Associazione Italiana Radioterapia e Oncologia clinica

Società Italiana di Radiobiologia

QUALITY OF LIFE CHANGES OVER TIME AND PREDICTORS IN A LARGE HEAD AND NECK PATIENTS' COHORT: AN ITALIAN MULTI-CENTRE LONGITUDINAL, PROSPECTIVE, OBSERVATIONAL STUDY

Anna Viganò[a], Francesca De Felice[b*], **Nicola Alessandro Iacovelli**[c], Daniela Alterio[d], Rossana Ingargiola[c], Alessia Casbarra[d,e^],Nadia Facchinetti[c], Olga Oneta[d,e^], Almalina Bacigalupo[f], Elena Tornari[f^], Stefano Ursino[g], Fabiola Paiar[g], Orietta Caspiani[h], Alessia Di Rito[i], Daniela Musio[b], Paolo Bossi[l], Patrizia Steca[m], Barbara Alicja Jereczek-Fossa[d,e], Letizia Cason[n], Nicola Palena[a], Andrea Greco[a,1], Ester Orlandi[c,1^]

[a]Department of Human and Social Sciences, University of Bergamo, Italy [b]Department of Radiotherapy, Policlinico Umberto I "Sapienza" University of Rome, Rome, Italy [c]Radiotherapy 2 Unit, Fondazione IRCCS Istituto Nazionale dei Tumori di Milano, Milan, Italy
[d]Division of Radiation Oncology, IEO, European Institute of Oncology IRCCS, Milan, Italy [e]Department of Oncology and Hemato-Oncology, University of Milan, Milan, Italy [f]Radiation Oncology Policlinico San Martino IRCCS, Genova, Italy
[g]Department of Radiation Oncology, S. Chiara University Hospital, Pisa, Italy[h]Radiation Oncology Department – Ospedale "S. Giovanni Calibita" Fatebenefratelli, Rome, Italy[i]IRCCS Istituto tumori "Giovanni Paolo II", Bari, Italy
[l]Medical Oncology, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health University of Brescia, ASST-Spedali Civili, Brescia, Italy
[m]Department of Psychology, University of Milan "Bicocca", Italy[n]Department of Human Sciences, Libera Università Maria SS. Assunta University, Rome, Italy

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DICHIARAZIONE

Relatore: NICOLA ALESSANDRO IACOVELLI

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

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M. D. Anderson symptom inventory head neck (MDASI-HN) questionnaire: Italian language psychometric validation in head and neck cancer patients treated with radiotherapy ± systemic therapy – A study of the Italian Association of Radiotherapy and Clinical Oncology (AIRO)

Anna Viganò [a], Francesca De Felice [b,*], Nicola Alessandro Iacovelli [c], Daniela Alterio [d], Nadia Facchinetti [c], Olga Oneta [d,e], Almalina Bacigalupo [f], Elena Tornari [f], Stefano Ursino [g], Fabiola Paiar [g], Orietta Caspiani [h], Alessia Di Rito [i], Daniela Musio [b], Paolo Bossi [l], Patrizia Steca [m], Barbara Alicja Jereczek-Fossa [d,e], Andrea Greco [a,1], Ester Orlandi [c,1]

[a] Department of Human and Social Sciences, University of Bergamo, Italy
[b] Department of Radiotherapy, Policlinico Umberto I "Sapienza" University of Rome, Rome, Italy
[c] Radiotherapy 2 Unit, Fondazione IRCCS Istituto Nazionale dei Tumori di Milano, Milan, Italy
[d] Division of Radiation Oncology, IEO, European Institute of Oncology IRCCS, Milan, Italy
[e] Department of Oncology and Hemato-Oncology, University of Milan, Milan, Italy
[f] Radiation Oncology Policlinico San Martino IRCCS, Genova, Italy
[g] Department of Radiation Oncology, S. Chiara University Hospital, Pisa, Italy
[h] Radiation Oncology Department – Ospedale "S. Giovanni Calibita" Fatebenefratelli, Rome, Italy
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[l] Medical Oncology, Department of Medical and Surgical Specialties, Radiological Sciences and Public Health University of Brescia, ASST-Spedali Civili, Brescia, Italy
[m] Department of Psychology, University of Milan "Bicocca", Italy

Aims

1) investigate quality of life (**QoL**) in patients with head and neck cancer (**HNC**) using the **MDASI-HN** module to measure symptom burden during RT and in the follow-up period, namely (1, 3, 6 and 12 months after completion of RT);

2) analyze whether **QoL** may be predicted by socio-demographic and clinical characteristics.

