



## Trend of Geriatric Patients Undergoing Radiotherapy

**Seema Devi\***

*Additional Professor, Department of Radiation Oncology, IGIMS, Patna, India*

**\*Corresponding Author:** Seema Devi, Additional Professor, Department of Radiation Oncology, IGIMS, Patna, India.

**DOI:** 10.31080/ASCB.2024.08.0464

**Received:** November 03, 2023

**Published:** December 21, 2023

© All rights are reserved by **Seema Devi**.

### Abstract

**Introduction:** Any person of age 60 and above and a citizen of India is categorized as senior citizen according to maintenance and welfare of parents and senior Citizen Act 2007. According to 2014 report by Help age India (Non-Profit Organization), in 2050 elderly population will be 20% of population addressed as a senior citizen. Cancer gradually peaks at the age of 70-80 years and there is a sharp increase reported after the age of 80 years. This article provides an overview of profile of elderly patients undergoing Radiotherapy in State Cancer Institute of Bihar.

**Material and Method:** This is a retrospective study of all cancer patients of 60 year and above at our department who received Radiotherapy from August 2021 to April 2023.

**Result:** A total of 1738 patients have received Radiotherapy during this period in which 432 (24.85%) cases were elderly patients from age 60 and above. 246 (57%) patients were males and 186 (43%) patients were females. The most common cases reported in our study was of Head and Neck cancer -186 (43%) cases. 15.2% patients of Carcinoma Cervix. 10.4% patients presented with carcinoma Breast.

**Discussion:** 432 Patients were included and analysed in this study about 24.35% of all total cases received Radiotherapy during period. HBCR data from 5 Indian hospitals also shown 20.3% of all malignancies in 65 years of age and above (17). In our study common site was carcinoma Head and Neck was commonest about 43.1% followed by carcinoma cervix, Carcinoma gastrointestinal cancer urogenital cancers.

**Conclusion:** A significant number of patients can be treated with curative intent with Supportive care There should be some patients protocol regarding nutritional status and for these patients treatment according to their need.

**Keywords:** Geriatric Patients; Radiotherapy; Oncology

### Background

#### Introduction

A person whose age is 60 years or above are known as elderly or senior citizen. Any person of age 60 and above and a citizen of India is categorized as senior citizen according to maintenance and welfare of parents and senior Citizen Act 2007 [1]. According to 2014 report by Help age India (Non-Profit Organization), in 2050 elderly population will be 20% of population addressed as a senior citizen. With increasing age chronic disease prevalence like Diabetes, Hypertension, Cardiac Disease and Renal diseases also in-

creases. Cancer gradually peaks at the age of 70-80 years and there is a sharp increase reported after the age of 80 years [2-5]. Elderly population divided into sub-groups by Gerontologists as Young old (65-74 years), middle old (75-84 years) and very old (>85 years). The older population is rapidly increasing in most of the countries. The new fields of medicine have been created to take care of elderly population. Gerontology is the study of ageing. Health and social care of elderly is called Geriatrics. Geriatrics Medicine is a sub-division which deals with and devoted to medical care of elderly. Geriatric oncology is sub-division of Geriatric medicine [6]. About

60-70% cancer mortality occurs in patients of 65 years and above age group [7] in last year 20 years. Number of patients over age of 65 is increasing significantly over the next 20 years in India. The cancer incidence increases more than 12-23% of all cancers after the age of 65 years [8]. The risk of cancer with this age group can be due to telomere shortening defective DNA repair mechanism, alteration in immune system carcinogens expression variation, exposure to carcinogens in early life. Hormonal alteration [9-11] in aging is characterized by phycological and psychological Changes that can influenced the decision, treatment, tolerance and outcome [1]. Geriatric Population has a heterogenous group and the patients chronological age may be different from their physiological status [1,12]. Comprehensive geriatric assessment (CGA) is a compiled standardized tool to assess geriatric domain in terms of comorbidity functional status, nutritional, Physical function cognitive performance and social support. It is dependent on multidimensional interdisciplinary diagnostic process.

According to the need of older person's medical, psychosocial and functional capability to develop a coordinated integrated plan for treatment and follow up [13]. Treatment can be tailored by on-

cologist geriatrician and social worker for their patients based on inputs [14-16].

This article provides an overview of profile of elderly patients undergoing Radiotherapy in State Cancer Institute of Bihar.

