




A 4.000 € way to improve perceived quality and meet expectations of thyroid cancer patients receiving therapeutic dose of Iodine-131

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Abstract

Background: Thyroid cancer is the most common malignant disease of the endocrine system and radioiodine therapy (RAIT) is still very often used, resulting in patients staying hospitalized for a few days alone and without visitors, augmenting their stress and discomfort. Our objective was to find simple ways of improving RAIT patients’ feelings and perceived quality of the nuclear medicine (NM) department services.

Material and methods: We designed a two-year study in order to enhance RAIT patients’ perceived quality of the nuclear medicine (NM) department services and expectations’ fulfillment. A questionnaire was used in order to capture patients’ perceived quality and expectations from their RAIT.

Results: 549 replies were collected. Many intrinsic and extrinsic determinants were found to be positively or negatively related to the perceived quality and fulfillment of patients’ expectations of receiving RAIT. A 1% increase could be achieved by spending 110 € per RAIT room.

Conclusions: In this article, we present some easily implemented changes in both personnel behavior and room amenities that could, at least in theory and based on our results, offer a 37.9% improvement in RAIT patients’ perceived quality and expectations’ fulfillment at a cost of 4169 €.

KEY words: RAIT; perceived quality; thyroid cancer

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Introduction

Thyroid cancer is the most common malignant disease of the endocrine system and one of the few cancers with a rising incidence [1]. Even if treatment protocols evolve, Radioiodine therapy

(RAIT) is still used in many cases [2], resulting in patients staying hospitalized for a few days [3] alone and without visitors, due to them being radioactive, augmenting their stress and discomfort [4]. The aim of our study is to capture patients’ feelings, perceived quality, and expectations from their RAIT at the Nuclear Medicine (NM) departments and find easy ways to improve them.

Material and methods

A cross-sectional survey, based on a customized, pre-weighted, and validated questionnaire, as proposed for this type of study [5], has been created and was used on 549 patients over a period of

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Table 1. Extrinsic parameters affecting patients' perceived quality and expectations' fulfillment

Personnel related	Provided in depth information	33.3%
	Respect shown	25.1%
	Shown interest in me	17.9%
	Psychological support	17.2%
	Kindness	15.1%
	Human Contact	14.3%
Amenities	Room comforts (internet connection, modern furniture, decoration, etc.)	21.6%
	Quality of food provided	27.1%
All the above		37.9%

two years at both NM departments offering RAIT of Northern Greece. Patients' demographics and cancer (TNM) characteristics were also recorded.

Local Health authorities have given their ethical approval and patients were informed of the survey and its goals and their written approved consent were achieved before filling it in.

Statistical analysis involved the Kolmogorov-Smirnov test, Student's test, χ^2 , one-way ANOVA, and Mann-Whitney-Wilcoxon test. IBM SPSS version 26 (IBM Inc., Armonk, NY) was used, and statistical significance was defined at the 95% confidence interval.

Results

Patients' demographics and cancer (TNM) characteristics were found to be in line with data from previous studies on such cohorts [6]. Intrinsic determinants found to be positively related to perceived quality and fulfillment of patients' expectations receiving RAIT are:

- being married or in a relationship versus being divorced ($p = 0.009$),
- being more than 50 years old ($p = 0.017$),
- being of male sex ($p = 0.015$),
- having lower than college/university education ($p = 0.012$),
- being a farmer versus blue-collar ($p = 0.035$) or white-collar ($p = 0.013$),
- having an aggravated TNM stage ($p = 0.043$),
- living in a non-urban environment ($p = 0.041$).

Extrinsic parameters positively determining patients' perceived quality and expectations' fulfillment are:

- being well-informed beforehand about the procedures that will be followed,
- feeling that they are respected,
- being reassured in detail that irradiation is not something to be afraid of and
- feeling that health professionals have a genuine interest in them.

Additionally, patients mentioned that their hospitalization would be much more enjoyable if room service, decoration, facilities, and amenities would be improved. Actually, as can be seen in Table 1, more than a third of the patients would have had a better experience during RAI, if all the above would be true.

Discussion

Intrinsic parameters, given that health should be a commodity accessible to all, are not supposed to be able to be altered, for example by choosing one's patients by age, gender, marital status, etc. However, extrinsic parameters can and should be improved for both personnel and amenities via the:

- Organization of in-house behavior-towards-patients seminars on a periodic basis. These seminars are best to be presented by both health professionals and patient organizations' representatives, since this way patients' needs are not muted, but rather put in conjunction with professionals' experience [7, 8]. These seminars do not need to have an impact on the hospital budget, besides maybe the refreshments offered to participants and the possible traveling expenses of the presenters. If two such seminars are to be organized per year with one presenter flying in and staying one night at a hotel (the most costly scenario), the yearly cost is estimated at 820 €.
- In-depth renovation of facilities. Even in countries where hourly working rates are high, such as the US or UK, a common 9.5 square-meter RAIT room renovation should not cost more than 3.310 € [9], including wall painting, floor and ceiling restoration, simple furniture and decoration emplacement, and internet connection.

