



UNIVERSIDADE ESTADUAL PAULISTA
“JÚLIO DE MESQUITA FILHO”
Campus de Araçatuba

TAMARA FERNANDES DE CASTRO

**SOCIAL SUPPORT AND FAMILY FUNCTIONING AFTER
TREATMENT OF HEAD AND NECK SQUAMOUS CELL
CARCINOMA**

**Araçatuba – SP
2023**

TAMARA FERNANDES DE CASTRO

**Social support and family functioning after treatment of
head and neck squamous cell carcinoma**

Tese apresentada à Faculdade de Odontologia de Araçatuba da Universidade Estadual Paulista (Unesp), para obtenção do título de Doutor, pelo Programa de Pós-Graduação em Odontologia, área de concentração em Estomatologia e psiconeuroimunologia.

Orientador: Prof. Tit. Glauco Issamu Miyahara

Coorientador: Prof. Assoc. Daniel Galera Bernabé

**Araçatuba – SP
2023**

Catálogo na Publicação (CIP)
Diretoria Técnica de Biblioteca e Documentação – FOA / UNESP

Castro, Tamara Fernandes de.
C355s Social support and family functioning after treatment of
head and neck squamous cell carcinoma. / Tamara Fernandes de
Castro. - Araçatuba, 2023
50 f. : il. ; tab.

Tese (Doutorado) – Universidade Estadual Paulista,
Faculdade de Odontologia de Araçatuba
Orientador: Prof. Glauco Issamu Miyahara
Coorientador: Prof. Daniel Galera Bernabé

1. Câncer 2. Neoplasias de Cabeça e Pescoço 3.
Carcinoma de Células Escamosas 4. Suporte Social I. T.

Black D65
CDD 617.64

Ana Claudia M. Grieger Manzatti – CRB-8/6315

Dedico este trabalho,

Aos meu pais, **Sebastião Soares de Castro** e **Maria Petronilha Fernandes de Castro** pela realização deste sonho,

Aos meus irmãos **Fausto Fernandes de Castro** e **Murilo Fernandes da Silva** pelo apoio incondicional,

Aos meus avós, **Sunta Maria Fernandes**, **Mario Fernandes**, **Aparecida Soares de Araújo** (in memoria) e **Alcino Norberto de Castro** (in memoria) pela ternura e afeto.

AGRADECIMENTO ESPECIAIS

Ao meu orientador e atual diretor **Prof. Titular Glauco Issamu Miyahara** pela confiança por todos estes anos, desde meu egresso no mestrado até o final deste ciclo. Agradeço pela oportunidade de aprendizado, tanto na vertente acadêmica como professora, como cirurgiã-dentista Estomatologista no Centro de Oncocologia Bucal. Foi um grande aprendizado, foi um aprendizado único.

Ao meu coorientador **Prof. Associado Daniel Galera Bernabé** agradeço pela orientação da minha trajetória, agradeço até pelos desentendimentos, pelo ombro amigo e conselhos que me deu. Sou extremamente grata por ter chego até aqui com seu apoio. Agradeço pelas horas extras em que ficamos trabalhando, pela longas conversas sobre pesquisas e discussão de casos desafiadores. Agradeço pela sua dedicação enquanto Professor, Pesquisador e Cientista. Foi um honra trabalhar ao seu lado.

Ao professor **Prof. Doutor Vitor Bonetti Valente**, agradeço antes mesmo de ser docente, quando fazia seu pós doutorado. Foi entusiasmante presenciar o início de uma carreira tão bonita que o senhor está fazendo acontecer. Obrigada por ser parte da minha trajetória. Agradeço pelo aprendizado em clínica e em sala de aula. Agradeço pelo apoio em minha carreira. Você me faz ser um profissional melhor.

Ao **Prof. Associado Éder Ricardo Biasoli**, muito obrigada pelos conselhos, pelas orientações como profissional e como pessoa. Obrigada pela sua vasta experiência clínica e também como docente, elas foram cruciais para minha formação. Obrigada professor.

AGRADECIMENTOS

A **Deus** pela dádiva da vida e por não me fazer desistir deste sonho.

Ao meu pai **Sebastião Soares de Castro**, obrigada por me ajudar e me apoiar em todas as esferas da minha vida. Saiba que você sempre será uma referência de lealdade. Amo você.

A minha mãe **Maria Petronilha Fernandes de Castro**, obrigada por todas as palavras de ternura e aconchego que tive. Obrigada pelo apoio, pelo incentivo, saiba que sou sua maior fã.

Ao meu irmão e amigo **Fausto Fernandes de Castro**, obrigada pelo colo amigo de sempre, as conversas e orientações. Tenho orgulho da pessoa que você é.

Ao meu irmão **Murilo Fernandes de Silva**, obrigada pelo seu jeito leve e carinhoso de levar a vida. Eu amo muito você.

Aos meus amigos **Jéssica Araujo Figueira** e **Saygo Tomo** eu agradeço pela amizade que teve início na pós-graduação e que se perdura até hoje. Vocês foram cruciais para concretização deste sonho, muito obrigada.

À minha amiga **Isabella Zanutto**, obrigada por sempre estar presente mesmo tão longe. Obrigada pelas conversas diárias, pelo ombro amigo e até pelas broncas necessárias, pelo sorriso sincero e por sempre me acolher, você é uma grande amiga.

Ao meu amigo e professor **Francisco de Assis Manoel** por estar presente todos os dias em minha vida. Você é um profissional de excelência e um amigo impar. Você que me ensinou que o esporte transforma vidas e eu sou prova essência disto. Obrigada pelo incentivo de sempre, você é especial pra mim.