## Material and Method

This is a retrospective study of all cancer patients of 60 year and above at our department who received Radiotherapy from August 2021 to April 2023. All cases were pathological confirmed. Demographic parameters like age and Sex, staging details and treatment details were analysed.

## Results

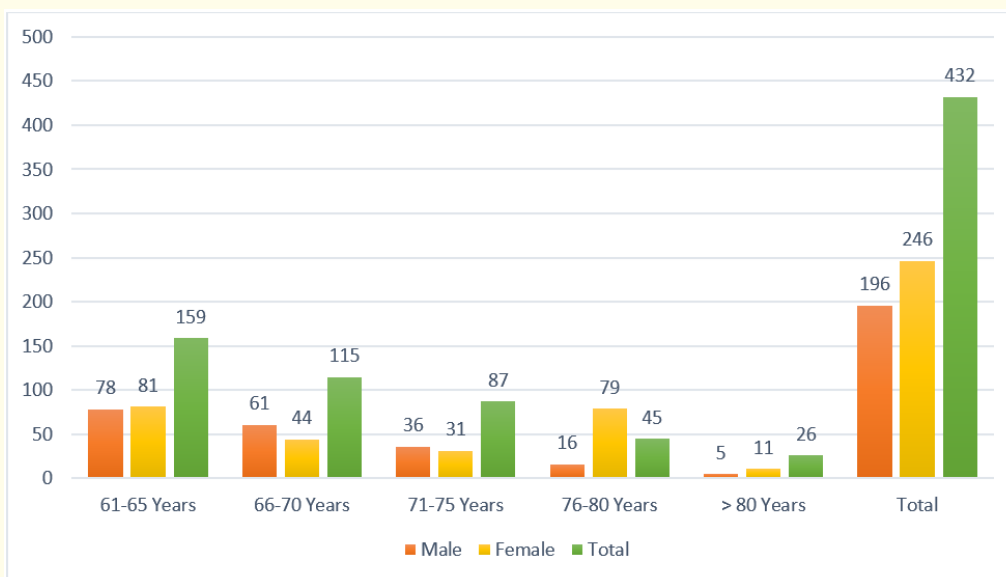
A total of 1738 patients have received Radiotherapy during this period in which 432 (24.85%) cases were elderly patients from age 60 and above. 246 (57%) patients were males and 186 (43%) patients were females. The most common cases reported in our study was of Head and Neck cancer -186 (43%) cases. 15.2% patients of Carcinoma Cervix. 10.4% patients presented with carcinoma Breast.

**Table 1:** A total of 25.69 % patients received palliative Radiotherapy. The most common age groups are given below.

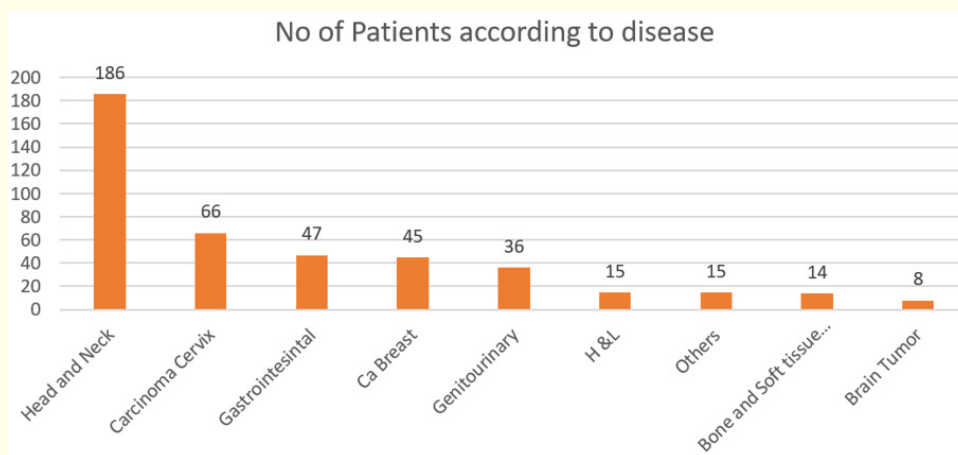
Age Group	Male	Female	Total	Percentage %
61-65 Years	78	81	159	36.81
66-70 Years	61	44	115	26.62
71-75 Years	36	31	87	20.14
76-80 Years	16	79	45	10.42
> 80 Years	5	11	26	6.02
Total	196	246	432	100.00

**Table 2:** No of Patients according to disease.

Sl. No	Disease	No of Patients
1	Head and Neck	186
2	Carcinoma Cervix	66
3	Gastrointestinal	47
4	Ca Breast	45
5	Genitourinary	36
6	H &L	15
7	Others	15
8	Bone and Soft tissue sarcoma	14
9	Brain Tumour	8
Total		432



Graph 1: Graph of common age group received palliative radiotherapy.



