



## Our Funded Research at a Glance

### SCS CANCER RESEARCH GRANT

# TEN-YEAR REVIEW & HIGHLIGHTS

The Singapore Cancer Society (SCS) Cancer Research Grant empowers local researchers to advance evidence-based solutions aimed at reducing the burden of cancer and improving survival outcomes in Singapore.

This report highlights projects funded from 2016 to 2025, presenting key research insights and outcomes from their recent published work across the cancer care continuum.



**\$2.78M**  
Invested in SCS Cancer  
Research Grant



**371**  
Research Applications  
Received



**32**  
Research Projects  
Funded



**11**  
Local Universities, Hospitals,  
& Institutes Funded



**20**  
Completed Research  
Projects



**12**  
Ongoing  
Research Projects



**39**  
Conference  
Presentations



**24**  
Peer-Reviewed  
Publications

# CANCER JOURNEY: Project Portfolio

This section maps projects awarded from 2016 to 2025, highlighting coverage from prevention to palliative care to strengthen knowledge sharing and guide evidence-based planning and service development.

## Prevention & Screening

## Cancer Care, Survivorship & Support

## Palliative Care

### ONGOING PROJECTS

Targeted Outreach to Improve Mammogram Uptake Among Never-Screened Women: A Behaviorally Tailored Randomized Trial (Lee, 2025)

Singapore Population's Preference for Using Novel Technologies to Enhance Cancer Screening – a Discrete Choice Experiment (Wang, 2024)

Overcoming spiritual barriers to cancer screening: An intervention to decrease cancer fatalism among Singaporeans (Kim, 2023)

Evaluating the impact of self-sampling HPV DNA test for cervical cancer screening in a real-world setting: a randomised controlled study (Wong, 2023)

### COMPLETED PROJECTS

Acceptability of Cervical Cancer Self-screening in Singapore (ACCSS) (Lim, 2021)

Automated Intelligent Kiosk to Increase Colorectal Cancer Screening in the Community (KIPFIT) (Tan, 2020)

### ONGOING PROJECTS

Nutritionally Improved Crackers for Chemotherapy-induced Nausea (Crack-Cin) (Chiah, 2025)

Pilot Study of Exercise Therapy and Cognitive Behavioural Therapy for Fatigue in Female Cancer Patients in Singapore (Tan, 2024)

The Table to Care: A Novel Psychotherapeutic Culinary Care Intervention (CCI) for Caregivers of Individuals with Cancer (Patinadan, 2024)

Remotely Supervised Exercise to Optimise Outcomes During Androgen Deprivation Therapy (RESORT) (Lee, 2023)

The impact of weekly group singing on the happiness and emotional wellbeing in children with cancer at the ARC Children's Centre, in partnership with the Voices of Singapore (Lim, 2023)

### COMPLETED PROJECTS

Personalising Digital Therapy with CURATE.AI to Address Cognitive Decline in Patients Following Radiation Therapy to the Brain (Ho, 2019)

Perspective and Supportive Care Needs of Asian Breast Cancer Patients Enrolled in a Preoperative Therapy Program – A Feasibility Study (Tan, 2019)

Assessing quality of life of patients and their caregivers on Phase I clinical trials (Chan, 2019)

The lived experience of post-mastectomy tele-rehabilitation and recovery: A pilot feasibility study (Miho, 2018)

Regional Cryotherapy in Preventing Paclitaxel Induced Peripheral Neuropathy in Patients with Early and Locally Advanced Breast Cancer: Long Term Follow up During Survivorship (Loh, 2018)

The Role of Pelvic Floor Exercise and Bladder Training in treating Urge Incontinence in Prostate Cancer Patients undergoing Radiation Therapy – A Pilot Randomised study (Chen, 2018)

The effectiveness of an interactive colorectal cancer self-management enhancement smartphone-based psychosocial intervention programme (iCanManage) on outcomes of patients with colorectal cancer and their family caregivers: A randomised controlled trial (He, 2018)

Renewing Intimacy and Sexuality (RISE): A Pilot Program to Support Marital Intimacy and Sexual Health of Female Cancer Patients in Singapore (Teo, 2017)

Economic burden of breast cancer survivors in Singapore (Chew, 2017)

