

Research Article

An Audit and Analysis of Causes of Treatment Default in Head and Neck Cancer: A Single Tertiary Cancer Centre Experience

Shweta Baral* , Sudhir Raj Silwal , Deep Lamichhane 

Department of Radiation Oncology, Bhaktapur Cancer Hospital, Bhaktapur, Nepal

Abstract

Background: Treatment default is widespread among cancer patients and usually compromise patients' clinical outcome. This not only compromises the management plan but also makes it harder to measure our treatment outcomes. **Method:** We reviewed Outpatient department (OPD) clinical record files of head and neck cancer patients who were registered at our hospital in a year. Patients were chosen on the basis of availability of record files at the time of sampling. All patients' OPD files were evaluated for treatment completion and causes of treatment default were recorded from the OPD record file. If information was not available in the OPD record file, patients or patients' relatives (if a contact number was available) were called for further information and cause of default. The Google spreadsheet was prepared to record demographics and causes of treatment default. **Results:** 72.19% were male among 205 patients analysed for the study. Most common site was oral cavity (30.24%), followed by oropharynx (21.9%), larynx (20%) and others. Intent was curative in 175 patients (85.36%) and palliative in 22 patients (10.73%). 112 curative intent patients (64%) and 11 palliative intent (50%) completed planned treatment, 27 curative intent patients (15.42%) and 7 palliative patients (31.81%) defaulted during treatment and 36 curative patients (20.57%) and 4 palliative patients (18.18%) defaulted before starting Primary treatment (Surgery or Radiotherapy). Treatment related toxicities in 20 patients (26.31%) waiting time for radiotherapy in 14 patients (18.42%) were major causes of default in this study. In curative intent cases, 44 patients (39.28%) had complete response, 41 patients (36.3%) had partial response, 10 patients (8.92%) had progressive disease and 6 patients (5.35%) had metastatic disease, 3-month post treatment. **Conclusion:** Among various reasons for noncompliance, few can be addressed immediately like arranging multidisciplinary team discussions at an institutional level to prioritize management. Further large-scale studies are needed to estimate the exact dimensions of the issues in our setup.

Keywords

Head and Neck Cancer, Treatment Audit, Treatment Default

1. Introduction

Treatment default is widespread among cancer patients and usually compromise patients' clinical outcome. In developing countries especially in South East Asia, head and neck cancer

burden is high compared with other parts of the world [1]. Radiotherapy along with chemotherapy or surgery are primary modes of management [2]. Timely completion of

*Corresponding author: shwetalamichhane@gmail.com (Shweta Baral)

Received: 24 February 2024; **Accepted:** 20 March 2024; **Published:** 11 April 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

treatment is one of the important prognostic factors for disease outcome. Radiotherapy is an effective treatment for squamous cell carcinoma of the head and neck but treatment interruptions during radiotherapy allow tumor cells to repopulate decreasing the chances of tumor control [3]. Due to various factors, many patients do not complete treatment on time or completely default from planned treatment. This not only compromises the management plan but also makes it harder to measure our treatment outcomes.

With this study, we have done an audit of head and neck cancer patients attending our hospital in one year and have analyzed the causes of the default. The term defaulters in this study encompass patients who refuse, delay, or fail to complete scheduled or planned treatment at our hospital. A similar survey by Chan et al evaluated the prevalence and characteristics associated with the default of treatment and follow-up in patients with cancer [4]. The study showed that the rate of default was 34% of which 56% of patients desired psychological support.

2. Method

Study design: Cross sectional study-medical audit

Setting: We reviewed Outpatient department (OPD) clinical record files of head and neck cancer patients who were registered at our hospital between 1st Jan 2020 to 31st Dec 2020.

Participants: Formal random sampling was not done. A convenience sample of all patients with a diagnosis of Head and neck cancer who were registered in the hospital between the aforementioned dates were used. Patients were chosen on the basis of availability of record files at the time of sampling.

The number of total patients with head and neck cancer who were registered at Bhaktapur Cancer Hospital was extracted from the hospital recording system. The number included both curative and palliative patients. All patients' OPD files were evaluated for treatment completion and causes of treatment default were recorded from the OPD record file. If

information was not available in the OPD record file, patients or patients' relatives (if a contact number was available) were called for further information and cause of default. They were explained regarding the cause of the call and the purpose of the study. Verbal consent for each patient was taken at the same time. If the phone number was unavailable and the reason for the default was not recorded in the file, then they were marked as missing data.

The Google spreadsheet was prepared to record demographics and causes of treatment default.