Graph 2: Total number of patient according to disease.

Table 3: Commonest age group according to disease.

Sl. No	Particular	Common age	Male	Female	Total Patients
1	Oral Cavity	60-65	54	26	80
2	Supraglottitis	60-65	6	4	10
3	Carcinoma Cervix	60-65	0	32	32
4	Carcinoma Breast	60-65	0	28	28
5	Carcinoma Prostate	66-70	19	0	19

**Table 4:** Distribution according to no. of patients in Head and neck cancers.

Location	No. of Cases
Oral Cavity	86
Oropharynx	21
Supraglottitis	18
Larynx	14
Nasal cavity + Nasopharynx	6
pyriform sinus	6
Angle of Mouth	3
Thyroid	2
Carcinoma Parotid	2
Total	158

**Table 5:** Treatment distribution according to affected parts.

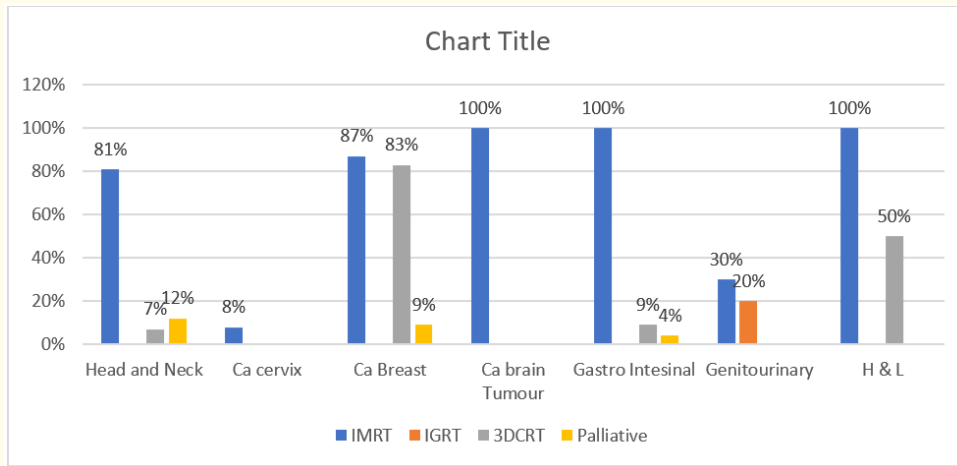
Disease	IMRT	IGRT	3DCRT	Palliative
Head and Neck	81%	-	7%	12%
Carcinoma cervix	8%	-	-	-
Carcinoma Breast	87%	-	83%	9%
Carcinoma Brain Tumour	100%	-	-	-
Gastro Intestinal	100%	-	9%	4%
Genitourinary	30%	20%	-	-
Haematolymphoid	100%	-	50%	-

In Brain Tumor and Gastrointestinal and Hemato lymphoid tumor all patients received IMRT. In Genitourinary cancer 30% patients received IMRT, 50% Patients received 3DCRT , 20% Patients received IGRT.

