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Self-Perceived Health Status and Sense of Coherence among Children with Cancer in the West Bank, Palestine

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Dedication

To the soul of my martyred father, my first mentor and dearest guide, I did it. May you look upon your daughter with pride from the heavens above.

To my dear mother, my paradise in this world and the light of our family, whose prayers eased my struggles and guided my path.

To my brother, who remains steadfast in prison, patient, and trusting in God.

To my brothers and sisters, my safety and source of joy in difficult times; you have always been, and will always be, my most precious support.

To my wonderful friends and to those who stood by me silently yet sincerely, may God keep you safe. I truly belong to you.

To my teachers, who granted me knowledge and wisdom, and believed in my abilities—thank you.

To the little hands—the brave children fighting cancer—whose hearts learned courage before fear.

To the children of Gaza, who faced war and hunger with pure hearts, and to their patient families.

To my homeland, Palestine, the land of resilience and generosity, may this work honor your history, your strength, and your undying hope.

And finally, to myself, who worked hard, stayed awake, and fought for this dream. Here I stand today, celebrating this achievement and dedicating it to you.

Donya Mohammad Anbar

Declaration

I certify that this thesis, which is submitted for the degree of Master's, is the result of my own research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

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Date: 03 /01 /2025

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Abstract

Introduction: Self-perceived health status (SPHS) and sense of coherence (SOC) are important concepts in understanding the health experience of children with cancer. This study aims to identify the level of SPHS and SOC, identify the relationship between medical and sociodemographic characteristics and SPHS/SOC, and identify the relationship between SPHS and SOC among children aged 8 to 18 years with a cancer diagnosis. This study aims to fill that gap by exploring the relationship between SOC and SPHS in children with cancer in the West Bank, Palestine. Understanding these concepts will reveal the children's coping mechanisms and help healthcare providers improve SOC in routine care to enhance SPHS, assist policymakers in creating supportive programs, and ensure psychological needs are met, while also guiding future research.

Methodology: A cross-sectional descriptive design was used. Two hundred participants completed the surveys, with a response rate of 54.1%. Participants were between 8 and 18 years old, had received a cancer diagnosis, were admitted to pediatric oncology/hematology wards or attended outpatient clinics at Najah National University Hospital (NNUH)/Nablus, Al-Istishari Hospital/Ramallah, and Beit-Jala Hospital/Bethlehem. Among the participants, 72% of children with cancer aged 8 to 18 years completed the PedsQL 3.0 Cancer Module Arabic Version, while 28% of children aged 13 to 18 years completed both the PedsQL 3.0 Cancer Module Arabic Version and the SOC-13 Arabic Version. The study period was from October 15, 2024, to December 16, 2025.

Results: The findings revealed that the PedsQL mean was 52.02 (SD = 17.02) and had low SPHS; the highest score was in the domains of communication (mean = 67.96 ± 28.11), while the lowest SPHS was in the domains of worry (mean = 36.00 ± 29.02) and procedural anxiety (mean = 36.62 ± 27.68). Also, the SOC mean score was 55.02 (SD = 12.27), and 76.8% of participants had low SOC. The SOC domains were 19.54 ± 6.78 out of 35 for comprehensibility, 17.59 ± 3.86 out of 28 for manageability, and 17.89 ± 4.61 out of 28 for meaningfulness. Otherwise, Statistical analysis demonstrates a significant co-relationship between SPHS and SOC with $r = 0.490$, P-value < 0.01. Which means, high SOC indicates high SPHS, as a result, coping with stressors and living with cancer.

Conclusion: The political situation in Palestine may negatively affect SOC in children overall, and specifically impact those with cancer, due to a lack of services and medication, and difficulty accessing healthcare. Tracking SPHS and SOC helps in understanding the impact of these barriers and assists caregivers in developing more effective interventions to improve the quality of care and support provided to these children. In summary, SOC is a key concept that affects SPHS among children with cancer. This shows that the psychological aspect in children is just as important as the medical aspect.

Keywords
Children; self-perceived health status (SPHS); sense of coherence (SOC); quality of life (QOL); health-related quality of life (HRQOL); and Cancer.

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List of Abbreviations

WHO	World Health Organization
QOL	Quality of Life
SOC	Sense of Coherence
NNUH	National Najah University Hospital
UNRWA	United Nations Relief and Works Agency
MOH	Ministry of Health
WB	West Bank
SPHS	Self-Perceived Health Status
STARs	Society for Theory and Research on Salutogenesis
PHIC	Palestinian Health Information Center
CNS	Central Nervous System
HRQOL	Health-related Quality of Life
CDC	Centers for Disease Control
PedsQL™	Pediatric Quality of Life Inventory
ALL	Acute Lymphocytic Leukemia

Chapter One

Introduction

1.1 Background

Chronic disease is defined as a lifelong condition that lasts longer than one year and requires medical follow-up (CDC, 2024a). Also, chronic illness affects all aspects of life, often leading to financial strain, social isolation, and loss of mobility, which increases dependence on others (Richman, 2022). As a result, children with chronic disease are at risk of developing anxiety disorder, which affects disease-related outcomes (Cobham et al., 2020). Also, mental health problems, grief, and low self-esteem can occur, but these can diminish as the person accepts their illness. In the second half of the 20th century, the WHO made a lot of effort to enhance awareness about chronic diseases (Medcalf & Atkin, 2025).

According to the Centers for Disease Control (CDC) (2024b), cancer is one of the most chronic diseases that interferes with daily life. It is characterized by uncontrollable growth and spread to other parts of the body (Brown et al., 2023). Also, it is considered one of the most common disease-related deaths if it is not diagnosed and treated early (Mullen et al., 2021). Globally, 400,000 children between 0 and 19 years old have been diagnosed with cancer (WHO, 2021a). Also, data from the WHO (2020) report that approximately 1,000 young people receive a cancer diagnosis each day. The WHO estimates there are approximately 100 cases of childhood cancer per million children worldwide.

According to Fadhil et al. (2022), 23,847 cases of children aged 0-14 diagnosed with cancer have been recorded in the Eastern Mediterranean region, with leukemia having the highest incidence at 7451. The most common cancer-related deaths among pediatric patients are leukemia, brain tumors, and non-Hodgkin lymphoma (Huang et al., 2023). Additionally, leukemia is the most common type of cancer among children under 20 years old (Flores-Lujano et al., 2024).

Data from WHO (2021b) indicated that more than 80% of children with cancer were cured in high-income countries, but less than 30% were cured in low- and middle-income countries (WHO, 2021c). This increase in the survival rate of children with cancer was attributed to modern treatments, centralized care, improvements in supportive care, standardized treatment protocols, and participation in clinical trials. However, disease and its treatment remained challenging. They could affect various aspects of daily life, such as physical, psychological, and social well-being. Rawat et al. (2021) report the side effects of chemotherapy and treatment adherence, including dry mouth, change in taste, nausea, vomiting, fatigue, loss of appetite, weight loss, hair loss, fever, constipation, and diarrhea.

Worldometer (2025) reported that Palestine is part of the Middle East and North Africa. It is divided into East Jerusalem, WB, and the Gaza Strip, with a total population of 5,627,047. Multiple challenges affect cancer patients in Palestine, such as a lack of oncology services, a shortage of cancer specialists, cancer care capacity building, and a lack of oncology nurses. Otherwise, Israeli occupation is one of the important things that affects cancer treatment in Palestine (Halahleh et al., 2022). Salem (2023) reports that cancer is the second leading cause of death in Palestine, with a mortality rate of 14%. According to the PHIC and the Health Policy & Planning Unit at the MOH (2023), in the WB, the incidence of childhood cancer was estimated at 144 per million Palestinian children from 2017 to 2021, which exceeds the global average. Also, they report, leukemia, brain and other CNS cancers, and lymphomas were the most commonly diagnosed cancers among children aged 0–14 in the WB. During this period, leukemia accounted for 29% of childhood malignancies in Palestine.

Medical advancement has broadened the scope of healthcare from prolonging life to enhancing the quality of life (QOL). Furthermore, children with cancer might sustain challenging and stressful circumstances related to the psychological consequences and long-term implications of the disease, which might affect their daily routine, QOL, and self-perceived health status (SPHS) (Stenmarker et al., 2020; Wang & Feng, 2022). According to Freidoony et al. (2015), SPHS is a subjective evaluation of one's health and a predictor of one's general health. Another important concept that centers on health is the SOC, proposed by Antonovsky (1979) and regarded as a crucial component of the Salutogenic paradigm. SOC refers to how much an individual can cope with stressors. A high SOC means having a positive orientation toward life (Antonovsky, 1979). In children with cancer, a SOC is very necessary. Having a strong SOC makes a child cope with stress and face challenges.

Caring for children with cancer is impacted by conflict, war, and natural disasters in many countries throughout the world (Siddiqui & Belgaumi, 2024). Salah (2018) reported that 60% of cancer cases among children were diagnosed in late stages. In addition, referral to hospitals in Israel, Jordan, and Egypt required a permit to travel.

SPHS in children with cancer has been studied in other locations worldwide. However, there are limited studies on the SOC concept. There are no studies on this in Palestine. This created a gap, and this study aimed to identify SPHS and SOC among Palestinian children with cancer in the WB. By examining both, we can gain a better understanding of the relationship and improve care.

1.2 Problem Statement

Children face significant challenges while dealing with cancer and its treatment, thus possibly decreasing their QOL and impacting their SOC. Therefore, many aspects of daily life, including psychological problems, can be impacted by having a chronic illness like cancer. Children’s perception of their illness can be influenced by their sociocultural and religious views, according to previous studies. SPHS and SOC in adult oncology have been previously studied; however, there is a limited number of studies in pediatric oncology. Health care providers working with these children primarily focus on treating physical aspects rather than psychological ones. The finding will examine the SOC and SPHS among Palestinian children with cancer and address this gap.

1.3 Significance of the study

To the best of the researcher's knowledge, most studies on the SOC and SPHS among children had been conducted in high-income countries. Furthermore, there had been no studies on this topic in Palestine. This study is significant because it examined the relationship between SPHS and SOC in children with cancer and addressed this gap. Understanding this relationship will provide insights into how children cope with cancer. The findings will help healthcare providers to improve the SOC during routine care and to enhance SPHS in children with cancer. Additionally, exploring these relationships will help policymakers to develop supportive programs to strengthen the SOC in these children, ensuring their psychological needs are met. The results will also guide future research to better understand how children with cancer perceive their illness and manage challenges.

Educational Level

This study enhances nursing education by increasing understanding of the relationship between sense of coherence (SOC) and subjective perception of health status (SPHS) in children with cancer, supporting improved awareness of psychosocial care needs.

Research Level

The study addresses a research gap by examining SOC and SPHS among children with cancer in Palestine, providing baseline data to support future psychosocial and pediatric oncology research.

Nursing Practice Level

The findings help nurses better understand how children with cancer cope with their illness, supporting interventions that strengthen SOC and improve SPHS during routine care.

Administrative Level

The results can guide administrators and policymakers in developing supportive programs and policies that address the psychological needs of children with cancer.

1.4 Aim of the study

This study aims to evaluate SPHS and SOC among children with cancer in the WB, Palestine.

1.5 Objectives of the study

1. To assess SPHS among children with cancer in the WB, Palestine.
2. To assess the SOC among children with cancer in the WB, Palestine.
3. To identify the relationship between a SOC and SPHS among children with cancer in the WB, Palestine.
4. To examine potential correlates between SPHS/SOC and medical and sociodemographic characteristics among children with cancer in the WB, Palestine.

1.6 Research questions

This study has addressed the following questions:

1. What are the levels of SPHS among children with cancer in the WB, Palestine?
2. What are the levels of SOC among children with cancer in the WB, Palestine?
3. Is there a relationship between SOC and SPHS among children with cancer in the WB, Palestine?
4. Is there a correlation between SPHS/ SOC and medical and sociodemographic characteristics among children with cancer in the WB, Palestine?

1.7 Statistical Hypothesis

- **Null Hypothesis (H0)**

1. There is no significant relationship between SOC and SPHS among children with cancer in the WB, Palestine.
2. There is no significant correlation between SPHS/ SOC and medical and sociodemographic characteristics among children with cancer in the WB, Palestine.

- **Alternative Hypothesis (H1)**

1. There is a significant co-relationship between a SOC and SPHS among children with cancer in the WB, Palestine.
2. There is a significant correlation between SPHS/ SOC and medical and sociodemographic characteristics among children with cancer in the WB, Palestine.

Chapter Two

Conceptual Framework and Literature Review

2.1 Conceptual Framework

2.1.1 Introduction

The conceptual framework for this study was designed to study sociodemographic characteristics and medical characteristics that had an impact on SOC and SPHS among children diagnosed with cancer. Also, assessed the relationship between SOC and SPHS. The conceptual framework of this study was developed based on an extensive review of relevant literature and guided by the researcher's interpretation of existing theories and empirical findings. The conceptual framework is shown in Figure 1.1.

- Independent Variables (IV): This study examined the association between the independent variables represented by the sociodemographic characteristics and medical. Sociodemographic characteristics included age, gender, religion, residence, income, insurance, mother's education level, mother's job, father's education level, and father's job. Medical characteristics included: cancer type, cancer stage, cancer duration, and treatment type.
- Dependent Variables (DV): SOC and SPHS are the main dependent variables.

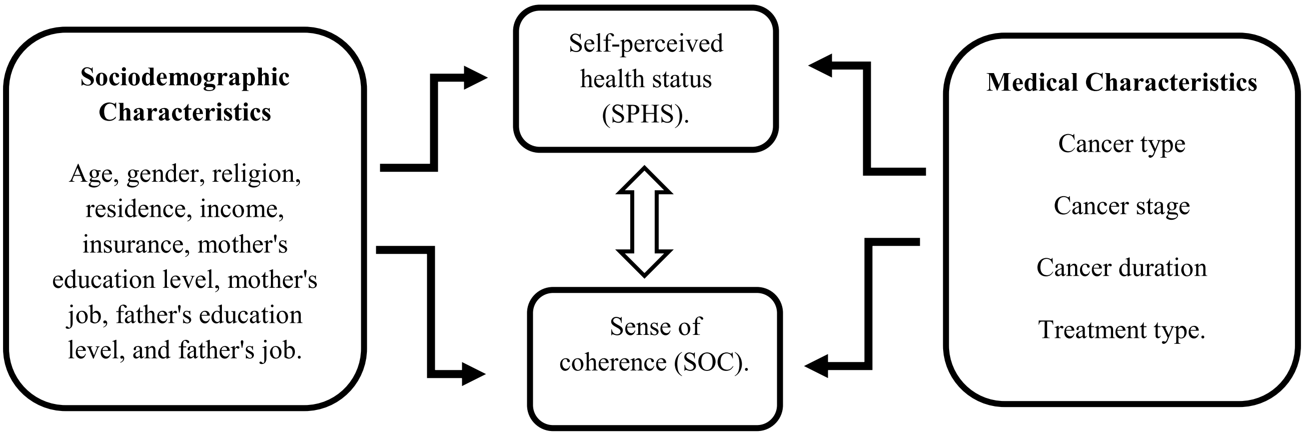


Figure (1.1): Conceptual Framework

SOC and SPHS are outcome variables influenced by sociodemographic and medical characteristics, with a reciprocal relationship between SOC and SPHS.

2.1.2 Socio-demographic data:

- **Gender:** This refers to the sex of respondents, female or male
- **Age:** This refers to the age of the respondent, from age 8 to 12 years old or from 13 to 18 years.
- **Religion:** This refers to the respondent's religion, and it is divided into Muslim, Christian, or others.
- **Location:** This refers to where the respondent stays, and it is considered the city, village, or camp.
- **Economic status:** This refers to the family's monthly income, which was categorized into the following: Less than 1500 shekels, 1501-2500 shekels, 2501–4000 shekels, and more than 4000 shekels.
- **Health Insurance:** Depends on whether the respondent has health insurance or not.
- **Educational level of mother:** This refers to the level of the mother's education obtained by respondents. It was categorized into six groups: non-education, primary, secondary, diploma, bachelor's degree, and post-graduate study.
- **The nature of the mother's job:** It depends on the mother`s employment status and is divided into unemployed, private sector employee, governmental sector employee, and self-employed.
- **Educational level of father:** This refers to the level of the father's education obtained by respondents. It was categorized into six groups: non-education, primary, secondary, diploma, bachelor's degree, and post-graduate study.
- **The nature of the father's job:** It depends on the father`s employment status and is divided into unemployed, private sector employee, governmental sector employee, and self-employed.

2.1.3 Medical Information:

- **Type of cancer:** This refers to the type of cancer the child has, which is divided into liver cancer, lung cancer, colorectal cancer, leukemia, lymphoma, bone tumors, brain and nervous system tumors, or other types.
- **Cancer Stage:** This refers to which stage the child is in, and it is divided into four phases: the first phase, the second phase, the third phase, and the fourth phase.
- **Type of Treatment:** This refers to which treatment the child received, and it is divided into Chemical, radiological, surgical, immunological, targeted, bone marrow transplantation, or other

- **Illness duration:** this depends on how long the child has had cancer since diagnosis: less than or equal to 6 months, from 6 months to 3 years, and equal to or more than 3 years

2.1.4 Conceptual Definition

- **Chronic disease** is defined as a life-long condition for more than one year and is associated with limitations in cognitive, social, emotional, and physical function compared with same-age peers. This condition affected daily life routine and required a specific diet, medication, or medical assistance to perform daily activities (Eiser, 1997).
- **Cancer** is defined as “a disease of uncontrolled proliferation by transformed cells, subject to evolution by natural selection” (Brown et al. 2023).
- **QOL** is defined as the individual's ability to meet their daily life's physical, social, and psychological needs, not only the absence of disease (Felce & Perry, 1995).
- **SOC** is defined as the individual's ability to cope and handle stress from life challenges by understanding that life is comprehensible, manageable, and meaningful (Antonovsky, 1979).
- **SP** Freidoony et al. (2015) defined it as a subjective evaluation of one's health and a predictor of one's general health

2.2 Literature Review

2.2.1 Introduction

This chapter examines existing research on SPHS, QOL, HRQOL, and SOC among children with chronic illnesses, especially cancer. It provides an overview of these concepts and highlights key findings. The researcher utilized databases such as PubMed, Scopus, ScienceDirect, Google Scholar, and ResearchGate to access relevant articles. Additionally, the researcher searched for these terms to find more articles: SPHS, QOL, HRQOL, SOC, cancer, PedsQL, children, oncology, WB, Palestine, health, and chronic disease.

2.2.2 Childhood chronic health conditions

Eiser (1997) defined chronic disease as a life-long condition for more than one year and is associated with limitations in cognitive, social, emotional, and physical function compared with same-age peers. This condition affected daily life routine and required a specific diet, medication, or medical assistance to perform daily activities. Chronic illnesses have an impact on a child's cognitive, emotional, and social well-being. Mastorci et al. (2025) conducted a study to assess the role of psychological variables in managing children with chronic diseases. They conducted a narrative review and found that children with chronic illnesses need medical and social support. Additionally, the disease limits children's ability to manage daily routines due to frequent hospitalizations, pain, and medication. Research shows that children with chronic diseases experience social and psychological consequences. For example, Fardell et al. (2023) conducted a study to assess the effect of hospitalization on children with chronic illness among 152,851 children recorded in the Australian Early Developmental Census with a history of hospitalization before school entry, compared to children without such a history. They conducted a longitudinal cohort study and found that children who have a history of admission to the hospital two weeks ago or more are 40% more likely to be developmentally high risk, and 14.6% have a chronic illness. This indicates that hospitalization due to chronic illness impacts early childhood development. In addition, chronic conditions significantly impact self-perceived health status and health-related quality of life (Elissa et al., 2020; Perreard et al., 2024).

2.2.3 Cancer disease among children (definition, types, treatment)

The WHO Cancer Control Program defined cancer as: "A generic term for a large group of diseases characterized by the growth of abnormal cells beyond their usual boundaries that could then invade adjoining parts of the body and spread to other organs" (WHO Cancer Control Program, 2018).

Cancer is not a single disease, but a group of diseases; there are more than 100 different types of cancer. They are named according to the organ or cell type in which they originated (NCI, 2015). The Cancer Atlas (2025) reports the common cancers in children, including leukemia, lymphomas, CNS tumors, sympathetic nervous system tumors, retinoblastoma, renal tumors, hepatic tumors, bone tumors, soft tissue sarcomas, germ cell and gonadal tumors, epithelial tumors, and melanoma. Leukemia, brain tumors, lymphomas, and neuroblastoma are the most common cancers in children aged 0 to 14 years (Dommett et al., 2012). Moreover, Children can develop types of cancer that can affect adults, although this is very rare (Davidoff, 2010).

Cancer Council Australia (2025) shows treatment for childhood cancer typically involves a combination of surgery to remove the tumor, chemotherapy to target rapidly dividing cancer cells, and sometimes radiation therapy to inhibit tumor growth, especially in solid or brain tumors. In some cases, stem cell transplantation is used to replace bone marrow after high doses of chemotherapy or radiation therapy. Modern treatments also include targeted and immunotherapies that target the tumor or strengthen the immune system, along with supportive care that provides nutrition, pain management, and psychosocial support for the child and their family. Chemotherapy, surgery, radiation therapy, immunotherapy, and stem cell transplant are considered the most common cancer therapies among children (American Cancer Society, 2023).

2.2.4 Childhood cancer worldwide and in Palestine

The WHO (2020) showed that 1,000 children were diagnosed with cancer daily. Leukemia was the most common type of cancer among children under 20 years of age (Flores-Lujano et al., 2024). According to the WHO, there were approximately 100 cases of childhood cancer for every million children worldwide. In the West Bank, the incidence of childhood cancer was estimated to be 14.4 per 100,000 Palestinian children in 2017–2021, which was higher than the global estimate. In Jordan, the incidence rate of cancer among adolescents was 159 new cases per 100,000, and 15% of them died within one year of diagnosis (Al Jadili & Thabet, 2017).

2.2.5 Self-Perceived Health Status (SPHS) among children with cancer

Freidoony et al. (2015) defined SPHS as a person's subjective evaluation of their general health. Another important concept related to health was QOL, defined by Veenhoven (2024) as what made life good, regarding the life in which one lived. Researchers obtained SPHS by asking participants, “How was your health status? Or how did you perceive your health?”

There is debate in using these terms; research shows that SPHS, HRQOL, and QOL are positively correlated. For example, Moons et al. (2006) claimed that researchers are routinely using the term HRQOL when referring to patients' subjective health. Some HRQOL questionnaires assess self-perceived or self-reported health rather than HRQOL (Karimi & Brazier, 2016). In this thesis, the instrument PedsQLTM Cancer Module 3.0 was used to assess self-perceived health status, as proposed by Karimi and Brazier (2016) and Moons et al. (2006). Moreover, Bakker et al. (2023) conducted a study to assess HRQOL among 7311 children and young adolescents with a cancer diagnosis compared with a healthy group in different countries. They conducted systemic review using 23 pediatric quality of life scales. They found that using the pediatric cancer module is the best way to assess QOL among cancer patients.

Corrigan et al. (2023) conducted a study to assess QOL among children and young adolescents with a cancer diagnosis receiving radiotherapy. They conducted systemic review. They reported a significant lack of studies concerning quality of life in children and adolescents who have received radiation therapy. Molarius and Janson (2002) consider SPHS as an indicator of QOL and well-being. In addition, Aslan and Onal (2025) show that good SPHS often predict better QOL. In addition, Kohút et al. (2025) find that illness perception among adolescents and young adults with cancer led to high QOL. Additionally, Larsen et al. (2023) conducted a study to assess QOL among 14,342 children and young adolescents with a cancer diagnosis in Europe. They conducted systemic review. They found that childhood cancer survivors had poorer QOL compared to others.

