрол түүнээс доош
	2. 6th grade	2. 6 ангийн боловсрол
	3. 7th grade	3. 7 ангийн боловсрол
	4. 8th grade	4. 8 ангийн боловсрол
	5. Some high school	5. Ямар нэгэн ахлах сургууль
	6. High school grad/GED	6. Ахлах сургууль төгссөн/ерөнхий боловсрол
	7. Some college/Technical degree/AA	7. Зарим коллеж /дипломын мэргэжилтэй
	8. College degree (BA/BS)	8. Коллежийн зэрэг (бакалавр)
	9. Advanced degree (MA, PHD, MD)	9. Эрдмийн зэрэг (мастер, доктор)
KEY	Key	Түлхүүр
	Patient comments in native language	Өвчтөний сэтгэгдэл төрөлх хэл дээр
	Participant comments in native language	Оролцогчийн сэтгэгдэл төрөлх хэл дээр
	Translation of comments into English	Сэтгэгдлүүдийн англи хэлний орчуулга
GENERAL QUESTION	General questions	Ерөнхий асуултууд
	Patient response (choose "yes"/"no")	Өвчтөний хариулт ("тийм"/ "үгүй" сонгох)
	Participant response (choose "yes"/"no")	Оролцогчийн хариулт ("тийм"/"үгүй" сонгох)

Translation into english	Англи хэлний орчуулга
Note to interviewer	Ярилцлагчийн тэмдэглэл
Please ask the participant about items that have been previously marked in the questionnaire as difficult to understand. Do your best to work with the participant to make sure that all problematic items are listed. Please ask why the items were difficult to understand or why the participant thought they were difficult.	Асуумжанд ойлгоход хэцүү гэж урьд нь тэмдэглэсэн зүйлсийн талаар оролцогчоос асууна уу. Оролцогчийн бүх асуудалтай гэсэн зүйлсийг жагсаалтийг тодруулахын тулд хамгийн сайнаараа ажилаарай. Эдгээр зүйлсийг ойлгоход хэцүү байсан эсвэл оролцогч нь яагаад хэцүү гэж бодсоныг асууна уу.
Were there any items on the questionnaire which were difficult to understand? If answer is "NO", please skip the next question.	Асуумжанд ямар нэгэн ойлгоход хэцүү зүйл байсан уу? Хэрэв "ҮГҮЙ" гэж хариулбал алгасаад дараагийнх руу орно уу
Would you please tell me which items were difficult to understand and why they were difficult? Also, could you suggest a better way to phrase these items?	Аль зүйл нь ойлгоход хэцүү байсан, яагаад хэцүү байсныг та надад хэлж өгнө үү. Мөн танд эдгээр зүйлсийн хэллэгийг илүү сайн болгох санал байна уу?
Were there any items on the questionnaire which were not relevant or were offensive to you? If answer is "NO", please skip the next question.	Асуумжанд хамааралгүй эсвэл танд эвгүй санагдсан зүйлс байсан уу? Хэрэв та "ҮГҮЙ" гэж хариулбал алгасаад дараагийн асуулт руу орно уу.
Would you please tell me which items were not relevant or were offensive, and why? Also, could you suggest a better way to phrase these items?	Та надад энэ асуумжинд аль зүйл нь хамааралгүй эсвэл танд эвгүй санагдаж байгаа, яагаад гэдгийг хэлж өгнө үү. Мөн танд эдгээрийн хэллэгийг илүү сайн болгох санаа байна уу
Is there anything else that should have been included related to your illness? If answer is "NO", please skip the next question.	Таны өвчинтэй холбоотой ямар нэгэн өөр зүйлийг оруулах ёстой байсан уу? Хэрэв "ҮГҮЙ" гэж хариулбал алгасаад дараагийн

	асуулт руу орно уу
Is there anything else that should have been included related to your condition? If answer is "NO", please skip the next question.	Таны нөхцөл байдалтай холбоотой ямар нэгэн өөр зүйлийг оруулах ёстой байсан уу? Хэрэв "ҮГҮЙ" гэж хариулбал алгасаад дараагийн асуулт руу орно уу
Would you please tell me what should be added?	Та өөр юу нэмэх ёстойг надад хэлж өгнө үү?
ITEM-SPECIFIC QUESTIONS	Зүйл-тусгай асуултууд
Now I would like to ask you about some items rights or wrong answers to these questions. I would simply like to know your opinion, so please use your own words when answering questions about the meaning of words or phrases. This questionnaire was translated from English into _____. Your feedback is appreciated and will help identify problems in the translation. I may ask you some repetitive questions, and I may ask some questions that seem like they have very obvious answers. I am not asking you because I think you don't know, and I am not asking you any trick questions. I am getting as much information on questionnaire items as possible so that we can make any necessary changes to them.	Одоо би танаас зарим зүйлийн талаар илүү тодруулж асуухыг хүсч байна. Эдгээр асуултуудад зөв эсвэл буруу хариулт гэж байхгүй. Би зүгээр л таны бодлыг мэдэхийг хүсч байгаа тул асуултанд хариулахдаа үг, хэллэгийн утгын талаархи бодлоо өөрийн үгээр хариулна уу. Энэхүү асуумж нь англи хэлнээс Монгол хэл рүү орчуулагдсан. Таны санал хүсэлтийг хүндэтгэх бөгөөд орчуулгад тулгарч буй бэрхшээлийг тодорхойлоход тусална. Би танаас зарим асуултыг дахин давтаж асууж магадгүй, мөн ойлгомжтой хариулттай мэт санагдах асуултуудыг ч асууж магадгүй юм. Таныг мэдэхгүй байх гээд асууж байгаа зүйл биш мөн таныг хууран мэхлэх ямар нэгэн асуулт асуухгүй. Би асуумжинд дах зүйлсийн талаар аль болох их мэдээлэл авч байж бид шаардлагатай өөрчлөлтүүдийг хийх боломжтой юм.
RESPONSE IN NATIVE LANGUAGE)	ӨВЧТӨНИЙ ХАРИУЛТ (ТӨРӨЛХ ХЭЛ ДЭЭР)
PARTICIPANT RESPONSE	ОРОЛЦОГЧИЙН ХАРИУЛТ