À minha querida e amada gata **Pantera**, pelo convívio diário, pelo carinho e compreensão. Eu amo muito você.

Aos amigos que fiz na pós-graduação, **Giseli Mitsury Kayahara, Ana Livia Santos Souza, Nilton José da Silva Filho, Vitória Iaros de Sousa, Pedro Victor Silva Duarte, Bruna Benício dos Santos, Mônica Moreno de Carvalho, Vitória Parmejane de Oliveira e Diovana de Melo Cardoso**, obrigada por deixar a rotina mais leve.

Aos alunos da graduação, **Isabela Ferreira Cerato e Carolina Naomi Morikawa** agradeço pela oportunidade de orientá-las em seus trabalhos de conclusão de curso, foi um privilégio ter esta oportunidade

Aos docentes do departamento de Diagnóstico e cirurgia, em especial **pela Prof.^a Ana Claudia Okamoto, Prof.^a Cristiane Furuse, Prof.^a Ana Maria Soubhia, Prof.^a Leda Maria Salzedas, Prof.^a Renata Callestini Felipini e Prof. Marcelo Macedo Crivilini**, gostaria de agradecer pela parceria de todos esses anos com a disciplina de Estomatologia, eu aprendi muito com cada um de vocês. Aos funcionários, **Adriana de Paula e Silva Rahal Leal e Jane Fátima Mendes Fernandes da Silva** por todo apoio e carinho que tiveram comigo, vocês são importantes pra mim.

A toda equipe e quadro de funcionários do Centro de Oncologia Bucal, Unidade Auxiliar de Estrutura Simples, da Faculdade de Odontologia do Câmpus de Araçatuba – UNESP, **Anne Cristina de Faria Cocato, Patrícia Gonçalves Barbosa, Daniene Tesoni Cassavara Ribeiro, Regiane Mazzariolli Pereira Nogueira, Gabrielle Dias**

Duarte, Francisco Urbano Collado e Sebastião Conrado Neto pelo convívio diário e pelo aprendizado impar que vocês me proporcionaram.

Às funcionárias da Seção de Pós-Graduação da FOA - UNESP, **Valéria Zagatto, Cristiane Lui e Lilian Mada** por toda a disponibilidade e toda a paciência.

Ao Programa de Pós-Graduação em Odontologia da Faculdade de Odontologia de Araçatuba – UNESP, na pessoa do coordenador, **Prof. Assoc. Wirley Gonçalves Assunção**.

À Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) - Código de Financiamento 001, pela bolsa de Demanda Social (DS) concedida a mim, que foi de extrema importância para minha manutenção durante o curso de doutorado.

Por fim, o meu profundo e sentido agradecimento a todas as pessoas que contribuíram para a concretização desta tese, estimulando-me intelectual e emocionalmente.

“E coisa mais divina que há no mundo
É viver cada segundo
Como nunca mais.”

Vinícius de Moraes

Castro TF. Apoio social e funcionamento familiar após tratamento de carcinoma espinocelular de cabeça e pescoço [tese]. Araçatuba: Universidade Estadual Paulista (Unesp), Faculdade de Odontologia; 2023.

RESUMO

Introdução: O déficit de apoio social pode impactar negativamente a qualidade de vida e os resultados clínicos dos pacientes com câncer. Entretanto, pouco se sabe sobre os fatores preditivos do déficit de apoio social após o tratamento do câncer de cabeça e pescoço. Este estudo teve como objetivo caracterizar o perfil da percepção de recebimento de apoio social e funcionalidade familiar em pacientes tratados de carcinoma espinocelular de cabeça e pescoço (CECP) e identificar preditores pré-tratamento. **Métodos:** 109 pacientes tratados por CECP foram avaliados quanto à percepção do suporte social recebido e do funcionamento familiar por meio dos questionários MOS-SSS e APGAR. **Resultados:** 34,9% dos pacientes com CECP apresentavam níveis parciais de suporte social global, enquanto 29,3% relataram algum nível de disfunção familiar. Pacientes tratados para câncer de orofaringe tiveram pontuação menor para suporte social tangível do que pacientes com câncer de boca e laringe ($p=0,042$). Pacientes com histórico de consumo grave de álcool antes do tratamento do câncer apresentaram níveis mais baixos de suporte social global ($OR = 11,494$, $p = 0,009$) e suporte afetivo ($OR = 10,309$, $p = 0,011$) após o tratamento do câncer. Não ser casado ($OR = 3,157$, $p = 0,048$) e ser alcoólatra ativo ($OR = 6,410$, $p = 0,039$) antes do tratamento foram preditores de disfunção familiar após o tratamento do CEC de cabeça e pescoço. **Conclusão:** Características sociodemográficas, clinicopatológicas e biocomportamentais pré-tratamento predizem a percepção de suporte social e funcionalidade familiar em pacientes tratados para CECP e devem ser consideradas pela equipe interdisciplinar responsável pelo tratamento oncológico.

Palavras-chave: Câncer, Carcinoma Espinocelular, Suporte Social, Estresse de Isolamento Social, Suporte Familiar, Funcionamento Familiar, Tratamento.

Castro TF. Social support and family functioning after treatment of head and neck squamous cell carcinoma [Thesis]. Araçatuba: São Paulo State University (Unesp), Faculty of Dentistry; 2023.