In addition, many studies examined the predictors of SPHS and QOL. For example, Zhen et al. (2018) conducted a study to assess patterns and predictors of QOL impairment during therapy among children aged ≥ 4 years diagnosed with ALL in the United States, Canada, New Zealand, and Australia. They conducted a Prospective cohort study, the parents completed the PedsQL Inventory Generic Core Scales 4.0 and McMaster Family Assessment Device over 2, 8, 17, 26, and 38 months post diagnosis, females finished treatment at 26 months (end with 4 evaluations), and males at 38 months (end with 5 evaluations). The patients with ALL experienced impairment in physical and emotional functioning during treatment, and it gradually improved over time, whereas patients with unhealthy family functioning were approximately 50% more likely to develop emotional impairment even at 26 months after diagnosis. The study was limited due to declining response rates over time; also, questionnaires collected from parent-reported data may not fully reflect children’s perceptions.

Otherwise, Wickramasinghe et al. (2025) conducted a study to explore how social support and illness perceptions influence psychosocial HRQOL among adolescents and young adults. They conducted a longitudinal cohort study. They found that females consistently reported lower psychosocial HRQOL compared with males. Also, a higher peer support was associated with psychosocial HRQOL and associated with negative illness perceptions, longer hospital stays, and poorer clinical communication. Data collected years ago, so findings may not reflect current medical and psychosocial care contexts. Additionally, Pan et al. (2017) conducted a study to investigate the relationship between fatigue, distress behaviors, and various demographic factors and quality of life among 150 children aged 7-18 with cancer from the pediatric oncology and hematology units of two teaching hospitals in Taiwan. The study utilized a cross-sectional study design. The result showed that more sleep/ rest fatigue led to poor QOL. Children aged 16-18 years reported lower school performance and more sleep/ rest fatigue than those aged 7-12 years. The scale QOL didn`t include fatigue. Additionally, studies have shown differences between self-reports and proxy-reports.

2.2.6 Sociodemographic and Medical Factors Affecting QOL

Previous studies indicated that both sociodemographic and medical characteristics may affect QOL. For example, Darabos et al. (2025) conducted a study to assess illness perception and examine associations between illness perceptions and causal attributions on HRQOL among adolescents and young adults who received a cancer diagnosis at two large North-Eastern hospitals in the United States. They conducted a cross-sectional study. They found that demographic and medical characteristics were associated with illness perceptions and associated with HRQOL. Higher negative illness perceptions were linked to lower HRQOL. In addition, Larsen et al. (2025) conducted a study to evaluate the QOL among 14,342 childhood cancer survivors in Europe. A systematic literature search was conducted, which was measured using qualitative and quantitative QOL questionnaires. They found that childhood cancer survivors reported poorer QOL. The female gender tended to report lower QOL. A brain tumor diagnosis and treatment with haematopoietic stem cell transplantation are risk factors for poorer QOL.

Within demographic characteristics, studies have shown that demographic variables, such as socioeconomic status, educational level, gender, marital status, place of residence, and employment status, are associated with levels of health and psychological quality of life in different population groups (Marques et al., 2019; Nutakor et al., 2023). In addition, Irestorm et al. (2025) conducted a study to assess the HRQOL among children aged 2-18 years diagnosed with cancer at the Princess Máxima Center for pediatric oncology in Utrecht, the Netherlands. They conducted a cross-sectional study, using the PedsQL cancer module of proxy report from age 2-7 years, and self-report from age 8-18 years. They found that HRQOL is different according to age, sex, and diagnosis, and the most HRQOL impaired domains were procedural anxiety and nausea, with nausea being more reported among children with solid tumors. The study is limited by its inclusion of only Dutch- or English-speaking families, as well as its narrow focus on age, sex, and diagnosis, without considering other influential factors.

Within medical characteristics, Choo et al. (2019) conducted a study to explore factors associated with HRQOL among 60 children aged 1 to 21 years with leukemia at the Teaching Hospital in Singapore. They conducted a cross-sectional pilot study using the PedsQL Generic Core Scale. They found that treatment duration and age were positively associated with HRQOL domains. Many psychosocial variables that could influence HRQOL were not assessed, so the findings are limited in generalizability. Also, Jankowska-Polańska et al. (2020) conducted a study to assess QOL among 74 children with ALL and stress level among their parents at the Pediatric Hematology Hospital in Wrocław, Poland. They conducted a cross-sectional study using the PedsQL Generic Core Scale questionnaire. They found that Children with ALL experience a lower QOL, especially in physical functioning. Depressed mood, fatigue, and weakness are the factors negatively influencing their QOL.

2.2.7 Sense of Coherence (SOC)

Salutogenic theory, developed by Aaron Antonovsky and related to an individual's ability to manage stress (Eriksson et al., 2007). SOC is the center of the Salutogenic model, introduced by Antonovsky (1979), which refers to a person's ability to perceive life from their point of view. Sense of coherence assessed comprehensibility, meaningfulness, and manageability. The 13 items of SOC-13 were built based on these three components. Comprehensibility refers to how a person sees events in their life. Meaningfulness refers to how a person feels toward life values. Manageability is referred to as how a person handles life challenges. The SOC-29 scale included 11 items of comprehensibility, 8 items of meaning, and 10 items of manageability, with scores from 1 to 7. After adding all scores, the highest score meant a high sense of coherence. In the same way, Liu et al. (2024) conducted a study to assess SOC and SOC category among cancer patients who received radiotherapy in Shanghai. They conducted a cross-sectional study using SOC-13 and the Medical Coping Modes Questionnaire (MCMQ). They identified three patterns of SOC: low SOC, moderate SOC, and high SOC. They added that age, residency, relapse, and side effects treatment were predictive of SOC level.

Previous studies have examined the SOC among parents of children with cancer. For example, Haraguchi & Takeuchi (2024) conducted a study to assess the SOC and how the SOC and social support of fathers influence the mental health of children among 51 parents of children with chronic disease and 86 parents of healthy children at Tokyo Healthcare University, Japan. They used a cross-sectional study with self-reported questionnaires. They found that fathers with children diagnosed with chronic disease face stressors, and a strong SOC helped fathers deal with stressors and kept their children's mental health better. Also, Bergh & Björk (2012) conducted a study to assess SOC among parents who have children diagnosed with cancer. They conducted a cross-sectional design using the Swedish version of SOC (29 items) at four time-points: at diagnosis time; during treatment; after their completed treatment, and when be off treatment or died. They found that SOC is not stable over time; it decreases between diagnosis time, during treatment, and when being off treatment or when dying. They also found that mothers had weaker SOC compared to the fathers in the manageability and meaningfulness part, while comprehensibility was the same. Studying the SOC among children is as important as studying their families because it shows that the disease not only affects the child's health, but its psychological and social impact extends to the child and the family as a whole.

There is a lack of literature that addresses SOC among pediatric cancer patients. Sundberg et al. (2012) conducted a study to compare SOC between 224 childhood cancer survivors and a comparison group aged 18 to 37 years, and the association between SOC and need for support. They conducted a cross-sectional study using the SOC-13 scale and interviews. They found that twenty percent of the survivors have low SOC and need support. On the other hand, Dadashi et al. (2024) conducted a study to determine predictors of death anxiety among cancer patients and assess the SOC to death anxiety among 200 cancer patients from an educational hospital in Tehran, Iran. They conducted a cross-sectional study. They found that higher SOC is linked to lower death anxiety, and demographic characteristics were correlated with death anxiety. It was conducted in one hospital, which limits generalizability. Moreover, Liu et al. (2021) conducted a study to assess sense of coherence (SOC), psychological distress (PD), and acceptance of disability (AD) among 162 colon cancer patients with permanent colostomy aged 28 to 88 years, at The Xi'an Jiaotong University Hospital. They conducted a cross-sectional design. They found that SOC and acceptance of disability (AD) were positively correlated, and both were negatively correlated with psychological distress (PD).

2.2.8 Sociodemographic and Medical Factors Affecting SOC

Eriksen et al. (2022) conducted a study to assess the relation between social support, clinical, demographic factors, and SOC among 56 colorectal cancer survivors over 80 years old. They conducted a cross-sectional study. They found a relationship between age, physical function, need for home care, and SOC, which means SOC will decrease as a person gets older. On the contrary, Bargehr et al. (2023) conducted a study to find the relationship between psychological, lifestyle, demographic factors, complementary and alternative medicine (CAM) use, and SOC among 349 cancer patients over 18 years in Germany. They conducted a cross-sectional study. They found no relationship between sociodemographic factors such as age, gender, and religion and SOC. Whilst SOC increases with high levels of education and income, there is no relationship found between medical factors, such as the type of cancer, and SOC. Similarly, Agormedah et al. (2024) conducted a study to assess the effect of age and gender on the SOC and subjective well-being among 724 children from secondary schools in Northern Ghana. They used a cross-sectional design. Results showed that there was no interaction effect between age and gender on the SOC. The finding could not be generalized due to fluctuating and changing stressors, and the study might be influenced by contextual factors across different regions. Because there is a lack of studies addressing Palestine regarding many factors. This study helped understand the SOC and focus on these factors within children in Palestine, who might have varying perceptions. Also, this provided an understanding of how demographic factors might differ from one region to another.

2.2.9 Relationship between Self-Perceived Health Status (SPHS) and Sense of Coherence (SOC)

Studies have shown a positive relationship between QOL and SOC, indicating that SOC tends to be better when QOL is also better. For example, Eriksson & Lindström (2007) conducted a study to assess the relationship between SOC and QOL. They conducted a systematic review. They found that the SOC has an impact on the QOL among children, older adults, and in families; high SOC leads to better QOL. Also, Bonzanini et al. (2020) conducted a study to assess the relationship between SOC and QOL among 90 head and neck cancer survivors at the Santa Maria University Hospital in Brazil. They conducted a cross-sectional study. They found a positive relationship between the SOC and the QOL. In addition, da-Silva-Domingues et al. (2022) conducted a study to assess the relationship between SOC and eight health-related behavior included (alcohol use, tobacco use, substance use, behaviors related to oral health, eating habits, rest periods, physical activity, and time spent in computer games, among adolescents and young adults. They conducted a systematic review. They found a relationship between the SOC and health behaviors

Many previous studies have focused on measuring the relationship between SPHS, QOL, HRQOL, and SOC in patients suffering from various chronic diseases other than cancer. For example, Ahmadi et al. (2023) conducted a study to assess SOC, HRQOL, and Self-Efficacy in sickle cell patients and to explore the effect of SOC and HRQOL on physical and mental health for these patients among 83 patients with sickle cell disease at the Ahvaz University Hospital of Medical Sciences. They conducted a cross-sectional study. They found that Self-efficacy and SOC are not related to each other. Self-efficacy predicts HRQOL on physical aspects; however, SOC predicts HRQOL on mental aspects. It was conducted in one hospital, which limits generalizability. Also, Elissa et al. (2020) conducted a study to assess SPHS and SOC among 100 children with type 1 diabetes aged 8-18 years in Palestine, compared with a 300-member healthy group, using PedsQL 4.0 Generic Core Scales and SOC-13. They conducted a cross-sectional study using the PedsQL Generic Core Scale. They found a positive correlation between self-perceived health status and SOC, with higher self-perceived health status related to higher SOC.

In the context of cancer caregivers, Dadashi et al. (2024) conducted a study to assess the relationship between SOC and QOL among 200 caregivers of cancer patients at Tehran teaching hospital, in Iran. They conducted a descriptive correlational study. The study showed a positive relationship between the SOC and the QOL.

2.2.10 Summary of Gaps and Need for Research in the West Bank Context

The review revealed that research measuring SPHS and SOC in children with cancer remains limited globally, with a near-complete absence of studies in Palestine. Therefore, there is a clear research need for local studies to address this gap and understand the experiences of children within their Palestinian social and health context.

Chapter Three

Study Method

3.1 Introduction

This chapter provides a detailed description of the researchers' methods and procedures, including the study design, study population, sample, data collection tools, ethical considerations, and statistical analysis.

3.2 Study design

A quantitative method using a cross-sectional design was performed to compare SPHS and the SOC among children diagnosed with cancer in the WB, Palestine. A cross-sectional design was chosen because it allowed data collection at a single point in time, aligned with the study objectives, ensured accurate and reliable data gathering, and provided a snapshot of the relationships among demographic data, medical characteristics, SOC, and SPHS. Data was collected using a structured questionnaire in Arabic.

3.3 Study Population

The target population of this study included all children who were between 8 and 18 years old and had a diagnosis of cancer for at least six months, who were admitted to pediatric wards or attended outpatient clinics in WB, Palestine, at Najah National University Hospital (NNUH)/ Nablus, Al-Istishari Hospital/Ramallah, and Beit-Jala Hospital/ Bethlehem.

3.4 Study Setting

This study was conducted in the pediatric oncology/ hematology wards and outpatient clinics at NNUH, Al-Istishari Hospital in Ramallah, and Beit Jala Hospital in Bethlehem, all located in the WB, Palestine. NNUH was the first educational hospital in Palestine, particularly in Nablus City, in the North region of the WB. The hospital had oncology departments for adults and children. The treatment options available for these children included biological therapy, chemotherapy, and immunotherapy. Bone marrow biopsy services and transplantation were also available. Additionally, Al-Istishari Hospital was a private hospital located in Ramallah, Palestine. The hospital provided stem cell transplantation and chemotherapy treatment. Beit-Jala Hospital was a governmental hospital in Palestine, particularly in Bethlehem City, in the West Bank South region. The hospital had two oncology departments for both adults and children. The treatment available for those children included chemotherapy and surgical therapy. The study period was from October 15, 2024, to December 16, 2025.

3.5 Sample Size and Selection Method

A convenience sampling method was used to recruit participants. The required sample size was calculated using the OpenEpi online sample size calculator (an open-source, web-based epidemiologic statistics tool developed from CDC resources). For the calculation, the population size was set at 10,000, the anticipated frequency (expected prevalence) was set to 50% (a conservative estimate maximizing variance), the margin of error (confidence limit) was set at ±5 %, and the design effect (DEFF) was set to 1 (simple random sampling assumed). The sample size was then computed using the standard formula implemented by OpenEpi:

“n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]”,

(Where N is the population size, p is the anticipated proportion, d is the desired absolute precision, Z1−α/2 is the standard normal deviate for the selected confidence level, and DEFF is the design effect). Scribd. Based on these parameters, the calculated target sample size was 370 participants.

However, due to the actual response rate, only 200 participants were ultimately enrolled in the study. Response rate 54.1%

3.6 Eligibility Criteria

3.6.1 Inclusion Criteria

The study group included:

✓ Children who had a cancer diagnosis who were between 8 and 18 years old
✓ Children with at least six months of cancer diagnosis
✓ Children who were free from any other chronic disease and free from any intellectual impairments
✓ Children whose parents signed a consent form

3.6.2 Exclusion Criteria

× Children aged under 8 years old or more than 18 years old.
× Children with less than six months of cancer diagnosis
× Children who complained of any chronic disease.
× Children who had intellectual impairments
× Children whose parents did not sign a consent form

3.7 Study Instruments and Tools

The primary data collection method was a structured questionnaire about sociodemographic, medical characteristics, the SOC, and SPHS. The researcher obtained approval to use the Arabic Version PedsQL™ Cancer Module 3.0 from Mapi Research Institute (Appendix VII). It was used to measure SPHS among children who received a cancer diagnosis (Varni et al., 2007). Also, the researcher obtained approval from the STARs society to assess SOC (Appendix VIII).

The questionnaire included:

- **Part one:** Socioeconomic and demographic information included questions such as age, gender, religion, place of residence, monthly income, insurance, mother's education level, mother's job, father's education level, and father's job. Also, medical characteristics information included questions such as cancer type, cancer stage, cancer duration, and treatment type.
- **Part two:** SPHS was assessed using the Arabic version of the PedsQL™ Cancer Module 3.0, with approval obtained from the Mapi Research Institute. The participant completed the questionnaire suitable for their age: from ages 8-12 years using child self-reports, and from ages 13-18 years using teen self-reports. The PedsQL™ Cancer Module is designed to provide a summary score based on a five-point Likert scale ranging from never to almost, across multiple dimensions, and is easy to score. It contains 8 domains, including: Pain (2 items), nausea (5 items), procedural anxiety (3 items), treatment anxiety (3 items), worry (3 items), Cognitive problems (5 items), Perceived physical appearance (3 items), Communication (3 items). Each item of the instrument is consisting of a 5- point Likert scale (0 = never a problem; 1 = almost never a problem; 2 = sometimes a problem; 3 = often a problem; 4 = almost always a problem), then it transformed from 0 to 100 scale (0 mean 100%, 1 mean 75%, 2 means 50%, 3 means 25, 4 means 0%)
- **Part three:** SOC was measured using the Arabic version of SOC-13, with approval obtained from the STARs society. Only children aged 13-18 years can complete this part. The SOC included 13 items, which were scored on a 7-point Likert scale format. It is composed of three elements: Comprehensibility (items 2, 6, 8, 9, 11), Manageability (items 3, 5, 10, 13), and Meaningfulness (items 1, 4, 7, 12), and coding for items 1, 2, 3, 7, 10 should be reversed. The score should range between 13 and 91 points (Saravia et al., 2014).

3.8 Reliability and Validity

SPHS was measured with the Arabic version of PedsQL™ cancer module 3.0, which was considered valid, reliable, and applicable to children who received a cancer diagnosis (Varni et al., 2007). The validation of the Arabic version was completed in Egypt and showed reliability with Cronbach's alpha, coefficient 0.86% (Fawzy et al., 2013). SOC was measured with the Arabic version of the SOC-13 scale, which was considered valid, reliable, and applicable for healthy children and those with chronic illnesses (Antonovsky, 1987).

3.9 Pilot Study

Before conducting the main study, a pilot study 10% conducted with a small sample size of participants to test the feasibility of the study design, data collection tools (the Arabic version of the SOC-13 scale, and the Arabic version of the PedsQL™ cancer module 3.0), and procedures. After calculating 10%*370, the pilot sample included 37 participants; these children were excluded from the final study sample. The PedsQL™ cancer module 3.0 questionnaire is available on the Mapi Research Trust website, specifically for Egyptian. This questionnaire maintains the use of Modern Standard Arabic in its wording. The Arabic version of PedsQL™ 4.0 Generic Core Scale has been previously used in studies conducted in Jordan (Al-Nassan et al., 2019). Since the Jordanian language is close to the Palestinian language, and given that the questionnaire uses Modern Standard Arabic, it is considered suitable for use with children in Palestine. The pilot study helped identify any potential problems in the questionnaire and detected any issues before the study began.

3.10 Data Collection Procedure

Data collection was done after approval from the Research Ethics Committee at Al-Quds University, Najah National University Hospital (NNUH), Al-Istishari Hospital, and the General Administration of Health Education and Scientific Research in the MOH. After obtaining approvals, the researcher went to the hospitals and spoke with the nursing supervisor, then directed to the head nurse of the pediatric departments and pediatric clinics. Data was collected by the researcher herself during the morning shift. The consent forms were taken from parents. The questionnaire was taken from children diagnosed with cancer at least six months ago using a self-reported questionnaire. Children were kept alone and given 20-30 minutes to fill out the questionnaire. The participants and family were provided with oral and written information about the nature of the study. They were also informed that participation was voluntary and all information would be treated confidentially. The family was asked about sociodemographic data. The study was conducted from October 15, 2024, to December 16, 2025.

3.11 Data Analysis

Data was checked for missing data. The collected data were analyzed using the Statistical Package for the Social Sciences version 31 (SPSS), and the data in the program. Frequencies and percentages are used for categorical variables, such as demographic and medical factors, and responses to PedsQL and SOC items. Also, mean, standard deviation (SD), and median are used for scale scores. The data were normally distributed, allowing the use of the t-test and one-way ANOVA to compare means across demographic and medical factors categories. The t-test was used to compare means of two groups, and one-way ANOVA was used to compare means of three or more. Also, Pearson Correlation between scales, domains, and total scores. A p-value was set at <0.05 for significant relationships

3.12 Ethical consideration

Ethical approval was obtained from the Research Ethics Committee at Al-Quds University (Annex II) and Najah National University Hospital (NNUH) (Annex IX), Al-Istishari Hospital (Annex XI), and the General Administration of Health Education and Scientific Research in the MOH (Annex XII). The parents signed the informed consent Annex I, and the children had given their assent before data collection. The consent form included the purpose and procedure of the study. The participants' identities, privacy, anonymity, and confidentiality were strictly protected. All information was treated in the strictest confidence. It meant that participants’ names were not identified in any way. Participants were free to withdraw from the study at any time and without giving a reason.

Chapter Four

Result

4.1 Introduction

This chapter provides the descriptive and analytical results of the current study, where the descriptive results are concerned with the description of participants’ responses to demographic and medical factors, as well as responses to PedsQL™ and SOC scales items, using frequencies and percentages, in addition to describing the scores of these scales using means and standard deviations. The analytical part is concerned with investigating the relationships between participants’ demographic and medical factors (as independent variables) and scores (as dependent variables), using mean differences tests, as well as correlations between scores, using suitable inferential tests.

4.2 Demographic and medical factors of the participants

The demographic data of the children who participated in this study are distributed in Table 1 below, which shows that 72% of them were between 8 and 12 years old, with more than half of them (54.5%) being males, and the majority (94%) are Muslims. In terms of geographical distribution, one-fourth (25%) of the children live in Jenin, with around half of them (48.5%) living in villages. In addition, more than one-third of them (38.5%) have a monthly family income between 2501 and 4000 ILS, while almost all of them are insured (98%).

In terms of their parents, less than half of the mothers (42.5%) and fathers (44.5%) have completed up to a high school degree, while 74% of the mothers are housewives, compared to 33.5% of self-employed fathers. The following figures illustrate the distribution of participants’ demographic factors.