Implementing the above improvements in both personnel behavior and room amenities results, at least in theory and based on our results, in a cost of around 110 € per increased percentage of improved perceived quality and expectations' fulfillment. This results in a total cost of 4.169 € for an increase of 37,9%.

Conclusions

To our knowledge, this is the first quantitative proposal on small and inexpensive changes in NM Departments in order to augment positive impressions and feelings of hospitalized thyroid cancer patients undergoing RAIT.

Conflict of interest

The authors have no conflicts of interest to declare.

References

1. Giannoula E, Melidis C, Papadopoulos N, et al. Dynamic Risk Stratification for Predicting Treatment Response in Differentiated Thyroid Cancer. *J Clin Med*. 2020; 9(9), doi: [10.3390/jcm9092708](https://doi.org/10.3390/jcm9092708), indexed in Pubmed: [32825789](https://pubmed.ncbi.nlm.nih.gov/32825789/).
2. Ciarallo A, Rivera J. Radioactive Iodine Therapy in Differentiated Thyroid Cancer: 2020 Update. *AJR Am J Roentgenol*. 2020; 215(2): 285–291, doi: [10.2214/AJR.19.22626](https://doi.org/10.2214/AJR.19.22626), indexed in Pubmed: [32551904](https://pubmed.ncbi.nlm.nih.gov/32551904/).
3. Borget I, Remy H, Chevalier J, et al. Length and cost of hospital stay of radioiodine ablation in thyroid cancer patients: comparison between preparation with thyroid hormone withdrawal and thyrogen. *Eur J Nucl Med Mol Imaging*. 2008; 35(8): 1457–1463, doi: [10.1007/s00259-008-0754-9](https://doi.org/10.1007/s00259-008-0754-9), indexed in Pubmed: [18385999](https://pubmed.ncbi.nlm.nih.gov/18385999/).
4. Banihashem S, Arabzadeh M, Jafarian Bahri RS, et al. Psychological Status and Quality of Life Associated with Radioactive Iodine Treatment of Patients with Differentiated Thyroid Cancer: Results of Hospital Anxiety and Depres-

- sion Scale and Short-Form (36) Health Survey. *Indian J Nucl Med.* 2020; 35(3): 216–221, doi: [10.4103/ijnm.IJNM_14_20](https://doi.org/10.4103/ijnm.IJNM_14_20), indexed in Pubmed: [33082677](https://pubmed.ncbi.nlm.nih.gov/33082677/).
5. Kaniuka-Jakubowska S, Lewczuk A, Majkowicz M, et al. Nontoxic Goiter (NTG) and Radioiodine: What Do Patients Think About It? Quality of Life in Patients with NTG Before and After 131-I Therapy. *Front Endocrinol (Lausanne)*. 2018; 9: 114, doi: [10.3389/fendo.2018.00114](https://doi.org/10.3389/fendo.2018.00114), indexed in Pubmed: [29713309](https://pubmed.ncbi.nlm.nih.gov/29713309/).
 6. Giannoula E, Melidis C, Frangos S, et al. Ecological Study on Thyroid Cancer Incidence and Mortality in Association with European Union Member States' Air Pollution. *Int J Environ Res Public Health*. 2020; 18(1), doi: [10.3390/ijerph18010153](https://doi.org/10.3390/ijerph18010153), indexed in Pubmed: [33379238](https://pubmed.ncbi.nlm.nih.gov/33379238/).
 7. de Lorenzo F, Apostolidis K. The European Cancer Patient Coalition and its central role in connecting stakeholders to advance patient-centric solutions in the mission on cancer. *Mol Oncol*. 2019; 13(3): 653–666, doi: [10.1002/1878-0261.12448](https://doi.org/10.1002/1878-0261.12448), indexed in Pubmed: [30657631](https://pubmed.ncbi.nlm.nih.gov/30657631/).
 8. Melidis C. Possible Impact of a European Agency for the Strategic Management Against Cancer (EASMAC) on Treatment, Diagnosis and EU Politics. *Clinics of Oncology*. 2020; 03(02), doi: [10.47829/coo.2020.3201](https://doi.org/10.47829/coo.2020.3201).
 9. DH Gateway Reviews Estates and Facilities Division. <https://www.gov.uk/government/publications/guidance-to-carry-out-cost-estimates-of-healthcare-buildings> [Online] (13.12.2021).