ABSTRACT

Background: Social support deficit can negatively impact cancer patients' quality of life and clinical outcomes. However, little is known about the predictive factors for social support deficit after head and neck cancer treatment. This study aimed to characterize the profile of the perception of receiving social support and family functionality in patients treated for head and neck squamous cell carcinoma (HNSCC) and to identify pre-treatment predictors. **Methods:** 109 patients treated for HNSCC were assessed for the perception of social support received and family functioning through MOS-SSS and APGAR questionnaires. **Results:** 34.9% of HNSCC patients had partial levels of global social support, while 29.3% reported some level of family dysfunction. Patients treated for oropharyngeal cancer had lower score for tangible social support than patients with oral and laryngeal cancer ($p=0.042$). Patients with a history of severe alcohol consumption before cancer treatment had lower levels of global social support ($OR = 11.494$, $p = 0.009$) and affective support ($OR = 10.309$, $p = 0.011$) after cancer treatment. Not being married ($OR = 3.157$, $p = 0.048$) and being an active alcoholic ($OR = 6.410$, $p = 0.039$) before treatment were predictors of family dysfunction after HNSCC treatment. **Conclusion:** Sociodemographic, clinicopathological and biobehavioral characteristics before treatment predict the perception of social support and family functionality in patients treated for HNSCC and should be considered by the interdisciplinary team responsible for cancer treatment.

Keywords: Cancer, Squamous Cell Carcinoma, Social Support, Social Isolation Stress, Family Support, Family Functioning, Treatment.

LISTA DE TABELAS

Table 1 Demographic, biobehavioral, and clinicopathological characteristics of HNSCC patients	23
Table 2 Mean scores of social support and family functioning in patients with HNSCC and its subgroups after cancer treatment.	26
Table 3 Levels of social support and family functionality in HNSCC patients and subgroups after cancer treatment.	28
Table 4 Associations between demographic, biobehavioral, and clinicopathological variables with social support and familiar functionality in patients treated for HNSCC.	29
Table 5 Significant results from the logistic regression analysis considering social support and family functioning as response variables and demographic, clinicopathological and biobehavioral data from HNSCC patients as independent variables.	31

LISTA DE ABREVIATURAS

MOS-SSS	Medical Outcomes Study Social Support Survey
HNC	Head and neck cancer
HNSCC	Head and neck squamous cell carcinoma
UNESP	Sao Paulo State University
SCC	Squamous cell carcinoma
CCI	Charlson Comorbidity Index
UICC	Union for International Cancer Control

SUMÁRIO

1 INTRODUCTION	15
2 METHODS	18
2.1 Study design and participants	18
2.2 Demographic, clinicopathological and biobehavioral Variables	18
2.3 Social Support	19
2.4 Family Functionality	19
2.5 Statistical Analysis	20
3 RESULTS	22
3.1 Demographic, clinicopathological and biobehavioral characteristics	22
3.2 Social support and family functionality in patients treated for HNSCC	25
3.3 Associations between social support and familiar functionality with demographic, clinicopathological and biobehavioral variables	28
4 DISCUSSION	33
5 CONCLUSIONS	38
REFERENCES	40
ANEXOS	46

Social support and family functioning after treatment of head and neck squamous cell carcinoma

Social support in patients with head and neck cancer

Tamara Fernandes de Castro¹; Ana Daniela Spinola da Silva¹, Giseli Mitsuy Kayahara¹, Bruna Amélia Moreira Serafim Costa¹, Éder Ricardo Biasoli¹; Aline Satie Takamiya¹, Vitor Bonetti Valente¹; Glauco Issamu Miyahara¹, Daniel Galera Bernabé¹

¹Psychosomatic Research Center, Oral Oncology Center, São Paulo State University (UNESP), School of Dentistry, Araçatuba, SP, Brazil.

Declaration of Competing Interest:

The authors declare no conflict of interest.

Keywords: Cancer, Head and neck cancer, Squamous cell carcinoma, Social support, Stress Social Isolation, Family Support, Family Functioning, Treatment

Corresponding author:

Daniel Galera Bernabé, PhD.

Psychosomatic Research Center, Oral Oncology Center, São Paulo State University (Unesp), School of Dentistry, 1193 José Bonifácio St, Araçatuba, SP 15050-015, + 55 18 36363275.

E-mail: daniel.bernabe@unesp.br

1 INTRODUCTION

1 INTRODUCTION

Social support is defined as the perception of the availability of support resources in the environment, such as emotional, affective, or instrumental resources, which arise in a specific context.¹ This support is provided by the community and encompasses a social networks and intimate and trusting relationships that are essential in everyday life and in times of crisis and stress.^{1,2} Social support is a common measure in health and social sciences and its absence or deficit can be a negative indicators for clinical³ and psychological outcomes in several diseases.^{4,5} Social support refers to a multidimensional construct that consists of four main domains (tangible support, emotional and informational support, affective support and positive social interaction).^{6,7} They are considered essential for understanding and identifying the individual's needs as well as proposing interventions for lack of support.⁸

Social support is an important predictor of quality of life in patients with different types of cancer, such as lung, breast, colorectal and head and neck.⁹ In patients with breast cancer, high levels of social support have been associated with reduced cancer-related distress through adaptation and coping with the disease.¹⁰ In patients with colorectal cancer, higher social support are linked with better health outcomes after cancer treatment.¹¹ A positive association has been observed between high levels of social support and improved resilience and psychological function in patients with lung cancer.⁸ Social support has also been pointed out as a prognostic factor in cancer patients. For example, Lutgendorf et al. showed that patients with ovarian cancer who reported higher levels of social support had lower overall mortality.¹² Low levels of social support have been associated with increased biomarkers of inflammation, compromised immune system, tumor growth and metastasis.¹³ The increased risk of mortality from insufficient social support is comparable to that of smoking or excessive alcohol consumption and potentially more concerning than inadequate levels of physical activity and obesity.¹⁴ In a systematic review, five of seven articles that assessed social influences on breast cancer clinical outcomes reported an association between low social support and cancer progression.¹⁵