	(IN NATIVE LANGUAGE)	(ТӨРӨЛХ ХЭЛ ДЭЭР)
INSTRUCTIONS	Please explain in your own words what this title means to you?	Энэ сэдэв ямар утгатайг та өөрийн үгээр тайлбарлана уу?
	Was there any part of the instructions that was confusing, unclear or that you would change? Please be specific.	Зааварын аль нэгэн хэсэгт эргэлзээтэй, ойлгомжгүй эсвэл өөрчлөх зүйл байсан уу? Тодорхой хэлнэ үү.
	Please explain what these instructions are asking you to do.	Эдгээр заавар таныг юу хийхийг хэлж тайлбарланауу.
	Please explain the meaning of this instruction using own words.	Энэ зааврын утгыг өөрийн үгээр тайлбарлана уу.
ITEM-SPECIFIC QUESTIONS	What answer did you choose and why?	Та ямар хариултыг сонгосон бэ, яагаад?
	What answer did you choose?	Та ямар хариулт сонгосон бэ?
	Please describe the reason for choosing your answer.	Та яагаад энэ хариултыг сонгосон шалтгаанаа тайлбарланауу
	Please explain the meaning of this item using your own words.	Энэ зүйлийн утгыг өөрийн үгээр тайлбарлана уу
	What did you think about when answering this item?	Энэ зүйлд хариулахдаа та юу бодож байсан вэ?
	What does this word mean in this item?	Энэ зүйлд энэ үг ямар утгатай вэ?
	What does this phrase mean in this item?	Энэ зүйлд энэ хэллэг ямар утгатай вэ?
	What does this word refer to in this item?	Энэ зүйлд энэ үг юуг илэрхийлж байна?
	What do these words mean in this item?	Энэ зүйлийн эдгээр үгнүүд ямар утгатай вэ?
	What does this phrase refer to in this item?	Энэ зүйлд энэ хэллэг юуг илэрхийлж байна вэ?
	Please provide examples of this phrase.	Энэ хэллэгт жишээ санал болгоно уу.
	Please provide examples of this word.	Энэ үгэнд жишээ санал болгоно уу.
	Are these examples easy to understand?	Эдгээр жишээнүүд ойлгоход амархан байна уу?
	How would you describe this feeling?	Энэ мэдрэмжийг яаж тайлбарлах вэ?
	How would you describe this phrase?	Энэ хэллэгийг та яаж тайлбарлах вэ?

	What part of the body does this item refer to?	Энэ хэсэг биеийн аль хэсэгт хамаарах вэ?
	Was this item easy to understand? If not, please explain why.	Энэ асуулт ойлгоход амар байсан уу? Үгүй бол яагаад гэдгийг тайлбарлана уу.
	Was this clear and easy to understand? If not, please explain why.	Энэ тодорхой бөгөөд ойлгоход амарбайсануу? Үгүй бол яагаад гэдгийг тайлбарлана уу.
ANSWER CHOICES	Are the answer choices clear in meaning and easy to understand? If not, please explain.	Энэ хариултын сонголтуудын утга нь тодорхой бөгөөд ойлгоход амар байна уу? Хэрэв үгүй бол тайлбарлана уу.
	Do these answer choices follow a logical order? If not, please suggest how we can improve them.	Эдгээр хариултын сонголтууд нь логик дараалалын дагуу байна уу? Хэрэв үгүй бол бид хэрхэн сайжруулах талаар санал болгоно уу.
	Using your own words, what does each answer choice mean?	Хариултын сонголт тус бүрийн утгыг өөрийн үгээр хэлнэ үү.
	Are the response options evenly spaced and easy to differentiate between?	Хариулт өгөх сонголтуудын хоорондох зай жигд бөгөөд амархан ялгагдаж байна уу?
	What does this word mean to you?	Танд энэ үг ямар утгатай бэ?
	We are thinking about using the following word for this answer choice:	Бид энэ хариултын сонголтонд дараах үгийг ашиглах талаар бодож байна.
RECALL	What does this time period refer to?	Энэ цаг үе/ хугацаа юуг илэрхийлж байна вэ?
	How far back does this questionnaire ask you to think when answering the questions? [Note to Interviewer: Discuss if different from “ 24 hours ”]	Энэ асуумжанд хариулахдаа та хэр зэрэг хугацааг эргэж бодсон вэ? [Ярилцагчийн тэмдэглэл: Хэрэв " 24 цаг "-аас ялгаатай байвал ярилцаарай]
	How far back does this questionnaire ask you to think when answering the questions? [Note to Interviewer: Discuss if different from “ 7 days ”]	Энэ асуумжанд хариулахдаа та хэр зэрэг хугацааг эргэж бодсон бэ? [Ярилцагчийн тэмдэглэл: Хэрэв " 7 хоног "-оос ялгаатай байвал ярилцаарай]
	Is there a better way to express this idea? If so,	Энэ санааг илэрхийлэх илүү сайн арга байна

	please provide your suggestion.	уу? Хэрэв тийм бол санал болгоно уу.
ADDITIONAL DEBRIEFING	We are thinking about using the following wording for this item:	Бид энэ зүйлд дараах үгийг ашиглах талаар бодож байна
	We are thinking about using a different wording for this item (please see column B).	Бид энэ зүйлийн хувьд өөр үгийг ашиглах талаар бодож байна (B баганыг харна уу)
	Would you answer the item differently if I phrased it this way?	Хэрэв би энэ хэллэгээр хийвэл та энд хариулна уу
	In what way would your answer be different?	Ямар байдлаар таны хариулт өөр байх вэ?
	Which version sounds more natural to you?	Ямар хувилбар нь илүү аятайхан сонсогдож байна бэ?
	Which version is easier to understand? (Please see column B.)	Аль хувилбар нь ойлгоход амархан бэ? (B баганыг харна уу)
	How would you speak to your doctor about this symptom?	Энэ шинж тэмдгийн талаар та эмчтэйгээ яаж ярих вэ?
	Please look at the item definition below. In your own opinion, which version best expresses this idea?	Доор байгаа зүйлийн тодорхойлолтыг харна уу. Таны бодлоор аль санааг хамгийн сайнаар илэрхийлсэн байна бэ?
	Please look at the item definition (please see column B). In your own opinion, which of the two versions best expresses this idea?	Доор байгаа зүйлийн тодорхойлтыг харна уу (B эгнээг харна уу) Таны бодлоор 2 хувилбарын аль нь энэ санааг хамгийн сайнаар илэрхийлсэн байна бэ?
YES/NO	What was the reason for your choice?	Ямар шалтгаанаар энэ сонголтыг хийсэн бэ?
	Yes	Тийм
	No	Үгүй
ADDITIONAL TEXT	(Choose "yes"/"no")	("тийм"/"үгүй" сонголт хийх)
	Item #	Зүйл #
	Item	Зүйл
	Question	Асуумж