Methods

Multilevel mixed-effects linear regression was used to estimate the association between **QoL** and: time, age, gender, household, educational level, employment status, ECOG performance status, human papilloma virus status, surgery, chemotherapy, alcohol intake and smoking.

Methods

Eligibility criteria:

- HNSCC (including oral cavity, oropharynx, larynx, and hypopharynx)
- age ≥ 18 years old
- ECOG performance status < 2
- good knowledge of Italian language

Exclusion criteria:

- history of cognitive or psychiatric disorders
- synchronous tumours
- previous RT to the head and neck region

Results

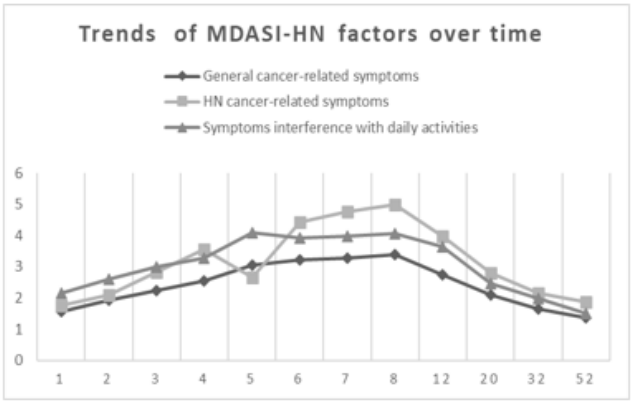
166 patients were treated with (chemo)radiotherapy ((C)RT) with definitive or adjuvant intent (postoperative), based on primary and disease stage from January 2016 to December 2019 at seven Italian Radiation Oncology Departments.

Table 1
Patients' socio-demographic characteristics.

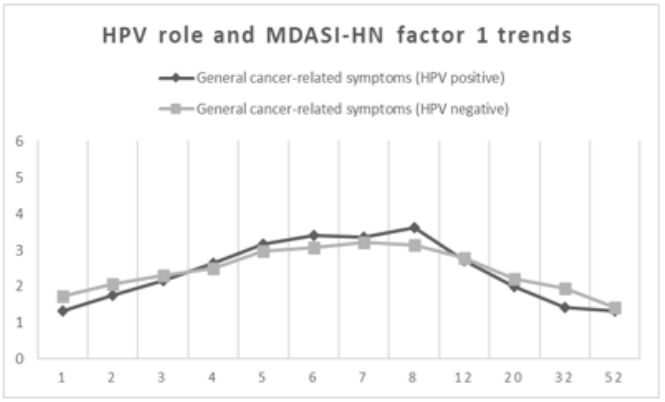
Demographic	Frequencies	(%)
Sex		
Male	119	71.7
Female	47	28.3
Age (years), mean (SD) = 61.69 (11.01); range = 24–93		
Marital status		
Single	10	6.0
Married	102	61.4
Divorced/separated	22	13.3
Widowed	11	6.6
Missing	21	12.7
Living situation		
Alone	15	9.0
Only with spouse/partner	63	38.0
With spouse/partner and children	52	31.3
Only with children	4	2.4
Only with other relatives	7	4.2
Other	3	1.8
Missing	22	13.3
Educational level		
None	1	0.6
Lower school	17	10.2
Middle school	34	20.5
High school	70	42.2
Graduate school	17	10.2
Postgraduate school	5	3.0
Missing	22	13.3
Employment status		
Employed	58	35.0
Unemployed	13	7.8
Housewife	9	5.4
Retired	50	30.1
Retired, but with some work	13	7.8
Missing	23	13.9

Table 2
Patients' clinical characteristics.

