

Unmet Needs in Geriatric Oncology

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Abstract



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India's population is aging, with the number of people aged 60 and over projected to reach 340 million by 2050. This is expected to lead to an increase in the number of older adults with cancer. Geriatric oncology is a rapidly growing field in India that is facing several challenges. Some of these include inadequate access to cancer screening and early detection programs in elderly, leading to late diagnoses and poor outcomes, lack of specialized geriatric oncology services, cancer-specific treatment guidelines and protocols in elderly, limited availability of treatment options due to accessibility, finances and other logistic issues, lack of trained healthcare professionals with expertise in geriatric oncology, lack of awareness, and access to early integrated palliative care services. There are several challenges faced by elderly in this journey like financial dependency, social isolation, difficulty in transportation to healthcare for treatments, and psychosocial aspects attributed to cancer. Awareness about availability of resources, patient assistance programs to reduce financial burdens, education campaigns, use of telemedicine and telehealth services to bypass transportation issues in remote and underserved areas, and integration of geriatric oncology into mainstream oncology services might be some solutions. Additionally, there is a need for more research on the unique characteristics and needs of older cancer patients in India, as well as the development of culturally appropriate interventions to address these needs. Development of India-specific geriatric assessment scales encompassing medical, psychosocial, and functional problems in elderly identifies areas of vulnerability. A multidisciplinary team-based decision-making is required at various levels. There is a need for increased investment in geriatric oncology research, training, and integrated palliative care services in India. Geriatric oncology is slowly being recognized as a separate subspecialty and more geriatric oncology centers and clinics are being set up in major cities in India that should be the way forward.

Keywords

- ▶ elderly
- ▶ frailty
- ▶ geriatric oncology
- ▶ assessment tools

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Introduction

According to the National Program of Health Care of the Elderly in India, older adults are defined as those who are 60 years and above. They can be divided into three categories: young old (60–69 years), middle old (70–79 years), and old old (>80 years). Life expectancy and tolerance to stress vary greatly among individuals of the same chronological age based on time alone. Therefore, physiological age is a better indicator of the cumulative effect of medical and psychosocial stressors on the aging process, which can be quantified via functional measures.¹ Physical frailty can be defined as a biological syndrome of decreased reserve and resistance to stressors resulting from cumulative declines across multiple physiological systems, causing vulnerability to adverse outcomes.²

Aging is associated with changes in dynamic biological, physiological, environmental, psychological, behavioral, and social processes, resulting in increased susceptibility to and frequency of disease, frailty, or disability. Some of the physiological changes include a decline in memory and attention span, respiratory reserve, cardiac output, conduction abnormalities, digestive juice secretion and absorption, sarcopenia, bone mineral density, glomerular filtration rate, and innate and adaptive immunity. No two older adults are the same; multiple changes in aging account for this heterogeneity. In association with multiple comorbid conditions and health deficits accumulated through the lifespan, they predispose an individual to malignancies.

Problem Statement

1. **Cancer burden:** Estimates from the Global Cancer Observatory (GLOBOCAN) suggest that the cancer incidence and mortality worldwide for the year 2020 were 19.3 and 10 million, respectively, with India ranking third after China and the United States of America. By 2040, it is predicted that cancer incidence in India will increase from 1.3 million to 2.08 million, accounting for a rise of 57.5% from 2020.³ This increase is attributable to changes in population dynamics and its growth. Overall, one in nine people is likely to develop cancer in his/her lifetime. Globally, half of the cancer burden was seen in the 65+ age group, while in India, it is one-third of cancer cases. The highest number of cancer cases in India was in the 60 to 64 years age group (males: 106,296 and females: 105,139).
2. **Population aging:** Estimates suggest that as of 2020, the number of people aged 60 years and older outnumbered children younger than 5 years. By the year 2030, one in six people in the world will be aged 60 years or over. The proportion of the world's population over 60 years will nearly double from 12% (1 billion) in 2020 to 22% (2.1 billion) in 2050, with the proportion of people over 80 years tripling between 2020 and 2050 (~450 million). In India, the proportion of the population over 60 years is expected to increase from 8.6% in 2011 to 9.7% in 2022,