	Participant response (in target language)	Оролцогчийн хариулт (зорилтот хэл дээр)
	Translation into english	Англи хэл рүү орчуулга
FINAL QUESTIONS	Final questions	Төгсгөлийн асуултууд
	Do you have any other comments about this questionnaire? (Choose "YES"/"NO")	Энэ асуумжинд та өөр ямар нэгэн санал сэтгэгдэлүүд байнау? ("ТИЙМ"/"ҮГҮЙ" сонголт хийх)
	Comments and suggestions	Сэтгэгдэлүүд болон Зөвлөмжүүд
	Thank you very much for helping us with this project. Your comments will help to ensure that the _____ language version of the questionnaire has been properly translated and can be used internationally. NOTE TO INTERVIEWER: Please indicate whether or not the patient required assistance filling out the questionnaire, and also list any comments you may have.	Энэхүү төслийг хэрэгжүүлэхэд бидэнд тусалсанд маш их баярлалаа. Таны энэ асуумжанд өгсөн саналууд Монгол хэл дээрх хувилбарыг зөв орчуулж, олон улсад ашиглах боломжтой болгоход тусална. ЯРИЛЦЛАГЧИЙН ТЭМДЭГЛЭЛ: Асуумжийг бөглөхөд өвчтөнд тусламж шаардлагатай байгаа үгүйг тодорхойлох, мөн өөрийн ямар сэтгэгдлүүд байгаагаа бичнэ үү.

Appendix 8. FACT-G Mongolian Version

FACT-G (Version 4)

Таны адил өвдсөн бусад хүмүүс доорхи жагсаалт бүхий зүйлсийг чухал гэж үзэж байна. Сүүлийн 7 хоногтой холбоотой өөрийн харуултаа илэрхийлэхдээ мөр тус бүрт нэг тоог дугуйлах юмуу тэмдэглэгээ хийнэ үү.

	Огт үгүй	Бага ээрэг	Зарим талаар	Нэлээд	Маш их	
<u>БИЕМАХБОДЫН САЙН САЙХАН - БАЙДАЛ</u>						
OP1	Би эрч хүчээр дутмаг байна	0	1	2	3	4
OP2	Миний дотор муухай оргилдог	0	1	2	3	4
OP3	Би биемахбодын байдлаасаа шалтгаалаад гэр бүлийнхээ хэргцээг хангахад бэрхшээлтэй байдаг ...	0	1	2	3	4
OP4	Би өвдөлттэй байдаг	0	1	2	3	4
OP5	Би эмчилгээний гаж нөлөөнөөс залхаж байна	0	1	2	3	4
OP6	Би өвчтэй гэдгээ мэдэрдэг	0	1	2	3	4
OP7	Би цагийг хүчээр орондоо хэвтэж өнгөрөөж байна	0	1	2	3	4

	Огт үгүй	Бага ээрэг	Зарим талаар	Нэлээд	Маш их	
<u>НИЙГЭМЛЭР БҮЛИЙН САЙН САЙХАН-БАЙДАЛ</u>						
OS1	Би найзуудтайгаа дотно байдаг	0	1	2	3	4
OS2	Би гэр бүлээсээ сэтгэл хөдлөлийн дэмжлэг авдаг	0	1	2	3	4
OS3	Би найз нөхөдөөсөө дэмжлэг авдаг	0	1	2	3	4
OS4	Манай гэр бүлийхэн миний өвчнийг хүлээн зөвшөөрсөн	0	1	2	3	4
OS5	Би өвчнийхөө талаар гэр бүлийн харилцаанд сэтгэл хангалуун байдаг	0	1	2	3	4
OS6	Би хамтрагчтайгаа ойр дотно байдаг (эсвэл миний гол дэмжигч хүн).....	0	1	2	3	4
Q1	<i>Таны одоогийн бэлгийн үйл ажиллагааны түвшинээс хамааралгүй, асуултын дагуу харуулна уу. Хэрвээ та энд харуулахыг хүсэхгүй бол энэ хайрцагт тэмдэглэгээ хийгээд дараагийн асуулт руу шилжинэ үү.</i>					
OS7	Би бэлгийн амьдралдаа сэтгэл хангалуун байдаг	0	1	2	3	4

FACT-G Mongolian Version

FACT-G (Version 4)

Сүүлийн 7 хоногтой холбоотой өөрийн хариултаа илэрхийлэхдээ мөр тус бүрт нэг тоог дугуйлах юмуу тэмдэглэгээ хийнэ үү.