Table 1.4-A: Distribution of participants' demographic factors

Factors	**Categories**	**Frequency**	**Percentage**
Age	8-12 YO	144	72.0%
	13-18 YO	56	28.0%
Gender	Male	109	54.5%
	Female	91	45.5%
Religion	Muslim	188	94.0%
	Christian	12	6.0%
Address	Nablus	40	20.0%
	Tulkarem	27	13.5%
	Jenin	50	25.0%
	Ramallah	12	6.0%
	Bethlehem	21	10.5%
	Hebron	23	11.5%
	Jericho	4	2.0%
	Salfit	7	3.5%
	Qalqlilyah	12	6.0%
	Gaza	4	2.0%
Residence	Village	97	48.5%
	City	78	39.0%
	Camp	25	12.5%
Monthly income	≤1500 ILS	52	26.0%
	1501-2500 ILS	55	27.5%
	2501-4000 ILS	77	38.5%
	>4000 ILS	16	8.0%
Insurance	Insured	196	98.0%
	Uninsured	4	2.0%

Table 1.4-B: Distribution of participants' demographic factors

Mother's education	Uneducated	7	3.5%
	Elementary	20	10.0%
	High school	85	42.5%
	Diploma	28	14.0%
	Bachelor's	54	27.0%
	Higher education	6	3.0%
Mother's work	Housewife	148	74.0%
	Private sector	28	14.0%
	Public sector	15	7.5%
	Self-employed	9	4.5%
Father's education	Uneducated	19	9.5%
	Elementary	23	11.5%
	High school	89	44.5%
	Diploma	16	8.0%
	Bachelor's	49	24.5%
	Higher education	4	2.0%
Father's work	Unemployed	28	14.0%
	Private sector	62	31.0%
	Public sector	43	21.5%
	Self-employed	67	33.5%

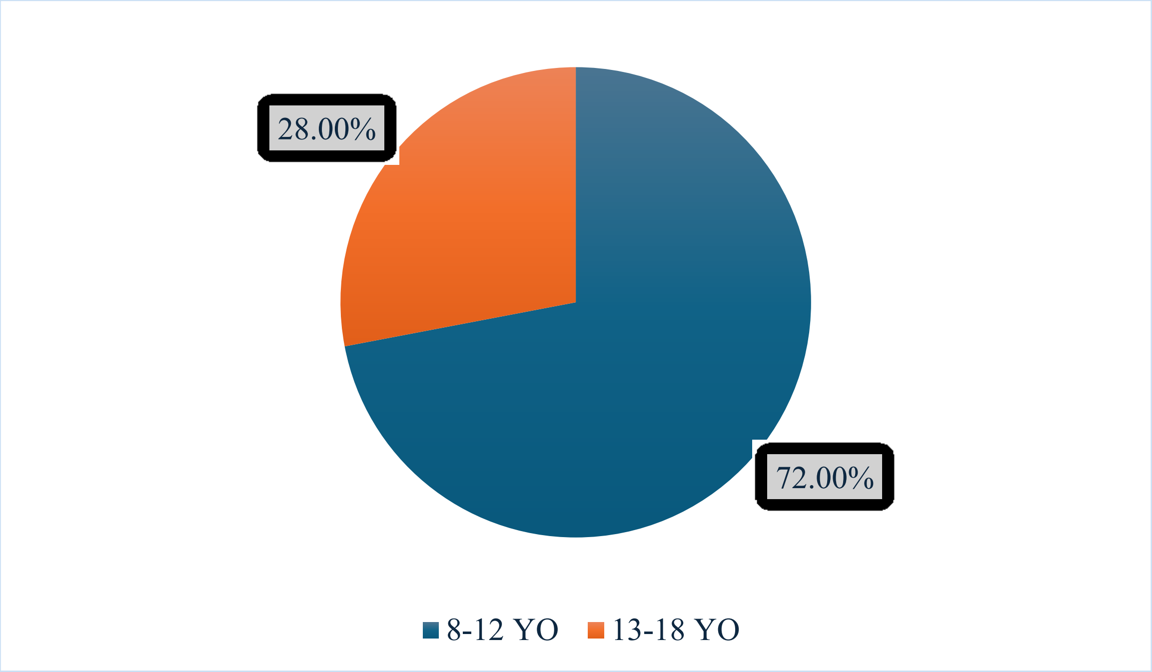


Figure 1.4: Distribution of children’s age groups

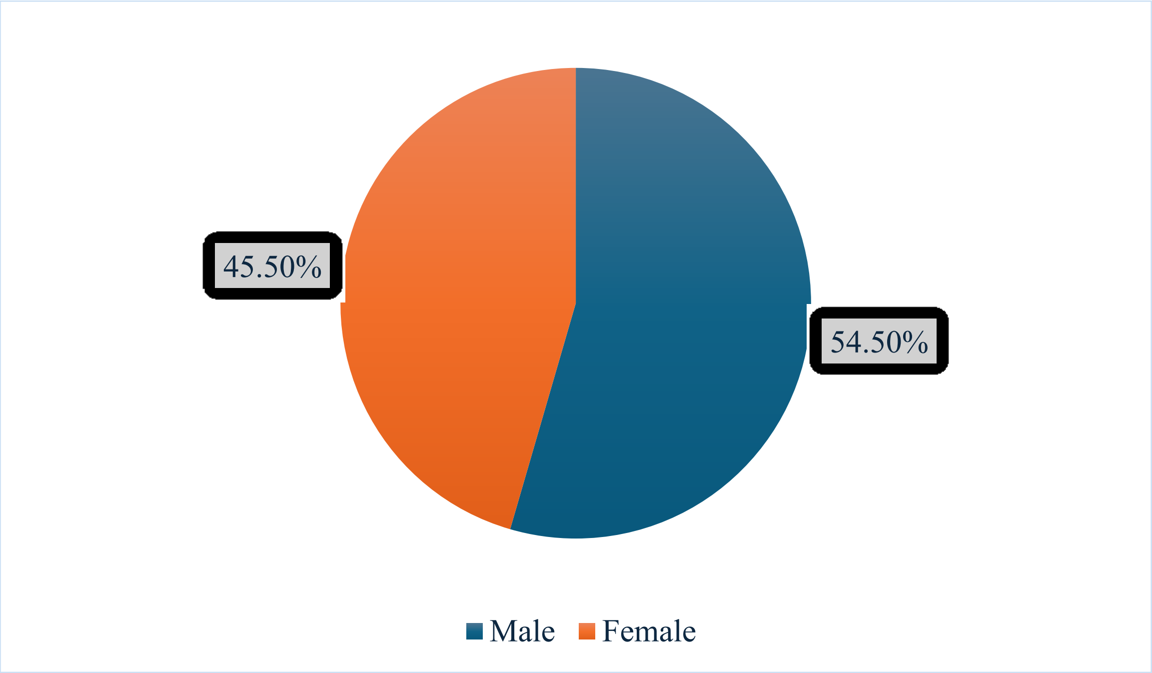


Figure 2.4: Distribution of children's gender

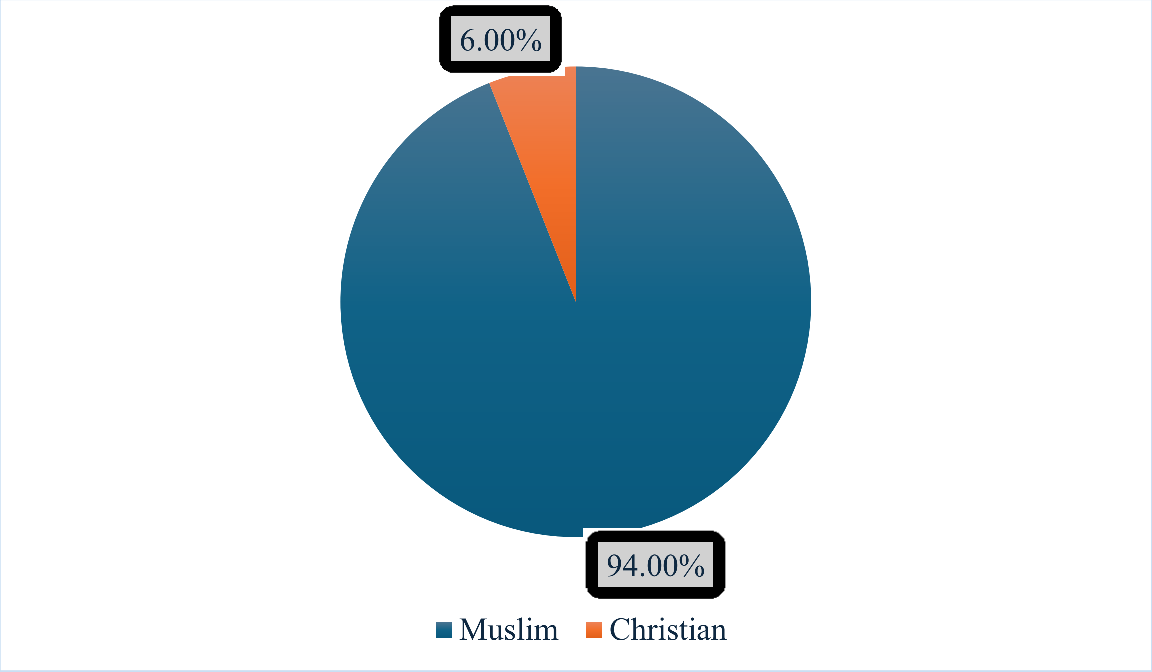


Figure 3.4: Distribution of children's religion

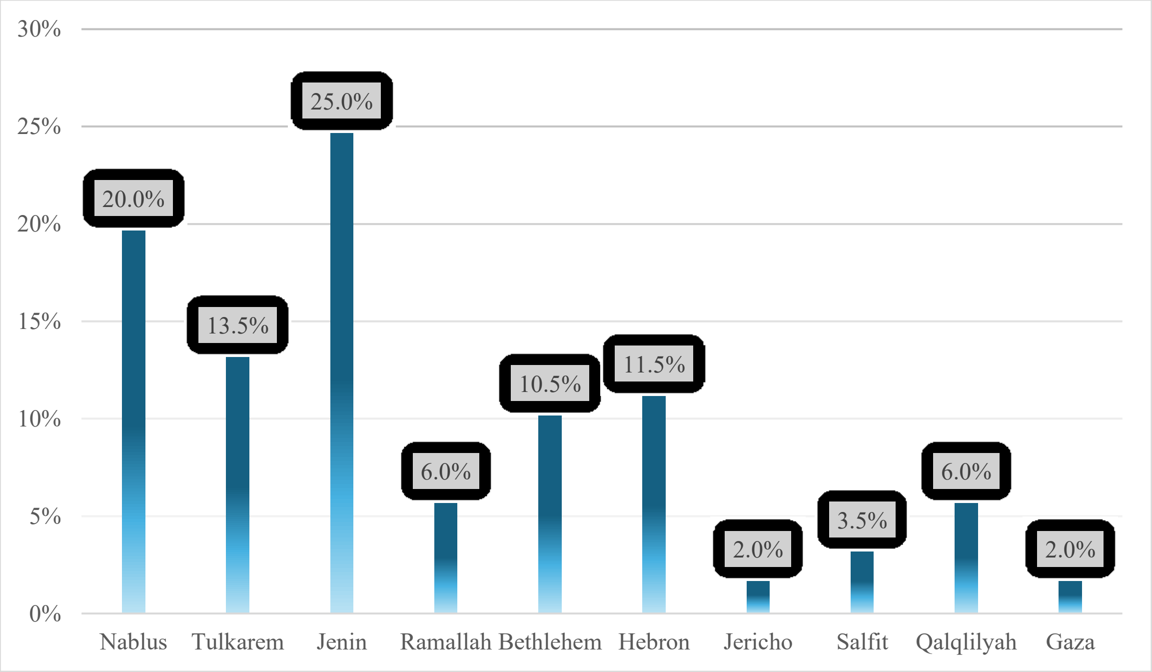


Figure 4.4: Distribution of children's addresses

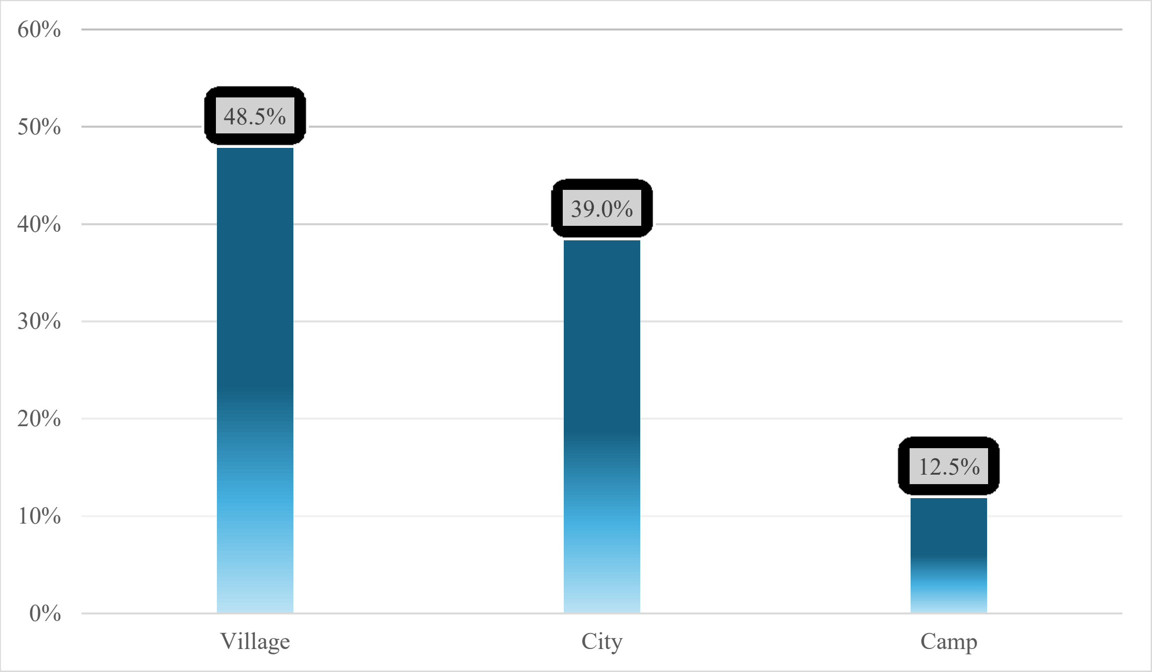


Figure 5.4: Distribution of children's residency

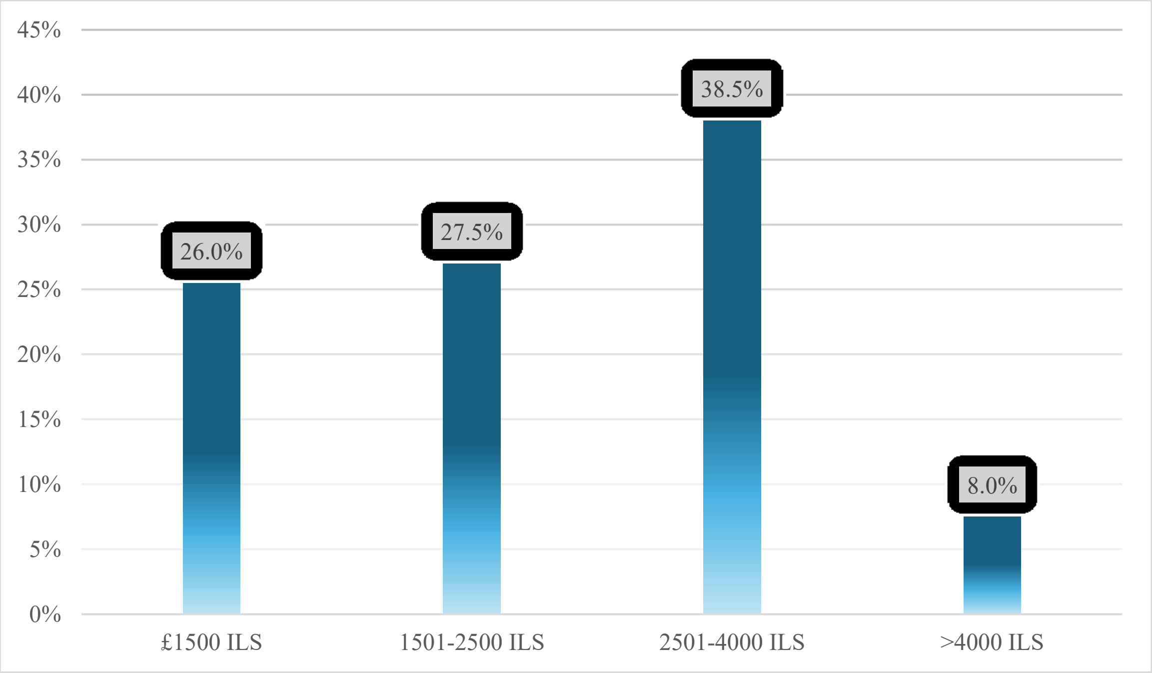


Figure 6.4: Distribution of children's family monthly income

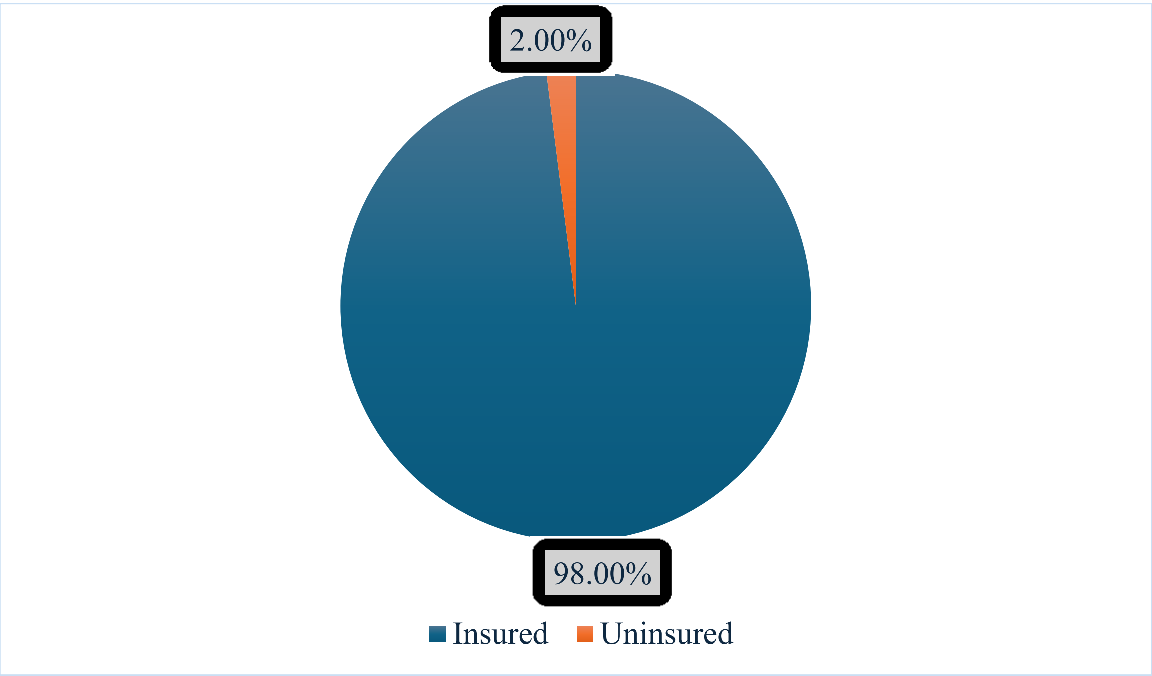


Figure 7.4: Distribution of children's insurance status

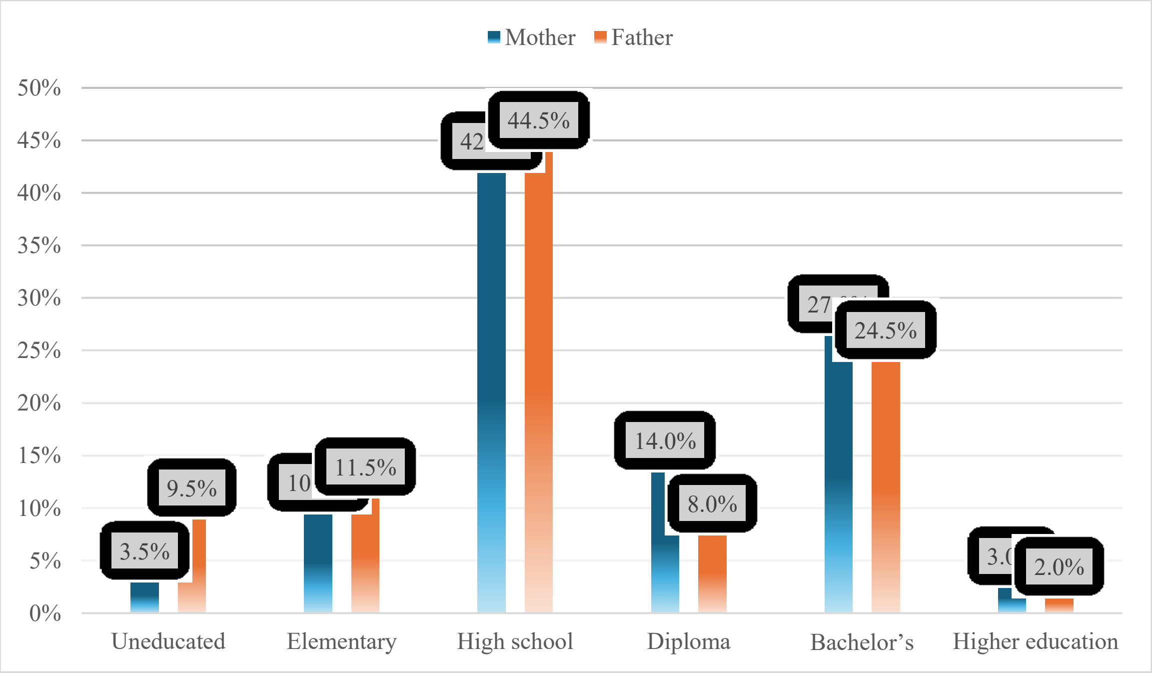


Figure 8.4: Distribution of parents' educational levels

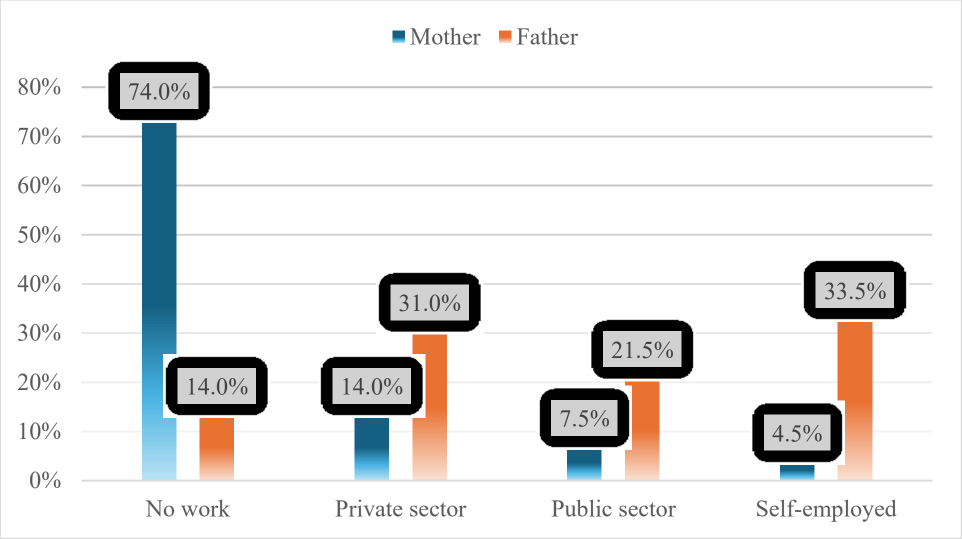


Figure 9.4: Distribution of parents' work status

The following table (Table 2) shows the medical factors of the children, where more than half of them (58.5%) had leukemia, with 40.5% of them in the second stage of cancer, while 78.5% of them had the disease for a period between 6 months and 3 years. 86.5% of them are treated using chemotherapy. The following figures illustrate the distribution of children's medical factors.

Table 2.4: Distribution of participants' medical factors

Factors	**Categories**	**Frequency**	**Percentage**
Cancer type	Liver cancer	3	1.5%
	Lung cancer	6	3.0%
	Colorectal cancer	5	2.5%
	Leukemia	117	58.5%
	Lymphoma	29	14.5%
	Bone tumors	19	9.5%
	Brain & CNS tumors	13	6.5%
	Others	8	4.0%
Cancer stage	Stage I	51	25.5%
	Stage II	81	40.5%
	Stage III	40	20.0%
	Stage IV	28	14.0%
Treatment type	Chemotherapy	173	86.5%
	Radiotherapy	7	3.5%
	Surgery	3	1.5%
	Immunotherapy	3	1.5%
	Targeted therapy	1	0.5%
	BMT	3	1.5%
	Others	10	5.0%
Cancer duration	< 6 months	3	1.5%
	6 months – 3 years	157	78.5%
	> 3 years	40	20.0%

CNS: Central Nervous System, BMT: Bone Marrow Transplant.