with an average life expectancy of 70.4 years (71.8 years for women and 69.2 years for men), a significant improvement over the life expectancy of 37 years in 1950. This demographic transition can be attributed to a rapid decline in communicable diseases and an improvement in life expectancy due to better access to healthcare standards. The Healthy Life Expectancy at birth also improved from 58.3 years in 2000 to 63.7 years in 2019. By 2030, the average life expectancy is expected to reach 75 years. In summary, the world's aging population is increasing rapidly, with the proportion of people over 60 years expected to nearly double by 2050. India is also experiencing this trend, with an expected increase in the proportion of people over 60 years.

Older Adults with Cancer: Relevant Issues

1. **Biological basis of increased cancers in older adults:** This rise in cancer incidence is attributed to population growth, particularly in the aging population. Lifestyle risk factors such as tobacco consumption, lack of physical exercise, and consumption of unhealthy food also contribute to this increase. Moreover, infection-related malignancies persist, particularly in low-income countries with a low human development index.⁴ At the molecular level, aging causes the attrition of telomeres, accumulation of epigenetic alterations, cellular senescence, altered metabolism, and genetic mutations, all of which contribute to the development of cancer.
2. **Competing risks for morbidity and mortality:** In India, 70% of older cancer patients are at risk of developing significant and harmful side effects if given standard treatment like young adults. Elderly cancer patients commonly have comorbidities such as diabetes mellitus, hypertension, ischemic heart disease, and stroke, which require careful consideration during treatment. Up to half of geriatric oncology (GO) patients are already taking at least three types of medications, leading to the risk of multiple drug-to-drug interactions. Additionally, accidental falls resulting in fractures in osteoporotic bones are common with advancing age, and bleeding due to nonsteroidal anti-inflammatory drugs is ten times higher in geriatric patients. All these factors present potential life-threatening challenges in managing cancer in the elderly population.
3. **The unders to consider:** Physiological changes in older adults' impact treatment decisions. Slower DNA repair mechanisms, reduced stem cell mass, and hematopoiesis can lead to prolonged toxicity. Changes in body composition can alter drug distribution. Reduced digestive enzyme production can cause variability in oral drug bioavailability. Lower albumin levels lead to a smaller plasma volume, increasing the concentration of water-soluble drugs and decreasing the concentration of liposoluble drugs.⁵ Decreased liver and kidney function can reduce drug metabolism and excretion. These changes are well-documented for certain chemotherapy agents like vinorelbine, doxorubicin, and paclitaxel.⁶

4. **Avoidable delays:** As individuals age, they may tend to overlook or attribute new symptoms to age-related changes and may not prioritize health promotion and disease prevention measures. This can result in delayed diagnosis and treatment, which reduces the chances of cure. Caregivers may also have biases against screening and treating older adults, leading to suboptimal care. Older patients may present with atypical symptoms, such as confusion, fatigue, depression, and social withdrawal. Physicians may not fully understand these varied presentations and may underestimate life expectancy, leading to delayed referrals for comprehensive care. Additionally, the lack of elderly-specific treatment guidelines can create confusion. Clinical trials and research also tend to under-enroll older adults due to strict eligibility criteria. Societal factors, such as cultural influences and the stigma surrounding cancer, further complicate the issue.
5. **Decision-making difficulties:** Elderly cancer patients in India encounter distinct challenges, including a fatalistic mindset that may arise after fulfilling social and familial obligations. Due to fear or stigma, caregivers may choose to withhold the cancer diagnosis from the patient. Decision-making is often not in the hands of the patient themselves, and we commonly encounter situations where relatives living abroad insist on different treatments based on online research.⁷ In some cases, patients' children may push for aggressive, inappropriate, or expensive treatments, while the patient simply seeks a better quality of life with minimal intervention. The financial status of the patient and their family, as well as their access to health insurance, also plays a significant role in the treatment they receive. Limited mobility and a lack of reliable medical transport further compound the challenges faced by elderly cancer patients, as does the conflict between caring for the family and managing the disease. Despite these hurdles, the greatest challenge for physicians remains maintaining a good quality of life during the toxic chemotherapy treatments.⁸ This requires specialized knowledge and expertise in this distinct field of study.
6. **Psychosocial issues:** The diagnosis of cancer in older adults can evoke a range of emotions among patients and their relatives. Responses vary, with some going through the complete spectrum of denial, anger, bargaining, depression, and acceptance, while others may show only one or a few of these stages. It is not uncommon for families to feel the need to shield the diagnosis from the patient, believing that the older patient may not be strong enough to accept the news and may collapse upon hearing it. According to a study conducted in 2010, the decision to withhold the diagnosis from the patient was often made by the family due to concerns over severe emotional distress or psychological frailty.⁹