	<u>СЭТГЭЛ ХӨДЛӨЛИЙН САЙН САЙХАН- БАЙДАЛ</u>	Огт үгүй	Бага ээрэг	Зарим талаар	Нэлээд	Маш их
001	Би уйтгарыг мэдэрдэг	0	1	2	3	4
002	Би өвчнөө хэрхэн даван туулж байгаадаа сэтгэл хангалуун байдаг	0	1	2	3	4
003	Би өвчний эсрэг тэмцэх итгэлээ алдаж байна	0	1	2	3	4
004	Би бухимдал мэдэрдэг	0	1	2	3	4
005	Би үхнэ гэдэгт санаа зовдог	0	1	2	3	4
006	Миний биеийн байдал цаашид илүү дордоно гэж санаа зовдог	0	1	2	3	4

	<u>ҮЙЛ АЖИЛЛАГААНЫ САЙН САЙХАН- БАЙДАЛ</u>	Огт үгүй	Бага ээрэг	Зарим талаар	Нэлээд	Маш их
001	Би ажил хийх чадвартай (гэрт хийх ажил орно)	0	1	2	3	4
002	Би ажилдаа (гэрийн ажил орно) сэтгэл хангалуун байдаг	0	1	2	3	4
003	Би амьдралаас таашаал авч чаддаг	0	1	2	3	4
004	Би өвчнөө хүлээн зөвшөөрч эвлэрсэн	0	1	2	3	4
005	Би сайн унтаж амарч байгаа	0	1	2	3	4
006	Би ихэвчлэн юмыг хөгжилтэйгээр хийж таашаал авдаг	0	1	2	3	4
007	Би яг одоогоор амьдралынхаа чанарт сэтгэл хангалуун байна	0	1	2	3	4

Appendix 9. FACT-G Permission



September 20, 2022

This letter serves as notice that **Gelegjams Delgersuren** was granted permission to translate and linguistically validate the Functional Assessment of Cancer Therapy – General (FACT-G) into Mongolian in conjunction with FACIT.org following an established FACIT Multilingual Translation Methodology(1,2), which was developed and validated to ensure that resulting translations of quantitative measures reflect conceptual equivalence with the source document rendered in language that is culturally acceptable and relevant to the target population, and is consistent with consensus opinion(3).

A handwritten signature in black ink, appearing to read 'JBredle'.

Jason Bredle, MFA
Director, FACIT.org



¹ Bonomi, A. E., Cella, D.F., Hahn, E.A., Bjordal, K., Sperner-Unterweger, B., Gangeri, L., Bergman, B., Willem-Groot, J., Hanquet, P., and Zittoun, R. (1996). Multilingual translation of the Functional Assessment of Cancer Therapy (FACT) quality of life measurement system. *Qual. Life Res.* 5:309-320.

² Eremenco, S., Cella, D., & Arnold, B. J. (2005). A comprehensive method for the translation and cross-cultural validation of health status questionnaires. *Evaluation and the Health Professions*, 28: 212-232.

³ Wild, D., Grove, A., Martin, M., Eremenco, S., Ford, S., Verjee-Lorenz, A. et al. (2005). Principles of good practice for the translation and cultural adaptation process for patient reported outcomes (PRO) measures: Report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value in Health*, 8(2): 94-104.

for the Content Validity

1. N. Erdenekhuu.

MD., Prof.

Director of the National Cancer Center of Mongolia

2. D. Altantsetseg.

MD., Clinical Prof.

National Cancer Center of Mongolia

3. Kh. Ariunaa.

MD., Ph.D

National Cancer Center of Mongolia

4. M. Undram.

MD., Ph.D.

Mongolian National University of Medical Sciences

5. G. Khulan

RN., Ph.D, Associate Prof.

Mongolian National University of Medical Sciences

6. D. Solongo

RN., Ph.D, Associate Prof.

Mongolian National University of Medical Sciences

7. Ts. Basbish

RN., Ph.D, Senior lecture

Mongolian National University of Medical Sciences

8. Yu. Oyunzul

RN., MNS

National Cancer Center of Mongolia

. Content Validity Form with Consent Form (English)

Thank you very much for participating professional expert. This is a internationally accepted standard questionnaire for quality of life of cancer patients. Your comments and suggests will have a very important role the evaluating this questionnaire for Mongolian version.

Title of research: Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment of Cancer Therapy-General (FACT-G)

Objective of research: The purpose of this study is to evaluate psychometric properties of the FACT-G in a population of Mongolian cancer patients.

The specific objectives are as follows.

- 1) To translate the English version of the FACT-G into Mongolian language
- 2) To assess the validity and reliability of the Mongolian version FACT-G

Benefit of research

1. This questionnaire is first time evaluating Mongolian version of health related quality of life for cancer patients
2. Possibility to determining quality of life in Mongolian cancer patients after the this version
3. This study will assess the health awareness, understanding their knowledge of people with cancer and contribute to improving their quality of life.

I agree to participant the professional expert of this study: Expert name /signature/

Assessment guidelines

Functional Assessment of Cancer Therapy-General (FACT-G) questionnaire is 4 subscales and total 27 questions. When you are evaluating each of these 27 questions, please see how they relate to each other and the topic, language clarity for choice of words and phrase, structure of sentence understandable, and patient response of scale. Please choose one of the 1 to 4 points from the Mongolian version of the questionnaire.

Evaluating the questionnaire for 4 criteria (Relevance, language clarity, Completeness, Scaling response)

1. Is this question related to evaluate quality of life of cancer patient? (Relevance)

1 = strongly not relevant

2= not relevant

3= relevant

4= strongly relevant

2. Is this wording and phrasing of the translation right choices? (language clarity, comprehensibility)

1 = strongly not agree

2= not agree

3= agree

4= strongly agree

3. Is the question clear in a complete sentence? (Completeness, comprehensiveness)

1 = strongly not agree

2= not agree

3= agree

4= strongly agree

4. Whether the response rate of questionnaire is clear for the patient to complete? (Scaling response)

1 = strongly not agree

2= not agree

3= agree

4= strongly agree

Date:

Resaercher: Delgersuren Gelegjamts

Thank you

. Content Validity Form with Consent Form (Mongolian)

Судалгаанд шинжээчээр оролцох зөвшөөрлийн хуудас

Танд судалгааны ажилд шинжээчээр оролцох болсонд чин сэтгэлээсээ талархаж байна. Та энэ асуумжанд өөрийн үзэл бодлоо илэрхийлж үнэлгээ өгсөнөөр олон улсад хүлээн зөвшөөрөгдсөн стандарт асуумжийг Монгол улсад хэрэглэх боломжийг бий болгох чухал үүрэгтэй оролцож үнэтэй хувь нэмэрээ оруулах юмаа.