In head and neck cancer (HNC), social support can be particularly crucial due to the marked disruption of essential functioning, and changes in speech, eating and facial aesthetics.¹⁶ These unique issues make HNC arguably one of the most traumatic

cancers.¹⁷ Some studies have investigated the influence of social support on quality of life in this population.^{18,19} However, these support levels may fluctuate in the post-treatment period. Hammerlid et al.²⁰ evaluated social support in head and neck squamous cell carcinoma (HNSCC) patients and observed lower levels of social support at 12 months' post treatment compared to the time of diagnosis. Derks et al.²¹ found similar results when evaluating elderly patients with HNSCC, so far, there are few studies that have investigated predictors of social support after HNC treatment.

Cancer patients tend to perceive friends and family – including their partners – as the main sources of support and consider support from these people essential in dealing with diagnosis and treatment.²² Family function refers to a family's ability to adjust to different situations and includes adaptation, partnership, growth, affection, and resolve.²³ Evidence regarding the influence of family support on cancer treatment shows that perceived family support is positively associated with better clinical outcomes.²⁴ Higher levels of family support contribute positively to reducing psychological distress in patients with breast cancer²⁵ and prostate cancer²⁶, while family dysfunction is a positive predictor for depression²⁷ and anxiety.^{24,26} In this context, family functionality influences coping with the disease, and the quality of life of patients with advanced stage cancer.²⁹ There are no studies that have investigated the family functionality profile in patients treated for HNSCC and explored its predictors.

Thus, knowledge of the social support profile received in HNSCC patients is necessary so that treatment strategies can be adapted to the needs of the individual. Although evidence clarifies the relevance of pre- and post-treatment social support for patients with HNSCC, to our knowledge, no study has mapped the predictors for support deficit in the post-treatment period. This study aimed to evaluate the profile of social support and family functionality after HNC treatment and their correlation with demographic, clinicopathological and biobehavioral variables.

2 METHODS

2 METHODS

2.1 Study design and Participants

This cross-sectional study was approved by the Committee of Human Studies of the Sao Paulo State University (UNESP), School of Dentistry, Araçatuba, São Paulo, Brazil (nº. 63661922.9.0000.5420) and informed consent was obtained from all participants. The patients with HNSCC were recruited between 2019 to 2022 from the Oral Oncology Center, Sao Paulo State University (UNESP), School of Dentistry, Araçatuba, São Paulo, Brazil, a institution specializing in the treatment for HNC. Inclusion criteria were patients over 18 years of age; histopathological diagnosis of squamous cell carcinoma (SCC); primary tumor located in the oral cavity, oropharynx, or larynx. Patients treated for HNSCC and whose cancer treatment had been completed for at least 4 months were recruited in the oncology follow-up clinic. Exclusion criteria were having undergone some previous oncological treatment before being admitted to our service and having been diagnosed with other head and neck malignancies, except SCC. Patients with cognitive alterations that make it difficult to understand the questionnaires and those who were treated at other centers were excluded from the study.

2.2 Demographic, Clinicopathological and Biobehavioral Variables

Demographic, clinicopathological, and biobehavioral data were extracted from patient's clinical records. Demographic variables (age, sex, ethnicity, education, marital status, living with someone, having sons, religion and family income), clinicopathological variables (comorbidity, clinical staging, primary tumor size (T), presence of regional metastases (N) and tumor histological grade, biobehavioral data (history and intensity of tobacco and alcohol consumption), type of oncological treatment (surgery, radiotherapy and chemotherapy or a combination of them), and occurrence of second primary tumor and recurrence were analyzed. Comorbidities were assessed according to the Charlson Comorbidity Index (CCI).³⁰ Clinical staging was defined according to the Union for International Cancer Control (UICC).³¹ Tobacco and alcohol consumption intensity was assessed using a score scale of 1–4 points according to the amount of cigarettes or doses of alcohol consumed per day: non-smoker/drinker, light use (1–10 cigarettes/1–2 drinks per day), moderate use (11–20

cigarettes/3–4 drinks per day), and heavy use (more than 20 cigarettes/more than 4 drinks per day).^{32,33}

2.3 Social Support

Perceived social support was assessed using the Medical Outcomes Study Social Support Survey (MOS-SSS).^{6,7} This instrument contains 19 items conceived in five domains of tangible support (4 items), emotional-informational support (8 items), affective support (3 items), and positive social interactions (3 items). Item #19 does not belong to any specific facet, although it is included in total social support. Tangible support refers to the assistance with basic needs or material resources (eg. loan, meal preparation, transport to medical appointments, etc.); emotional and informational support indicates the provision of advice, information, guidance, and includes the presence of someone who encourages the people to express their emotions in a meaningful way; affective support involves receiving of affection and love, and positive social interaction reflects the interaction with people to carry out pleasurable activities together. Items from the MOS-SSS are rated on a 5-point Likert scale (ranging from 1 never; to 5 always). In addition to item 19, total social support ranges from 19 to 95. This scale was previously validated for the Brazilian population.³⁴

2.4 Family Functionality

To assess family functionality, the Family APGAR questionnaire will be used. This instrument has been validated in Brazilian population, advocated by the Ministry of National Health, and used by the Unified Health System.³⁵ The test consists of five objective questions classified on a 3-point Likert scale. The score for family functionality ranges from 0 to 10 points, with scores of 7 to 10 being classified as highly functional, scores ranging from 4 to 6 as moderate dysfunction, and scores ranging from 0 to 3 as high family dysfunction. The MOS-SSS and APGAR questionnaires were applied only once in the post-treatment period by the same researcher. The questionnaires were applied in a private environment, specifically for psychological assessment, without the presence of a family member and/or other people.