The Impact of Surgical Treatment on Physical Functions and Quality of Life in Patients with Head and Neck Cancer: A Prospective Cohort Study (Tan, 2016)

Feasibility and Efficacy Study of Multidisciplinary Breast Cancer Rehabilitation during Chemotherapy (Chew, 2016)

A Study of Family Caregivers' Needs, Burden of Care and Quality of Life over the Course of a Cancer Illness (Mahendran, 2016)

### ONGOING PROJECTS

Assessment of Adolescent and Young Adult (AYA) patients' needs in palliative care (Teo, 2025)

Implementation of patient-reported outcome measures (PROMs) in routine clinical practice (Yang, 2022)

### COMPLETED PROJECTS

Measuring quality of care among patients with cancer during their end-of-life (Mihir, 2021)

Validity and Reliability of the Integrated Palliative care Outcome Scale (iPOS) (Yang, 2017)

## Health Services Research

### ONGOING PROJECTS

Measuring The True Cost of Cancer: A Longitudinal Study on Productivity Cost and Health-Related Quality of Life for Cancer Patients (Ngeow, 2022)

Dietary Beliefs and Nutrition Education Needs of Cancer Patients in Singapore (Ng, 2020)

### COMPLETED PROJECTS

The burden of health-related quality of life (HRQoL) in glioma and validation of a disease-specific HRQoL instrument for brain tumours in Singapore (Lim, 2020)

Using patients' health preferences to develop a local scoring algorithm for a cancer-specific utility instrument (Luo, 2017)

Evaluating the role of a Geriatric Oncology service: how it can impact upon the quality of life in the older adult with cancer and aid in the reduction of caregiver distress (Pang, 2016)

## Automated Intelligent Kiosk to Increase Colorectal Cancer Screening in the Community (KIPFIT)

“I am privileged to be awarded a grant by Singapore Cancer Society (SCS) to develop and pilot the FITKIT kiosk to dispense FIT kits to eligible adults for colorectal cancer (CRC) screening at any time. The kiosk development process yielded many invaluable lessons, from vendor engagement, design, modus operandi, logistics, system integration and overcoming the restrictions during the COVID-19 pandemic. The results are promising despite the tedious development journey. The CRC screening rate more than doubled and most who collected the kits completed the test. A subsequent survey of the public showed higher levels of CRC screening but its uptake remained stagnant. Such findings are pivotal to prepare for the next study to focus on modifying the health-seeking behaviour of the general population towards evidence-based cancer screening. Since the completion of the study, SingHealth Polyclinics have started to engage vendors to design an enhanced KIPFIT kiosk to scale up CRC screening in primary care, which is aligned to the national Healthier SG programme. As a family physician, my role in preventive health is to inform, motivate and nudge my patients to take up cancer screenings. I am truly grateful to SCS for the opportunity to test an innovation which potentially opens the door to an end-to-end screening programme for one of the common cancers in Singapore.”



**Dr Tan Ngiap Chuan**  
Senior Consultant,  
Director, Department of Research  
SingHealth Polyclinics

### Awareness and Uptake of Colorectal Cancer Screening after Healthier SG Launch: A Questionnaire Survey

#### FINDINGS

This study aimed to assess colorectal cancer (CRC) screening awareness and uptake among residents aged 50–85 years following the launch of the Healthier SG initiative. The cross-sectional survey of 350 participants found:

- **Screening Uptake:** Overall, 65.1% of respondents reported having undergone CRC screening.
- **Key Motivator:** Routine health checks (41.7%) and professional recommendation (25.0%) were the strongest motivators for screening.
- **Primary Barrier:** The primary reason for not screening was absence of symptoms (47.5%).

#### OUTCOMES & IMPACT

- **Uptake Increase:** The study observed a notable rise in CRC screening compared to national statistics prior to Healthier SG.
- **Identified Critical Gap:** “Absence of symptoms” remains a primary barrier to screening, suggesting the need to focus on patient education and reinforcing the value of asymptomatic screening.
- **Strategic Focus Area:** Reinforced the vital role of primary care physician recommendation as an effective motivator for screening uptake.
- **Logistical Challenges:** Innovative delivery methods, such as self-serve kiosks at community hubs or direct-to-home mailing of FIT kits, can help reduce barriers to screening.