Судалгааны сэдэв: Хорт хавдрын эмчилгээний үйл ажиллагааны үнэлгээ - ерөнхий (ХЭҮҮ-Е) асуумжийн Монгол хувилбарыг гаргаж психометрийн шинж чанарыг тодорхойлох нь

Судалгааны зорилго: Монгол улсын хорт хавдартай өвчтөнүүдийн эмчилгээний үеийн үйл ажиллагааг үнэлж, асуумжийн психометрийн шинж чанарыг үнэлэхэд оршино.

Судалгааны зорилт:

- 1) “FACT-G” (Functional assessment of cancer therapy –General) асуумжийг Англи хэлнээс /ХЭҮҮ-Е/ Монгол хэл рүү хөрвүүлэх
- 2) “FACT-G” асуумжийн Монгол хувилбарын хүчин төгөлдөр ба үнэн байдал (Validity), найдвартай ба зөв байдлыг (Reliability) үнэлэх

Судалгааны ач холбогдол

1. Олон улсад хүлээн зөвшөөрөгдсөн энэхүү стандарт асуумж нь Монгол улсад анх удаа судлагдаж байгаа эрүүл мэндтэй холбоотой асуумж болно.
2. Энэ асуумжийн монгол хувилбарыг бий болох нь хавдраар оношлогдсон иргэдийн

амьдралын чанарыг үнэлэх боломжтой болно.

3. Энэхүү судалгаа нь хорт хавдартай иргэдийн эрүүл мэндтэй холбоотой ухамсар, ойлголт болон мэдлэгийг үнэлж тэдний амьдралын чанар сайжруулахад хувь нэмэр оруулах болно.

Энэ судалгааны ажилд шинжээчээр оролцохыг зөвшөөрч байна

Шинжээчийн нэр /Гарын үсэг/

Үнэлгээ өгсөн: он сар өдөр

Судлаач: Гэлэгжамц Дэлгэрсүрэн

Баярлалаа. Танд эрүүл энхийг хүсье!

Үнэлгээ өгөх аргачлал

Хорт хавдрын эмчилгээний үеийн үйл ажиллагааны үнэлгээ – Ерөнхий

Энэ асуумж нь 4 дэд бүлэгтэй нийт 27 асуулт бүхий асуумж юм. Та энэ 27 асуулт бүрт үнэлгээ өгөхдөө сэдэв, бүтэц, агуулгын хувьд хоорондоо хэрхэн хамааралтай эсэх мөн орчуулагыг үг, хэллэгийн сонголт, өвчтөн хариулахад ойлгомжтой байгаа эсэхийг танд илгээх асуумжийн Монгол хувилбараас харж 1-4 онооны аль нэгийг сонгон үнэлгээ ээгнө үү. Үнэлгээ өгөхдөө 4 төрлөөр үнэлгээ өгнө.

1. Асуултууд хорт хавдартай иргэдийн амьдралын чанарыг үнэлэхэд хамааралтай эсэхэд үнэлгээ өгнө

1 = энэ асуулт хамааралгүй

2= энэ асуулт зарим талаар хамааралтай

3= энэ асуулт хамааралтай

4= энэ асуулт үнэхээр хамааралтай

2. Орчуулагын хэл зүй, зөв үг, хэллэгийн сонголтонд үнэлгээ өгнө

1 = огт зөвшөөрөхгүй

2= зөвшөөрөхгүй байна

3= зөвшөөрч байна

4= үнэхээр зөвшөөрч байна

3. Асуулт бүтэн өгүүлбэрээр бичигдсэн шууд хариулахад ойлгомжтой эсэх

1 = огт зөвшөөрөхгүй

2= зөвшөөрөхгүй байна

3= зөвшөөрч байна

4= үнэхээр зөвшөөрч байна

4. Асуумжийн хариултын сонголт өвчтөн бөглөхөд ойлгомжтой эсэх

1 = огт ойлгомжгүй

2= зарим талаар ойлгомжтой

3= ойлгомжтой

4= хангалттай ойлгомжтой

Appendix 13. Permission of Data Collection from the Institution



**NATIONAL CANCER CENTER
MINISTRY OF HEALTH, MONGOLIA**

Nam Yan Ju street, Bayanzurkh district,
Ulaanbaatar, MONGOLIA
Tel: (976-11) 45 00 43, Fax: (976-11) 45 81 89
E-mail: nccm@cancer-center.gov.mn
Website: cancer-center.gov.mn

Date July 23, 2011
Ref. 019 206

TO: INSTITUTION REVIEW
BOARD, CHOSUN UNIVERSITY,
KOREA

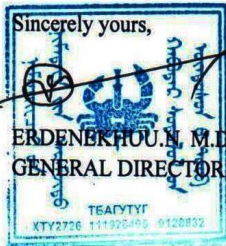
Approval letter of Hospital

We would like to inform you that the Mongolian National Cancer Center is willing to cooperate with the following research work.

Researcher name: Gelegjants Delgersuren (Doctoral student in Chosun University, Korea)

Research title "Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment Therapy-General (FACT -G)"

Sincerely yours,



ERDENEKHOUJIN, M.D., Ph.D.MPH
GENERAL DIRECTOR



INSTITUTION REVIEW BOARD,
CHOSUN UNIVERSITY, KOREA

**THE HEALTH CENTER OF BAYANGOL
DISTRICT**

Jalkhanz Khutagt Damdirbazar Street
3rd Subdistrict, 17th Khoroo, Bayangol District,
16064 Ulaanbaatar, Mongolia
Telephone/Fax: +976-11-365036
<http://www.bgemn.ub.gov.mn>
E-mail: bgemn@ubhealth.mn

Date: 28.07.2021
Ref: 337

We would like to inform you that
"Bayangol" District hospital is willing to cooperate
with the following research work.

Researcher name: Gelegjamts Delgersuren (Doctoral student in Chosun University,
Korea)
Research title "Evaluation of the Psychometric Properties of the Mongolian version of
Functional Assessment Therapy-General (FACT -G)"

HEAD OF THE CENTER  ZEEREN BALDANDUGAR (M.D.)