2.5 Statistical Analysis

Statistical analyzes were performed using the SPSS software (version 18.0; SPSS Inc. Released, 2009) and the GraphPad Prism (version 8.0.2; GraphPad Software Inc. San Diego, CA, USA). In our preliminary analysis, continuous measures were tested for normality with the Shapiro-Wilk test. Analysis of Variance (ANOVA) was used to compare among HNSCC subgroups (oral cavity, oropharynx, and larynx) the mean scores of social support and family functionality measured by the MOS-SSS and APGAR tests, respectively. The support profile received by patients with HNSCC was also evaluated by categorizing the final score of the questionnaires into quartiles; the last two quartiles were designated as low support levels, the third quartile as moderate, and the first two quartiles as high levels. The chi-square test or Fisher's exact test were used to investigate the association of social support and family functionality with demographic, clinicopathological, and biobehavioral variables. For this analysis, Apgar and MOS-SSS scores were dichotomized according to the median, where patients were classified by receiving higher or lower levels of social support and family functioning, seen if the scores were above or below the median, respectively. A different categorization was defined only for tangible support given the high scores scored by patients for this subtype of support with the median being equal to the maximum score. For the tangible support domain, HSNCC patients were classified as having received total (maximum score) or partial support (scores below the maximum value for this domain). For the univariate analysis, marital status was classified into married and unmarried status and the time elapsed from the oncological treatment for the primary tumor was divided into 4 periods: 4 to 12 months, 13 to 24 months, 25 to 60 months, and 61 to 120 months. Multivariate regression analysis was performed using the stepwise logistic regression method, considering social support and familiar functionality as the dependent variables and demographic, clinicopathological and biobehavioral characteristics as exploratory variables. Only variables with $p < 0.2$ in the univariate analysis were included in the regression models. The level of statistical significance was set at a p -value less than 0.05 ($p < 0.05$) for all statistical tests.

3 RESULTS

3 RESULTS

3.1 Demographic, clinicopathological and biobehavioral characteristics

One hundred and nine patients treated for HNSCC were included in the study. Sixty-five patients (59.6%) had tumors located in the oral cavity, 27 (24.8%) had tumors in the larynx, and 17 (15.6%) in the oropharynx. Most of the patients were men (78%), middle aged (64.2%), white (69.7%) and married (58.7%). The minority lived alone (12.8%), whereas 87.2% live with a partner or relative. Most patients had at least one comorbidity (73.4) including hypertension (46.8%), diabetes (12.8%), gastritis (16.5%) and depression (10.1%). Most patients had incomplete elementary school (48.6%), and family income of R\$1000–5000 (1 USD = 5 Reais, approximately) per month (57.8%). Most patients were smokers (61.5%). In relation to tobacco consumption intensity, 30.2% of them reported light, 12.1% moderate and 57.7% heavy tobacco consumption. The majority of patients were drinkers (46.8%) with a history of light 27.5% moderate 23.9% and heavy 22% alcohol consumption. Most HNSCC patients (61.5%) had the disease classified in initial stage (I and II), and tumors microscopically graded in moderately differentiated (59.6%). Fifty-three (48.6%) were treated by surgery alone, while fifty-six (51.4%) had associated treatment. Thirteen patients had recurrence (11.9%) and six patients had a second primary tumor (5.5%). The mean time between the end of cancer treatment and the application of the questionnaires was 33.72 months (Table 1).

Table 1. Demographic, biobehavioral, and clinicopathological characteristics of HNSCC patients.

Variable	N (%)
Age (Years)	
Means (SD)	61.29 (10.65)
Age range (Years)	
0-45	8 (7.3)
45-65	70 (64.2)
> 65	31 (28.4)
Sex	
Male	85 (78)
Female	24 (22)
Ethnicity	
White	76 (69.7)
Non-white	33 (30.3)
Education*	
Illiterate	5 (4.6)
Incomplete primary school	53 (48.6)
Elementary school	26 (23.9)
High school	19 (17.4)
University	4 (3.7)
Marital status	
Single	16 (14.7)
Married	64 (58.7)
Divorced	15 (13.8)
Widowe	14 (12.8)
Living alone	
No	95 (87.2)
Yes	14 (12.8)
Sons	
No	13 (11.9)
Yes	95 (87.2)
Number of sons*	
Without children	9 (8.3)
1 to 2 children	59 (54.1)
3 to 5 children	22 (20.2)
Above 5 children	7 (6.4)
Religion*	
No religion	3 (2.8)
Catholic	64 (58.7)
Evangelical	26 (23.9)
Spiritist	1 (9)
Another religion	1 (9)
Family income *	
< 1.000 / mo	34 (31.2)
R\$ 1000 – 5.000 / mo	63 (57.8)
> R\$ 5000,00 / mo	4 (3.7)
Comorbidity	
No	29 (26.6)
Yes	80 (73.4)
CCI score	
0	33 (30.3)
1	47 (43.1)
2	21 (19.3)
3	8 (7.3)