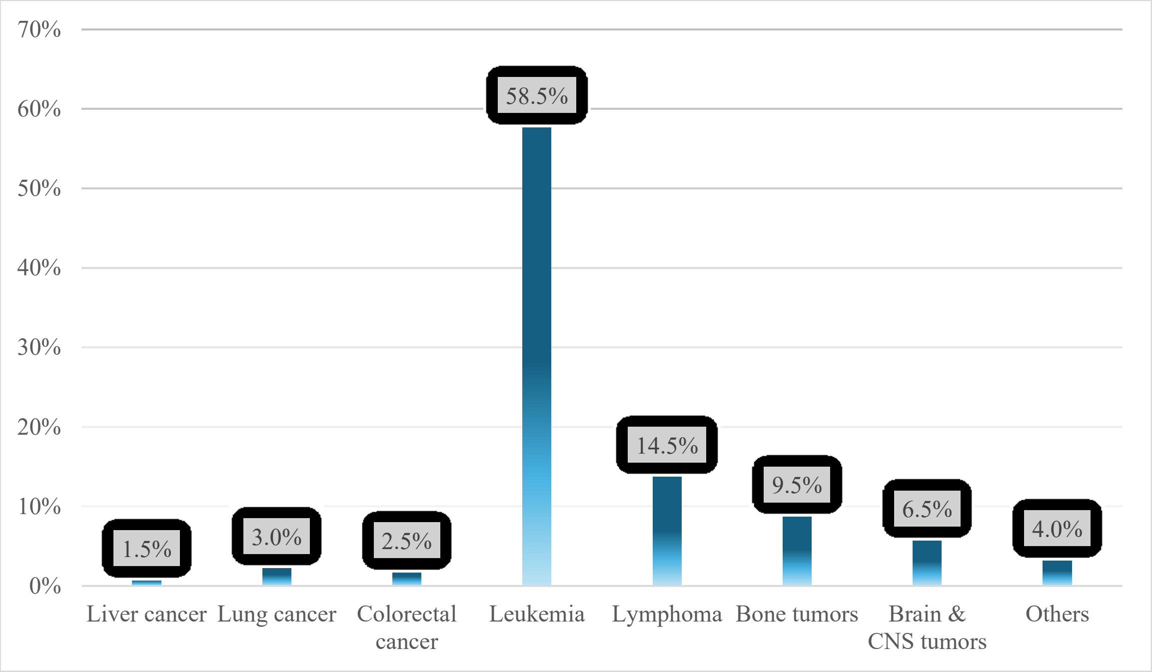


Figure 10.4: Distribution of children's cancer types

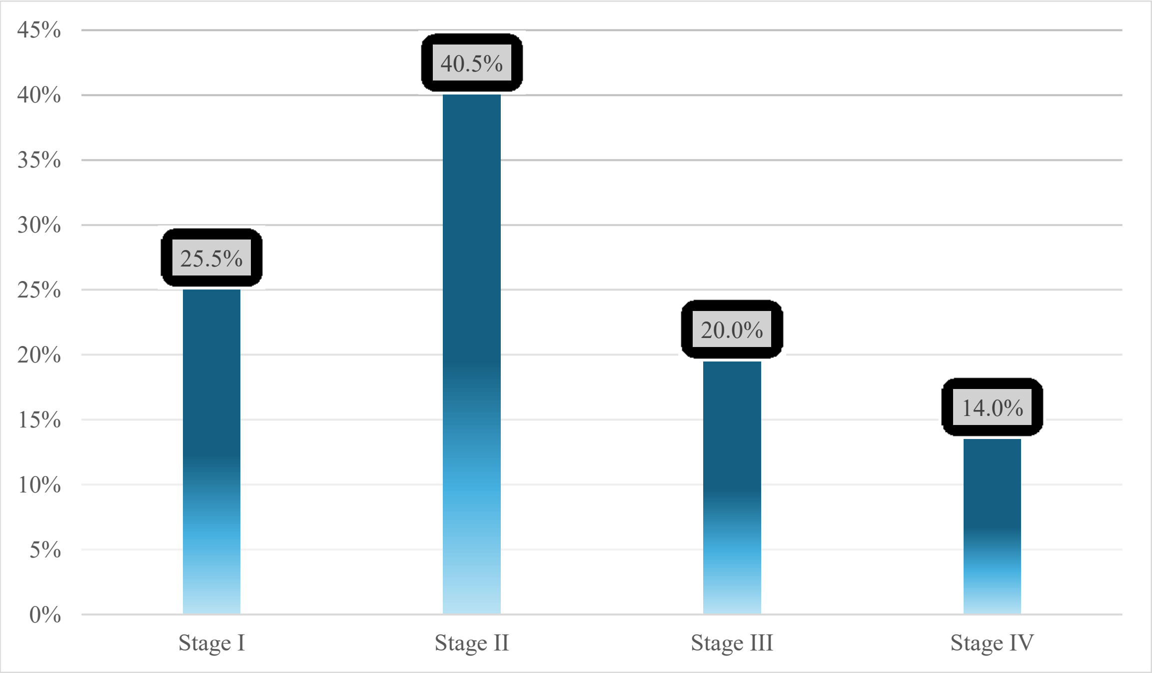


Figure 11.4: Distribution of children's cancer stage

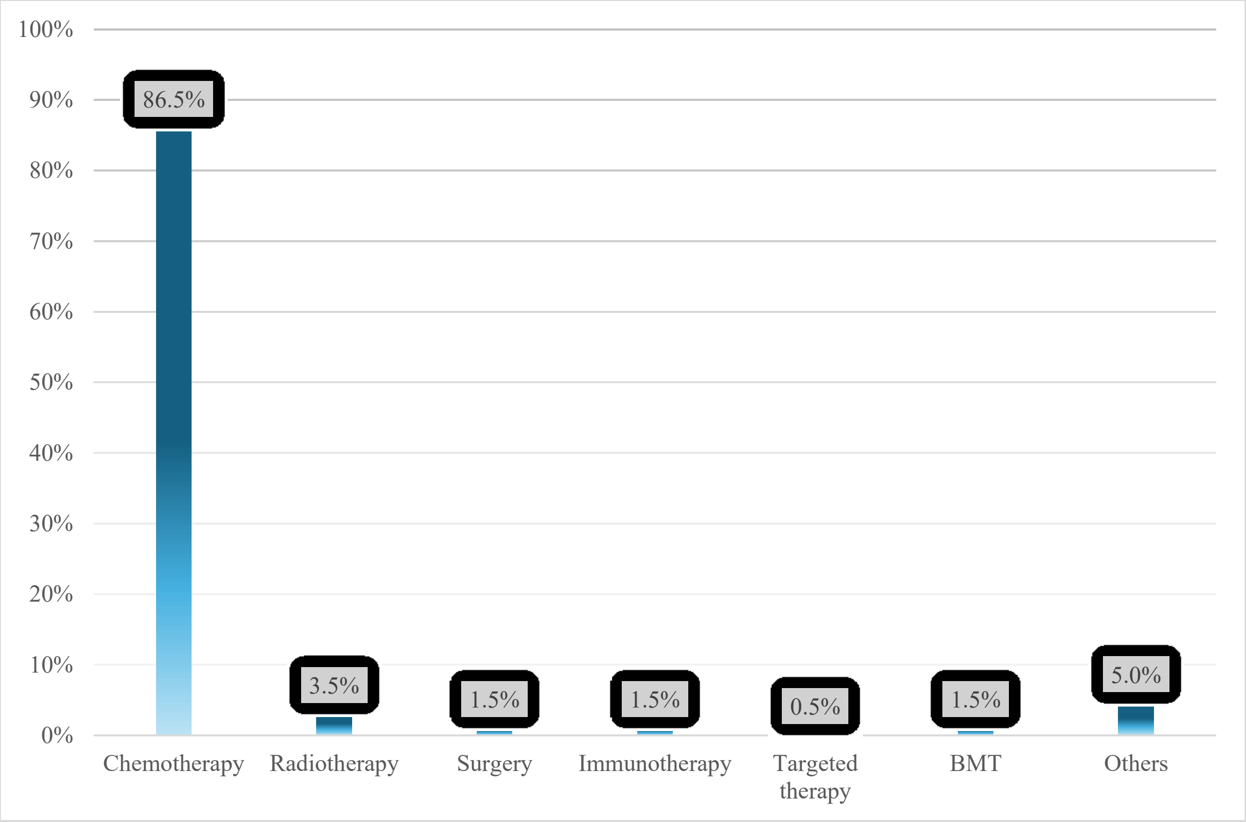


Figure 12.4: Distribution of cancer treatment type

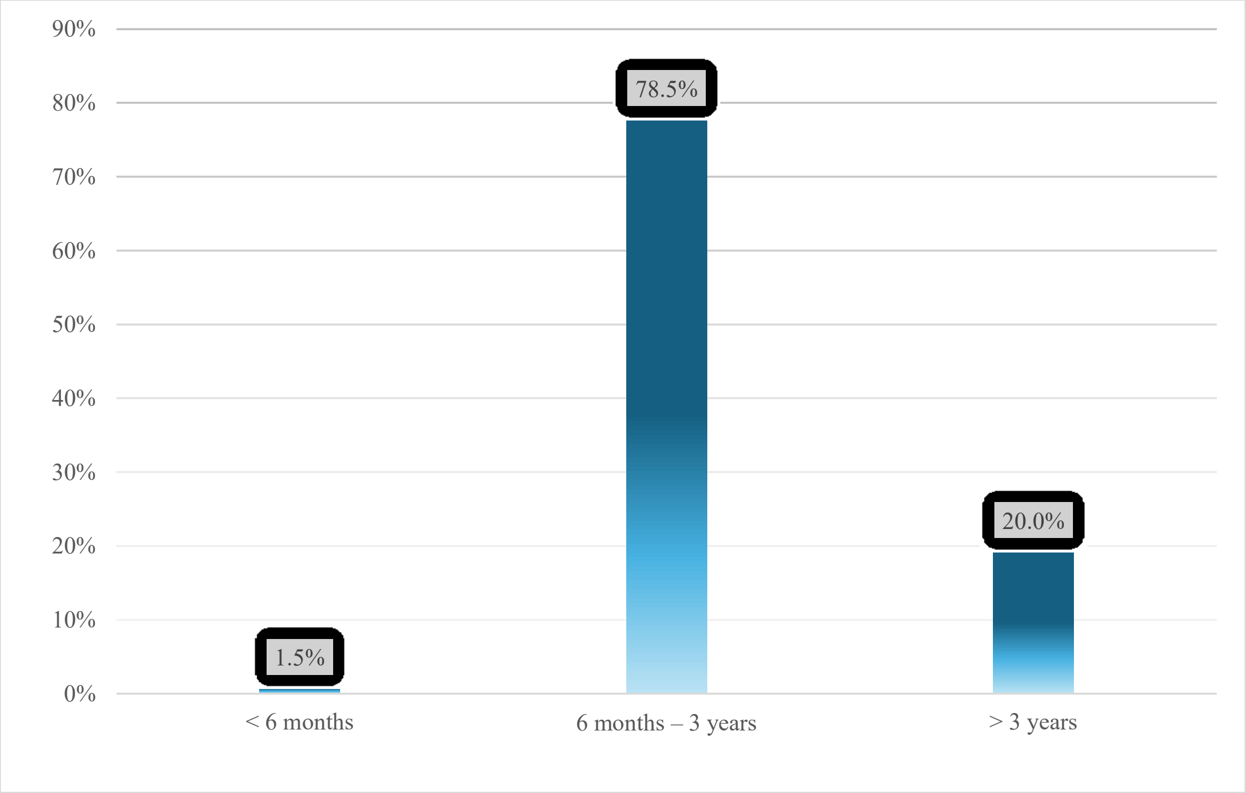


Figure 13.4: Distribution of cancer duration

4.3 Self-Perceived Health Status (SPHS)

Children were asked to evaluate their SPHS using the Arabic Version PedsQL™ Cancer Module 3.0 tool, where their responses to its domains are distributed in Table 3 below. In the domain of pain, almost half of the children (48.5%) stated they sometimes feel pain in joints and muscles, with 33.5% of them sometimes feeling frequent pain.

In terms of nausea, around one fourth of the children stated they sometimes have nausea during treatment (25.0%) with unpleasant food taste (26.0%), while 37.5% stated they never feel nausea when thinking of the treatment. Around one third of the children (30.5%) stated they sometimes have procedural anxiety related to needles causing pain, while 31.0% stated they always feel anxious about needles, compared to 40% who have treatment anxiety related to waiting for doctors, with one third of them sometimes having such problems with going to doctors (33%) or hospital (31%).

Less than a third of the children (29%) stated they have worries about treatment side effects, while one fourth of them always worry about treatment not working (25.5%), compared to almost half of them (48%) who always worry about cancer coming back. Fewer patients reported having specific cognitive problems, where 33.5% of them sometimes have problems with knowing what to do when something bothers them, while 30% of them rarely have problems with solving mathematical equations, compared to 27.5% who rarely have problems with paying attention to things or remembering what they read.

In terms of the children's perceived physical appearance, 34% of them reported never having problems with feeling not good-looking, compared to 28% who never have problems with others seeing their scars. Lastly, 31.5% of the children stated they never have problems with telling doctors or nurses about their feelings, with higher percentages related to never having problems with asking doctors or nurses (35.5%) or explaining the disease to others (36%).

Table 3.4: Distribution of participants’ responses to PedsQL™ Cancer Module 3.0 items

Items	**Always**		**Usually**		**Sometimes**		**Rarely**		**Never**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Pain										
Joints and muscles	22	11.0%	43	21.5%	97	48.5%	22	11.0%	16	8.0%
Frequent pain	22	11.0%	54	27.0%	67	33.5%	34	17.0%	23	11.5%
Nausea										
Nausea during treatment	40	20.0%	40	20.0%	50	25.0%	33	16.5%	37	18.5%
Unpleasant food taste	29	14.5%	49	24.5%	52	26.0%	32	16.0%	38	19.0%
Nausea during thinking of treatment	32	16.0%	21	10.5%	41	20.5%	31	15.5%	75	37.5%
Nausea that prevents eating	40	20.0%	36	18.0%	55	27.5%	19	9.5%	50	25.0%
Nausea from some foods and smells	40	20.0%	45	22.5%	55	27.5%	19	9.5%	41	20.5%
Procedural Anxiety (Problems with…)										
Needles cause pain	55	27.5%	50	25.0%	61	30.5%	24	12.0%	10	5.0%
Anxiety during blood sampling	53	26.5%	44	22.0%	59	29.5%	26	13.0%	18	9.0%
Anxiety about needles	62	31.0%	42	21.0%	62	31.0%	19	9.5%	15	7.5%
Treatment Anxiety (problems with…)										
Waiting for the doctor	23	11.5%	40	20.0%	80	40.0%	33	16.5%	24	12.0%
Going to the doctor	27	13.5%	43	21.5%	66	33.0%	38	19.0%	26	13.0%
Going to the hospital	45	22.5%	52	26.0%	62	31.0%	26	13.0%	15	7.5%
Worry (about…)										
Treatment side effects	50	25.0%	56	28.0%	58	29.0%	20	10.0%	16	8.0%
Treatment work or not	51	25.5%	52	26.0%	46	23.0%	29	14.5%	22	11.0%
Cancer comes back	96	48.0%	22	11.0%	40	20.0%	21	10.5%	21	10.5%
Cognitive problems (problems with…)										
Knowing what to do when something bothers me	13	6.5%	23	11.5%	67	33.5%	59	29.5%	38	19.0%
Solving math. equations	10	5.0%	28	14.0%	50	25.0%	60	30.0%	52	26.0%
Writing school papers/reports	14	7.0%	24	12.0%	54	27.0%	50	25.0%	58	29.0%
Paying attention to things	9	4.5%	13	6.5%	56	28.0%	55	27.5%	67	33.5%
Remembering what I read	15	7.5%	23	11.5%	50	25.0%	55	27.5%	57	28.5%
Perceived Physical Appearance (problems with…)										
Feeling not good-looking	19	9.5%	16	8.0%	54	27.0%	43	21.5%	68	34.0%
Others see my scars	32	16.0%	42	21.0%	43	21.5%	27	13.5%	56	28.0%
Others see my body	42	21.0%	44	22.0%	33	16.5%	28	14.0%	53	26.5%
Communication (Problems with…)										
Telling doctors/nurses what I feel	8	4.0%	27	13.5%	40	20.0%	62	31.0%	63	31.5%
Asking doctors/nurses	9	4.5%	24	12.0%	44	22.0%	52	26.0%	71	35.5%
Explaining my disease to others	19	9.5%	20	10.0%	41	20.5%	48	24.0%	72	36.0%

After calculating the total scores of self-perceived health status (SPHS) and its domains among 200 children with cancer diagnosis aged 8 to 18 years. The mean PedsQL™ score was 52.02 (SD = 17.02). A score classified as low, there are no specific cut-off points or recommended score categorizations, but some studies report that higher PedsQL scores indicate better HRQOL (Varni et al., 2002). Additionally, It was shown that the highest self-perceived health among children were in the domains of communication (mean = 67.96 ± 28.11) and cognitive problems (mean = 64.75 ± 24.15), while the lowest self-perceived health were in the domains of worry (mean = 36.00 ± 29.02) and procedural anxiety (mean = 36.62 ± 27.68), with an overall mean scores of 52.05 ± 17.02), ranging from 6.48 to 88.89. Figure 14 below illustrates the description of PedsQL™ domains and overall scores.

Table 4.4: Description of PedsQL™ (SPHS) domains scores among participants

Domain	**Mean**	**SD**	**Median**	**Minimum**	**Maximum**
Pain and hurt	46.81	25.65	50.00	0.00	100.00
Nausea	51.57	29.44	50.00	0.00	100.00
Procedural anxiety	36.62	27.68	33.33	0.00	100.00
Treatment anxiety	45.92	26.68	50.00	0.00	100.00
Worry	36.00	29.02	33.33	0.00	100.00
Cognitive problems	64.75	24.15	65.00	0.00	100.00
Perceived physical appearance	56.83	32.08	50.00	0.00	100.00
Communication	67.96	28.11	75.00	0.00	100.00
Overall PedsQL	52.05	17.02	51.39	6.48	88.89

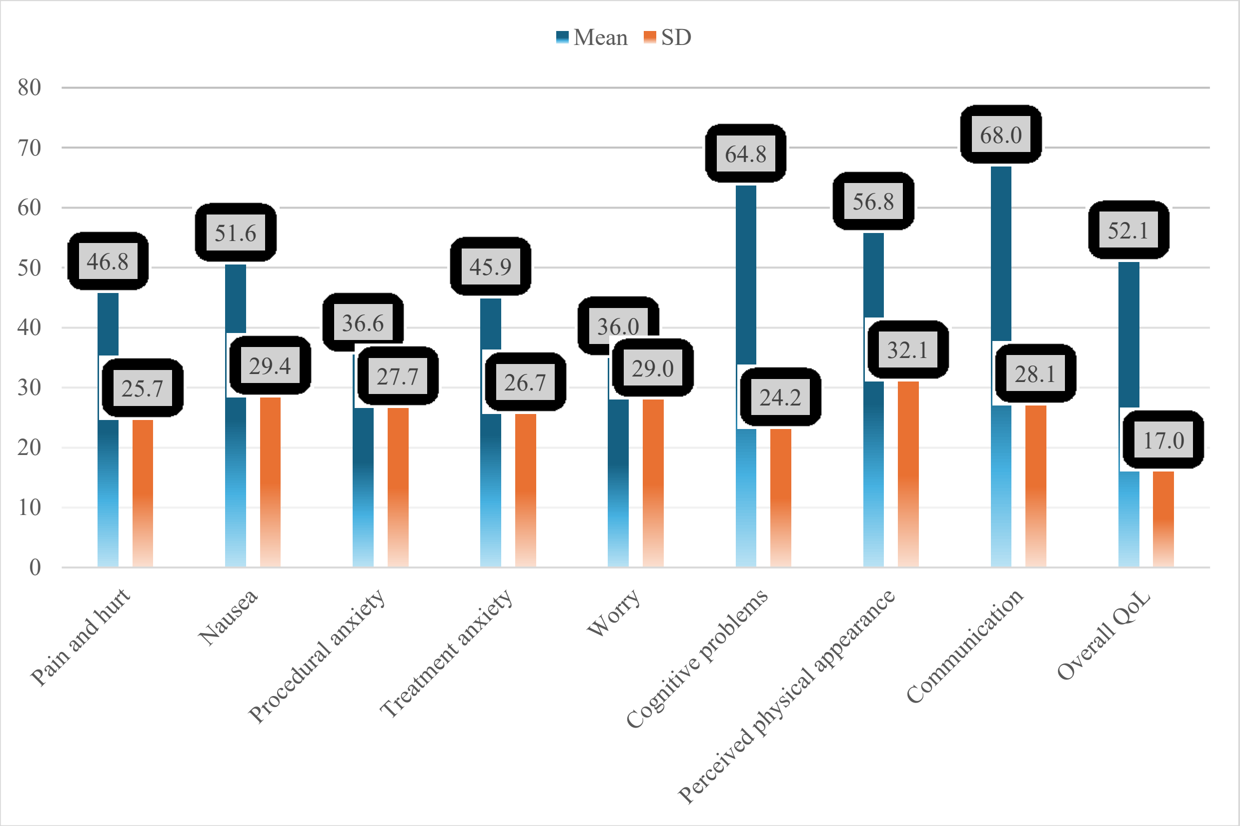
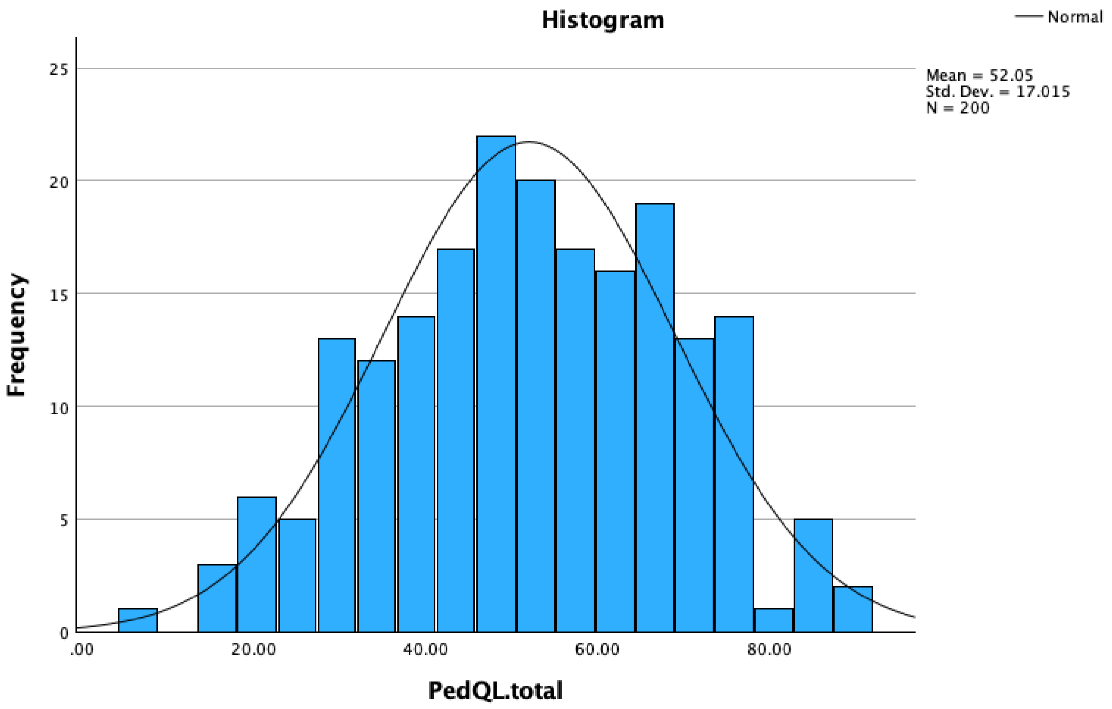


Figure 14.4: Distribution of PedsQL™ domains and overall scores



4.4 Sense of Coherence (SOC)

After calculating the total scores of SOC and its domains among 56 children with cancer diagnosis aged 13 to 18 years. The mean SOC score was 55.02 (SD = 12.27), and 76.8% have low SOC. The SOC categories consist of previous research into three groups representing weak SOC 35±60 points, moderate SOC 61±75 points, and strong SOC 76±91 points (Mendel et al., 2001). Additionally, Table 5 shows the responses to statements related to SOC among children between the ages of 13 and 18, where 23.2% of them stated they have never had the feeling of not really caring about what goes around, compared to 50% who stated that disappointment from people whom they counted on never happened. Almost one third of the children (32.1%) stated they feel life is worth living at the most level, while 37.5% of them stated they never had the feeling of being treated unfairly. On the other hand, 25% of these children stated they very often have mixed-up feelings, while 30.4% of them very often have feelings inside they would rather not feel.