БАЯНЗҮРХ ДҮҮРЭГ
“ЭРҮҮЛ ОРШИХУЙ” ӨРХИЙН
ЭРҮҮЛ МЭНДИЙН ТӨВ БГБХН

13292 Улаанбаатар хот, Баянзүрх дүүрэг,
22 дугаар хороо, Алтан-Өлгий,
Хорооны Цогцолбор байр
Утас: 9312-7243
E-mail: bzd_erulorshihui22@yahoo.com

2021. 07. 26 № 74

танай _____ -ны № _____ -т

TO: INSTITUTION REVIEW BOARD,
CHOSUN UNIVERSITY, KOREA

Approval letter of Family Health Center

We would like to inform you that “ERUUL ORSHIHUI” Family Health Center is willing to cooperate with the following research work.

Researcher name: Gelegants Delgersuren (Doctoral student in Chosun University, Korea)

Research title “Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment Therapy-General (FACT -G)”

Sincerely yours,

DIRECTOR



BAYARBAT.L



HOPE HOSPICE

Date *20.07.2021.*

21 / 55

city Ulaanbaatar

To: Institution Review Board, Chosun University, Korea

We would like to inform you that the "Hope" Hospice is willing to cooperate with the following research work.

Researcher name: Gelegjamts Delgersuren (Doctoral student in Chosun University, Korea)

Research title "Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment Therapy-General (FACT -G)"

"Hope" Hospice

Director

Burenjargal *Бүрэнжаргал*



[Signature] / signature /

Research Summary for IRB Remission (Mongolian)

СУДАЛГААНЫ ТАНИЛЦУУЛГА

■ Судалгааны сэдэв /Монгол/

“Хорт хавдрын эмчилгээний үйл ажиллагааг үнэлэх-Ерөнхий ” асуумжийн Монгол хувилбарыг гаргаж хүчин төгөлдөр болон найдвартай байдлыг үнэлэх

■ Судлаач, хамтран судлаачийн овог, нэр, албан тушаал

Албан тушаал	Овог нэр	Байгууллага	Албан тушаал
Судлаач	Гэлэгжамц Дэлгэрсүрэн	Чусон Их Сургууль, Сувилахуйн Тэнхим	Докторант

※ Таныг бидний судалгаанд оролцоно уу хэмээн энэхүү хүсэлтийг илгээж байна. Та судалгаанд оролцох эсэхээ шийдэхийн өмнө доорх агуулгыг анхааралтай уншиж танилцана уу. Энэхүү судалгаа нь таны сайн дурын оролцооны үндсэн дээр хийгдэх бөгөөд судалгааны талаар шаардлагатай мэдээлэл болон асуух зүйлсээ судлаачаас чөлөөтэй лавлаж асууна уу. Шаардлагатай мэдээллээ хангалттай авсан гэж үзвэл судалгаанд оролцохыг зөвшөөрсөн гарын үсгээ зурж, он сар өдрөө тэмдэглэнэ үү. Зөвхөн шаардлагатай тохиолдолд судлаач гарын үсгээ зурж баталгаажсан зөвшөөрлийн хуудасны хувилбарыг судалгаа бүрэн хийгдэж дууссаны дараа таны цахим хаяг руу илгээж болно.

1. Судалгааны зорилго

Монголын хорт хавдартай иргэдийн дунд “FACT-G” асуумжийн психометрийн шинж чанарыг үнэлж Монгол хүнд тохирох хувилбарыг гарган ирэхэд оршино. Тодорхой 2 зорилго тавьж байна.

- 1) “FACT-G” асуумжийн Англи хэлнээс Монгол хэл рүү хөрвүүлэх
- 2) “FACT-G” асуумжийн Монгол хувилбарын хүчин төгөлдөр ба үнэн байдал (Validity), найдвартай ба зөв байдлыг (Reliability) үнэлэх

2. Судалгаанд оролцогчийн тоо болон судалгаанд хамрагдах хугацаа

- 1) Судалгааг явуулах хугацаа нь Чусон Их Сургуулийн Ёс Зүйн Хорооны зөвшөөрөл олгогдсоноос хойш 1 жилийн хугацаанд хийж гүйцэтгэнэ.
- 2) Судалгаанд нийтдээ 300 хорт хавдартай хүнийг хамруулах ба судалгааны асуумжийг бөглөхөд ойролцоогоор 12-15 минут зарцуулагдана.

3. Судалгаанд оролцогч нарт хийгдэх шинжилгээ болон журам

Байхгүй

4. Туршилтын болон хяналтын бүлэгт санамсаргүй түүврийн аргаар хуваарилах эсэх

Байхгүй

5. Судалгаанд оролцогч нарын анхаарах зүйлс

- 1) Судалгаанд хамрагдахын өмнө судалгааны танилцуулга, зөвшөөрлийн хуудастай сайтар танилцах
- 2) Энэхүү судалгаанд зөвхөн өөрийн сайн дураар оролцохыг зөвшөөрсөн байх
- 3) Оролцогч нь судалгааны асуумжийг дуустал, бүрэн гүйцэт бөглөх бөгөөд ойролцоогоор 12-15 минут зарцуулагдана.
- 4) Судалгааг бөглөж дууссаны дараа, асуумжтай хамт тараагдсан дугтуйнд хийж битүүмжлэн томилогдсон судлаачид хүлээлгэж өгнө.

6. Судалгаанд оролцогч нарт хүлээгдэж буй ашиг болон санхүүгийн урамшуулал

- 1) Та энэхүү судалгаанд оролцсоноор Монголын хорт хавдартай өвчтөнүүдийн амьдралын чанарыг тодорхойлох мөн цаашид хийгдэх сувилахуйн тусламж үйлчилгээнд өөрийн хувь нэмэрээ оруулна.
- 2) Мөн энэхүү судалгаанд хамрагдсанаар тодорхой хэмжээний урамшуулал олгох бөгөөд гарын бэлэг болгон (ойролцоогоор Солонгос улсын мөнгөн дүнгээр 2000 вонтой тэнцэх) судалгааны асуумжийг бүрэн бөглөсөн тохиолдолд урамшуулал болгон олгоно.