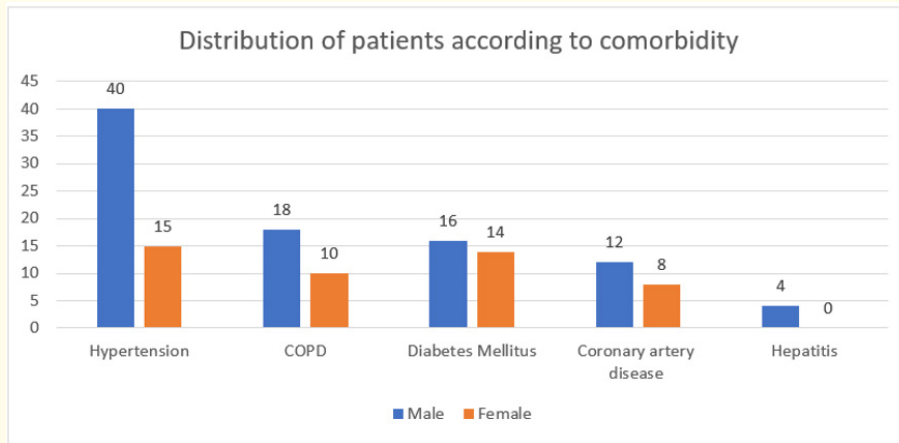
Gastro-intestinal cancer contributed above 11.1% cases. Urinary bladder and prostate cancer reported 8.5%, 3.4% cases of hematic lymphoid carcinoma. 2% cases of brain tumor reported. Bone and soft tissue tumor reported 3.2%. In head and neck 81% patients received IMRT and 7% cases received 3DCRT, 12% patients received palliative Radiotherapy. In carcinoma breast 3% patients received 3DCRT, 87% received IMRT 10% cases received palliative Radiotherapy. In Carcinoma cervix 83% cases received 3DCRT, 8% cases received IMRT, 9% patients received palliative Radiotherapy. Total of 25.69% patients received palliative radiotherapy.

Commonest age group was reported 61-65 years (36.8%), 66-70 year (26.6%). 71-75 year (20%), 76-80 years (10.4%), >80 years (6%). 186 (43%) patients were female while 246 (57%) were males. Male:Female ratio was 1:3:1.

All patients were histopathologically proven before receiving treatment. Squamous Cell Carcinoma in 48%, adenocarcinoma in 28%. Rest of the patients were sarcoma brain tumour, Haematolymphoid metastatic carcinoma. Head and neck. Cancer of Ca tongue 15% and 10.8% cancer of Ca breast 10% cancer of lower alveolus. 10% cancer oral cavity cancer 54%. 2<sup>nd</sup> commonest cancer was carcinoma cervix with 15.8% cases, Ca breast 10%, carcinoma prostatic 5% cases. Patients received palliative radiotherapy 12% cases. 8 cases of multiple myeloma



Graph 4: Treatment distribution according to affected part.



Graph 5: Distribution of patient according to comorbidity.

Comorbidity	Male	Female	Total
Hypertension	40	15	65
COPD	18	10	28
Diabetes Mellitus	16	14	30
Coronary artery disease	12	8	20
Hepatitis	4	0	4

Table 6: Distribution of patients according to comorbidity.

**Table 7:** Distribution of Head and Neck Cancer Stages wise.

Stage of Cancer	Total number of Patient of Head and Neck	Percentage
Stage I	14	8.8%
Stage II	66	41.77%
Stage III	42	26.56%
Stage IV	36	22.78%
Total	158	100.00%

**Table 9:** Distribution of Carcinoma Breast Stage wise.

Stage of Cancer	Total number of Patient of Carcinoma Cervix	Percentage
Stage I	0	0.00
Stage II	28	62.22
Stage III	12	26.67
Stage IV	5	11.11
Total	45	100

## Discussion

432 Patients were included and analysed in this study about 24.35% of all total cases received Radiotherapy during the period. HBCR data from 5 Indian hospitals have also shown 20.3% of all malignancies in 65 years of age and above [17]. In our study common site was carcinoma Head and Neck was commonest about 43.1% followed by carcinoma cervix, Carcinoma gastrointestinal cancer urogenital cancers. The Commonest age group was 61-65 years (36.8%) followed by 66 to 70 years (26.6%). A Study done by Tiwari, *et al.* [18] shown Head and Neck Cancer population was 11% of all sites. In our study 43% patients belonged to head and neck cancer. Males and female ratio shown by Tiwari, *et al.* was 82% and 18% respectively. Study done by Pothamsetty [19] shown 15% patients were female in head and cancer site. Siddiqui, *et al.* [20] shown two third of elderly patients of head and neck cancer presented in advanced stage of decrease western population [18].

Multi-centre study done by Thiagarajan, *et al.* [21] shown 77% elderly patients were stage III and IV Head and Neck cancer. In our study stage III and IV cancer contributed 66%. In our study carcinoma tongue was commonest site of disease (15%). Dhillan, *et al.* reported commonest site was lip and oral cavity in head and neck cancer [22]. Huang, *et al.* [23] shown cancer were commonest site followed by oral cavity. Median age in our study was 68 years, while study done by Patil, *et al.* [24] was 75 years and Tiwari, *et al.* was 70 years [18]. Study done by Tiwari, *et al.* shown 75% of patients

presented with stage III and IV disease [18]. Study done by Sarkar and shahi shown [8] median age was 65 years of age. Elderly patients had higher proportion of gastrointestinal and genitourinary tract malignancies. Patil, *et al.* [24] shown in his study head and neck cancer was commonest (32.4%) lung 23.3%, 23.3% gastrointestinal. In females, commonest was head and neck 31.6% gynaecological 18.4% and gastrointestinal 24.5%. 30% patients presented with localized disease. 49.4% with locoregional disease and 19.1% presented with distant metastasis.