Life transitions, such as relocation, retirement, and loss of loved ones, as well as mobility issues, often lead to social withdrawal and depression in older adults.¹⁰ Unfortunately,

many elderly cancer patients feel undervalued by their families and society, and that they receive inadequate assessment and treatment at medical facilities due to their age.¹¹ As a result, they may not report their pain or other symptom, believing that complaining is a sign of weakness or that their complaints will not be addressed. This can lead to poorer overall outcomes for these patients.

7. **Quality of life issues:** Maintaining quality of life is crucial for older adults with cancer, second only to increasing their chances of survival through treatment. Early involvement of a palliative care team, along with a physiotherapist, dietician, psychologist, and rehabilitation teams, is important to manage symptoms such as fatigue, constipation, pain, cognitive impairments, falls, and malnutrition. However, the fear of addiction to narcotic analgesics and associated stigma can hinder pain control measures.¹² Therefore, discussions about medications that may lead to delirium and sedation are necessary, as well as taking precautions to avoid falls in homes and restrooms.

8. **Others:** It is rare to find an elderly cancer patient in India who is not also using some form of alternative medicine alongside their allopathic treatment, ranging from traditional home remedies to recognized systems like AYUSH and even so-called magical remedies. Around 25% of our patients admit to using alternative medicine without informing their allopathic doctors, often unaware of the content or name of what they are consuming. Reports indicate that some of these medicines may be contaminated with steroids or heavy metals, but the impact on cancer-directed therapy is unknown.

The lack of trained geriatric counselors or psychologists in India also poses a challenge. Conducting a comprehensive geriatric assessment (CGA) takes about 50 minutes, which is not feasible in most busy practices. Also, many of the validated geriatric assessment scales are from the Western world and they do not account for India's sociocultural diversity. Some questions are irrelevant to our patients, and others hold no value in our society, especially in rural areas. Many patients are not comfortable sharing their personal perceptions with others, which is a fundamental concept in these scales. Therefore, there is a need for developing an India-specific assessment tool that addresses our circumstances and relevant questions.

Obstacles to Adequate Cancer Care Delivery in Older Adults

1. **Lack of referral to higher centers:** Access to specialized cancer care can be a significant challenge for older adults, as they may not always be referred to higher centers for definitive therapy. This may be due to barriers at the family or primary care physician level. Studies have shown that the odds of referral to higher centers for small cell lung cancer care and receipt of chemotherapy decrease significantly with age. For instance, a study

conducted in Canada in 2018 revealed that the odds ratio of referral for patients aged 80 and above was 0.28; while the odds ratio for patients aged 70 to 79 was 0.60. Similarly, the odds ratio for receipt of chemotherapy for these age groups was 0.19 and 0.52, respectively, when compared to patients under 70 years old.¹³ These findings suggest that access to specialized cancer care for older adults may be worse in developing countries and areas with limited access to healthcare.