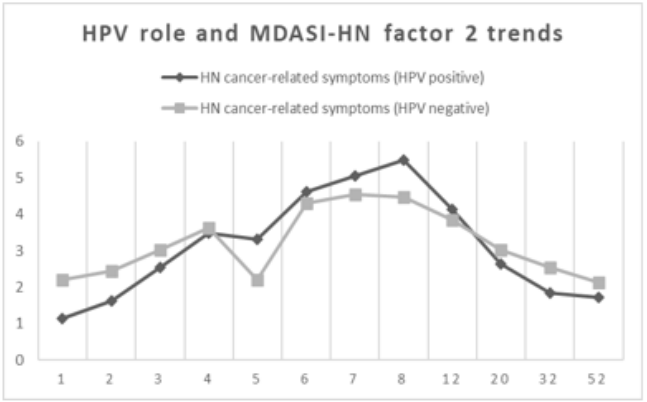
Demographic	Frequencies	(%)
Tumour site		
Hypopharynx	8	4.9
Larynx	29	17.9
Oral cavity	34	21
Oropharynx	91	56.8
Global stage (according to TNM 7th edition)		
I	5	3.3
II	14	9.3
III	22	14.7
IV	109	72.7
ECOG status		
0	105	64.4
1	58	35.6
Tabacco smoker		
Current	37	22.3
Former	74	44.6
Never	47	28.3
Unknown	8	4.8
Alcohol		
Current	39	23.5
Former	18	10.9
Never	55	33.1
Unknown	54	32.5
HPV status		
Negative	32	19.3
Positive	66	39.7
Unknown	68	41.0
Surgery		
Yes	52	31.7
No	112	68.3
Setting Radiation Therapy		
Postoperative (45–66 Gy) with SyT	20	12.2
Postoperative (45–66 Gy) without SyT	32	19.5
Definitive (66–72 Gy) with SyT	84	51.2
Definitive (66–72 Gy) without SyT	28	17.1


Trends of MDASI-HN factors over time
General cancer-related symptoms
HN cancer-related symptoms
Symptoms interference with daily activities
0 1 2 3 4 5 6
1 2 3 4 5 6 7 8 12 20 32 52

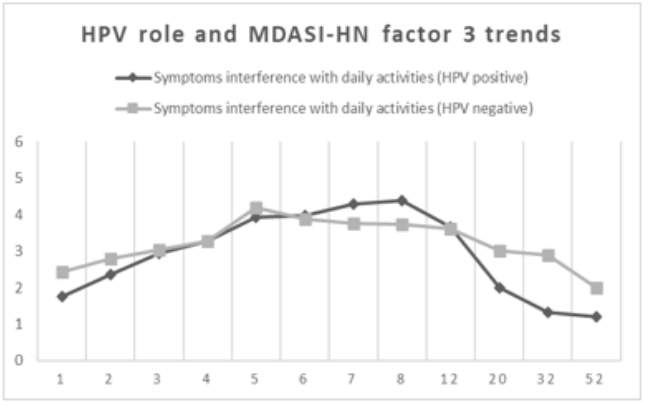
(a)


HPV role and MDASI-HN factor 1 trends
General cancer-related symptoms (HPV positive)
General cancer-related symptoms (HPV negative)
0 1 2 3 4 5 6
1 2 3 4 5 6 7 8 12 20 32 52

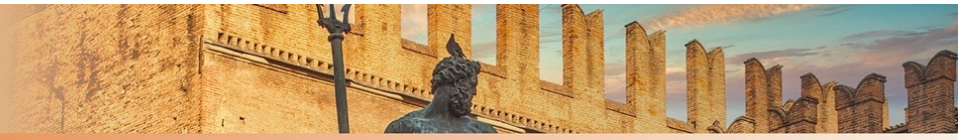
(b)


HPV role and MDASI-HN factor 2 trends
HN cancer-related symptoms (HPV positive)
HN cancer-related symptoms (HPV negative)
0 1 2 3 4 5 6
1 2 3 4 5 6 7 8 12 20 32 52

(c)


HPV role and MDASI-HN factor 3 trends
Symptoms interference with daily activities (HPV positive)
Symptoms interference with daily activities (HPV negative)
0 1 2 3 4 5 6
1 2 3 4 5 6 7 8 12 20 32 52

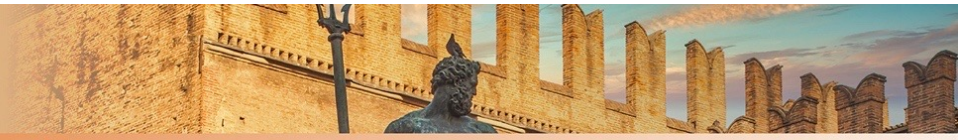
(d)



Results

Among the **166** participants, **time** resulted to be a predictor of all the three questionnaire factors, namely general and specific related symptoms, and interference with daily life. Moreover, regarding symptoms interference with daily activities factor, **HPV positive** status played a significant role.