Table 5.4-A: Distribution of participants' reactions to the SOC questionnaire (presented as frequencies and percentages for each option)

1. Do you have the feeling that you don't really care about what goes on around you?													
Never		**2**		**3**		**4**		**5**		**6**		**Very often**	
13	23.2%	8	14.3%	12	21.4%	12	21.4%	4	7.1%	5	8.9%	2	3.6%
2. Has it happened in the past that you were surprised by the behavior of people whom you thought you knew well?													
Never happened		**2**		**3**		**4**		**5**		**6**		**Always happened**	
10	17.9%	10	17.9%	7	12.5%	6	10.7%	4	7.1%	8	14.3%	11	19.6%
3. Has it happened that people whom you counted on disappointed you?													
Never happened		**2**		**3**		**4**		**5**		**6**		**Always happened**	
28	50.0%	8	14.3%	7	12.5%	2	3.6%	4	7.1%	4	7.1%	3	5.4%
4. When you think about life, you:													
Feel life is worth living		**2**		**3**		**4**		**5**		**6**		**Ask yourself why you exist**	
18	32.1%	5	8.9%	7	12.5%	6	10.7%	4	7.1%	6	10.7%	10	17.9%
5. Do you have the feeling that you're being treated unfairly?													
Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
10	17.9%	10	17.9%	8	14.3%	1	1.8%	2	3.6%	4	7.1%	21	37.5%
6. Do you have the feeling that you are in an unfamiliar situation and don't know what to do?													
Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
3	5.4%	3	5.4%	4	7.1%	16	28.6%	11	19.6%	5	8.9%	14	25.0%
7. Doing the things you do every day is:													
A source of pleasure and satisfaction		**2**		**3**		**4**		**5**		**6**		**A source of pain and boredom**	
13	23.2%	5	8.9%	13	23.2%	13	23.2%	6	10.7%	2	3.6%	4	7.1%
8. Do you have very mixed-up feelings and ideas?													
Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
14	25.0%	4	7.1%	6	10.7%	15	26.8%	8	14.3%	2	3.6%	7	12.5%
9. Does it happen that you have feelings inside you would rather not feel?													

Table 5.4-B: Distribution of participants' reactions to the SOC questionnaire (presented as frequencies and percentages for each option)

Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
17	30.4%	5	8.9%	14	25.0%	4	7.1%	3	5.4%	3	5.4%	10	17.9%
10. Many people – even those with strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?													
Never		**2**		**3**		**4**		**5**		**6**		**Very often**	
10	17.9%	10	17.9%	6	10.7%	9	16.1%	12	21.4%	1	1.8%	8	14.3%
11. When something happened, have you generally found that:													
Over/under-estimated its importance		**2**		**3**		**4**		**5**		**6**		**You saw things in the right proportion**	
11	19.6%	5	8.9%	9	16.1%	15	26.8%	3	5.4%	5	8.9%	8	14.3%
12. How often do you have the feeling that there's little meaning in the things you do in your daily life?													
Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
10	17.9%	7	12.5%	8	14.3%	10	17.9%	5	8.9%	7	12.5%	9	16.1%
13. How often do you have feelings that you're not sure you can keep under control?													
Very often		**2**		**3**		**4**		**5**		**6**		**Never**	
10	17.9%	15	26.8%	7	12.5%	8	14.3%	3	5.4%	5	8.9%	8	14.3%

After calculating the SOC scores, Table 6 shows the description of these scores, where the overall score had a mean of 55.02 ± 12.27 out of 91, with a median of 53, and more than three-fourths of the children aged between 13 and 18 years old (76.8%) had a low level of SOC. Also, the table shows that the mean scores for SOC domains were 19.54 ± 6.78 out of 35 for comprehensibility, 17.59 ± 3.86 out of 28 for manageability, and 17.89 ± 4.61 out of 28 for meaningfulness, which are illustrated in Figures 15 and 16 below.

Table 6.4: Distribution and description of SOC-13 categories and total scores

Category	**N**	**%**	**Mean**	**SD**	**Median**	**Min.**	**Max.**
Total SOC (of 91)			55.02	12.27	53.00	32.00	85.00
Low	43	76.8%					
Moderate	8	14.3%					
High	5	8.9%					
Comprehensibility (of 35)			19.54	6.78	17.00	8.00	35.00
Manageability (of 28)			17.59	3.86	16.00	10.00	28.00
Meaningfulness (of 28)			17.89	4.61	18.50	9.00	28.00

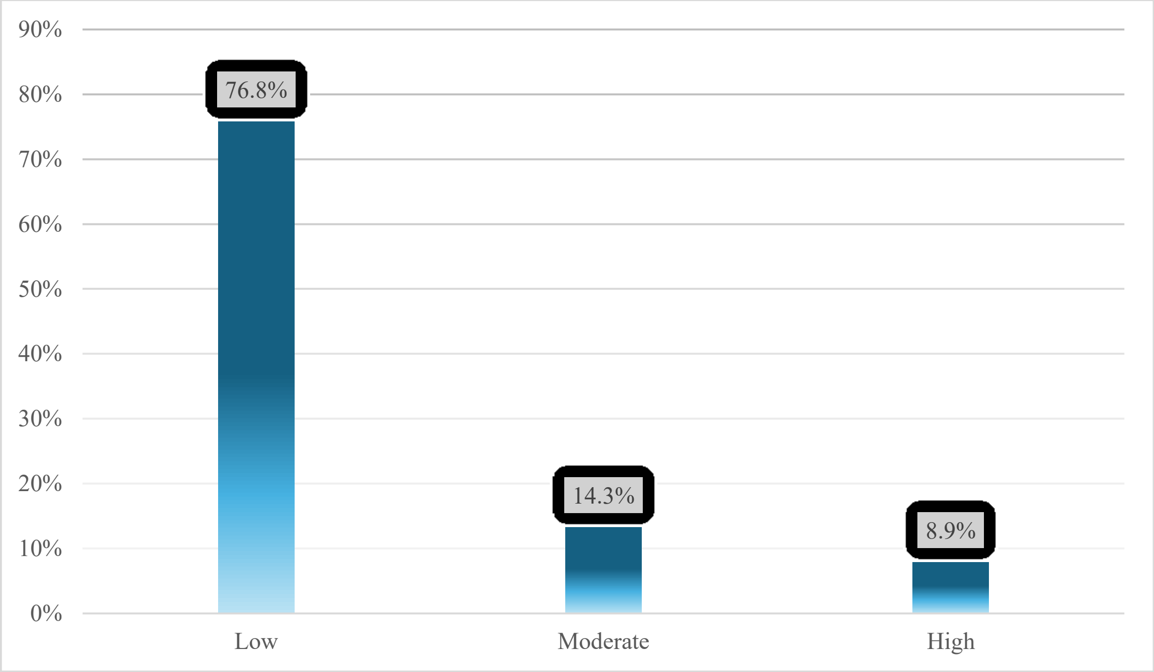


Figure 15.4: Distribution of Sense of Coherence levels among children b/w 13 and 18 years old

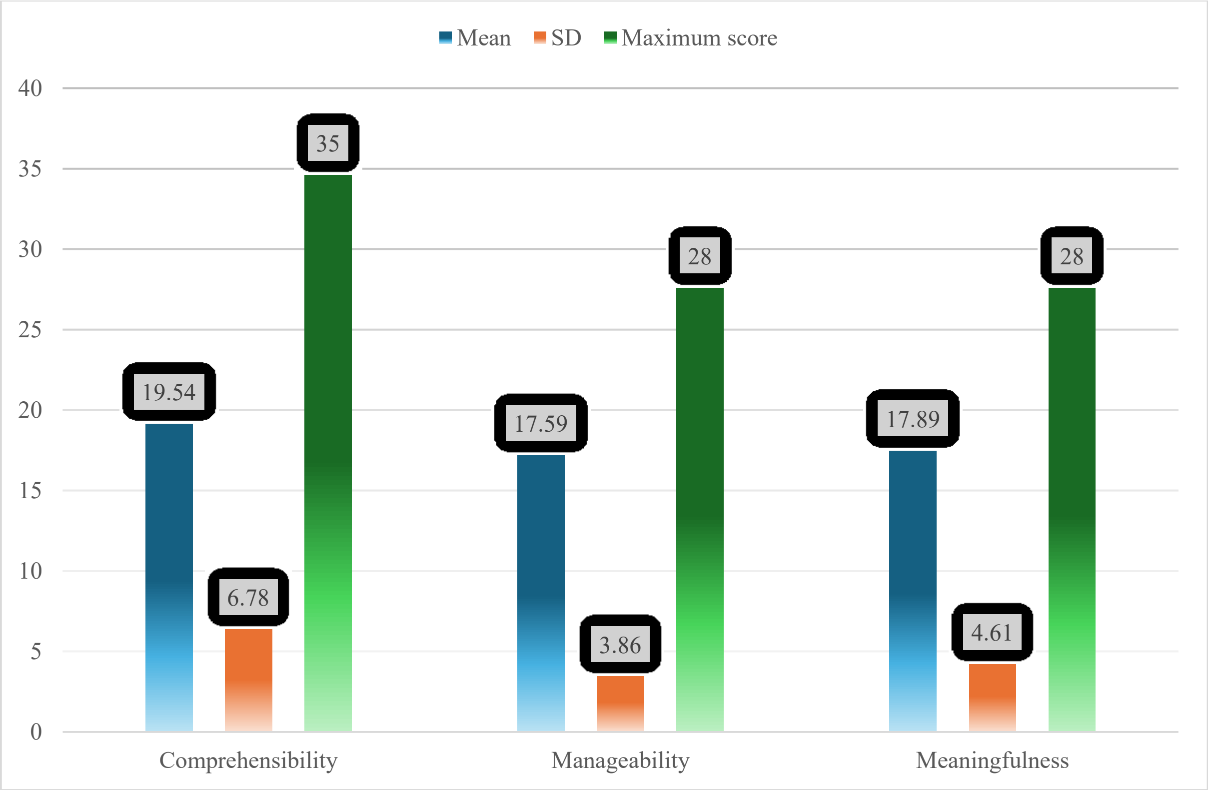
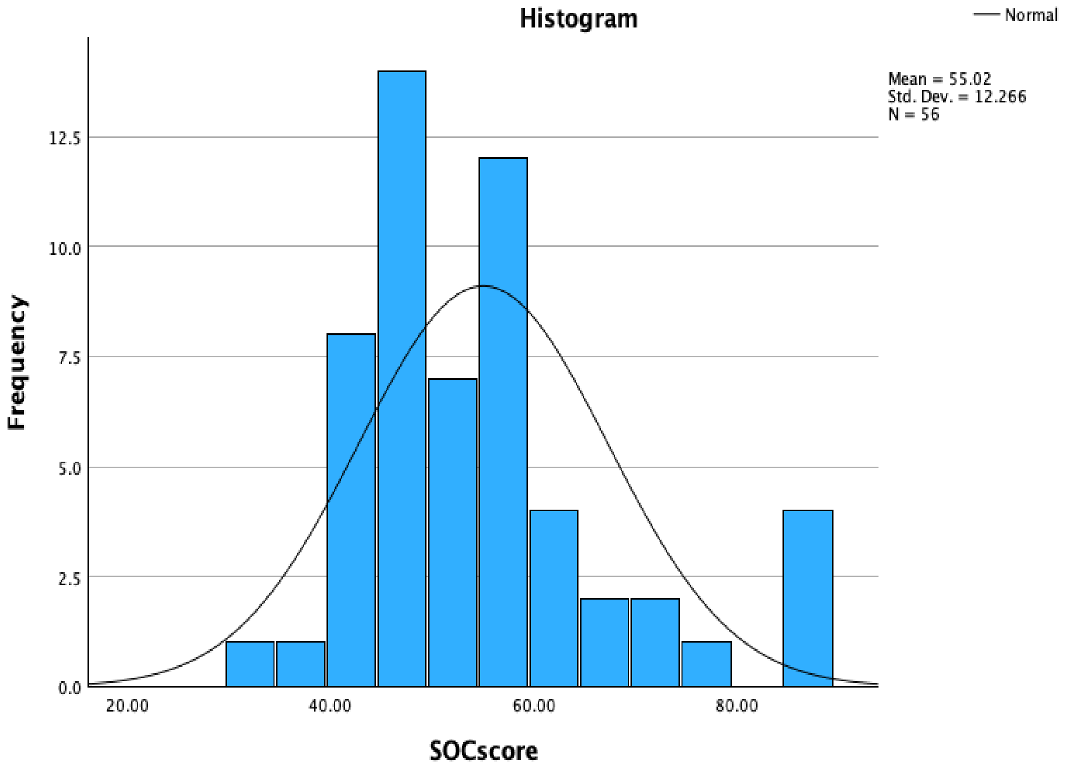


Figure 16.4: Description of Sense of Coherence domains' scores



4.5 Association between Self-Perceived Health Status (PedsQL™), Sense of Coherence, Socio-Demographic, and Medical Characteristics in the Study Group

This part is concerned with investigating the relationships between children's demographic and medical factors and their Self-Perceived Health Status (PedsQL™) and SOC scores, as well as the correlations between domains and total scores of PedsQL and SOC, using the suitable inferential tests. When demographic and medical factors were tested for their relationships with PedsQL™ scores, Table 7 shows that Self-Perceived Health Status (SPHS) scores were significantly related to the children's religion (t = 3.418, p-value < 0.001), with significantly higher scores among Muslim children (mean = 53.06 ± 16.72) compared to Christians (mean = 36.19 ± 13.88). Also, Self-Perceived Health Status (SPHS) scores were significantly higher among children living in villages (mean = 55.07 ± 16.26) compared to both cities (mean = 50.52 ± 17.37) and camps (mean = 45.07 ± 16.72), indicating a significant association between children's residency and their SPHS (F = 4.063, p-value = 0.019).

In terms of medical factors, cancer stage showed a significant relationship with PedsQL™ scores (F = 5.047, p-value = 0.002), where the highest scores were among children in their fourth (mean = 59.49 ± 15.95) and first stages (mean = 56.60 ± 17.05), with a significantly better SPHS scores among children treated with chemotherapy (mean = 53.73 ± 16.54) compared to non-chemotherapy treatment (mean = 41.29 ± 16.36, t = 3.639, p-value <

0.001). The rest of the demographic and medical factors were insignificantly related to children's SPHS scores (p-value > 0.05).

Table 7.4: Relationships between participants' demographic and medical factors and their PedsQL™ scores

Factors	**Values**	**Mean**	**SD**	**Test value**	**p-value**
Age	8-12 YO	52.96	16.93	1.225	0.222
	13-18 YO	49.69	17.15		
Gender	Male	52.96	17.14	0.827	0.409
	Female	50.96	16.89		
Religion	Muslim	53.06	16.72	3.418	<0.001
	Christian	36.19	13.88		
Address	North	53.83	16.94	2.231	0.086
	Middle	51.85	17.34		
	South	46.34	16.82		
	Gaza	55.09	9.70		
Residence	Village	55.07	16.26	4.063	0.019
	City	50.52	17.37		
	Camp	45.07	16.72		
Monthly income	≤1500 ILS	49.16	17.94	1.573	0.197
	1501-2500 NIS	50.29	17.63		
	2501-4000 NIS	54.23	15.76		
	>4000 NIS	56.94	16.74		
Insurance	Insured	52.22	17.03	0.985	0.326
	Uninsured	43.75	16.47		
Mother's education	Up to elementary	50.21	21.03	0.238	0.789
	High school	52.78	17.03		
	University	51.90	15.76		
Mother's work	Housewife	52.21	17.18	0.037	0.991
	Private sector	51.26	13.42		
	Public sector	51.42	17.59		
	Self-employed	52.78	24.98		
Father's education	Up to elementary	47.91	19.43	1.620	0.201
	High school	53.46	16.63		
	University	52.74	15.75		
Father's work	Unemployed	45.57	19.93	1.676	0.173
	Private sector	53.00	15.91		
	Public sector	52.13	16.87		
	Self-employed	53.81	16.54		
Cancer type	Solid	50.84	16.55	-0.609	0.543
	Hematological	52.49	17.22		
Cancer stage	Stage I	56.50	17.05	5.047	0.002
	Stage II	48.50	16.11		
	Stage III	48.33	17.04		
	Stage IV	59.49	15.95		
Treatment type	Chemotherapy	53.73	16.54	3.639	<0.001
	Non-chemotherapy	41.29	16.36		
Cancer duration	< 6 months	50.00	14.37	0.059	0943
	6 months – 3 years	51.91	16.64		
	> 3 years	52.73	18.92		

On the other hand, when the SOC scores were compared across the children's demographic and medical health factors, Table 8 shows that lower SOC was significantly found among children who live in camps (mean = 42.67 ± 2.16) compared to both villages (mean = 56.73 ± 13.28) and cities (mean = 56.25 ± 11.06), showing that SOC is significantly related to children's residency (F = 3.759, p-value = 0.030). Also, SOC scores were significantly related to children's cancer stage (t = -2.636, p-value = 0.011), where they were higher among children with longer duration, with a mean of 61.24 ± 14.32 after 3 years, compared to 52.31 ± 10.33 in the duration between 6 months and 3 years. The rest of the demographic and medical factors did not significantly relate to SOC scores (p-value > 0.05).

Table 8.4-A: Relationships between participants' demographic and medical factors and their SOC scores

Factors	**Values**	**Mean**	**SD**	**Test value**	**p-value**
Gender	Male	57.29	13.57	1.395	0.169
	Female	52.75	10.56		
Religion	Muslim	55.11	12.47	0.293	0.771
	Christian	52.50	4.95		
Address	North	55.19	12.04	2.726	0.053
	Middle	45.00	11.05		
	South	54.69	11.43		
	Gaza	74.00	0.00		
Residence	Village	56.73	13.28	3.759	0.030
	City	56.25	11.06		
	Camp	42.67	2.16		
Monthly income	≤1500 ILS	53.59	12.47	0.447	0.720
	1501-2500 NIS	53.67	11.78		
	2501-4000 NIS	57.17	13.13		
	>4000 NIS	51.33	6.66		
Insurance	Insured	55.19	12.48	0.435	0.333
	Uninsured	52.00	8.72		
Mother's education	Up to elementary	51.80	9.86	1.441	0.246
	High school	52.89	12.48		
	University	58.30	12.16		
Mother's work	Housewife	54.14	11.78	0.654	0.524
	Private sector	56.71	15.60		
	Public sector	60.40	12.74		
	Self-employed	--	--		
Father's education	Up to elementary	45.71	9.67	2.589	0.085
	High school	55.66	11.90		
	University	57.65	12.71		
Father's work	Unemployed	57.63	18.00	1.209	0.316
	Private sector	59.36	15.85		
	Public sector	51.36	6.14		
	Self-employed	53.22	9.11		
Cancer type	Solid	52.44	8.85	-0.996	0.162
	Hematological	56.05	13.35		

Table 8.4-B: Relationships between participants' demographic and medical factors and their SOC scores

Cancer stage	Stage I	53.45	12.15	1.198	0.320
	Stage II	54.73	12.56		
	Stage III	50.33	6.10		
	Stage IV	59.71	14.28		
Treatment type	Chemotherapy	56.24	13.19	1.297	0.200
	Non-chemotherapy	51.36	8.27		
Cancer duration	< 6 months	--	--	-2.636	0.011
	6 months – 3 years	52.31	10.33		
	> 3 years	61.24	14.32		

Lastly, the scores of PedsQL™ and SOC domains and total scores were tested for their inter-correlation, where Table 10 shows that more pain (as a domain of PedsQL™) is significantly correlated with more nausea ($r = 0.341$, p-value < 0.01), more worry ($r = 0.322$, p-value < 0.01), more problems with cognitive impairment ($r = 0.244$, p-value < 0.01), more problems with perceived physical appearance ($r = 0.311$, p-value < 0.01) and the overall SPHS ($r = 0.417$, p-value < 0.01). Moreover, more nausea (as a domain of PedsQL™) was significantly correlated with more treatment anxiety ($r = 0.265$, p-value < 0.01), more worry ($r = 0.345$, p-value < 0.01), more cognitive impairment ($r = 0.231$, p-value < 0.01), more problems with perceived physical appearance ($r = 0.310$, p-value < 0.01), more problems with communication ($r = 0.163$, p-value < 0.05), and the overall SPHS ($r = 0.644$, p-value < 0.01).

Moreover, procedural anxiety (as a domain of PedsQL™) was significantly correlated with more treatment anxiety ($r = 0.462$, p-value < 0.01), more worry ($r = 0.279$, p-value < 0.01), more cognitive problems ($r = 0.189$, p-value < 0.01), more problems with communication ($r = 0.165$, p-value < 0.05) and the overall SPHS ($r = 0.382$, p-value < 0.01). In addition, treatment anxiety (as a domain of PedsQL™) was significantly correlated with more worry ($r = 0.355$, p-value < 0.01), problems with cognitive impairment ($r = 0.345$, p-value < 0.01), more problems with perceived physical appearance ($r = 0.219$, p-value < 0.01), more problems with communication ($r = 0.329$, p-value < 0.01) and the overall QOL ($r = 0.624$, p-value < 0.01).

While more worry (as a domain of PedsQL™) was significantly correlated with more cognitive impairment ($r = 0.353$, p-value < 0.01), more problems with perceived physical appearance ($r = 0.161$, p-value < 0.05), more problems with communication ($r = 0.202$, p-value < 0.01) and the overall SPHS ($r = 0.609$, p-value < 0.01), it was also correlated with manageability ($r = 0.290$, p-value < 0.05) and meaningfulness ($r = 0.386$, p-value < 0.01) domains of SOC, as well as the overall SOC ($r = 0.427$, p-value < 0.01). In addition, while more cognitive impairment (as a domain of PedsQL) was significantly correlated with more problems with perceived physical appearance ($r = 0.378$, p-value < 0.01), more problems with communication ($r = 0.574$, p-value < 0.01) and overall SPHS ($r = 0.709$, p-value < 0.01), it was also significantly correlated with worse states of comprehensibility (r

= 0.396, p-value < 0.01) and manageability (r = 0.477, p-value < 0.01) domains of SOC, as well as overall SOC (r = 0.406, p-value < 0.01).

More problems with perceived physical appearance (as a domain of PedsQL™) was also significantly correlated with more problems with communication (r = 0.556, p-value < 0.01) and the overall SPHS (r = 0.620, p-value < 0.01), in addition to significantly correlating with worse meaningfulness (r = 0.496, p-value < 0.01) and the overall SOC (r = 0.351, p-value < 0.01). The communication domain of SOC was significantly correlated with the overall SPHS (r = 0.628, p-value < 0.01), indicating better SPHS with better communication, with significant correlations with manageability (r = 0.571, p-value < 0.01) and meaningfulness (r = 0.290, p-value < 0.05) domains of SOC, as well as the overall SOC (r = 0.508, p-value < 0.01), which also applies for the overall PedsQL™ scores, that was significantly correlated with manageability (r = 0.420, p-value < 0.01) and meaningfulness (r = 0.456, p-value < 0.01) domains of SOC, as well as the overall SOC (r = 0.490, p-value < 0.01), indicating that better overall SPHS significantly correlate to a better SOC.

Across domains of SOC, comprehensibility was significantly correlated with better manageability (r = 0.468, p-value < 0.01) and the overall SOC (r = 0.755, p-value < 0.01), while better manageability was significantly correlated with better meaningfulness (r = 0.457, p-value < 0.01) and the overall SOC (r = 0.791, p-value < 0.01), with significant correlation between meaningfulness and the overall SOC (r = 0.655, p-value < 0.01).

In conclusion, all domains of PedsQL™ were significantly inter-correlated, except between pain and both procedural and treatment anxiety, between nausea and procedural anxiety, and between procedural anxiety and perceived physical appearance (p-value > 0.05), with inter-correlation between some domains of PedsQL™v and domains of SOC, while only comprehensibility and meaningfulness domains of SOC were insignificantly correlated (p-value > 0.05).