2. **Difference in management in emergency/intensive care unit:** Older adults with cancer require specialized care when being treated in emergency or intensive care units.¹⁴ Common oncologic emergencies, such as febrile neutropenia and electrolyte imbalances, may present atypically in older patients. Therefore, medical professionals must be vigilant when deciding on appropriate interventions, such as fluid resuscitation, nutritional support, antibiotic therapy, and drug interactions with previously prescribed medications. Due to the age-related decline in homeostatic mechanisms, older patients with cancer are at an increased risk of rapid deterioration, multiorgan involvement, and delayed recovery. Hence, careful attention and individualized management are necessary for this patient population.
3. **Decision-making in tumor boards:** Multidisciplinary teams (MDTs) making decisions for cancer patients may give priority to the age of the patient. A study on colorectal cancer over 3 years found that MDTs recommended adjuvant chemotherapy to 97% of younger patients compared to only 65% of older patients. In the end, only 42% of the older patients received chemotherapy compared to 86% of the younger patients. Similar trends were seen in the palliative setting, but with slightly lower percentages.¹⁵ Decisions regarding chemotherapy for older patients are often based on preconceptions, clinical experience, and chronological age rather than CGA or objective scales for chemotherapy tolerance.
4. **Older adults with cancer in research/clinical trials:** Clinical trials in the past have excluded older adults with cancer, but there has been an improvement in involving them in cancer research in recent years.¹⁶ A comparison of cancer patients over 60 years and under 60 years found that both groups placed similar importance on enrolling in clinical trials. However, elderly patients were less likely to inquire about clinical trials compared to younger patients.

Multidisciplinary Team in Geriatric Oncology Unit: Role and Responsibility

Effective management of older cancer patients requires careful coordination and planning among various specialists and stakeholders to achieve treatment goals and maintain quality of life.¹⁷ Therefore, a MDT led by a geriatrician and oncologist or a dual trained oncogeriatrician should be the foundation of any GO unit. This team should be further complemented by allied healthcare professionals such as nutritionists, physical therapists, counselors, pharmacists,

trained nurses, and social workers. Effective communication channels must be established between the various members of the MDT. Collaborative efforts clear goal setting, and task delegation under effective leadership will help ensure individualized care for the heterogeneous older population to avoid over or under treatment.

However, the number of geriatricians or geriatric oncologists is limited and cannot keep up with the increasing number of older cancer patients, especially in low- and middle-income countries (LMICs). Therefore, it is crucial to provide oncologists with basic geriatric principles and educate geriatricians on cancer-specific geriatric assessment. The management of age-related comorbidities, frailty, and other concerns should be overseen by a geriatrician and advice the oncologist on patient-related relevant issues.¹⁸ The geriatrician can also guide inpatient optimization or prehabilitation to prepare the patient for different modalities of cancer treatment. The goal of this team-based approach is to provide comprehensive and coordinated care, tailored to the unique needs of older cancer patients. The following factors should guide decision-making.¹⁹

1. Assessment of the patient's biological and functional age
2. Evaluation of treatment options and their potential benefits and drawbacks
3. Life expectancy and how it relates to the expected benefits of treatment
4. Preservation of the patient's quality of life
5. Patient-centered goals of treatment or "what matters most" to the patient

Assessment and Decision-Making Tools

1. Comprehensive geriatric assessment:

The CGA is a thorough and interdisciplinary diagnostic process that aims to improve the overall health of frail older patients by addressing key domains related to frailty. These domains include functional status, comorbidity, cognition, mental health, social status and support, nutrition, and polypharmacy.²⁰ CGA is considered the gold standard for health assessment in older adults and is crucial for geriatric care. It offers numerous benefits, such as identifying geriatric impairments, estimating survival, predicting treatment-related toxicity, improving communication with patients and caregivers, assisting in treatment decisions, and providing deficit-directed interventions. Additionally, it can help prevent treatment-related toxicity and enhance the quality of life.