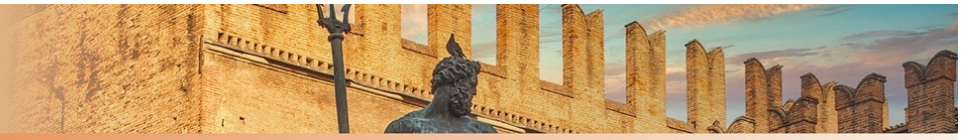
Independent variables	GC-RS Factor	HNC-RS Factor	SIDA Factor
	***b* (95% CI)**	***b* (95% CI)**	***b* (95% CI)**
Gender	-0.45 (-1.18; 0.27)^{ns}	-0.45 (-1.26; 0.37)^{ns}	-0.67 (-1.67; 0.33)^{ns}
Age	0.0001 (-0.03; 0.03)^{ns}	-0.01 (-0.05; 0-02)^{ns}	0.005 (-0.03; 0.04)^{ns}
Living situation	0.24 (-0.87; 1.35)^{ns}	0.20 (-1.04; 1.44)^{ns}	0.58 (-0.95; 2.10)^{ns}
Educational level	0.10 (-0.57; 0.77)^{ns}	0.46 (-0.28; 1.21)^{ns}	0.16 (-1.07; 0.76)^{ns}
Employment status	-0.33 (-1.08; 0.4)^{ns}	-0.28 (-1.11; 0.55)^{ns}	0.60 (-0.42; 1.61)^{ns}
ECOG	0.19 (-0.48; 0.87)^{ns}	0.32 (-0.43; 1.07)^{ns}	0.21 (-0.71; 1.13)^{ns}
Smoker	0.51 (-0.21; 1.23)^{ns}	0.34 (-0.46; 1.14)^{ns}	0.48 (-0.05; 1.47)^{ns}
Alcohol use	-0.51 (-1.18; 0.16)^{ns}	-0.16 (-0.91; 0-59)^{ns}	-0.68 (-1.59; 0.24)^{ns}
HPV	-0.59 (-1.32; 0.15)^{ns}	-0.54 (-1.36; 0.28)^{ns}	-1.59 (-2.60; -0.59)**
Surgery	-0.70 (-0.79; 0.65)^{ns}	-0.49 (-1.3; 0.32)^{ns}	-0.11 (-1-10; 0.89)^{ns}
Chemotherapy	0.34 (-0.35; 1.05)^{ns}	0.38 (-0.4; 1.16)^{ns}	0.70 (-0.26; 1.66)^{ns}
Time			
Linear Effect	0.33 (0.27; 0.38)***	0.54 (0.46; 0.62)***	0.37 (0.29; 0.45)***
Quadratic Effect	-0.02 (-0.02; -0.01)***	-0.03 (-0.03; -0.02)***	-0.02 (-0.02; -0.01)***
Cubic Effect	0.0002 (0.0001; 0.0002)***	0.0003 (0.0002; 0.0003)***	0.0002 (0.0001; 0.0002)***



Results

Considering only **HPV negative** patients, only **time** predicted patients' quality of life.