Table 9.4-A: Correlations between PedsQL™ and SOC scores and domains

Domain	Pain	Nausea	Procedural anxiety	Treatment anxiety	Worry	Cognitive impairment	Perceived appearance.	Commun.	Total PedsQL™	Compreh.	Manage.	Meaning.
Nausea	0.341**	---										
Procedural anxiety	-0.054	0.061	---									
Treatment anxiety	0.118	0.265**	0.462**	---								
Worry	0.322**	0.345**	0.279**	0.355**	---							

Table 9.4-B: Correlations between PedsQL™ and SOC score

Domain	Stat	Pain	Nausea	Procedural anxiety	Treatment anxiety	Worry	Cognitive impairment	Perceived appear.	Commun.	Total PedsQL	Compreh.	Manage.	Meaning.
Nausea	r	0.341	---										
	p	<0.001	---										
Procedural anxiety	r	-0.054	0.061	---									
	p	0.445	0.392	---									
Treatment anxiety	r	0.118	0.265	0.462	---								
	p	0.096	<0.001	<0.001	---								
Worry	r	0.322	0.345	0.279	0.355	---							
	p	<0.001	<0.001	<0.001	<0.001	---							

Table 9.4-C: Correlations between PedsQL™ and SOC score

Cognitive impairment	r	0.244	0.231	0.189	0.345	0.353	---						
	p	<0.001	0.001	0.007	<0.001	<0.001	---						
Perceived appearance	r	0.311	0.310	0.015	0.219	0.161	0.378	---					
	p	<0.001	<0.001	0.831	0.002	0.023	<0.001	---					
Communication	r	0.072	0.163	0.165	0.329	0.202	0.574	0.556	---				
	p	0.311	0.021	0.019	<0.001	0.004	<0.001	<0.001	---				
Total PedsQL	r	0.417	0.644	0.382	0.624	0.609	0.709	0.620	0.628	---			
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	---			
Comprehensibility	r	-0.075	-0.020	0.114	0.197	0.243	0.396	0.062	0.257	0.256	---		
	p	0.585	0.883	0.401	0.146	0.071	0.003	0.648	0.056	0.057	---		
Manageability	r	0.106	0.172	0.217	0.232	0.290	0.447	0.201	0.571	0.420	0.468	---	
	p	0.436	0.205	0.108	0.086	0.030	<0.001	0.137	<0.001	0.001	<0.001	---	
Meaningfulness	r	0.161	0.416	0.140	0.134	0.386	0.122	0.496	0.290	0.456	0.178	0.457	---
	p	0.235	0.001	0.302	0.326	0.003	0.369	<0.001	0.030	<0.001	0.189	<0.001	---
Total SOC	r	0.093	0.226	0.163	0.256	0.427	0.406	0.351	0.508	0.490	0.755	0.791	0.655
	p	0.497	0.094	0.230	0.056	0.001	0.002	0.008	<0.001	<0.001	<0.001	<0.001	<0.001

Chapter Five

Discussion

5.1 Introduction

This study aimed to assess SPHS among 200 children aged 8 to 18 years and SOC among 56 of those aged 13 to 18 years, and to find the correlation between SOC and SPHS in children diagnosed with cancer in the West Bank, Palestine. The findings revealed that 52.02 (SD = 17.02) have low SPHS and 55.02 (SD = 12.27) have low SOC. Also, the finding shows a positive correlation between SOC and SPHS, indicating that children with high SOC tend to report the best SPHS. This chapter interprets the researcher's conclusions from the previous study, presents limitations, strengths, and future recommendations.

5.2 Relationship between socio-demographic characteristics and SPHS among children who received a cancer diagnosis

The researcher finds a significant relationship between child residency and SPHS, attributes these findings to the fact that Palestinians face serious challenges accessing health centers in rural areas (villages and camps) due to Israeli occupation checkpoints, and road closure in some regions, which hinder medical follow-up (Jabali et al., 2024). The findings align with Noonan et al. (2020), as both showed that place of residence is a key factor in PedsQL, with rural areas being linked with a lower quality of life compared to urban areas. Otherwise, the researcher finds that Nablus and Jenin have the highest cancer incidence rates in WB Palestine cities. Conversely, MOH (2024) reports that the highest rate of cancer among children under 18 years of age in the West Bank in 2023 was in Hebron City, followed by Nablus City. From my perspective, Nablus and Jenin have witnessed the incursions and the use of tear gas and other military weapons after the war, which may be linked to an increase in the incidence of cancer there.

In addition, the study finds that there is no relationship between age, gender, parental education level, or monthly income and child SPHS. When comparing these results with previous literature, the finding is in contrast to that of Moghaddan et al. (2020), which indicated that low maternal educational level was associated with poor HRQOL. In addition, Raybin et al. (2021) found that the strongest relationship between age and QOL is that older children have worse QOL, including worry, nausea, and pain. Other demographic factors, such as sex, socioeconomic status, and geographic location, showed no relationship with children’s QOL. Robson et al. (2021) found a positive correlation between age, family income levels, and PedsQL™ scores, indicating that older children with higher family income levels have a better QOL, but no significant correlation was observed between gender and QOL.

5.3 Relationship between medical characteristics and SPHS among children who received a cancer diagnosis

In this study, Leukemia was identified as the most common cancer among Palestinian children, with a prevalence rate of 58.5%. The finding is consistent with studies in Asia, Iraq, and Africa (Abood et al., 2020; Mulatie et al., 2025; Nakata et al., 2025). Additionally, our study found that 86.5% of children received chemotherapy. This finding is consistent with Mitwalli et al. (2023), who reported that Palestinians face difficulty accessing cancer care, a lack of medication, and the availability of some advanced treatments, such as radiotherapy and bone marrow transplant, due to Israeli Occupation. Which means some patients are referred outside. This indicates the reality in Palestine that there is a major problem in providing appropriate treatments, a shortage of medication, the difficulty of obtaining some therapies such as radiotherapy, and the delay in referral for treatment.

5.4 Relationship between socio-demographic, medical characteristics, and SOC among children aged 13 to 18 years old

In this study, most participants demonstrate a low SOC of 76.8%, which may reflect the difficulty the children face and feel anxious when faced with severe symptoms and intensive chemotherapy. So, they find difficulty in understanding the disease and the changes in their life.

There are no studies that discuss the topic of SOC in children with cancer, but SOC has been addressed in adults with cancer, and SOC has been studied in children with other diseases. Recent cancer literature suggests that the sense of coherence (SOC) is influenced by a number of social and demographic factors that may support a patient's ability to understand and cope with their illness. Studies related to SOC have shown that socio-demographic variables, such as income, education, and marital status, have a positive correlation with SOC in some samples (Nowicki et al., 2019; Bonzanini et al., 2020; Henz et al., 2023). However, Bargehr et al. (2023) in the German patient study found that neither age nor sex had a significant effect. From my perspective as a researcher, I interpret this as the availability of economic resources, better health knowledge, and family or partner support contributing to a patient's ability to understand and manage illness-related stressors more effectively.

5.5 Relationship between SPHS and SOC among children who received a cancer diagnosis

This study finds a significant positive relationship between SOC and SPHS, which means children aged 13 to 18 years with strong SOC are able to manage their physical and mental well-being and find meaning for their lives. There are no studies that discuss the correlation between SOC and SPHS in children with cancer, but they have been studied in children with other chronic illnesses.

Previous research focuses on addressing SOC and SPHS among child illnesses such as congenital heart disease and type 1 diabetes, spinal bifida, and neglects pediatric oncology. Moksnes et al. (2017) supported this study and found that Positive association between self-related health and SOC among adolescents aged 13–18 years. Similarly, Elissa et al. (2020) found that high SPHS is associated with high SOC among Palestinian children with type 1 diabetes. On the other hand, Nahal et al. (2021) found that Palestinian children with spinal bifida had low SOC and low SPHS, which is consistent with our finding that 76.8% of children aged 13 to 18 years with cancer have low SOC.

However, a clear knowledge gap exists in the literature on children with cancer; no study has directly assessed the relationship between SOC and SPHS in this group. Psychological support programs may contribute to improving their health assessment, enhancing their quality of life, and mitigating the psychological effects. Addressing this gap can also provide a basis for developing psychological interventions specially designed for children with cancer.

5.6 Study Strengths

One of the strengths of this study is its rarity; few global studies have addressed the relationship between SOC and SPHS in children with cancer, especially in Palestine. The study is also distinguished by its use of cancer modules, specifically the Arabic version, to assess SPHS, whereas many studies use generic core scales. This provides a more specialized perspective and is better suited to the characteristics of these children.

5.7 Study Limitations

The researcher faced challenges while collecting data,

1. This study used a cross-sectional design (due to low response rate), and the goal was to collect 370 questionnaires, but the researcher only got 200, which limits generalizability.
2. Israeli occupation, which includes the presence of checkpoints that restrict transportation within the city, making access difficult.
3. Difficulty contacting the authors to obtain the Arabic version of the questionnaire, which delayed the start of data collection as scheduled.
4. Little literature addresses SOC among children who received a cancer diagnosis.

5.8 Recommendations

In light of the decline in SPHS and SOC, healthcare providers must offer targeted and personalized interventions that improve the health and well-being of children with cancer.

1. Healthcare providers should incorporate routine psychosocial screening, including SPHS in children & assessment of SOC, into standard care for adolescents with cancer.
2. Targeted interventions aimed at enhancing SOC should be implemented.
3. Regarding SPHS Domain: Prioritize interventions that address worry (especially fear of recurrence) and procedural anxiety using evidence-based psychological and tailored management strategies.
4. At the policy level, resources should be allocated to establish specialized psychosocial support services within pediatric oncology centers.
5. An integrated, multidisciplinary approach that combines medical, psychological, and social care is recommended.
6. The researcher encourages future studies with larger samples, qualitative methods, and a longitudinal design to better understand the relationship between SOC and SPHS.

5.9 Conclusion

This study aimed to assess SPHS and SOC among children with cancer, and to investigate the relationship between sociodemographic and medical characteristics and SOC/SPHS. The findings revealed that 52.02 (SD = 17.02) have low SPHS and 76.8% (SD = 12.27) have low SOC among Palestinian children, in the West Bank. Which means, high SOC indicates high SPHS, as a result, coping with stressors and living with cancer. In summary, SOC is a key concept that affects SPHS among children with cancer. This shows that the psychological aspect in children is just as important as the medical aspect.

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Annexes:

Annex I: Consent Form

نموذج الموافقة على المشاركة في بحث علمي

تحية طيبة وبعد ...

أنا الطالبة دنيا عنبر، طالبة ماجستير في برنامج تمريض الأطفال في جامعة القدس. أقوم بعمل بحث يهدف إلى دراسة "الحالة الصحية الذاتية وإحساس التماسك بين الأطفال المصابين بالسرطان في الضفة الغربية". الدراسة تشمل الأطفال الذين تتراوح أعمارهم ما بين ١٨ سنة في التعامل مع مرض السرطان وذلك للخروج بتوصيات قد تساعد صانعي السياسات في التخطيط لبرامج الرعاية.

عزيزي ولي الأمر، نطلب موافقتك على مشاركة طفلك في هذا البحث، حيث سيتم جمع البيانات والمعل مات بطريقة آمنة وسرية وفقاً للمعايير الأخلاقية المعتمدة. المشاركة في هذا البحث هي اختيارية وتطوعية، مع ضمان السرية والخصوصية التامة للمشاركين في هذه الدراسة، وكذلك معلومات هذه الدراسة ستبقى سرية وتستخدم لغرض البحث العلمي فقط ، لذلك لا داعي للبوح بالاسم الا خصي.

في حال وجود أي استفسار يمكنك الاتصال مع الشخص القائم على البحث في أي وقت على العنوان التالي:

الاسم: دنيا عنبر

البريد الالكتروني Donyaanbar97@gmail.com

شاكرين حسن تعاونكم

Annex II: Research Ethical Committee Approval Letter

Al-Quds University
Jerusalem
Deanship of Scientific Research

بسم الله الرحمن الرحيم

جامعة القدس
القدس
عمادة البحث العلمي

Research Ethics Committee
Committee's Decision Letter

Date: March 15, 2025
Ref No: 525/REC/2025

Dears Dr. Kawther Alayasa, Ms. Donya Anbar,

Research ethics application. After reviewing your submission titled: "Self-Perceived Health Status and Sense of Coherence among Children with Cancer in the West Bank, Palestine", the Research Ethics Committee (REC) at Al-Quds University confirms that your application aligns with our ethics guidelines, which are based on the principles outlined in the Declaration of Helsinki.

Please note that this approval does not replace other required permissions, such as for sample shipment or data sharing. We also request a copy of your final report or publication when available.

This approval is valid for two years. If your research extends beyond this period, a renewal request will be necessary. The approval remains valid as long as there are no changes to the research protocol.

Sincerely,

Prof. Dr. Elham Kateeb, BDS MPH PhD

Scientific Research, Dean
Al-Quds University
Cell phone: ++972599510404
ekateeb@staff.alquds.edu

Cc. Prof. Imad Abu Kishek - President
Cc. Members of the committee
Cc. file

Abu-Dies, Jerusalem P.O.Box 20002
Tel-Fax: #970-02-2791293
research@admin.alquds.edu
أبوديس، القدس ص.ب. 20002
تلفاكس: #970-02-2791293

Annex III: Socioeconomic and Demographic Information

البيانات الديوغرافية الاحصائية:

1. **العمر** أ) 12-8 سنة ب) 18-13 سنة
2. **الجنس** أ) ذكر ب) أنثى
3. **الديانة** أ) مسلم ب) مسيحي ج) أخرى
4. **العنوان** أ) نابلس ب) طولكرم ج) جنين
   د) رام الله ه) بيت لحم ف) الخليل
   ك) أريحا ل) سلفيت م) قلقيلية
5. **مكان السكن** أ) قرية ب) مخيم ج) مدينة
6. **الدخل الشهري** أ) أقل أو يساوي 1500 شيكل ب) 2500-1501 شيكل
   ج) 2500 شيكل – 4000 شيكل د) أكثر من 4000 شيكل
7. **التأمين** أ) مؤمن ب) غير مؤمن
8. **مستوى تعليم الأم** أ) غير متعلمة ب) ابتدائي ج) ثانوي
   د) دبلوم ج) بكالوريوس د) دراسات عليا
9. **طبيعة عمل الأم** أ) ربة منزل ولا تعمل ب) موظفة قطاع خاص
   ج) موظفة قطاع حكومي د) لديها عمل خاص
10. **مستوى تعليم الأب** أ) غير متعلم ب) ابتدائي ج) ثانوي
    د) دبلوم ج) بكالوريوس د) دراسات عليا

11. **طبيعة عمل الأب** أ) لا يعمل ب) موظف قطاع خاص
    ج) موظفة قطاع حكومي د) لديها عمل خاص

البيانات الصحية:

1. **نوع السرطان** أ) سرطان الكبد ب)سرطان الرئة ج) سرطان القولون ولمستقيم
   د) سرطان الدم (اللوكيميا) ه) سرطان الغدد الليمفاوية
   ف) أورام العظام ق) أورام الدماغ والجهاز العصبي
   ل) نوع آخر (يرجى التحديد)____________
2. **مرحلة المرض** أ) المرحلة الأولى ب) المرحلة الثانية
   ج) المرحلة الثالثة د) المرحلة الرابعة
3. **نوع العلاج** أ) الكيميائي ب) الإشعاعي ج) الجراحة
   د) المناعي ه) الموجه ف) زرع نخاع العظم
   ق) علاج آخر (يرجى التحديد)____________
4. **مدة الاصابة** أ) أقل أو يساوي 6 شهور ب) من 6 شهور إلى ثلاث سنوات
   ج) أكثر أو يساوي ثلاث سنوات

Annex IV: SOC-13 Arabic Version

في الأسئلة التالية هنالك 7 احتمالات للإجابة . عليك الإشارة إلى الرقم الملائم لإجابتك حيث أن 1 و7 هي الإجابات المتطرفة . إذا كانت الكلمات تحت رقم 1 (لفترات متباعدة او بتاتا) ملائمة لك , أحطاي بدائرة رقم 1. وإذا كانت الكلمات تحت رقم 7 (لفترات متقاربة) ملائمة لك , أحطاي بدائرة رقم 7. وإذا كان شعورك غير ذلك أحطاي بدائرة الرقم القريب من شعورك ل1 أو ل7 . لكل سؤال أشر\اي بإجابة واحدة فقط.

1. هل تشعر باللامبالاة لما يدور حولك؟

1	2	3	4	5	6	7
لفترات متباعدة أو بتاتا						لفترات متقاربة

2. هل حصل في الماضي انك فوجئت من تصرفات أناس تعرفهم\ تعرفينهم جيدا ؟

1	2	3	4	5	6	7
لفترات متباعدة أو بتاتا						لفترات متقاربة

3. هل الأشخاص الذين اعتمدت عليهم خيبوا آمالك؟

1	2	3	4	5	6	7
لم يحصل بتاتا						حصل دائما

4. عندما تفكر/ي في حياتك, على الأغلب:

1	2	3	4	5	6	7
تشعر\اين بمدى أهمية العيش						تسأل\اين نفسك لماذا أنت موجود\ة أصلا؟

5. هل يحصل انك تشعر\اين بأنك تعامل\اين بشكل غير منصف؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

6. هل يحصل انك تشعر\اين بأنك موجود\ة بوضع غير مألوف-عادي ولا تعرف\اين ماذا تفعل\اين؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

7. الأشياء التي تشغلك في حياتك اليومية:

1	2	3	4	5	6	7
تسبب المتعة والاكتفاء العميق						تسبب الألم والملل

8. ما هو مدى تردد خواطر وأفكار مشتتة في ذهنك ؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

9. هل يحصل ان تشعر مشاعر كنت توداين عدم الشعور بها؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

10. هنالك أناس كثيرون, حتى ذوي الميزات القوية, يشعرون أحيانا أنهم مثل "المسكين".

1	2	3	4	5	6	7
لم اشعر بذلك بتاتا						شعرت بذلك بفترات متقاربة

11. هل بعد حدوث بعض الأشياء والأمور ,تبين لك أنك :

1	2	3	4	5	6	7
تماديت أو قللت من أهمية الأمور						قدرت الأشياء بصورة صحيحة

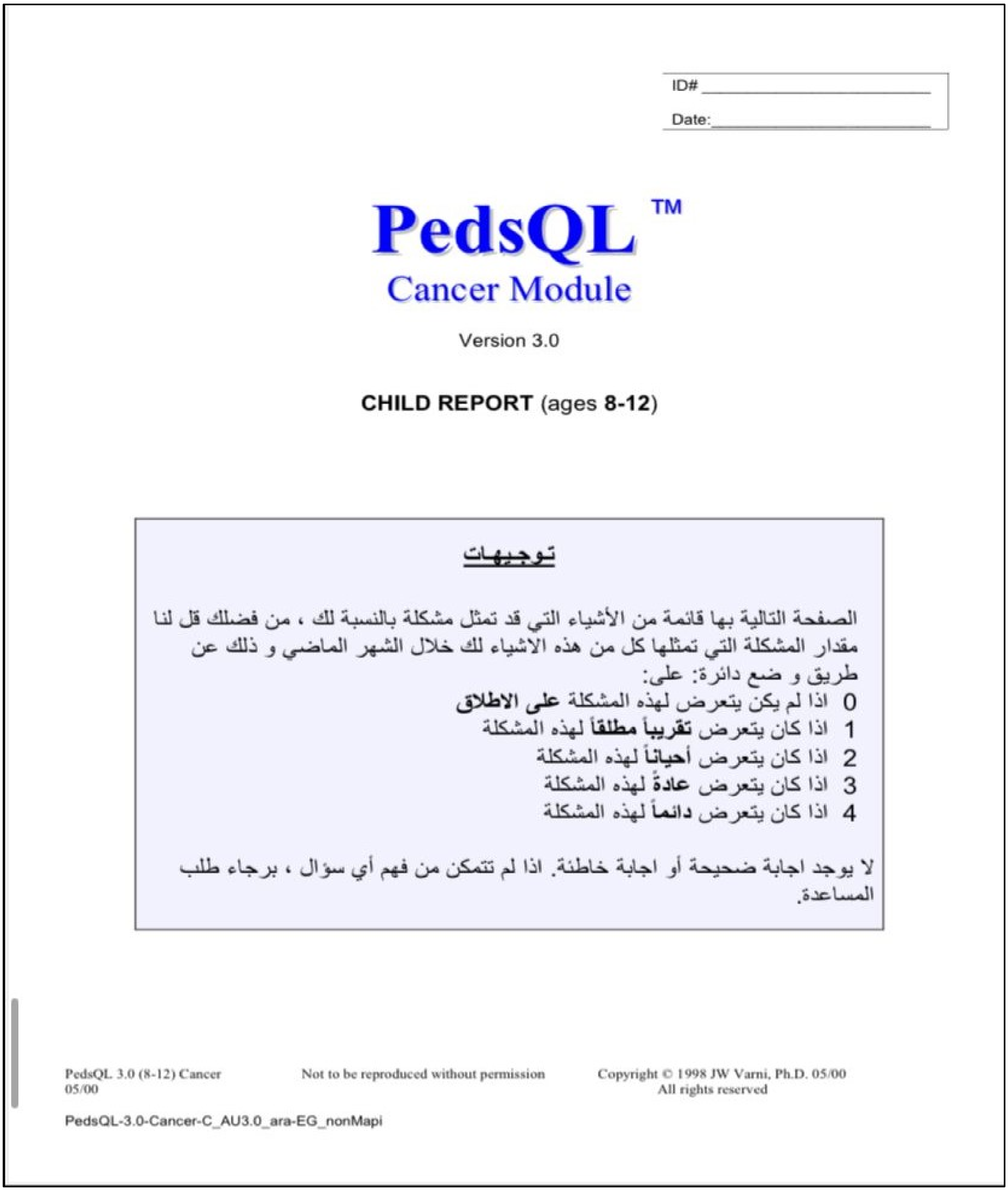
12 . هل تشعراين بعدم أهمية الأشياء التي تشاركاين بها في الحياة اليومية؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

13. هل يحصل أنه لديك مشاعر لست متأكدا اة من قدرتك في السيطرة عليها؟

1	2	3	4	5	6	7
لفترات متقاربة						لفترات متباعدة أو بتاتا

Annex V: The Arabic Version of PedsQL Cancer Module 3.0 – Child Report



ID# ________________________

Date:________________________

PedsQL ™

Cancer Module

Version 3.0

CHILD REPORT (ages **8-12**)

توجيهات

الصفحة التالية بها قائمة من الأشياء التي قد تمثل مشكلة بالنسبة لك ، من فضلك قل لنا مقدار المشكلة التي تمثلها كل من هذه الاشياء لك خلال الشهر الماضي و ذلك عن طريق و ضع دائرة: على:

0 اذا لم يكن يتعرض لهذه المشكلة **على الاطلاق**
1 اذا كان يتعرض **تقريباً مطلقاً** لهذه المشكلة
2 اذا كان يتعرض **أحياناً** لهذه المشكلة
3 اذا كان يتعرض **عادةً** لهذه المشكلة
4 اذا كان يتعرض **دائماً** لهذه المشكلة

لا يوجد اجابة ضحيحة أو اجابة خاطئة. اذا لم تتمكن من فهم أي سؤال ، برجاء طلب المساعدة.