According to a study by Prabhash et al, only a small percentage (2%) of patients evaluated in a specialized GO clinic had a normal CGA. The frequently affected domains were comorbidities (79%), fatigue (77%), and nutrition (65%). The study also found that most patients (97%) had not received recommended vaccines for influenza and pneumococcus. Additionally, 51% of patients demonstrated polypharmacy. A significant majority (70%) of patients had an estimated risk of developing high-grade toxicity from full-dose combination chemotherapy.²¹ The physician-

administered portion of the geriatric evaluation, chemotherapy risk assessment and evaluation of life expectancy took a median of 50 minutes. Performing a CGA may not be practical in a busy clinical practice or resource-limited academic centers. Thus, there is a pressing need for dedicated GO clinics.

However, the use of this tool has some drawbacks that need to be addressed. Lack of trained personnel administering the tool can pose a challenge. It might take longer to administer. Finally, there is a lack of follow-up and intervention after the geriatric assessment, which could limit the effectiveness of the tool.

2. Other assessment/screening tools

Below are some commonly used screening tools in the general geriatric and cancer population.²² The patients who are positive on a screening test are taken up for CGA. (→ Table 1)

In a study done by Shah et al, G8 assessment when combined with VES-13 could reliably identify those patients who would benefit the most from a CGA.²³ The timed up and go (TUG) test is another easy-to-administer tool that measures physical performance and may help to identify vulnerable patients who require a CGA in a busy outpatient setting. A TUG score of ≥ 10 seconds is a good predictor of impaired mobility.²⁴

3. Oncology-specific scales

The Cancer and Aging Research Group (CARG) chemotherapy Calculator and Chemotherapy Risk Assessment Scale for High-Age Patients (CRASH) score are online tools that can aid healthcare providers in assessing toxicity risk in older patients initiating a new line of treatment.²⁵ The CARG tool uses age, tumor type, planned chemotherapy, weight, height, creatinine, and hemoglobin, along with five additional questions on falls, social support, medication-taking ability, hearing impairment, and physical performance. Compared to other commonly used tools such as the Karnofsky performance status, both CRASH and CARG scores exhibit superior performance.²⁶

In a study conducted at an academic center in India, the CARG score proved to be a valuable tool for assessing the risk of grade 3 to 5 toxicities from chemotherapy in older patients with cancer. It effectively stratified patients into low and intermediate/high risk categories and predicted the timing of these toxicities. This information was valuable to oncologists in determining whether or not to proceed with chemotherapy in older patients. However, the study's limitation was that the CARG score was provided to oncologists before beginning chemotherapy, which may have influenced their decision-making on the chemotherapy regimen and dosage, potentially affecting the accuracy of the CARG risk prediction model.²⁷

However, most of the screening tools used are validated in Western populations and might not be culturally applicable to LMICs. Therefore, Banerjee et al developed the "SCReening of the Older PErsOn with Cancer," Version 1 (SCOPE-C) as a tailored evaluation tool for Indian patient population.²⁸ This tool also stresses more on the functional domain in its core structure and is complemented by other relevant domains.²⁹ They validated this tool on older adults over 60 years old with a confirmed cancer diagnosis. The patients were tracked at 4, 12, and 24 weeks, and their survival status was recorded. SCOPE-C demonstrated great potential in assessing older adults with cancer, particularly in busy healthcare systems with limited resources. A preliminary evaluation using this prognostic screening tool may thus optimize care and support clinicians in making well-informed treatment decisions.