2.1. Statistical Analysis

For categorical data, frequencies and percentages were calculated. Summary table of the reasons for lack of adherence is provided. Treatment outcome was calculated and presented in table in the form of frequencies and percentages. However, given the retrospective nature of the audit, and the small sample size formal statistical tests for associations were not conducted.

2.2. Ethics Statement

Research approval was taken from Nepal Health Research Council (NHRC) IRB and hospital administration before conducting the study.

3. Results

Three hundred and twenty-nine (329) new head and neck cancer patients were registered in the year 2020 during the study period. Record files of forty-two (42) patients were not found, treatment was ongoing for thirty-three (33) patients during the study period and forty nine patients (49) were registered only without further treatment plan. Rest Two hundred and five patients were analyzed for the study.

Table 1. Demographics of patients (N=205).

Patient characteristics	Value, %
Age, No. (%) years	
Median	58
≤40 years	27 (13.17%)
40-70 years	149 (72.68%)
>70	29 (14.14 %)
Sex	
Male	148 (72.19%)
Female	57 (27.80%)

Patient characteristics	Value, %
Clinical site and stage, N (%)	
Oral Cavity	62 (30.24%)
Buccal mucosa	11
Gingivo buccal Sulcus	12
Floor of Mouth	7
Tongue	31
Alveolus	1
Maxilla	8 (3.9%)
Hypopharynx	20 (9.7%)
Oropharynx	45 (21.9%)
Larynx	41 (20%)
SCC Skin	3 (1.4%)
Parotid	8 (3.9%)
Sino nasal carcinoma	2 (0.97%)
Nasopharynx	11 (5.36%)
Nasal cavity	2 (0.97%)
CUP with neck nodes	2 (0.97%)
Sub Mandibular gland	1 (0.48%)
Stage	
I	14 (6.8%)
II	5 (2.43%)
III	34 (16.5%)
IVA	107 (52.1%)
IVB	19 (9.26%)
IVC	17 (8.29%)
Recurrence	3 (1.46%)
Missing	6 (2.92%)
Intent	
Curative	175 (85.36%)
Palliative	22 (10.73%)
Others	8 (1.95%)
Planned Treatment	
surgery	54 (26.34%)
Radiotherapy	179 (87.31%)
Chemotherapy+ Radiotherapy	112 (54.63%)
Supportive care only	1 (0.48%)
Other	6 (2.92%)

Table 2. Rate of Treatment Completion.

	Curative intent patients	Palliative intent patients
Total	175	22
Completed planned treatment	112 (64%)	11 (50%)
Defaulted during treatment	27 (15.42%)	7 (31.81%)
Defaulted before starting Primary treatment (Surgery or Radiotherapy)	36 (20.57%)	4 (18.18%)

Table 3. Treatment Outcome, 3 months post-treatment (N=112).

	Complete response (Locoregional)	Partial response (Locoregional)	Progressive disease (Locoregional)	Distant Metastasis	Unavailability of data
Curative (patients, %)	44 (39.28)	41 (36.60)	10 (8.92)	6 (5.35)	11 (9.82)
Palliative (patients, %)	0 (0)	6 (54.54)	1 (9.09)	4 (36.36)	0 (0)

Table 4. Causes of default (N=76).

	Curative patients	Palliative patients	Total patients (%)
Logistic issues (distance, accommodation near hospital)	6	1	7 (9.21)
Waiting time for Radiotherapy	11	3	14 (18.42)
Financial issues	10	0	10 (13.15)
Treatment toxicities	20	0	20 (26.31)
Fear of Treatment/Toxicities	2	3	5 (6.57)
Others	2	0	2 (2.63)
Unknown	15	3	18 (23.68)

4. Discussion

In Nepal, according to Globocan 2020, Cancer of the Lip and oral cavity is the 6th commonest cancer, and Cancer Larynx is the 14th commonest [5]. Our hospital registered a total of 329 cases of head and neck cancer in 2020. Consumption of tobacco-related products and alcohol are the primary risk factors for head and neck cancer which is correlated to the increased prevalence of oral cavity tumors on our part. Many patients default on their planned treatment, the most common cause being the high cost of cancer care in Nepal. Other issues include lack of family support, the distance of the hospital from home, accommodation problems near the hospital, the unknown estimated cost for treatment, etc.

Cancer incidence rates are higher in high-income countries compared to low-middle-income countries (LMICs) but still,

the total mortality rate is significantly high in LMICs. Poorer treatment outcomes in LMICs are the result of several factors including delayed diagnosis, and treatment and also because of the inaccessibility of various treatment options. In our study, the presentation was locally advanced in 76.5% of cases, 4.8% of cases were metastatic and two patients were of local recurrence.