PedsQL 3.0 (8-12) Cancer
05/00

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PedsQL-3.0-Cancer-C_AU3.0_ara-EG_nonMapi

PedsQL 2

خلال الشهر الماضي ، كم شكلت الأمور التالية مشكلة بالنسبة لك:

الألم و الوجع (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1.أشعر بأوجاع أو آلام بالمفاصل و/أو العضلات	0	1	2	3	4
2. كثيراً ما أشعر بالوجع	0	1	2	3	4

الغثيان (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بغثيان أثناء العلاج الطبي	0	1	2	3	4
2. مذاق الطعام غير محبب لي	0	1	2	3	4
3. أشعر بغثيان عند التفكير في العلاج الطبي	0	1	2	3	4
4. أشعور بغثيان لدرجة تمنعني عن الطعام	0	1	2	3	4
5. بعض الأطعمة و الروائح تشعرني بالغثيان	0	1	2	3	4

التوتر من الإجراءات (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. الإبر (مثل الحقن و فحوصات الدم و المحاليل) تسبب لي الألم	0	1	2	3	4
2. أشعر بالتوتر عند سحب الدم	0	1	2	3	4
3. أشعر بالتوتر من التعرض للإبر (مثل الحقن و فحوصات الدم و المحاليل)	0	1	2	3	4

التوتر من العلاج (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بالتوتر عند انتظار الطبيب	0	1	2	3	4
2. أشعر بالتوتر عند الذهاب للطبيب	0	1	2	3	4
3. أشعر بالتوتر عند الذهاب للمستشفى	0	1	2	3	4

القلق (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بالقلق من الآثار الجانبية للعلاج الطبي	0	1	2	3	4
2. أشعر بالقلق حول ما اذا كان العلاج يعمل أم لا	0	1	2	3	4
3. أشعر بالقلق من عودة حدوث السرطان	0	1	2	3	4

مشاكل الإدراك (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. من الصعب عليّ معرفة مايجب عمله عند التعرض لشئ يضايقني	0	1	2	3	4
2. أجد صعوبة في حل المسائل الحسابية	0	1	2	3	4
3. أجد صعوبة في كتابة أوراق أو تقارير العمل/الدراسة	0	1	2	3	4
4. من الصعب عليّ الانتباه للأشياء	0	1	2	3	4
5. من الصعب عليّ تذكر ما أقرأه	0	1	2	3	4

PedsQL 3.0 (18-25) Cancer
05/00

PedsQL-3.0-Cancer-C_AU3.0_ara-EG_nonMapi

PedsQL 3

خلال الشهر الماضي ، كم شكلت الأمور التالية مشكلة بالنسبة لك:

الوعي بالمظهر (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بأنني لست حسن/حسنة المظهر	0	1	2	3	4
2. لا أحب أن يرى الأخرون ندباتي	0	1	2	3	4
3. أشعر بالحرج من أن يرى الآخرون جسمي	0	1	2	3	4

التواصل (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أجد صعوبة في اخبار الأطباء أو التمريض بما أشعر به	0	1	2	3	4
2. أجد صعوبة في توجيه أسئلة للأطباء أو التمريض	0	1	2	3	4
3. أجد صعوبة في شرح مرضي للأخرين	0	1	2	3	4

PedsQL 3.0 (18-25) Cancer
05/00

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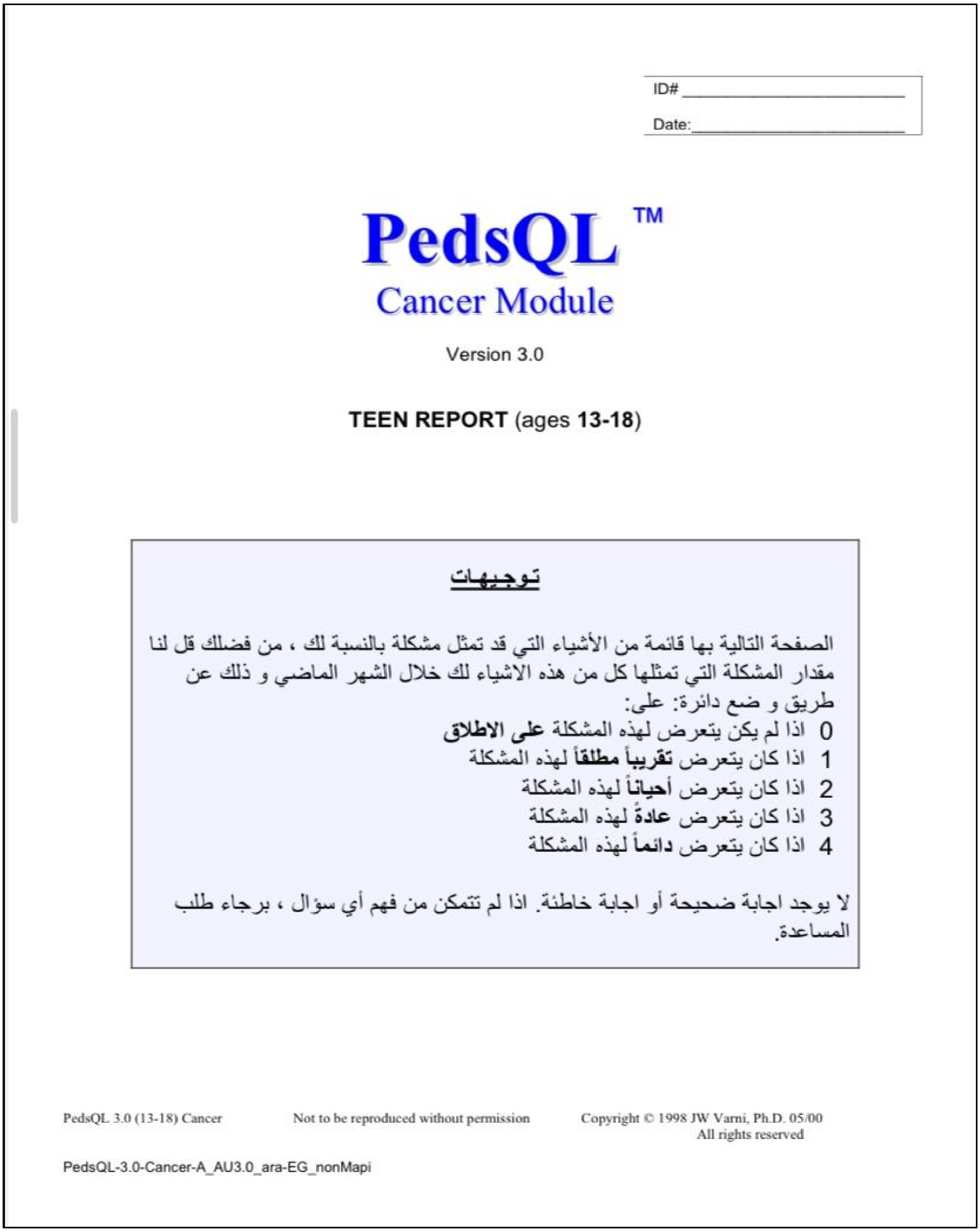
Annex VI: PedsQL™ Cancer Module 3.0 Arabic Version – Teen Report



ID# ______________________

Date: ______________________

PedsQL ™
Cancer Module

Version 3.0

TEEN REPORT (ages **13-18**)

توجيهات

الصفحة التالية بها قائمة من الأشياء التي قد تمثل مشكلة بالنسبة لك ، من فضلك قل لنا مقدار المشكلة التي تمثلها كل من هذه الاشياء لك خلال الشهر الماضي و ذلك عن طريق و ضع دائرة: على:

0 اذا لم يكن يتعرض لهذه المشكلة **على الاطلاق**
1 اذا كان يتعرض **تقريباً مطلقاً** لهذه المشكلة
2 اذا كان يتعرض **أحياناً** لهذه المشكلة
3 اذا كان يتعرض **عادةً** لهذه المشكلة
4 اذا كان يتعرض **دائماً** لهذه المشكلة

لا يوجد اجابة ضحيحة أو اجابة خاطئة. اذا لم تتمكن من فهم أي سؤال ، برجاء طلب المساعدة.

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خلال الشهر الماضي ، كم شكلت الأمور التالية مشكلة بالنسبة لك:

الألم و الوجع (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1.أشعر بأوجاع أو آلام بالمفاصل و/أو العضلات	0	1	2	3	4
2. كثيراً ما أشعر بالوجع	0	1	2	3	4

الغثيان (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بغثيان أثناء العلاج الطبي	0	1	2	3	4
2. مذاق الطعام غير محبب لي	0	1	2	3	4
3. أشعر بغثيان عند التفكير في العلاج الطبي	0	1	2	3	4
4. أشعور بغثيان لدرجة تمنعني عن الطعام	0	1	2	3	4
5. بعض الأطعمة و الروائح تشعرني بالغثيان	0	1	2	3	4

التوتر من الإجراءات (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. الإبر (مثل الحقن و فحوصات الدم و المحاليل) تسبب لي الألم	0	1	2	3	4
2. أشعر بالتوتر عند سحب الدم	0	1	2	3	4
3. أشعر بالتوتر من التعرض للإبر (مثل الحقن و فحوصات الدم و المحاليل)	0	1	2	3	4

التوتر من العلاج (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بالتوتر عند انتظار الطبيب	0	1	2	3	4
2. أشعر بالتوتر عند الذهاب للطبيب	0	1	2	3	4
3. أشعر بالتوتر عند الذهاب للمستشفى	0	1	2	3	4

القلق (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بالقلق من الآثار الجانبية للعلاج الطبي	0	1	2	3	4
2. أشعر بالقلق حول ما اذا كان العلاج يعمل أم لا	0	1	2	3	4
3. أشعر بالقلق من عودة حدوث السرطان	0	1	2	3	4

مشاكل الإدراك (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. من الصعب عليّ معرفة مايجب عمله عند التعرض لشئ يضايقني	0	1	2	3	4
2. أجد صعوبة في حل المسائل الحسابية	0	1	2	3	4
3. أجد صعوبة في كتابة أوراق أو تقارير العمل/الدراسة	0	1	2	3	4
4. من الصعب عليّ الانتباه للأشياء	0	1	2	3	4

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05/00

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خلال الشهر الماضي ، كم شكلت الأمور التالية مشكلة بالنسبة لك:

الوعي بالمظهر (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أشعر بأنني لست حسن/حسنة المظهر	0	1	2	3	4
2. لا أحب أن يرى الآخرون ندباتي	0	1	2	3	4
3. أشعر بالحرج من أن يرى الآخرون جسمي	0	1	2	3	4

التواصل (مشكلات تتعلق بـ.....)	مطلقاً	تقريباً مطلقاً	أحياناً	عادةً	دائماً
1. أجد صعوبة في اخبار الأطباء أو التمريض بما أشعر به	0	1	2	3	4
2. أجد صعوبة في توجيه أسئلة للأطباء أو التمريض	0	1	2	3	4
3. أجد صعوبة في شرح مرضي للآخرين	0	1	2	3	4

Annex VII: Mapi Research Trust Approval Letter to use the Arabic Version of PedsQL™ Cancer Module 3.0

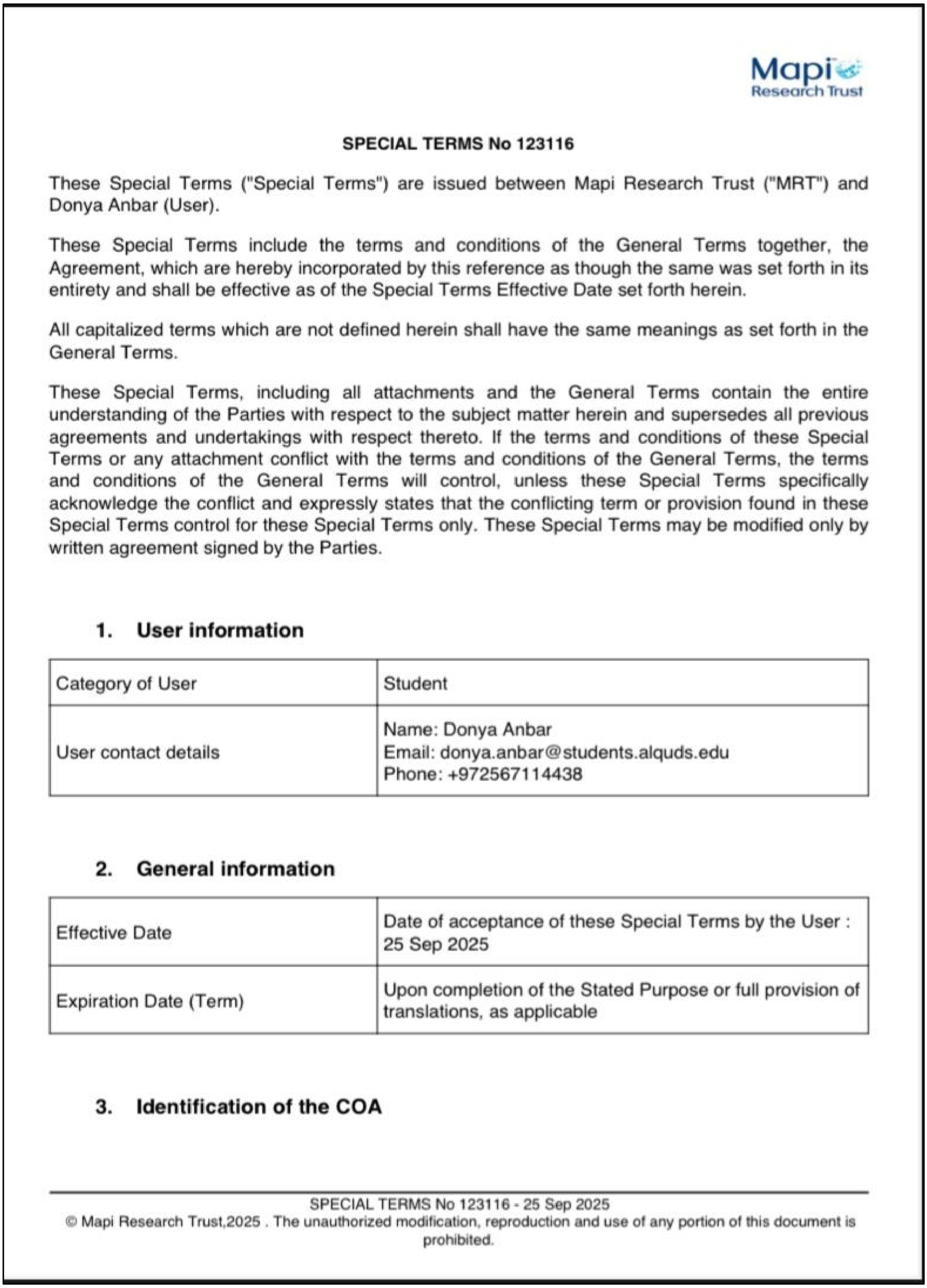
Mapi™
Research Trust

These translations were developed by local academic teams with Mapi's permission. You are authorized to use them within an academic research program, for individual clinical use or university degree. Although the local teams respected the author's requirements, these versions are not validated for commercial use.

It should be noted that Mapi was not involved in the linguistic validation process of these language versions. For this reason, Mapi will not supply any translation certificates or supporting documentation.

For any information or questions, please submit a request in the ePROVIDE system.

Thank you !



Mapi
Research Trust

SPECIAL TERMS No 123116

These Special Terms ("Special Terms") are issued between Mapi Research Trust ("MRT") and Donya Anbar (User).

These Special Terms include the terms and conditions of the General Terms together, the Agreement, which are hereby incorporated by this reference as though the same was set forth in its entirety and shall be effective as of the Special Terms Effective Date set forth herein.

All capitalized terms which are not defined herein shall have the same meanings as set forth in the General Terms.

These Special Terms, including all attachments and the General Terms contain the entire understanding of the Parties with respect to the subject matter herein and supersedes all previous agreements and undertakings with respect thereto. If the terms and conditions of these Special Terms or any attachment conflict with the terms and conditions of the General Terms, the terms and conditions of the General Terms will control, unless these Special Terms specifically acknowledge the conflict and expressly states that the conflicting term or provision found in these Special Terms control for these Special Terms only. These Special Terms may be modified only by written agreement signed by the Parties.

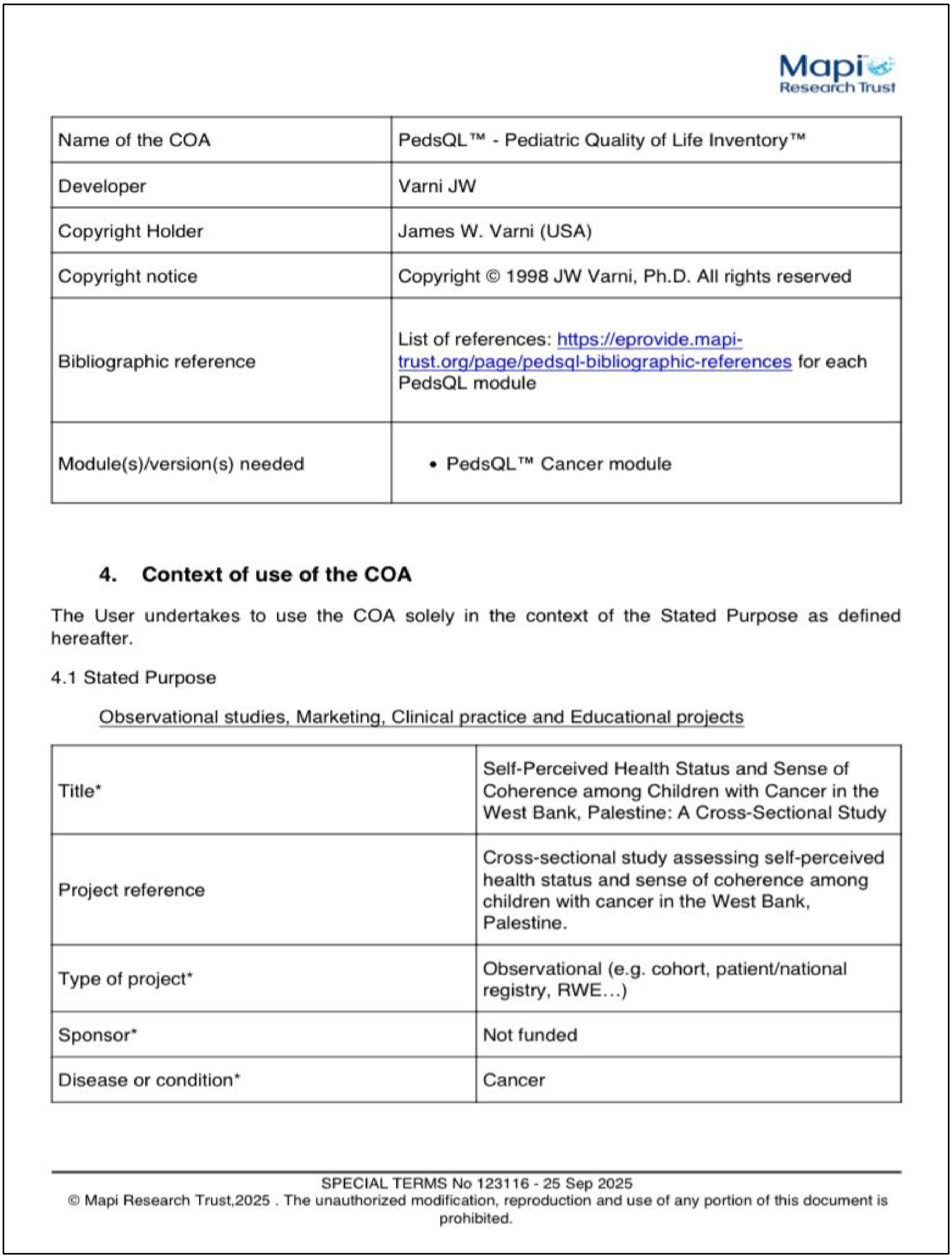
1. User information

Category of User	Student
User contact details	Name: Donya Anbar Email: donya.anbar@students.alquds.edu Phone: +972567114438

2. General information

Effective Date	Date of acceptance of these Special Terms by the User : 25 Sep 2025
Expiration Date (Term)	Upon completion of the Stated Purpose or full provision of translations, as applicable

3. Identification of the COA



Name of the COA	PedsQL™ - Pediatric Quality of Life Inventory™
Developer	Varni JW
Copyright Holder	James W. Varni (USA)
Copyright notice	Copyright © 1998 JW Varni, Ph.D. All rights reserved
Bibliographic reference	List of references: https://eprovide.mapi-trust.org/page/pedsql-bibliographic-references for each PedsQL module
Module(s)/version(s) needed	• PedsQL™ Cancer module

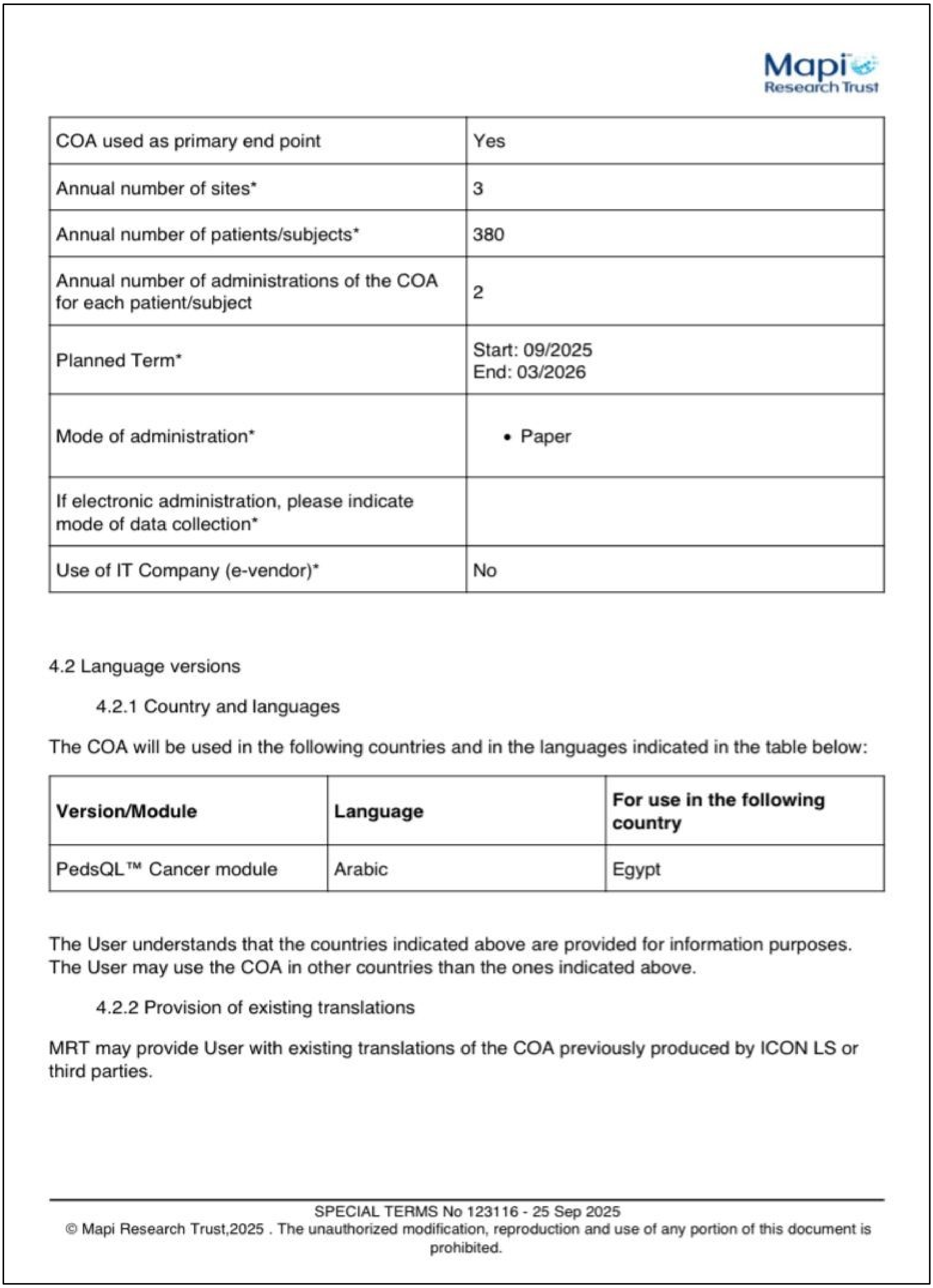
4. Context of use of the COA

The User undertakes to use the COA solely in the context of the Stated Purpose as defined hereafter.