Smoking	
Non-smoker	18 (16.5)
Current smoker	67 (61.5)
Ex-smoker	24 (22)
Tobacco intensity	
Light	28 (30.2)
Moderate	11 (12.1)
Heavy	52 (57.7)
Alcohol consumption	
Non-drinker	29 (26.6)
Current drinker	51 (46.8)
Ex-drinker	29 (26.6)
Alcohol intensity	
Non-drinker	29 (26.6)
Light	30 (27.5)
Moderate	26 (23.9)
Heavy	24 (22)
Tumor location	
Oral cavity	65 (59.6)
Larynx	27 (24.8)
Oropharynx	17 (15.6)
T – Classification	
T1	39 (35.8)
T2	36 (33)
T3	22 (20.2)
T4	12 (11)
Regional metastasis	
N0	85 (78)
N+	24 (22)
Clinical stage	
I	38 (34.9)
II	29 (26.6)
III	22 (20.2)
IV	20 (18.3)
Histopathologic grade*	
Well-differentiated	21 (19.3)
Moderately-differentiated	65 (59.6)
Poorly-differentiated	10 (9.2)
Treatment	
Surgery only	53 (48.6)
Sur + RT	26 (23.9)
RT	7 (6.4)
Ch + RT	17 (15.6)
Sur + RT + Ch	6 (5.5)
Second primary tumor	
No	103 (94.5)
Yes	6 (5.5)
Recurrence	
No	96 (88.1)
Yes	13 (11.9)
Post-treatment time (months)	
Means (SD)	33.72 (30.78)

Abbreviation: CCI, Charlson Comorbidity Index; Sr, Surgery; RT, radiotherapy; Ch, Chemotherapy.

* Variables with missing data.

3.2 Social support and family functionality in patients treated for HNSCC

The mean number of close friends or relatives that patients reported in their social network after cancer treatment was 4, ranging from 1 to 14. HNSCC patients had an overall mean score of 78.32 for social support measured by MOS-SSS, out of a maximum possible score of 95. The mean scores for the social support subtype were 18.36 for tangible support (maximum score of 20), 32.59 for emotional and informational support (maximum score of 40), 11.03 for affective support (maximum score of 15), and 12.30 for positive interaction support (maximum score of 15) (Table 2). When only the group of patients with tumors located in the oral cavity were analyzed, the global support score was 77.64, tangible support 18.45, emotional and informational support 32.23, affective support 10.80, and positive interaction 12.03 (Table 2). The average global support score in patients with oropharynx cancer was 72.41, tangible support 17.17, emotional and informational support 30.58, affective support 9.64, and positive interaction 11.52. Regarding the social support reported by patients treated for laryngeal cancer, the mean score for global support was 83.66, followed by 18.92 for tangible support, 34.74 for informational support, 12.48 for affective support and 13.55 for positive interaction (Table 2). Regarding family functionality measured by the Apgar questionnaire, the mean score reported by HNSCC patients was 7.71 (maximum score of 10); Patients treated for oral cancer had a mean score of 7.44, while patients treated for oropharynx and laryngeal cancer scored 7.00 and 8.81, respectively (Table 2). Patients treated for tumors located in oropharynx (17.17 ± 3.62) had reduced levels of tangible social support compared to patients treated for laryngeal tumors (18.92 ± 3.37) ($p=0.042$). There were no significant differences between the HNSCC subgroups in the means of global support score and the other support subtypes ($p>0.05$). Patients treated for laryngeal cancer tended to have higher positive interaction scores than patients treated for oropharynx cancer, but this result did not reach statistical significance ($p=0.063$). There were also no differences in the scores of family functioning measured by the Apgar questionnaire after cancer treatment among different HSNCC subgroups ($p>0.05$) (Table 2).

Table 2. Mean scores of social support and family functioning in patients with HNSCC and its subgroups after cancer treatment.

	HNSCC mean (SD)	Oral Cavity mean (SD)	Oropharynx mean (SD)	Larynx mean (SD)	p-value
MOS-SSS					
Overall support	78.32 (15.9)	77.64 (16.4)	72.41 (16.6)	83.66 (12.7)	0.167
Tangible	18.36 (3.44)	18.45 (3.40)	17.17 (3.62)	18.92 (3.37)	0.042*
Emotional/Informational	32.59 (7.33)	32.23 (7.74)	30.58 (7.36)	34.74 (5.88)	0.266
Affectionate	11.03 (3.67)	10.80 (3.61)	9.64 (3.85)	12.48 (3.34)	0.155
Positive interaction	12.30 (2.73)	12.03 (2.91)	11.52 (2.47)	13.55 (2.04)	0.063
APGAR					
Family functionality	7.71 (2.81)	7.44 (2.88)	7.00 (3.14)	8.81 (2.11)	0.182

Abbreviation: HNSCC, head and neck squamous cell carcinoma;