### Increasing the Accessibility to Colorectal Cancer Screening in the Community via Faecal Immunochemical Test Kits Dispensed via Automated Kiosk

#### FINDINGS

The uptake of CRC screening in Singapore has been low. An automated kiosk (KIPFIT) dispensing Faecal Immunochemical Test (FIT) kits was developed to facilitate CRC screening. This study aimed to examine the uptake rate of CRC screening and assess user factors associated with the novel KIPFIT automated kiosk.

- **Completion Rate:** 68.9% of participants who collected kits from the kiosk returned at least one completed FIT kit.
- **Facilitating Factors:** participants who were aware of CRC screening and of Chinese ethnicity were more likely to complete the CRC screening.
- **Usability Challenge:** The System Usability Scale score of 57.7 was below the average usability threshold of 68, indicating a need for technical refinement.

#### OUTCOMES & IMPACT

- **Validating Innovative Delivery:** Demonstrated the kiosk as an effective delivery portal, achieving a high screening completion rate of 68.9% among participants.
- **Efficiency & Scalability:** Validated the potential of automated dispensing to optimise limited healthcare human resources by providing a scalable and accessible alternative to counter-based collection.
- **Technical Refinement Needed:** Identified technical and design improvements required to ensure future large-scale deployment is accessible for older and less-educated users.

#### Publication(s)

Tan FY, Koh YL, Subramanian RC, Tan NC. Awareness and uptake of colorectal cancer screening after Healthier-SG launch: A questionnaire survey. *Ann Acad Med Singap.* 2025 Oct 16;54(11), Online-First. doi: 10.47102/annalsacadmedsg. 2025210

Tan NC, Chandhini SR, Tan FY, Raj Kapoor S, Loh CLL, Koh EYL. Increasing the accessibility to colorectal cancer screening in the community via faecal immunochemical test kits dispensed via automated kiosk. *Sci Rep.* 2025 Oct 24;15(1):37203. doi: 10.1038/s41598-025-21057-8. PMID: 41136413; PMCID: PMC12552713.

#### Grant

This project was funded by SCS Cancer Research Grant 2020 (SCS-GRA-2020-00136).

## High Acceptability of HPV Self-sampling in a Singapore Primary Care Setting

“The SCS Cancer Research Grant had been instrumental in supporting our research on HPV self-sampling swabs in the polyclinics. We were able to establish a high acceptance rate amongst the general population with respect to HPV self-sampling as well as its strong correlation when compared to physician-sampling swabs. This is useful as we head towards incorporating HPV self-sampling into the national guidelines in a bid to increase cervical screening rates.”



**Dr Lim Li Min**  
Consultant,  
Dept of Obstetrics & Gynaecology,  
National University Hospital

### Q FINDINGS

This study aimed to study the acceptability of HPV self-sampling for cervical cancer in a primary care setting in Singapore, with a second aim to compare the concordance between self-sampling and nurse-sampling.

- Out of 200 participants, 88% found self-sampling easy to perform and experienced minimal discomfort.
- The concordance rate between self-sampled and nurse-sampled HPV results was 98.4%, indicating no significant difference in test accuracy.
- The majority of participants preferred self-sampling at home (56.6%) or in a health center (22.5%) over physician-sampling (8%) and were more likely to participate in future cervical cancer screening if self-sampling was available (91.5%).

### 🔗 OUTCOMES & IMPACT

- **High acceptability:** Established the high acceptability of HPV self-sampling among women in a primary care setting.
- **Confirmed Accuracy:** Demonstrated a high concordance rate between self-sampled and nurse-sampled HPV results, confirming its detection accuracy.
- **Reduced Barriers:** Provides an alternative to circumvent cultural and psychological barriers (fear, discomfort) associated with conventional screening.
- **Supported National Strategy:** The findings support the implementation of self-sampling in national guidelines which can enhance screening accessibility for under-screened women and strengthen the goal to eliminate cervical cancer.

### Publication(s)

Chan GMF, Ong LSD, Shen L, Ng SYJ, Low JHJ, Lim LM. High acceptability of HPV self-sampling in a Singapore primary care setting. *Ann Acad Med Singap.* 2025 Apr 30;54(5):319-321. doi: 10.47102/annals-acadmedsg.20252. PMID: 40471116.