Only 62.43% of patients completed planned treatment in the study. 64% of curative intent cases and 50% of palliative intent cases were compliant with the treatment. The findings were similar to a study by Mohanti et al, where 56% of total patients complied with planned treatment. In the study, of the patients who complied with treatment, 62% of cases were in the curative intent group and 54% of cases were in the palliative intent group [6].

The response rate of treatment in our study was 51.78% with a complete response in 35.71% of cases and a partial response in 16.07% of cases.

Major reasons for noncompliance in our study are logistic issues, treatment-related toxicities, waiting time for radiotherapy and financial constraints. The treatment-related toxicities were the primary cause of treatment default with rate of 26.31% similar to the study by Ferreira et al in which toxicities accounted for major treatment interruptions [7]. Timely management and proper counseling may help to reduce the rate of toxicity-related defaults in our setup.

As healthcare costs for cancer are higher than other conditions, discussions regarding expenses are relevant and necessary to allow timely interventions that reduce the risk of financial burden [8]. Besides the financial assistance of the amount of one lakh (US Dollar: 700-800) for cancer treatment by the Government, further expenses have to be paid by patients themselves as out-of-pocket expenditures. The cost of cancer diagnosis is itself high including the cost of histopathological diagnosis and investigations like scans (CT scan, MRI, and PET CT scan). The financial assistance available can only be used after a pathological diagnosis of cancer. But most of the patients usually have already spent a large amount before reaching the cancer hospital for treatment. The expense before treatment includes the cost of travel, food, and accommodation during the process of cancer diagnosis for both patient and patient's associates, the major share being the investigations for diagnosis at one or various hospitals. This also adds to overall financial toxicity to patients and patient's families.

Accommodation issues near hospitals and management of 24-hour caretakers are also major issues during prolonged treatment of cancer. A systemic review by Fan et al. suggested that housing insecurity is adversely associated with cancer care and outcomes, underscoring the importance of screening for housing needs and supporting systemic changes to advance equitable access to care [9]. Formulation of guidelines (hospital or national level) on the basis of affordability and available treatment options may help to streamline management and reduce extra costs. Government subsidized accommodation plans around public hospitals may be one of the mitigation strategies to improve adherence to treatment.

The next important cause in our setup is the long waiting time for radiotherapy in Government cancer centers. Waiting time for radiotherapy could be managed by improving and adding resources in Government cancer centers to accommodate more patients. However, there are a few other related issues. Despite being inoperable locally advanced tumors of the oral cavity, forty-one patients were planned for curative chemo-radiotherapy with or without neoadjuvant chemotherapy out of which only twenty-six patients completed their planned treatment. Two patients defaulted after neoadjuvant chemotherapy, three patients completely defaulted to planned treatment, two patients died during neoadjuvant chemotherapy and seven patients who received neoadjuvant chemotherapy defaulted to radiotherapy after a few fractions. These findings are directly related to the chemotherapy-related toxicities in patients who otherwise would have received palliative treatment with respect to standardized guidelines. Out of

twenty-six patients who had completed treatment, eleven patients had residual disease three months post-treatment, and six patients developed metastasis within three months of completion of treatment. The inclination toward curative planning for such inoperable oral cavity tumors might be because the physicians are exceptionally optimistic in non-metastatic tumors and many a time tend to pull back for marking those tumors as palliative.

On the other hand, in cases of hypopharynx, larynx, and oropharynx tumors, rarely patients undergo surgical treatment when indicated. Only two out of twenty-five eligible patients of locally advanced laryngeal carcinoma underwent radical laryngectomy which further adds up patients for radiotherapy slots, increasing waiting time. A similar study was done by Dronkers et al in 2015, in which 17% of patients did not receive standard treatment for head and neck cancers, either due to non-standard treatment advice in 10% of cases or due to patients' choice in 7 % of cases [10]. In our study, the line of management has been guided mostly by physician perspectives. However, in some cases, as in early-stage hypopharyngeal and oropharyngeal tumors surgery was declined due to unavailability of expertise and logistic issues. Shared treatment decision between physicians and patients is not very common here which may be due to various reasons including physicians' standing as the sole authority for decisions, barriers to good communication between physicians and patients like patients' socioeconomic and educational levels, linguistic issues, and physicians being unaware of updated treatment guidelines. A meta-analysis by Zolnieriek et al communication in medical care is highly correlated with better patient adherence, and training physicians to communicate better enhances their patients' adherence [11]. Patient adherence to treatment is directly correlated with the treatment outcome. In contrast to the Dronkers' et al study, where less extensive treatments were chosen for patients with poor physical conditions and elderly patients, locally advanced inoperable cases were overtreated despite their age and performance status in our study [10]. We do not have established multidisciplinary meetings for Head and Neck Cancer, contributing to variability in choosing a line of management between physicians. Identification of barriers that lead to nonadherence, designing strategies to overcome such obstacles, and effective communication become imperative to ensure uninterrupted treatment [12]. Effective counseling about financial issues, treatment status, and prognosis with optimal utilization of available resources in terms of logistics may improve patients' adherence to treatment.