*p<0.05

With the aim of providing a better characterization of the social support profile received by patients with HNSCC after cancer treatment, the scores measured by the MOS-SSS were also categorized into three levels of support (high, moderate and low). The results showed that seventy-one patients treated for HNSCC (65.1%) had high levels of global social support (MOS-SSS score ranging from 76 to 95). Nineteen of these patients (17.4%) received the maximum score on the questionnaire. Twenty-eight patients (25.7%) had moderate levels of support, while 10 patients (9.2%) had low levels of support (Table 3). As for the tangible support, ninety-nine HNSCC patients (90.8%) had high support levels. Four patients (3.7%) received moderate social support and six (5.5%) had low support levels. Regarding emotional and informational support domain, 52 HNSCC patients (47.7%) had high levels of social support, while 38 patients (34.9%) were classified with moderate levels and 19 (17.4%) with low levels. As for the affective social support domain, 75 patients (68.8%) had high support levels. Thirty-two patients (29.4%) received a maximum score of 15. Twenty-seven patients (24.8%) reported moderate levels of affective support and 7 patients (6.4%) had low levels, regarding positive interaction, ninety-three patients (85.3%) had high levels of support, with 37 patients (33.9%) receiving a maximum score of 15 on the questionnaire. Fifteen patients (13.8%) reported moderate levels of positive interaction, while only one patient was classified as having low level of this subtype (Table 3). The results from the categorization of the MOS-SSS scores according to the HNSCC subgroups are shown in table 3. There was no significant association between

the support social levels after cancer treatment and the location of the primary tumor ($p>0.05$) (Table 3).

When family functioning scores were categorized into different levels, 77 HNSCC patients (70.6%) were classified as having high levels of family functioning. Eighteen patients (16.5%) had moderate family dysfunction while 14 patients (12.8%) had marked family dysfunction (Table 3). The results regarding the categorization of the Apgar scores according to the HNSCC subgroups are shown in table 3. Patients treated for oropharynx cancer reported more accentuated family dysfunction than patients treated for oral and laryngeal cancer, but this association did not reach statistical significance ($p=0.058$) (Table 3).

Table 3. Levels of social support and family functionality in HNSCC patients and subgroups after cancer treatment.

	HNSCC N (%)	Oral N (%)	Oropharynx N (%)	Larynx N (%)	p-value
MOS-SSS (scores)					
Overall support					
High (76-95)	71 (65.1)	41 (63.1)	8 (47.1)	22 (81.5)	0.150
Moderate (57-75)	28 (25.7)	19 (29.2)	6 (35.3)	3 (11.1)	
Low (19-56)	10 (9.2)	5 (7.7)	3 (17.6)	2 (7.4)	
Tangible					
High (15-20)	99 (90.8)	60 (92.3)	14 (82.4)	25 (92.6)	0.378
Moderate (10-14)	4 (3.7)	1 (1.5)	2 (11.8)	1 (3.7)	
Low (4-9)	6 (5.5)	4 (6.2)	1 (5.9)	1 (3.7)	
Emotional/Informational					
High (35-40)	52 (47.7)	31 (47.7)	6 (35.3)	15 (55.6)	0.413
Moderate (25-34)	38 (34.9)	22 (33.8)	6 (35.3)	10 (37)	
Low (8-24)	19 (17.4)	12 (18.5)	5 (29.4)	2 (7.4)	
Affectionate					
High (10-15)	75 (68.8)	44 (67.7)	9 (52.9)	22 (81.5)	0.376
Moderate (5-9)	27 (24.8)	17 (26.2)	6 (35.3)	4 (14.8)	
Low (3-4)	7 (6.4)	4 (6.2)	2 (11.8)	1 (3.7)	
Positive interaction					
High (10-15)	93 (85.3)	54 (83.1)	13 (76.5)	26 (96.3)	0.338
Moderate (5-9)	15 (13.8)	10 (15.4)	4 (23.5)	1 (3.7)	
Low (3-4)	1 (0.9)	1 (1.5)	0 (0)	0 (0)	
APGAR (scores)					
Highly functional (7-12)	77 (70.6)	43 (66.2)	11 (64.7)	23 (85.2)	0.058
Moderate dysfunction (4-6)	18 (16.5)	14 (21.5)	1 (5.9)	3 (11.1)	
Accentuated dysfunction (0-3)	14 (12.8)	8 (12.3)	5 (29.4)	1 (3.7)	

Abbreviation: HNSCC, head and neck squamous cell carcinoma.

3.3 Associations between social support and familiar functionality with demographic, clinicopathological and biobehavioral variables

In univariate analysis, female HNSCC patients had lower levels of global social support than male patients ($p = 0.024$) after cancer treatment. Patients who were not married in the pre-treatment period reported lower levels of global ($p=0.006$), affective ($p=0.020$), emotional/informational ($p=0.008$) and tangible ($p=0.010$) social support in the post-treatment period (Table 4). HNSCC patients who live alone before treatment had lower levels of emotional/informational ($p=0.029$) and tangible ($p=0.027$) social support after oncological treatment than those who lived with one or more people. Patients with incomplete primary school patients with HNSCC had lower levels of positive interaction ($p=0.009$). Patients treated for oropharynx cancer reported lower levels of global social support ($p=0.009$), positive interaction ($p=0.006$) and tangible support ($p=0.018$) compared to patients treated for tumors located in the oral cavity

and larynx (Table 4). Patients who were active smokers before cancer treatment displayed lower positive interaction in the post-treatment period than non-smokers or ex-smokers ($p=0.038$). HNSCC patients who were heavy drinkers in the pre-treatment period reported lower affective support compared to those who were non-drinkers or former alcoholics ($p=0.008$). Patients who received non-surgical treatment displayed reduced emotional/informational support than those who underwent surgery ($p=0.003$). Patients treated for HNSCC with a longer follow-up period (13-60 months) reported lower levels of tangible support in relation to patients with 4-12 months ($p=0.046$). No significant associations were observed between levels of global support and the other subtypes of social support with any other measures of elapsed post-treatment time. Regarding family functionality, HNSCC patients who were not married before cancer treatment reported lower family functionality in the post-treatment period than those who were married patients ($p=0.024$).