7. Судалгаанд оролцогч нарт үүсэх эрсдэл болон тааламжгүй нөлөө байгаа эсэх

- 1) Асуумж судалгааг бөглөхтэй холбоотойгоор үүсэх эрсдэл байхгүй хэдий ч зарим хүмүүст судалгааны агуулга, чиг хандлагаас хамаараад таагүй мэдрэмж төрж болох ба хүссэн үедээ судалгааг бөглөхөө/оролцохоо зогсоож болно.
 - 2) Судалгаанд оролцох явцад үүсэж болох эрсдэлт хүчин зүйлийн талаар асуух зүйл байвал судлаачтай холбоо барина уу.
 - 3) Судалгааг үргэлжлүүлэхээс татгалзсан тохиолдолд танд ямар нэгэн торгууль, шийтгэл ногдуулахгүй.
 - 4) Судалгаанд оролцогчийн биеийн байдал тавгүй тохиолдолд, хагалгааны дараа байгаа болон эмчилгээний үеэр судалгааг авахгүй
 - 5) Судалгаанд оролцох хүсэлтэй боловч унших, бичихэд хүндрэлтэй тохиолдолд асран хамгаалагч болон судлаач туслалцаа үзүүлж болно.
8. Судалгаанд хамрагдах үед хохирол учирсан тохиолдолд оролцогчдод олгох нөхөн олговор болон эмчилгээ байгаа эсэх
- Байхгүй
9. Судалгаанд хамрагдахын тулд оролцогчоос гарах зардал
- Энэхүү судалгаанд хамрагдахын тулд оролцогчоос ямар нэгэн зардал гарахгүй.
10. Судалгаанд оролцогч нарын сонгох болон бусад зүйл
- Судалгааны орох болон гарах шалгуураа баримтлан сонгоно.
11. Судалгаанд хамрагдах таны шийдвэр нь сайн дурын үндсэн дээр байх ба судалгааны явцад судалгааг үргэлжлүүлэхээс татгалзаж болно. Энэхүү судалгаанд хамрагдахын тулд судлаачаас хангалттай хэмжээний мэдээллийг авсан байх бөгөөд судалгаанд сайн дураараа оролцох болно. Хэрэв та судалгааг үргэлжлүүлэхээс татгалзсан тохиолдолд танд ямар нэгэн торгууль, шийтгэл ногдуулахгүй, мөн та заавал оролцох албагүй. Нэмэлтээр дурдахад, судалгаанд оролцохоор зөвшөөрлийн гарын үсэг зурсан ч, шалтгаан тоочилгүй хүссэн үедээ судалгааг үргэлжлүүлэхээс татгалзаж болно.
12. Таны хувийн мэдээлэл нууцлагдах бөгөөд энэхүү судалгааны судлаач нараас өөр хүн

мэдээллийг авах боломжгүй.

- 1) Таны өгсөн мэдээлэл нь нууц бөгөөд нийтэд нээлттэй биш юм. Зөвшөөрлийн хуудсанд гарын үсэг зурснаар та судлаачид таны мэдээллийг шууд ашиглах зөвшөөрлийг олгож байгаа бөгөөд судалгааны үр дүнг нийтлэхэд таны хувийн мэдээллийг нууцлах болно.
 - 2) Энэхүү судалгааг Чосун их сургуулийн IRB хорооноос зөвшөөрөл авсны дараа судалгаа явагдаж байгаа болно. Судалгаанд оролцогч нь 2 долоо хоногийн дотор бөглөсөн судалгааны асуумжийг судлаачид хүлээлгэн өгөх боломжтой.
 - 3) Цуглуулсан өгөгдлийг компьютер дээр кодлон, судалгааны боловсруулалт хийнэ. Энэхүү өгөгдлийг 3 жилийн хугацаанд хадгалагдаж, удирдах бөгөөд хувийн нууцыг хамгаалах дүрэм, журмын дагуу хийж гүйцэтгэнэ.
 - 4) Судалгаанд оролцогчдын бөглөсөн асуумж хуудсыг судалгаа бүрэн гүйцэт дууссаны дараа цоожтой шүүгээнд хадгалж, 3 жилийн дараа устгана.
 - 5) Судалгаанд оролцохоос татгалзсан тохиолдолд, тухайн субъектийн холбогдох мэдээллийг нэн даруй баримтжуулан устгаж, судалгааны нууцлалыг (нууцлалыг хадгалах) алдагдуулахгүйгээр дүрэм журмын хүрээнд үйл ажиллагааг явуулна.
 - 6) Энэхүү судалгаа нь холбогдох дүрэм журамд заасны дагуу судалгааны сэдвийн нууцлалыг зөрчихгүй явуулах ба тодорхой зөвшөөрөл бүхий хүмүүс (жишээ нь, Чосун их сургуулийн IRB хорооны гишүүн, судлаач) судалгааны сэдвүүдийн бүртгэлд хандах боломжтой.
13. Судалгаатай холбоотой шинэ мэдээлэл цуглуулсан тохиолдолд судалгаанд оролцогч нарт мэдээлэл хүргэнэ. Судалгааны явцад, хэрэв бид судалгаанд оролцогч нарын сайн-сайхан байдал, (эрүүл байх)-д нөлөөтэй мэдээллийг илрүүлбэл оролцогч нарт мэдээлэл хүргэнэ.
14. Судалгаанд хамрагдахыг хязгаарлах шалтгаан
- Дараах тохиолдолд таны зөвшөөрөлгүйгээр судалгаанд оролцохыг хязгаарлаж болно. Үүнд: Судлаачийн зааварчилгааг дагаж, мөрдөөгүй тохиолдолд

15. Чусон Их Сургуулийн Ёс Зүйн Хороотой холбоо барих хаяг

Энэхүү судалгаанд Чусонь Их Сургуулийн Ёс Зүйн Хорооны зөвшөөрөл авах бөгөөд хэрэв асууж тодруулах зүйл гарвал дараах хаягаар холбогдоно уу (нэрээ нууцалж болно).