### Grant

This project was funded by SCS Cancer Research Grant 2021 (SCS-GRA-2021-00174).

## CURATE.AI COR-Tx Platform as a Digital Therapy and Digital Diagnostic for Cognitive Function in Patients with Brain Tumour Postradiotherapy Treatment

“We set out with an ambitious plan to harness digital therapeutics, a new form of intervention for patients, and we could not have achieved this without the generous encouragement from SCS. Our work has been presented at the highest levels of clinical sharing including the ASCO Annual Meeting, all the way to policy-level forums. We are grateful for the privilege of working with our patient and caregiver communities to pursue unprecedented levels of translation at our institute.”



**Prof Dean Ho**  
Provost's Chair Professor Director,  
The N.I Institute for Health  
National University of Singapore

### Q FINDINGS

Cognitive decline may be exacerbated, in brain tumour patients, by prior radiotherapy. This study aimed to test the feasibility of the CURATE.AI COR-Tx platform—an AI-driven digital therapeutic combined with digital cognitive training—as a personalised intervention to improve cognitive function in brain tumor patients postradiotherapy.

- The CURATE.AI COR-Tx platform uses patient specific data to dynamically tailor cognitive training intensity, addressing limitations of one-size-fits-all approaches.
- This single-arm feasibility trial demonstrated high intervention adherence and acceptability, paving the way for larger multisite randomised controlled trials.

### 🔗 OUTCOMES & IMPACT

- **Pioneering Personalised Care:** Developed an AI-driven digital therapeutic to address cognitive decline, aligning with the strategic goal of personalised cancer care.
- **Enhanced Accessibility & Efficiency:** Enables the safe, home-based delivery and monitoring of cognitive therapy, significantly reducing the need for frequent hospital visits.
- **Scalable Innovation:** Provides a scalable and accessible model for extending supportive care beyond the traditional hospital setting.

### Publication(s)

Remus A, Tadeo X, Kai GNS, Blasiak A, Kee T, Vijayakumar S, Nguyen L, Raczowska MN, Chai QY, Aliyah F, Rusalovski Y, Teo K, Yeo TT, Wong ALA, Chia D, Asplund CL, Ho D, Vellayappan BA. CURATE.AI COR-Tx platform as a digital therapy and digital diagnostic for cognitive function in patients with brain tumour postradiotherapy treatment: protocol for a prospective mixed-methods feasibility clinical trial. *BMJ Open.* 2023 Oct 24;13(10):e077219. doi: 10.1136/bmjopen-2023-077219. PMID: 37879700; PMCID: PMC10603439.

Kwek SP, Leong QY, Lee VV, Lau NY, Vijayakumar S, Ng WY, Rai B, Raczowska MN, Asplund CL, Remus A, Ho D. Exploring the General Acceptability and User Experience of a Digital Therapeutic for Cognitive Training in a Singaporean Older Adult Population: Qualitative Study. *JMIR Form Res.* 2025 Jan 13;9:e63568. doi: 10.2196/63568. PMID: 39805580; PMCID: PMC11773276.

### Grant

This project was funded by SCS Cancer Research Grant 2019 (SCS-GRA-2019-00063).

# Study of Family Caregivers' Needs, Burden of Care and Quality of Life over the Course of a Cancer Illness

“Caregivers need to realise that the cancer journey may be long and arduous. They should learn to accept and respect their care recipient's wishes and support them in their decisions. There may be 'good days' when their loved one feels better, and they can find strength and solace in those days in preparation for the 'difficult days'. Caregivers need to recognise their own needs and take care of themselves. This includes taking breaks from their caregiving roles to re-charge, maintaining a healthy diet and exercise, and rallying support from others when required.”