The treatment delays due to radiation mucositis Swallowing problem, nutritional deficiencies, concurrent treatment advised in 63% of patients. Carcinoma cervix patients 36% patients have grade II and grade III diarrhoea 9% patients have anaemia. 3% patients interrupted radiation due to diarrhoea Anaemia nutritional deficiency. Haematological toxicities occur mostly in head and neck cancer 6% patients developed anaemia due to nutritional weakness, intake problem and mucositis Mortality rate was 2% due to cardiac arrest.

Patients with Comorbidities shown poorer survival poor quality of life and high cost of treatment. Clinical tools for decision making Coordination of health care clinicians' skill are some of the methods which can improve survival and quality of life in this category of patients [25]. Study done by Suhag, *et al.* [26] showed common-

est site were head and neck 28%, 2nd commonest was Lung (23%) followed by genitourinary and gastrointestinal malignancies 20% and 15% respectively. Comorbidities detected in 51%, concurrent chemotherapy was used in 27% patients, 36% patients were required hospitalization. During radiotherapy 23% has treatment interruption during radiotherapy 19% failed to prescribed treatment. Another observational analytic study done by Goyal, *et al.* [27] shown out of 1800 OPD patients 489 were more than 60 years of age male: female ratio was 5:3. In our study 34.02% patients reported with comorbidities. Study done by Bahig, *et al.* [28] reported predictive factors of overall survival and outcome, hospitalization and treatment completion role in elderly advanced Head and Neck carcinoma patients with concurrent chemotherapeutic was 84% Vander walve, *et al.* [29] also shown similar survival outcome in elder patients in a comprehensive ultra line review with more toxicity and supportive care in older patient Moye, *et al.* mortality rate was double as compare to younger patients with 5 years of treatment [30]. In our study 58% patients presented with locoregional disease, 19% presented with distant metastasis. 73% patients treated with curative intent and 27% patients with low performance status, elderly age, advance stage of disease are treated with palliative radiotherapy different fractionation scheme was offered for palliation.

The treatment decision in geriatric patients taken by recommendation of international society of geriatric oncology Included evaluation of functional status, Comorbidities cognitive behaviours, mental health status studies showed that patients were less likely to receive curative Treatment in patients with comorbidities [31].

### Conclusion

Progressive increase in number of patients of geriatric oncology due to increase in life expectancy and continuous evaluation in diagnostic and treatment techniques age alone cannot be the criteria to decide the intent of treatment, there is a need of multimodal treatment for these patients according to their performance, status, comorbidities nutritional status of patients.

A significant number of patients can be treated with curative intent with Supportive care There should be some patients protocol regarding nutritional status and for these patients treatment according to their need.

### Bibliography

1. "Maintenance and welfare of parents and Senior Citizens Act, 2007".
2. Harding, *et al.* "Cancer Suppression at old Age". *Cancer Research* 68 (2008): 4465-4478.
3. Salizstein SL, *et al.* "Features of cancer in nonagenarians and Centenarians". *Journal of the American Geriatrics Society* 46 (1998): 994-998.
4. Pompei F and Wilson R. "Age distribution of cancer: the incidence turnover at old age". *Human and Ecological Risk Assessment* 7 (2001): 1619-1650.
5. Alterovitz SS and Mendelsohn GA. "Relationship goals of middle-aged, Young-old, and Old-Old Internet daters: an analysis of online personal ads". *Journal of Aging Studies* 27 (2013): 159-165.
6. Balkrishna B Yeole. "Geriatric cancers in India: An Epidemiological and Demographic Overview". *Asian Pacific Journal of Cancer Prevention* 9.2 (2008): 271-274.
7. Mohile S, *et al.* "Geriatric oncology research to improve clinical care". *Nature Reviews Clinical Oncology* 9.10 (2012): 571-578.
8. Sarkar A and Shahi UP. "Assessment of cancer care in Indian elderly cancer patients: a single center study". *South Asian Journal of Cancer* 2.4 (2013): 202-208.
9. Goyal LK, *et al.* "Cancer in geriatric patients: a single center observational study". *Scholars Journal of Applied Medical Sciences* 4.5E (2016): 1781-1785.
10. Hurria A, *et al.* "Designing therapeutic clinical trials for older and frail adults with cancer: U13 conference recommendations". *Journal of Clinical Oncology* 32.24 (2014): 2587-2594.
11. Vijaykumar DK, *et al.* "Geriatric oncology: the need for a separate subspecialty". *Indian Journal of Medical and Paediatric Oncology* 33.2 (2012): 134-136.
12. Wildiers H, *et al.* "International Society of Geriatric Oncology consensus on geriatric assessment in older patients with cancer". *Journal of Clinical Oncology* 32.24 (2014): 2595-2603.