4.1 Stated Purpose

Observational studies, Marketing, Clinical practice and Educational projects

Title*	Self-Perceived Health Status and Sense of Coherence among Children with Cancer in the West Bank, Palestine: A Cross-Sectional Study
Project reference	Cross-sectional study assessing self-perceived health status and sense of coherence among children with cancer in the West Bank, Palestine.
Type of project*	Observational (e.g. cohort, patient/national registry, RWE…)
Sponsor*	Not funded
Disease or condition*	Cancer



COA used as primary end point	Yes
Annual number of sites*	3
Annual number of patients/subjects*	380
Annual number of administrations of the COA for each patient/subject	2
Planned Term*	Start: 09/2025 End: 03/2026
Mode of administration*	• Paper
If electronic administration, please indicate mode of data collection*	
Use of IT Company (e-vendor)*	No

4.2 Language versions

4.2.1 Country and languages

The COA will be used in the following countries and in the languages indicated in the table below:

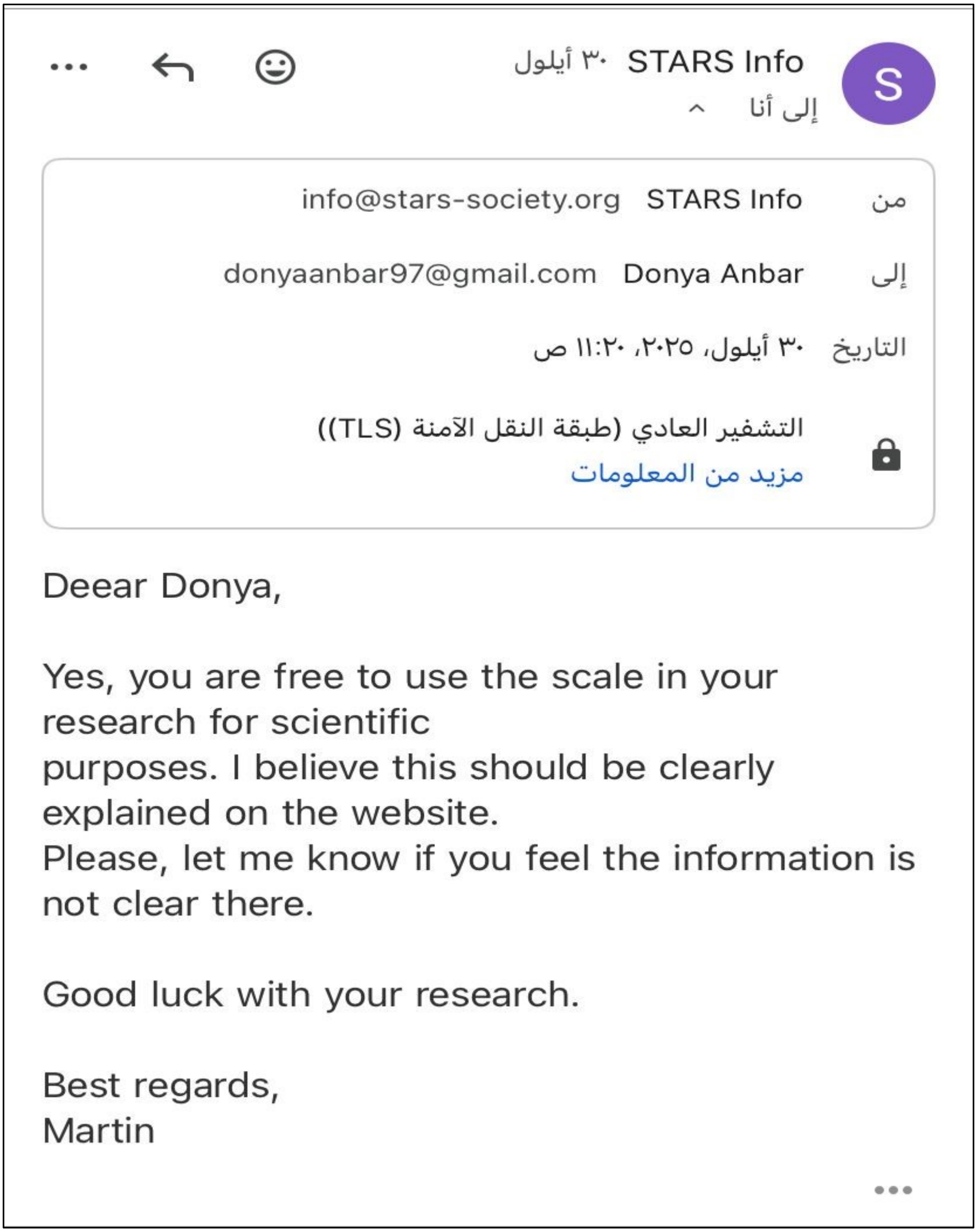
Version/Module	**Language**	**For use in the following country**
PedsQL™ Cancer module	Arabic	Egypt

The User understands that the countries indicated above are provided for information purposes. The User may use the COA in other countries than the ones indicated above.

4.2.2 Provision of existing translations

MRT may provide User with existing translations of the COA previously produced by ICON LS or third parties.

Annex VIII: STARS Society to use SOC-13 - Arabic Version



STARS Info ٣٠ أيلول

إلى أنا

من STARS Info info@stars-society.org

إلى Donya Anbar donyaanbar97@gmail.com

التاريخ ٣٠ أيلول، ٢٠٢٥، ١١:٢٠ ص

التشفير العادي (طبقة النقل الآمنة (TLS))

مزيد من المعلومات

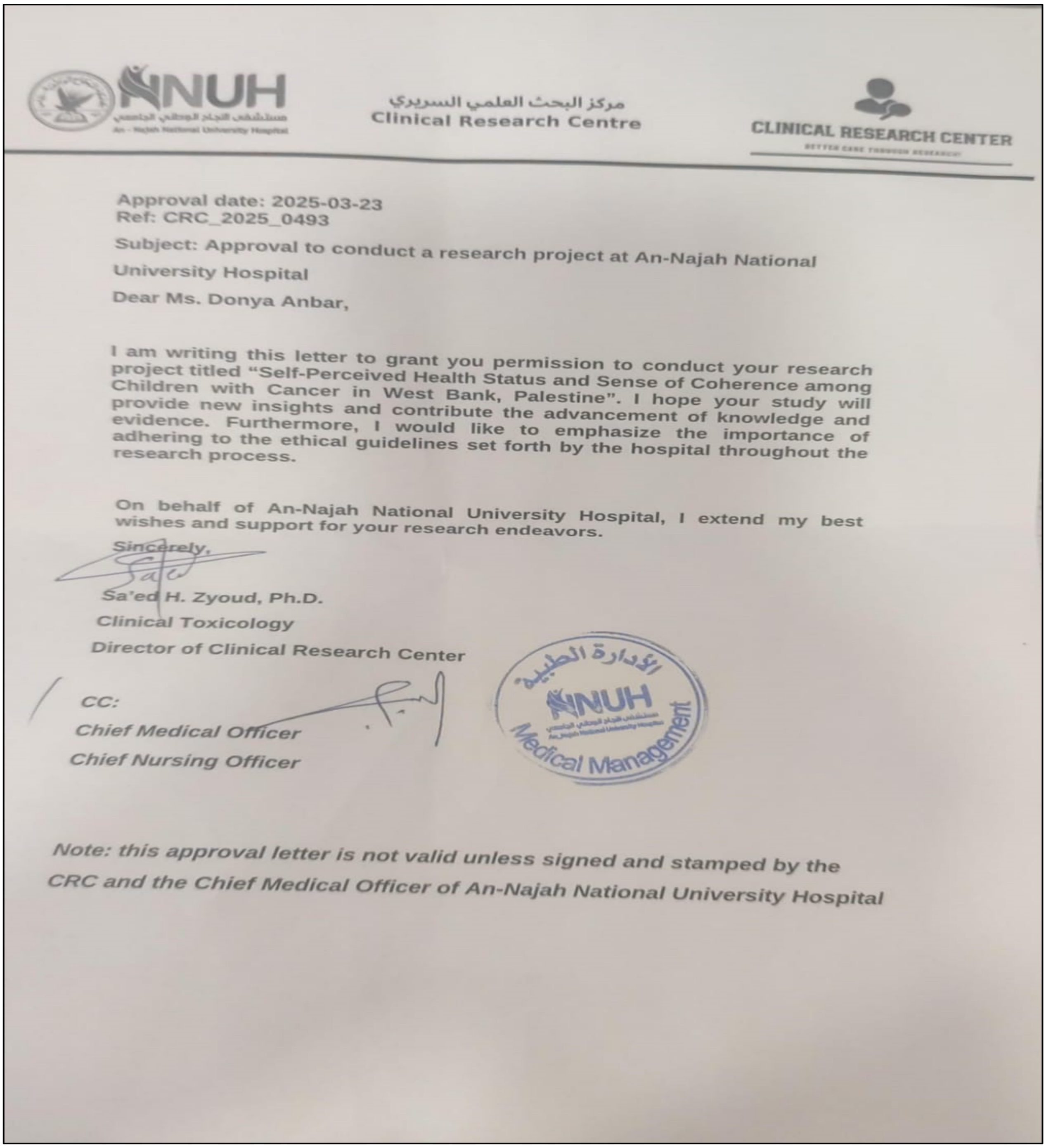
Deear Donya,

Yes, you are free to use the scale in your research for scientific purposes. I believe this should be clearly explained on the website.
Please, let me know if you feel the information is not clear there.

Good luck with your research.

Best regards,
Martin

Annex IX: NNUH Approval Letter



NNUH
مستشفى النجاح الوطني الجامعي
An - Najah National University Hospital

مركز البحث العلمي السريري
Clinical Research Centre

CLINICAL RESEARCH CENTER
BETTER CARE THROUGH RESEARCH!

Approval date: 2025-03-23
Ref: CRC_2025_0493

Subject: Approval to conduct a research project at An-Najah National University Hospital

Dear Ms. Donya Anbar,

I am writing this letter to grant you permission to conduct your research project titled "Self-Perceived Health Status and Sense of Coherence among Children with Cancer in West Bank, Palestine". I hope your study will provide new insights and contribute the advancement of knowledge and evidence. Furthermore, I would like to emphasize the importance of adhering to the ethical guidelines set forth by the hospital throughout the research process.

On behalf of An-Najah National University Hospital, I extend my best wishes and support for your research endeavors.

Sincerely,

Sa'ed H. Zyoud, Ph.D.
Clinical Toxicology
Director of Clinical Research Center

CC:
Chief Medical Officer
Chief Nursing Officer

الإدارة الطبية
NNUH
Medical Management

Note: this approval letter is not valid unless signed and stamped by the CRC and the Chief Medical Officer of An-Najah National University Hospital

Annex X: NNUH Permission Letter

Al- Quds University
Faculty of Health professions
Nursing Department
Jerusalem-Abu Dies

بسم الله الرحمن الرحيم

جامعة القدس
كلية المهن الصحية
دائرة التمريض
القدس-أبوديس

التاريخ 2025/3/19

حضرة الدكتور محمد جابر المحترم / المدير الطبي /مستشفى جامعة النجاح
وحضرة الدكتور سائد زيود / مدير البحث السريري / مستشفى جامعة النجاح

الموضوع: تسهيل مهمة طالبة ماجستير في جمع بيانات لغرض البحث العلمي

تحية طيبة وبعد،

يرجى من حضرتكم تسهيل مهمة الطالبة دنيا عنبر ورقمها الجامعي 22312133, وهي طالبة ماجستير تمريض الاطفال \ كلية المهن الصحية \ جامعة القدس في جمع بيانات المعلومات اللازمة عن طريق توزيع استبيان على الأطفال المصابين بالسرطان في مستشفى جامعة النجاح وذلك لغرض اجراء دراسة بحثية لرسالة الماجستير بعنوان (**الادراك الذاتي للحالة الصحية والشعور بالتماسك عند الأطفال الذين يعانون من السرطان في الضفة الغربية، فلسطين)**

بإشراف د. كوثر العيسة وذلك في الفترة ما بين 1/ 4/ 2025- 1/ 12/ 2025.

وتفضلوا بقبول فائق الاحترام والتقدير،

منسقة برنامج الماجستير/ دائرة التمريض

Salam el Khatib

د. سلام الخطيب
مرفق: الاستبيان ونموذج الموافقة المستنيرة

Tel : + 02 2799753
Fax : + 02 2791243

تلفون : 2799753
فاكس : 2791243

Annex XI: Al-Istishari Hospital Permission Letter

Salam Alkhatib, PhD
Associate professor of mental health nursing

Faculty of Health Profession

Coordinator of Master studies

Nursing Department

Al-Quds University

---------- Forwarded message ---------
From: **Othman Awad** <othman.awad@iah.ps>
Date: Wed, Oct 1, 2025, 08:31
Subject: RE: Fwd:
To: Salam Khatib <salam.khatib@staff.alquds.edu
>, Sanaa Alshrafi <sanaa.alshrafi@iah.ps>

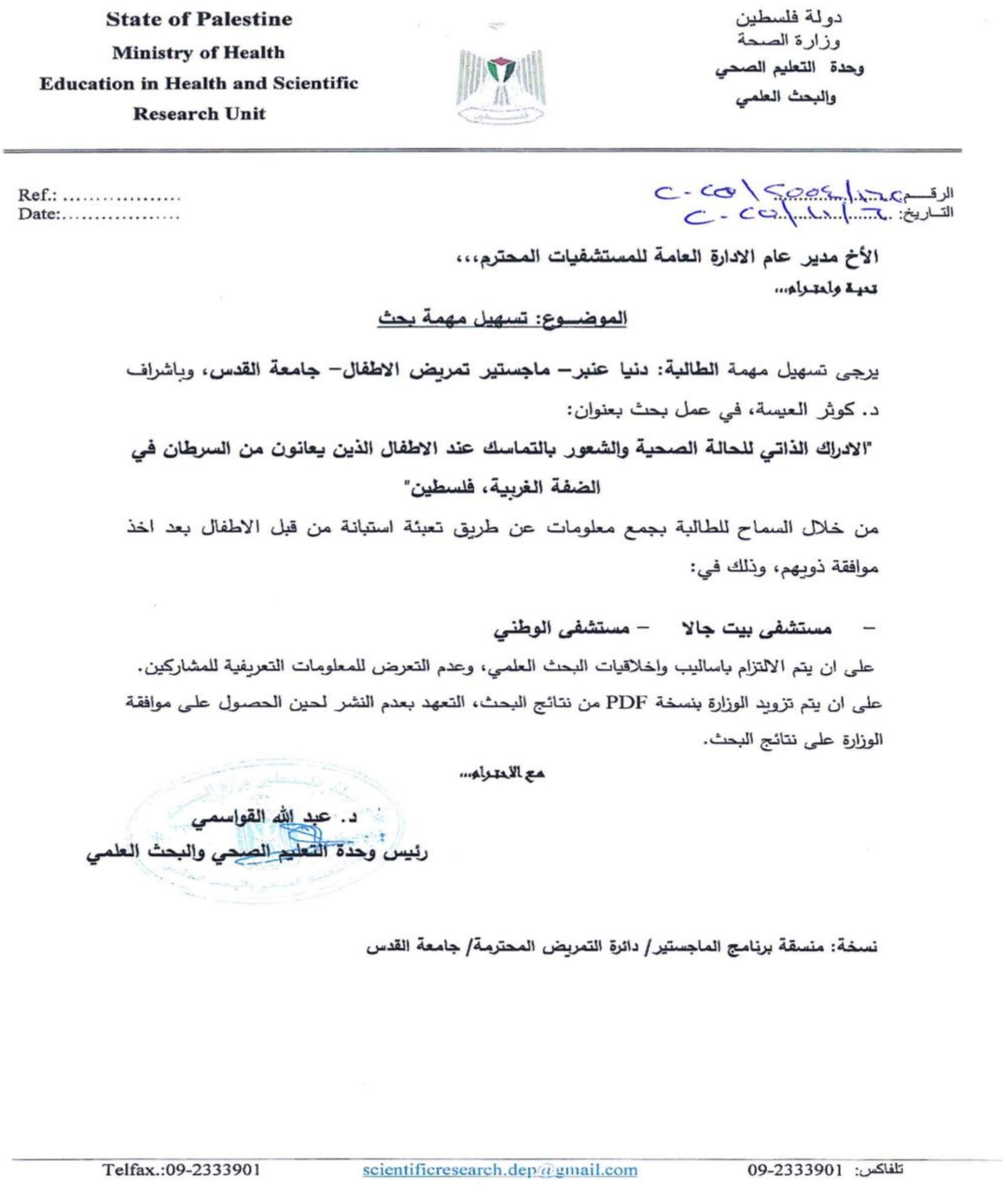
حضرة الدكتورة سلام المحترمة

تحية طيبة وبعد:

لا مانع من عمل البحث

جزيل الشكر

Annex XII: Ministry of Health Approval Letter



State of Palestine
Ministry of Health
Education in Health and Scientific
Research Unit

دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي
والبحث العلمي

Ref.: ………………
Date:………………

الرقـــم: ح ص ح/١/٥٥٥٤ \ ٢٠٢٠
التـاريخ: ٢/١١/٢٠٢٠

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،

تحية واحترام...

<u>الموضـــوع: تسهيل مهمة بحث</u>

يرجى تسهيل مهمة **الطالبة: دنيا عنبر– ماجستير تمريض الاطفال– جامعة القدس**، وباشراف د. كوثر العيسة، في عمل بحث بعنوان:

"الادراك الذاتي للحالة الصحية والشعور بالتماسك عند الاطفال الذين يعانون من السرطان في الضفة الغربية، فلسطين"

من خلال السماح للطالبة بجمع معلومات عن طريق تعبئة استبانة من قبل الاطفال بعد اخذ موافقة ذويهم، وذلك في:

- **مستشفى بيت جالا – مستشفى الوطني**

على ان يتم الالتزام باساليب واخلاقيات البحث العلمي، وعدم التعرض للمعلومات التعريفية للمشاركين.

على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة الوزارة على نتائج البحث.

مع الاحترام...

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي

نسخة: منسقة برنامج الماجستير/ دائرة التمريض المحترمة/ جامعة القدس

الحالة الصحية المُدركة ذاتيًا والشعور بالتماسك لدى الأطفال المصابين بالسرطان في الضفة الغربية، فلسطين

إعداد: دنيا محمد صبحي عنبر
إشراف: د. كوثر العيسة

الملخص

مقدمة: يُعدّ كلٌّ من الحالة الصحية المُدرَكة ذاتيًا (SPHS) والشعور بالتماسك (SOC) مفهومين هامين لفهم التجربة الصحية للأطفال المصابين بالسرطان. تهدف هذه الدراسة إلى تحديد مستوى كلٍّ من الحالة الصحية المُدرَكة ذاتيًا والشعور بالتماسك، وتحديد العلاقة بين الخصائص الطبية والاجتماعية والديموغرافية وهما، وتحديد العلاقة بينهما لدى الأطفال الذين تتراوح أعمارهم بين 8 و18 عامًا والمصابين بالسرطان. تسعى هذه الدراسة إلى سدّ هذه الفجوة من خلال استكشاف العلاقة بين الشعور بالتماسك والحالة الصحية المُدرَكة ذاتيًا لدى الأطفال المصابين بالسرطان في الضفة الغربية، فلسطين. سيكشف فهم هذه المفاهيم عن آليات التكيف لدى الأطفال، وسيساعد مقدمي الرعاية الصحية على تحسين الشعور بالتماسك في الرعاية الروتينية لتعزيز الحالة الصحية المُدرَكة ذاتيًا، كما سيساعد صانعي السياسات في إنشاء برامج داعمة، وضمان تلبية الاحتياجات النفسية، بالإضافة إلى توجيه البحوث المستقبلية.

منهجية الدراسة: استُخدم تصميم وصفي مقطعي. أكمل مئتا مشارك الاستبيانات، بنسبة استجابة بلغت 54.1%. تراوحت أعمار المشاركين بين 8 و18 عامًا، وكانوا قد شُخِّصوا بالسرطان، ودخلوا أقسام أورام/أمراض دم الأطفال، أو ترددوا على العيادات الخارجية في مستشفى النجاح الجامعي الوطني/نابلس، ومستشفى الاستشاري/رام الله، ومستشفى بيت جالا/بيت لحم. من بين المشاركين، أكمل 72% من الأطفال المصابين بالسرطان الذين تتراوح أعمارهم بين 8 و18 عامًا النسخة العربية من وحدة السرطان في مقياس PedsQL 3.0، بينما أكمل 28% من الأطفال الذين تتراوح أعمارهم بين 13 و18 عامًا كلاً من النسخة العربية من وحدة السرطان في مقياس PedsQL 3.0 والنسخة العربية من مقياس SOC-13. امتدت فترة الدراسة من 15 أكتوبر 2024 إلى 16 ديسمبر 2025

نتائج الدراسة: أظهرت النتائج أن متوسط درجة مقياس جودة حياة الأطفال (PedsQL) بلغ 52.02 (بانحراف معياري 17.02)، مع انخفاض مستوى الحالة الصحية المُدركة ذاتيًا (SPHS). وسُجلت أعلى درجة في مجال التواصل (بمتوسط 67.96 ± 28.11)، بينما سُجلت أدنى درجة في مجالي القلق (بمتوسط 36.00 ± 29.02) والقلق الإجرائي (بمتوسط 36.62 ± 27.68). كما بلغ متوسط درجة الشعور بالتماسك (SOC) 55.02 (بانحراف معياري 12.27)، وكان لدى 76.8% من المشاركين مستوى منخفض من الشعور بالتماسك. أما فيما يخص مجالات الشعور بالتماسك، فقد بلغت الدرجات 19.54 ± 6.78 من 35 في مجال الفهم، و17.59 ± 3.86 من 28 في مجال القدرة على الإدارة، و17.89 ± 4.61 من 28 في مجال المعنى. بخلاف ذلك، يُظهر التحليل الإحصائي وجود علاقة ارتباطية ذات دلالة إحصائية بين الحالة الصحية المُدركة ذاتيًا (SPHS) والشعور بالتماسك (SOC) بمعامل ارتباط (r) يساوي 0.490 وقيمة احتمالية (P) أقل من 0.01. وهذا يعني أن ارتفاع مستوى

الشعور بالتماسك (SOC) يشير إلى ارتفاع الحالة الصحية المُدركة ذاتيًا (SPHS)، وبالتالي، القدرة على التكيف مع الضغوطات والتعايش مع السرطان.

الاستنتاج: قد يؤثر الوضع السياسي في فلسطين سلبًا على الشعور بالتماسك لدى الأطفال عمومًا، وعلى المصابين بالسرطان تحديدًا، نظرًا لنقص الخدمات والأدوية، وصعوبة الوصول إلى الرعاية الصحية. يساعد تتبع الحالة الصحية المُدركة ذاتيًا والشعور بالتماسك على فهم تأثير هذه المعوقات، ويدعم مقدمي الرعاية في تطوير تدخلات أكثر فعالية لتحسين جودة الرعاية والدعم المقدم لهؤلاء الأطفال. باختصار، يُعد الشعور بالتماسك مفهومًا أساسيًا يؤثر على الحالة الصحية المُدركة ذاتيًا لدى الأطفال المصابين بالسرطان. وهذا يدل على أن الجانب النفسي لدى الأطفال لا يقل أهمية عن الجانب الطبي.

الكلمات المفتاحية: الأطفال؛ الحالة الصحية المُدركة ذاتيًا؛ الشعور بالتماسك؛ جودة الحياة؛ جودة الحياة المرتبطة بالصحة؛ والسرطان.