**Dr Rathi Mahendran**  
Senior Consultant Psychiatrist (Ret'd)  
Yong Loo Lin School of Medicine  
National University of Singapore

## Lifestyle and Symptom Management Needs: A Network Analysis of Family Caregiver Needs of Cancer Patients

### FINDINGS

Family cancer caregivers (FCCs) play an essential role in the cancer journey but often have unmet needs. This study explored the structural relationships between FCC needs to identify the most central needs among 363 caregivers in Singapore using network analysis:

- Network analysis confirmed that “Dealing with lifestyle changes” and “Managing cancer-related symptoms” are the two most central (influential) needs for FCCs.
- Key structural relationships were found between needs regarding (1) having financial clarity on insurance and managing medical expenses, (2) managing cancer-related pain and symptoms, and (3) being satisfied with relationships and having intimate relationships.

### OUTCOMES & IMPACT

- **Identified Intervention Focus:** Provided the evidence to prioritise support interventions focusing on the two most central needs: caregiver lifestyle management and cancer-related symptom management.
- **Systemic Improvement:** Underscored the need to improve access to social and medical support to assist FCCs with role transitions and handling complex cancer-related problems.
- **Integrated Financial Support:** Highlighted the necessity of financial counseling and social support to help families navigate the complex financial burden of cancer care.

## Cancer Caregivers Unmet Needs and Emotional States across Cancer Treatment Phases

### FINDINGS

This study aimed to investigate the association between FCCs' unmet daily needs and negative emotional states (depression, anxiety, stress) across their care recipients' treatment phases. The key findings across 237 caregivers include:

- **Intermediate Phase (6-9 months):** This phase was identified as a period of high risk, where unmet personal care needs were significantly associated with overall caregiver distress and stress.
- **Chronic Phase (>9 months):** In the chronic phase, unmet personal care needs were significantly associated with overall distress, anxiety, and stress.
- **Post-Treatment Phase:** Unmet role management needs remained associated with stress.
- Higher depression was associated with greater unmet role management needs, regardless of treatment phases.

### OUTCOMES & IMPACT

- **Critical Intervention Window:** Provided evidence identifying the intermediate and chronic treatment phases as the periods of greatest risk and effect on caregiver unmet needs and emotions.
- **System Integration Focus:** Underscored the critical need to integrate routine caregiver screening of emotional states and unmet needs and support into patient care protocols throughout the entire cancer treatment journey.
- **FCC Support Needs:** Highlighted the necessity of supportive frameworks that enable FCCs to prioritise self-care and learn to identify and attend to their own needs during the caregiving journey.

### Publication(s)

Yang WFZ, Chan YH, Griva K, Kuparasundram S, Mahendran R. Lifestyle and Symptom Management Needs: A Network Analysis of Family Caregiver Needs of Cancer Patients. *Front Psychiatry*. 2021 Sep 20;12:739776. doi: 10.3389/fpsy.2021.739776. PMID: 34616323; PMCID: PMC8488172.

Yang WFZ, Lee RZY, Kuparasundram S, Tan T, Chan YH, Griva K, Mahendran R. Cancer caregivers unmet needs and emotional states across cancer treatment phases. *PLoS One*. 2021 Aug 11;16(8):e0255901. doi: 10.1371/journal.pone.0255901. PMID: 34379667; PMCID: PMC8357113.

### Grant

This project was funded by SCS Cancer Research Grant 2016.

## Perioperative Experiences and Needs of Patients Who Undergo Colorectal Cancer Surgery and Their Family Caregivers

“We appreciate the great support from SCS for this research. It allowed us to complete this complicated study with the involvement of an international multidisciplinary team. This fantastic collaboration may not have been possible without the initial support from SCS. Thus, I would like to take this chance to thank the committee for funding this meaningful project which will benefit patients with colorectal cancer and their caregivers, as well as healthcare professionals.”



**Prof He Honggu**  
Yong Loo Lin School of Medicine  
National University of Singapore

### FINDINGS

Little is known about how colorectal cancer (CRC) patients and their family caregivers cope and what unmet needs they face during the perioperative phase, which is often stressful and disruptive. This study addressed the knowledge gap:

- Both patients and caregivers experienced shock, fear, and misconceptions about CRC, compounded by inadequate preoperative information and guidance.
- Surgery led to physical limitations, dietary restrictions, and social withdrawal for patients, while caregivers faced heavy time demands, financial strain, and emotional burden.
- Participants highlighted the importance of emotional encouragement, practical assistance, clear instructions, and the need for comprehensive psychosocial support.