IRB Committee of Chosun University Tel: 062-230-7640~3, Email: irb@chosun.ac.kr

심의 승인서

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IRB No.	2-1041055-AB-N-01-2021-72			
연구 과제명	국 문	몽골어판 암환자 삶의 질 측정도구 (FACT-G)의 심리측정적 속성 평가		
	영 문	Evaluation of the Psychometric Properties of the Mongolian version of Functional Assessment of Cancer Therapy-General (FACT-G)		
심의종류	시정심의(신속)	심의일자	2021년 10월 15일	
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심의의견				

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Appendix 16. Content Validity Index (CVI)

Content validity of FACT-G Mongolian version (Total)

Do main	Items	Experts								Expert in agreement	I-CVI	UA	Domain I-CVI
		1	2	3	4	5	6	7	8				
Physical well-being	Item1									8	1	1	.96
	Item2									8	1	1	
	item3									8	1	1	
	Item4	x								7	.88	0	
	Item 5									8	1	1	
	Item 6									8	1	1	
	Item7							x		7	.88	0	
Social/family well-being	Item 8									8	1	1	.94
	Item9	x								7	.88	0	
	Item10									8	1	1	
	Item11									8	1	1	
	Item12	x								7	.88	0	
	Item13							x		7	.88	0	
	Item14									8	1	1	
Emotional well-being	Item 15									8	1	1	1.
	Item 16									8	1	1	
	Item 17									8	1	1	
	Item 18									8	1	1	
	Item 19									8	1	1	
	Item 20									8	1	1	
Functional well-being	Item 21									8	1	1	1.
	Item 22									8	1	1	
	Item 23									8	1	1	
	Item 24									8	1	1	
	Item 25									8	1	1	
	Item 26									8	1	1	
	Item27									8	1	1	
										S-CVI/AVE	.97		.97
Proportion relevance		1	.8 8	1	1	1	1	.9	1	S-CVI/UA		.81	

I-CVI: Item content validity index, S-CVI: Scale content validity index, UA: Universal agreement, AVE

Content validity of FACT-G Mongolian version (Relevance)

Do main	Items	Experts								Expert in agreement	I-CVI	UA	Domain I-CVI
		1	2	3	4	5	6	7	8				
Physical well-being	Item1									8	1	1	.98
	Item2									8	1	1	
	item3									8	1	1	
	Item4									8	1	1	
	Item 5									8	1	1	
	Item 6									8	1	1	
	Item7							x		7	.88	0	
	Item 8									8	1	1	
Social/family well-being	Item9		x							7	.88	0	.98
	Item10									8	1	1	
	Item11									8	1	1	
	Item12									8	1	1	
	Item13									8	1	1	
	Item14									8	1	1	
	Item 15									8	1	1	
Emotional well-being	Item 16									8	1	1	1.
	Item 17									8	1	1	
	Item 18									8	1	1	
	Item 19									8	1	1	
	Item 20									8	1	1	
	Item 21									8	1	1	
	Item 22									8	1	1	
Functional well-being	Item 23									8	1	1	1.
	Item 24									8	1	1	
	Item 25									8	1	1	
	Item 26									8	1	1	
	Item27									8	1	1	
S-CVI/AVE											.99		.99
Proportion relevance		1	.9	1	1	1	1	.9	1	S-CVI/UA		.92	

I-CVI: Item content validity index, S-CVI: Scale content validity index, UA: Universal agreement, AVE: average

Content validity of FACT-G Mongolian version (Comprehensibility)

Do main	Items	Experts								Expert in agreement	I-CVI	UA	Domain I-CVI
		1	2	3	4	5	6	7	8				
Physical well-being	Item1									8	1	1	.96
	Item2									8	1	1	
	item3									8	1	1	
	Item4	x								8	.88	0	
	Item 5									8	1	1	
	Item 6									8	1	1	
	Item7							x		7	.88	0	
	Item 8									8	1	1	
Social/family well-being	Item9									8	1	1	.96
	Item10									8	1	1	
	Item11									8	1	1	
	Item12	x								7	.88	0	
	Item13	x								8	.88	0	
Emotional well-being	Item14									8	1	1	1.
	Item 15									8	1	1	
	Item 16									8	1	1	
	Item 17									8	1	1	
	Item 18									8	1	1	
	Item 19									8	1	1	
	Item 20									8	1	1	
Functional well-being	Item 21									8	1	1	1.
	Item 22									8	1	1	
	Item 23									8	1	1	
	Item 24									8	1	1	
	Item 25									8	1	1	
	Item 26									8	1	1	
	Item27									8	1	1	
S-CVI/AVE											.98		.98
S-CVI/UA												.85	
Proportion relevance		1	.8 8	1	1	1	1	.9	1				

I-CVI: Item content validity index, S-CVI: Scale content validity index, UA: Universal agreement, AVE: average

Content validity of FACT-G Mongolian version (Comprehensiveness)

Do main	Items	Experts								Expert in agreement	I-CVI	UA	Domain I-CVI
		1	2	3	4	5	6	7	8				
Physical well-being	Item1									8	1	1	.98
	Item2									8	1	1	
	item3									8	1	1	
	Item4									8	1	1	
	Item 5									8	1	1	
	Item 6									8	1	1	
	Item7							x		7	.88	0	
Social/family well-being	Item 8									8	1	1	.95
	Item9									8	1	1	
	Item10									8	1	1	
	Item11									8	1	1	
	Item12									8	1	1	
	Item13		x					x		6	.75	0	
	Item14							x		7	.88	0	
Emotional well-being	Item 15									8	1	1	1.
	Item 16									8	1	1	
	Item 17									8	1	1	
	Item 18									8	1	1	
	Item 19									8	1	1	
	Item 20									8	1	1	
	Item 21									8	1	1	
Functional well-being	Item 22									8	1	1	1.
	Item 23									8	1	1	
	Item 24									8	1	1	
	Item 25									8	1	1	
	Item 26									8	1	1	
	Item27									8	1	1	
S-CVI/AVE											.98		.98
Proportion relevance													.92
		1	.9	1	1	1	1	.9	1	S-CVI/UA		.92	

I-CVI: Item content validity index, S-CVI: Scale content validity index, UA: Universal agreement, AVE: average

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