13. Given B and Given CW. "Older adults and cancer treatment". *Cancer* 113.12 (2008): 3505-3511.
14. Magnuson A., et al. "Models of care in geriatric oncology". *Current Geriatrics Reports* 3.3 (2014): 182-189.
15. Denewet N., et al. "Comprehensive geriatric assessment and comorbidities predict survival in geriatric oncology". *Acta Clinica Belgica* 71.4 (2016): 206-213.
16. Baitar A., et al. "Implementation of geriatric assessment-based recommendations in older patients with cancer: a multicentre prospective study". *Journal of Geriatric Oncology* 6.5 (2015): 401-410.
17. Coordinating Unit, National Cancer Registry Programme (ICMR). Consolidated reports of the hospital based cancer registries 2001-2003. Bangalore, India: National Cancer Registry Programme (Indian Council of Medical Research) (2007): 254.
18. Meena Tiwari. "Head and Neck cancer in Geriatric population in A Tertiary Care Institute in India: Lesson Learnt" (2019).
19. Pothamsetty RK., et al. "Cancer Magnitude in Elderly Indian Women, an Experience from Regional Cancer Centre, India". *Investing in the Next Generation of Women's Health* 1.3 (2017).
20. Siddiqui F and Gwede CK. "Head and Neck Cancer in the elderly Population". *Seminars in Radiation Oncology* 22 (2012): 321-333.
21. Thiagarajan S., et al. "Head and Neck Cancer in geriatric patients: Analysis of the pattern of care given at a tertiary cancer care center". *Indian Journal of Cancer* 52 (2015): 387-390.
22. Dhillon PK., et al. "The Burden of Cancers and their variations across the states of India: the Global Burden of Disease Study 1990-2016". *Lancet Oncology* 19 (2018): 1289-1306.
23. Huang SH., et al. "Patterns of Care In elderly Head and Neck Cancer Radiation Oncology Patients: A single Center Cohort study". *International Journal of Radiation Oncology, Biology, Physics* 79.1 (2011): 46-51.
24. Patil VM., et al. "Patterns of care in geriatric cancer patients - an audit from a rural based hospital cancer registry in Kerala". *Indian Journal of Cancer* 52 (2015): 157-161.
25. Chen RC., et al. "Impact of age and comorbidity on treatment and outcomes in elderly cancer patients". *Seminars in Radiation Oncology* 22.4 (2012): 265-271.
26. Suhag V., et al. "Radiotherpay and geriatric cancer patients: A single institute experience". *Indian Journal of Medical Sciences* 71.1 (2019): 28-34.
27. Goyal LK., et al. "Cancer in geriatric patients: a single center observational study". *Scholars Journal of Applied Medical Sciences* 4.5E (2016): 1781-1785.
28. Bahig H., et al. "Predictive factors of survival and treatment tolerance in older patients treated with chemotherapy and radiotherapy for locally advanced head and neck cancer". *Oral Oncology* 51.5 (2015): 521-528.
29. Vander Walde NA., et al. "Treatment of older patients with head and neck cancer: a review". *Oncologist* 18.5 (2013): 568-578.
30. Moye VA., et al. "Elderly patients with squamous cell carcinoma of the head and neck and the benefit of multi-modality therapy". *Oncologist* 20.2 (2015): 159-165.
31. Sarfati D., et al. "The impact of comorbidity on cancer and its treatment". *CA Cancer Journal of Clinics* 66 (2016): 337-350.