### OUTCOMES & IMPACT

- **Identified Gaps in Support:** Highlighted critical unmet needs for integrated emotional and informational psychosocial support among colorectal cancer (CRC) patients and their caregivers.
- **Targeted Resource Justification:** Provided evidence justifying the need for targeted resources and interventions to directly address significant caregiver burden.
- **Holistic Care Alignment:** Reinforced the strategic priority of holistic care by underscoring the necessity of embedding psychosocial support within survivorship programmes.

### Publication(s)

Wan SW, Chong CS, Jee XP, Pikkarainen M, He HG. Perioperative experiences and needs of patients who undergo colorectal cancer surgery and their family caregivers: a qualitative study. *Support Care Cancer*. 2022 Jun;30(6):5401-5410. doi: 10.1007/s00520-022-06963-1. Epub 2022 Mar 17. PMID: 35298716; PMCID: PMC8929239.

### Grant

This project was funded by SCS Cancer Research Grant 2018 (SCS-GRA-2018-00036).

## Development of a Validated Scale for Measuring Quality of End-of-Life Care in Cancer Patients

“The SCS Cancer Research Grant was instrumental in the development of the Quality of Care for Patients with Advanced Illnesses (QCPAI) scale, a reliable and culturally adaptable tool to measure end-of-life care quality. This support enabled us to address critical gaps in evaluating patient-centered outcomes, paving the way for improvements in care delivery for advanced cancer patients.”



**Dr Mihir Gandhi**  
HoD, Department of Biostatistics  
Singapore Clinical Research Institute

### FINDINGS

There is a significant lack of patient-centered experience measures for advanced illness care, often relying on caregiver reports. This study addressed this critical gap:

- The study successfully developed and validated the Quality of Care for Patients with Advanced Illness (QCPAI) scale, a 15-item scale designed to comprehensively assess care quality from the patient's perspective.
- The scale was developed through a structured 5-step process, and evaluated among 200 advanced cancer patients and their caregivers.
- Key findings indicated that the QCPAI scale exhibited robust validity and reliability, with strong correlations to overall care satisfaction, confirming its suitability for clinical use.

### OUTCOMES & IMPACT

- **Validated and Reliable Scale (QCPAI)** for systematically evaluating the quality of advanced illness care.
- **Drives Patient-Centred Care:** Supported the delivery of care by formally incorporating patient preferences and priorities.
- **Supports Clinical Assessment:** The tool provides a reliable measure for healthcare providers to assess quality of care in clinical settings and inform quality improvement efforts.

### Publication(s)

Gandhi M, Ang FJL, Neo SHS, Gonzalez JM, Cheung YB, Finkelstein EA; QCPAI Study Group. Quality of Care for Patients With Advanced Illness Scale: Development, Preference Elicitation, and Evaluation of Measurement Properties. *Value Health*. 2025 Sep;28(9):1417-1425. doi: 10.1016/j.jval.2025.05.006. Epub 2025 Jun 4. PMID: 40480457.

### Grant

This project was funded by SCS Cancer Research Grant 2021 (SCS-GRA-2021-00144).

# Validation and Implementation of Patient-reported Outcome Measures (PROMs) in Routine Clinical Practice

“I first heard about the Integrated Palliative Care Outcomes Scale (IPOS) at the Asia Pacific Hospice Conference. It struck me as a tool that was really patient-centred and focused on the main concerns and problems that someone with advanced cancer might have. The SCS research grant provided support for the translation and validation of the Integrated Palliative care Outcomes Scale (IPOS) which can potentially be used as both an assessment tool and outcome measure for patients with advanced cancer.”



**Dr Grace Yang**  
Senior Consultant  
Division of Supportive and Palliative Care  
National Cancer Centre Singapore

## Validity and Reliability of the English and Translated Chinese Versions of the Integrated Palliative Care Outcome Scale (IPOS) in Singapore

### FINDINGS

Patient-centred outcomes are key to assessing palliative care quality. This study evaluated the validity and reliability of the English and Chinese versions of the Integrated Palliative Care Outcome Scale (IPOS) among 220 advanced cancer patients in Singapore.

#### Key Findings:

- IPOS in both English and Chinese showed good structural validity, construct validity, and test-retest reliability for total scores.
- The staff version of IPOS showed poor interrater reliability with the patient-reported scores, deeming it an unreliable proxy measure.