Independent variables	GC-RS Factor	HNC-RS Factor	SIDA Factor
	***b* (95% CI)**	***b* (95% CI)**	***b* (95% CI)**
Gender	-1.21 (-2.76; 0.33)^{ns}	-1.39 (-2.96; 0.17)^{ns}	-1.43 (-3.73; 0.88)^{ns}
Age	0.03 (-0.10; 0.15)^{ns}	0.07 (-0.05; 0.20)^{ns}	0.09 (-009; 0.28)^{ns}
Educational level	-0.35 (-1.95; 1.26)^{ns}	0.28 (-1.34; 1.90)^{ns}	-0.68 (-3.08; 1.72)^{ns}
Employment status	-0.55 (-3.98; 2.89)^{ns}	0.41 (-3.07; 3.89)^{ns}	1.17 (-3.96; 6.31)^{ns}
ECOG	-0.36 (-1.96; 1.24)^{ns}	-0.46 (-2.07; 1.16)^{ns}	-0.16 (-2.55; 2.23)^{ns}
Smoker	0.01 (-1.88; 1.90)^{ns}	-0.93 (-2.83; 0.97)^{ns}	-0.26 (-3.07; 2.55)^{ns}
Alcohol use	-0.30 (-2.58; 1.98)^{ns}	1.36 (-0.94; 3.66)^{ns}	0.74 (-2.66; 4.14)^{ns}
Surgery	0.07 (-2.28; 2.43)^{ns}	0.04 (-2.34; 2.41)^{ns}	0.91 (-2.60; 4.43)^{ns}
Chemotherapy	0.87 (-1.75; 3.49)^{ns}	0.28 (-2.36; 2.92)^{ns}	0.61 (-3.30; 4.52)^{ns}
Time			
Linear Effect	0.35 (0.22; 0.49)***	0.58 (0.39; 0.77)***	0.51 (0.32; 0.70)***
Quadratic Effect	-0.02 ([-0.03; -0.01)***	-0.03 (-0.04; -0.02)***	-0.03 (-0.04; -0.02)***
Cubic Effect	0.0003(0.0002; 0.0004)***	0.0004 (0.0002; 0.0005)***	0.0004 (0.0002; 0.0005)***



Results

Differently, among **HPV positive** patients, other variables resulted significant, such as **gender**, **educational level**, **alcohol use**, **surgery**, **age** at diagnosis, **employment status** and **ECOG** status.

Independent variables	GC-RS Factor	HNC-RS Factor	SIDA Factor
	***b* (95% CI)**	***b* (95% CI)**	***b* (95% CI)**
Gender	-1.14 (-1.88; -0.41)**	-0.72 (-1.49; 0.04)ns	-1.62 (-2.85; -0.39)*
Age at diagnosis	0.04 (0.003; 0.08)*	0.03 (-0.02; 0.07)ns	0.11 (0.04; 0.18)**
Living situation	-0.58 (-1.42; 0.26)ns	-0.36 (-1.23; 0.51)ns	-0.74 (-2.14; 0.65)ns
Educational level	1.24 (0.48; 1.99)**	1.82 (1.05; 2.60)***	0.50 (-0.75; 1.75)ns
Employment status	0.31 (-0.43; 1.04)ns	0.39 (-0.37; 1.15)ns	1.74 (0.52; 2.96)**
ECOG	0.14 (-0.66; 0.94)ns	0.91 (0.09; 1.73)*	0.54 (-0.79; 1.88)ns
Smoker	0.62 (-0.11; 1.36)ns	0.54 (-0.22; 1.31)ns	1.18 (-0.05; 2.41)ns
Alcohol use	-1.02 (-1.71; -0.33)**	-0.63 (-1.34; 0.07)ns	-1.36 (-2.51; -0.21)**
Surgery	1.16 (0.11; 2.20)*	0.66 (-0.41; 1.74)ns	0.77 (-0.97; 2.51)ns
Chemotherapy	-0.17 (-1.05; 0.72)ns	-0.33 (-1.24; 0.58)ns	-0.05 (-1.52; 1.42)ns
Time			
Linear Effect	0.39 (0.32; 0.47)***	0.74 (0.63; 0.84)***	0.43 (0.3; 0.56)***
Quadratic Effect	-0.02 (-0.02; -0.02)***	-0.04 (-0.04; -0.03)***	-0.02 (-0.03; -0.02)***
Cubic Effect	0.0002 (0.0002; 0.0003)***	0.0004 (0.0004; 0.0005)***	0.0003 (0.0002; 0.0004)***

Conclusions

It was evident that quality of life of patients with head and neck cancer declined during RT, whereas it slowly improved after ending treatment. Our results clarified the role of some socio-demographic and clinical variables, for instance human papilloma virus, which would allow to develop treatments tailored to each patient.