Limitations of the study: This is retrospective single institution study; hence sample size is small. Proper sampling could not be done due to unavailability of all clinical record files.

5. Conclusion

Among various reasons for noncompliance, few can be

addressed immediately like arranging multidisciplinary team discussions at an institutional level to prioritize management. Other bigger issues like lack of adequate resources, financial issues, and accommodation problems need policy-level management. Further large-scale studies are needed to estimate the exact dimensions of the issues in our setup.

Abbreviations

LMICs: Low-Middle Income Countries
 OPD: Out Patient Department
 NHRC: Nepal Health Research Council
 IRB: Institutional Review Board

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Conflict of Interest

The authors declare no conflicts of interest.

References

- [1] International Agency for Research on Cancer GLOBOCAN 2020. Available at <https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.21660>
- [2] Ratko, T., Douglas, GW., de Souza, JA., et al. (2014). Radiotherapy Treatments for Head and Neck Cancer Update. Agency for Healthcare Research and Quality. <https://effectivehealthcare.ahrq.gov/products/head-neck-cancer-update/research-protocol>
- [3] Palwe, V., Patil, R., Pandit, P., & Nagarkar, R. (2020). Factors influencing non-adherence to radiotherapy: A retrospective audit of 1,548 patients from a tertiary cancer centre. *Journal of Radiotherapy in Practice*, 19(4), 359-364. <https://doi.org/10.1017/S1460396919000840>
- [4] Chan CM, Wan Ahmad WA, Md Yusof M, Ho GF, Krupat E. Prevalence and characteristics associated with default of treatment and follow-up in patients with cancer. *Eur J Cancer Care (Engl)*. 2015 Nov; 24(6): 938-44. <https://doi.org/10.1111/ecc.12312> (Epub 2015 Mar 24).
- [5] International Agency for Research on Cancer GLOBOCAN 2020. Available at <https://gco.iarc.fr/today/data/factsheets/populations/524-nepal-fact-sheets.pdf>
- [6] Mohanti, Bidhu & Nachiappan, P & Pandey, R & Sharma, Atul & Bahadur, Sudhir & Thakar, Alok. (2007). Analysis of 2167 head and neck cancer patients' management, treatment compliance, and outcomes from a regional cancer center, Delhi, India. *The Journal of laryngology and otology*. 121. 49-56. <https://doi.org/10.1017/S0022215106002751>
- [7] Ferreira, B. C., Sa-Couto, P., Lopes, M. C., & Khouri, L. (2016). Compliance to radiation therapy of head and neck cancer patients and impact on treatment outcome. *Clinical and Translational Oncology*, 18(7), 677-684. <https://doi.org/10.1007/s12094-015-1417-5>
- [8] Agarwal, A., Livingstone, A., Karikios, D. J. *et al*. Physician-patient communication of costs and financial burden of cancer and its treatment: a systematic review of clinical guidelines. *BMC Cancer* 21, 1036 (2021). <https://doi.org/10.1186/s12885-021-08697-5>
- [9] Fan Q, Nogueira L, Yabroff KR, Hussaini SMQ, Pollack CE. Housing and Cancer Care and Outcomes: A Systematic Review. *J Natl Cancer Inst*. 2022 Dec 8; 114(12): 1601-1618. <https://doi.org/10.1093/jnci/djac173>
- [10] Dronkers EA, Mes SW, Wieringa MH, van der Schreeff MP, Baatenburg de Jong RJ. Noncompliance to guidelines in head and neck cancer treatment; associated factors for both patient and physician. *BMC Cancer*. 2015 Jul 11; 15: 515. <https://doi.org/10.1186/s12885-015-1523-3>
- [11] Zolnieriek KB, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. *Med Care*. 2009 Aug; 47(8): 826-34. <https://doi.org/10.1097/MLR.0b013e31819a5acc>
- [12] Rangarajan, R., & Jayaraman, K. (2017). Barriers affecting adherence to radiation treatment and strategies to overcome those barriers. *Indian Journal of Cancer*, 54(2), 458-460. https://doi.org/10.4103/ijc.IJC_260_17