### OUTCOMES & IMPACT

- **Validated IPOS as a reliable instrument** to measure palliative care outcomes in advanced cancer patients in Singapore.
- **Local Context Standardisation:** Successful validation in both English and Chinese facilitates consistent patient-reported data collection and quality measurement across Singapore’s diverse demographic.

### Publication(s)

Long VJE, Cheung YB, Qu D, Lim K, Lee G, Yee ACP, Guo P, Harding R, Yang GM. Validity and reliability of the English and translated Chinese versions of the Integrated Palliative care Outcome Scale (IPOS) in Singapore. *BMC Palliat Care*. 2021 Mar 9;20(1):40. doi: 10.1186/s12904-021-00737-y. PMID: 33750367; PMCID: PMC7944591.

Yang GM, Lee Y, Ke Y, Neo PSH, Cheung YB. Feasibility of Weekly Integrated Palliative Care Outcome Scale (IPOS) Within a Stepped Care Model. *J Pain Symptom Manage*. 2024 Sep;68(3):e174-e182. doi: 10.1016/j.jpainsymman.2024.06.004. Epub 2024 Jun 13. PMID: 38878909.

## Feasibility of Weekly Integrated Palliative Care Outcome Scale (IPOS) Within a Stepped Care Model

### FINDINGS

Proactive patient-reported symptom monitoring is necessary to identify concerns often missed by healthcare teams. This feasibility study assessed the administration of weekly online IPOS questionnaires within a stepped care model.

#### Key Findings:

- The mean completion rate was 58%, with higher education levels associated with higher completion rates.
- Most patients (85%) felt comfortable completing the online questionnaire, but some (14%) found it troublesome to complete weekly.

### OUTCOMES & IMPACT

- **Suboptimal completion** of patient reported IPOS questionnaires.
- **Identified Implementation Barriers:** Highlighted the need for further research to overcome key barriers and improve the uptake of PROMs in real-world clinical settings.

## Optimising Patient Engagement with Patient-Reported Outcome Measures Across the Cancer Continuum: A Qualitative Study

### FINDINGS

Routine implementation of Patient-Reported Outcome Measures (PROMs) remains challenging, despite their value to patient-centred care. This qualitative study explored patients’ experiences with PROM integration within a supportive care programme.

#### Key Findings:

- Digital literacy and cognitive burden were identified as the primary barriers to completion, while multilingual formats aided access.
- Patients found PROMs most useful during active treatment. However, lack of time, reminders, and frequent completion led to reduced sustained engagement.
- Participants viewed the PROM as meaningful and validating but noted that presentation formats were critical to perceived simplicity and ease of use.

### OUTCOMES & IMPACT

- **Model for Effective Implementation:** Confirmed that effective PROM implementation requires balancing simplicity, accessibility, and clinical relevance to ensure clinical responsiveness and improved patient outcomes.
- **Identified Key Barriers:** Highlighted how sustained engagement is threatened by response fatigue, cognitive burden, and a lack of reminders, even when patients find the tool meaningful.

### Grant

This project was funded by SCS Cancer Research Grant 2017 and 2022 (SCS-GRA-2022-00193).

Low ESQY, Tan SM, Yang GM, Ke Y. Optimizing Patient Engagement with Patient-Reported Outcome Measures Across the Cancer Continuum: A Qualitative Study. *Palliat Med Rep*. 2025 Jun 5;6(1):333-341. doi: 10.1089/pmr.2025.0029. PMID: 40919548; PMCID: PMC12410332.

## Health-related Quality of Life in Singapore: Population Norms for the EQ-5D-5L and EORTC QLQ-C30

“ I am grateful to the Singapore Cancer Society for providing my team and I with the seed funding necessary to initiate our research to validate internationally designed quality-of-life (QOL) questionnaires for local use in brain tumours. This allowed us to show that measuring QOL in brain tumours in Singapore is meaningful and important, and allowed us to develop a research team that has gone on to win further grant funding and aims to be a world-class neurosurgery lab.”