Progress So Far

GO clinics have been established in premier academic institutes in India, and validation of various geriatric assessment tools in older Indian patients with cancer has been completed. Indigenous versions of assessment tools, such as SCOPE-C version 1, are developed and validated. Numerous national and international organizations have established training opportunities for healthcare professionals from various disciplines. One such initiative is the Geriatric Oncology Cognition and Communication training program, which consists of

Table 1 Commonly used Geriatric screening tools

| Name of the tool | Components | Authors |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| VES-13 | Age, self-rated health, three questions on functionality (total 6Q) | Saliba S et al., 2001 ³⁴ |
| G8 | 7Q from the MNA scale, 1Q on age (total 8Q) | Bellera CA et al., 2012 ³⁵ |
| Abbreviated comprehensive geriatric assessment (CGA) | 3Q on ADL, 4Q on IADL, 4Q on GDS, 4Q on MMSE (total 15Q) | Overcash et al., 2005 ³⁶ |
| Brief CGA | Domains: Functional, comorbidity, cognition, psychologic, social support, social functioning, nutrition | Hurria et al., 2005 ³⁷ |
| Oncogeriatric screen (OGS) | 2Q on autonomy, 2Q on depression, 2Q on cognition 2Q on nutrition, 1Q each on comorbidity & polypharmacy (total 10Q) | Valéro S, et al., 2010 ³⁸ |

an intensive 2-day didactic and experiential training, followed by six bimonthly booster videoconferences.³⁰ The American Society of Clinical Oncology (ASCO) offers a robust GO training program as part of their annual meeting. Additionally, global oncology training exchange programs have been implemented in various countries.

In early 2020, the Food and Drug Administration (FDA) Oncology Center of Excellence released draft guidance on including older adults in cancer clinical trials. They also launched Project Silver, a joint international initiative to improve the evidence base for older adults with cancer, gathering more detailed labeling information reflecting clinical experience and collecting data on older adults with cancer in the post-market setting. The FDA, ASCO, and the CARG have collaborated closely to increase the evidence of safety and efficacy of new cancer treatments for older adults.³¹ Mandated age-wise reporting of effectiveness and toxicity has also been implemented.

Leading oncology societies have also provided recommendations to enhance GO clinical practice, training, and research. The dissemination of GO knowledge has been facilitated through scientific journals and society guidelines.

Room for Scope and Suggestions

GO services can be improved at the micro, meso, and macro levels in India.³² Here are some suggestions:

Micro level:

- Healthcare professionals need specialized training, workshops, and Continuing Medical Education sessions in GO to improve their ability to diagnose and manage cancer in older adults, communicate with patients and families, and address geriatric-specific issues.
- As part of the curriculum, residents should be required to complete a specified period of rotation in geriatric medicine/oncology.
- Incorporation of geriatric assessments in practical examination sessions of all oncology residents also helps engrain its importance early during training period.
- Patients and their families need education about cancer screening, early detection, and treatment options, as well as resources and support for caregivers such as financial assistance, respite care, and counseling.

Meso level:

- Develop more region- and culture-specific geriatric assessment tools for initial evaluation of older cancer patients.³³
- Establish specialized GO clinics staffed by healthcare professionals trained in GO.
- Implement a multidisciplinary approach to cancer management.
- Integrate palliative care into the care of older adults with cancer from the time of diagnosis.

Macro level:

- Develop health policies and special budgets that address the specific needs of older adults with cancer, including improving access to care and promoting education and training of healthcare professionals.
- Increase funding for generating our own GO databases, for robust research and care to ensure the best possible care for older adults with cancer.
- Design clinical trials tailored with inclusive criteria to enroll a higher number of older adults and generate data applicable to the elderly population.
- Launch public awareness campaigns targeting both the general public and healthcare professionals to raise awareness about the importance of cancer screening and early detection in older adults.

Conclusion

The past decade has seen significant progress in GO in India, with the establishment of GO units, training of healthcare providers, and increased awareness through early detection programs, collaborations with international organizations. However, there is still a long way to go in terms of policy-making and budget allocation to improve the quality of care for older adults with cancer. To achieve this goal, it is crucial to include geriatric services in public health services, establish high-quality health databases, and capacity building to address the lack of trained personnel. Access to healthcare and awareness about diseases and health also need to be improved. Additionally, there is a need to ensure that pain control measures, such as readily available morphine, are in place and to establish integrated palliative care and home care services. Collective efforts are needed to ensure that older adults with cancer receive the quality care they deserve.

Conflict of Interest

None declared.

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