**Dr Mervyn Lim**  
Senior Resident  
Division of Neurosurgery  
National University Hospital

### FINDINGS

Comparison of patient health-related quality of life (HRQOL) scores to a reference group is needed to quantify the HRQOL impact of disease or treatment. This study aimed to establish population norms for the two key HRQOL tools—the EQ-5D-5L and the cancer-specific EORTC QLQ-C30—based on age, sex, and ethnicity among the general adult Singaporean population.

#### Key Findings:

- Normative EQ-5D-5L scores (overall quality of life) decreased with increasing age (lowest in the ≥65 years group) and were lower in females and non-Chinese individuals.
- Normative EORTC QLQ-C30 scores (cancer-specific) were higher in middle-aged individuals than in young and older individuals.

### OUTCOMES & IMPACT

- **Foundation for Future Studies:** Provided essential regression-based population norms that future studies involving patient populations in Singapore using EQ-5D-5L or EORTC QLQ-C30 can use to accurately interpret HRQOL data.
- **Informed Public Health Policy:** Facilitated population health monitoring by informing the priorities of public health programmes and evaluating the effectiveness of disease management policies.

### Publication(s)

Tan J, Lim MJ, Kanesvaran R, Norman R, Chay WY, Harunal Rashid MFB, Gandhi M, King M, Luo N. Health-related quality of life in Singapore: Population norms for the EQ-5D-5L and EORTC QLQ-C30. *Ann Acad Med Singap.* 2025 Mar 27;54(3):147-159. doi:10.47102/annalsacadmedsg.2024283. PMID: 40178421.

### Grant

This project was funded by SCS Cancer Research Grant 2020 (SCS-GRA-2020-00123).

## Valuation of the EORTC Quality of Life Utility Core 10 Dimensions (QLU-C10D) in a Multi-ethnic Asian Setting: How Does Having Cancer Matter?

“ I am grateful to Singapore Cancer Society for funding this methodological study which may help improve cancer patients’ access to cost-effective cancer treatment. By funding this study, Singapore Cancer Society also contributed to the advancement of patient-centred and value-based care in Singapore.”



**A/Prof Luo Nan**  
Saw Swee Hock School of Public Health  
National University of Singapore

### FINDINGS

This study aimed to develop and compare utility value sets for different cancer health states, based on the EORTC QLU-C10D, using the preferences of Singapore’s general public and local cancer patients for use in local health policy. The study surveyed 600 members of the general public and 626 cancer patients.

#### Key Findings:

- Physical functioning and pain had the most impact on utility for both cancer patients and general public groups.
- Cancer patients showed a lower value for mild-to-moderate problems but a higher value for severe health states, compared with the general public.

### OUTCOMES & IMPACT

- **Localised Health Economic Value:** Successfully established the first Singapore-specific utility value sets for the EORTC QLU-C10D, necessary for calculating the cost-effectiveness of local treatments and healthcare services.
- **Patient-Centred Policy:** Confirmed that cancer patients’ perspective of health value is different from the general public’s, underscoring the need to use patient data for healthcare policy and resource decisions.

### Publication(s)

Gandhi M, Kanesvaran R, Rashid MFBH, et al. Valuation of the EORTC Quality of Life Utility Core 10 Dimensions (QLU-C10D) in a Multi-ethnic Asian Setting: How Does Having Cancer Matter?. *Pharmacoeconomics.* 2024;42(12):1413-1425. doi:10.1007/s40273-024-01432-5

### Grant

This project was funded by SCS Cancer Research Grant 2017.

# Singapore Cancer Society extends our gratitude to our trusted host institutions, whose support has made these important works possible:



## SCS Cancer Research Grant

Since 1973, SCS has been supporting local cancer research projects across a wide spectrum of subjects, with the objectives of improving the quality of life, quality of care, and quality of treatment for cancer patients. SCS would also like to underscore the importance of cancer prevention and screening, as well as the psychosocial aspects of cancer on patients and their caregivers.

### Research Areas

SCS invites the research community to submit proposals addressing the following areas while considering the proposals' relevance to SCS services and programmes in terms of cancer prevention and screening, psychosocial support, survivorship support, cancer rehabilitation as well as palliative care.



Cancer Prevention & Screening



Cancer Care, Survivorship & Support



Health Services Research



Palliative Care



## More About Us



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