Table 4. Associations between demographic, biobehavioral, and clinicopathological variables with social support and familial functionality in patients treated for HNSCC.

Variable	MOS - Social Support Survey					APGAR
	Tangible	Emotional/ Informational	Affectionate	Positive interaction	Overall support	
Sex (female vs male)	0.058	0.090	0.097	0.172	0.024*	0.981
Marital status (not married vs married)	0.010*	0.008*	0.020*	0.119	0.006*	0.024*
Living alone (yes vs no)	0.027*	0.029*	0.212	0.650	0.093	0.235
Education (Incomplete primary school vs complete)	0.450	0.137	0.162	0.009*	0.140	0.568
Location (oropharynx vs larynx)	0.018*	0.293	0.124	0.006*	0.009*	0.159
Smoking (active vs others)	0.186	0.084	0.560	0.038*	0.229	0.540
Alcoholism intensity (heavy vs non-drinkers)	0.209	0.174	0.008*	0.289	0.035*	0.218
Treatment (non-surgery vs surgery)	0.990	0.003*	0.791	0.370	0.959	0.321
Time (4-12 vs 13-60 months)	0.046*	0.396	0.498	0.973	0.819	0.340

* $p<0.05$

Multivariate regression analysis showed that female HNSCC patients were more likely to have lower levels of general social support compared to male patients (OR = 6.675, 95% CI = 1.617- 28.303, $p = 0.009$). However, when the model was adjusted, no significant association was found between gender and general social support levels (OR = 3.759, 95% CI = 0.813–17.377, $p = 0.090$). History of severe alcohol

consumption before cancer treatment was an independent predictor of lower levels of general social support in the post-treatment period compared to teetotaler (OR = 11.456, 95% CI = 2.350-55.834, $p = 0.003$). This result was maintained even in the adjusted model (OR = 11,456, 95% CI = 1,945–71,428, $p = 0.009$) (Table 5). Multivariate analysis for tangible support showed that marital status not married (OR = 2.958, 95% CI = 1.189-7.361, $p = 0.020$), oropharynx cancer location vs oral cavity (OR = 3.921, 95% CI = 1.085-14.084, $p = 0.037$), oropharynx cancer location vs larynx (OR = 10.416, 95% CI = 2.032-52.631, $p = 0.005$) and clinical stage III (OR = 5.235, 95% CI = 1.273-21.739, $p = 0.022$) are independent predictors for lower levels of tangible support after cancer treatment. When the model was adjusted, not married marital status (OR = 2.963, 95% CI = 0.857–10.245, $p = 0.086$) and location of oropharynx versus oral cavity cancer (OR = 5.524, 95% CI = 0.846–35.714, $p = 0.074$) lost significance. In contrast, oropharynx versus larynx cancer location (OR = 20,833, 95% CI = 2,314–200,000, $p = 0.007$) and clinical stage III (OR = 14,925, 95% CI = 2,409–90,909, $p = 0.004$) showed significant association with tangible social support even in the adjusted model (Table 5). Multivariate analysis for emotional/Informational support revealed that HNSCC patients who were not married in the pre-treatment period had more than twice the chance of having lower levels of tangible support compared to married patients (OR = 2.333, 95% CI = 1.035-5.262, $p = 0.041$) but not in the adjusted model (OR = 2099, 95% CI = 0777-5672, $p = 0.114$). Regression logistic analysis for affective support showed that female HNSCC patients (OR = 5.229, 95% CI = 1.216-22.480, $p = 0.026$) and history of heavy alcohol consumption (OR = 11.477, 95% CI = 2.236-58.909, $p = 0.004$) before cancer treatment were independent predictors for lower levels of affective support. However, when the model was adjusted, the association between gender and levels of affective support was lost (OR = 2.993, 95% CI = 0.600–14.933, $p = 0.181$) (Table 5). Regression logistic analysis for positive interaction showed patients treated for tumors located in the oral cavity were more than 3 times more likely to have lower levels of positive interaction compared to those treated for larynx cancer (OR = 3.520, 95% CI = 1.348-9.191, $p = 0.010$) and patients treated for tumors located in the oropharynx were more than 6 times more likely to have low levels of positive interaction compared to those treated for larynx cancer (OR = 6.134, 95% CI = 1.543-24.390, $p = 0.010$). These results were maintained in the adjusted model for patients with tumors located in the oral cavity (OR = 4.003, 95% CI = 1.113–14.394, $p = 0.034$) and oropharynx (OR = 4.149, 95% CI = 0.870–19.863, p

= 0.048). Multivariate analysis for family functioning showed that marital status not married (OR = 3.280, 95% CI = 1.290-8.338, $p = 0.013$), being an active alcoholic (OR = 5.813, 95% CI = 1.432-23.809, $p = 0.014$) or former alcoholic (OR = 5.347, 95% CI = 1.552-25.000, $p = 0.032$) before cancer treatment were independent predictors for family dysfunction. These effects remained significant after adjusting for potential confounding (Table 5).

Table 5. Significant results from the logistic regression analysis considering social support and family functioning as response variables and demographic, clinicopathological and biobehavioral data from HNSCC patients as independent variables.

Dependent Variable	Independent Variable	OR no adjustment	95% CI	p-value	OR adjusted	95% CI	p-value
Overall support	Sex (female vs male)	6.765	1.617 – 28.303	0.009	3.759	0.813-17.377	0.090
	Consumption of alcohol (severe vs teetotaler)	11.456	2.350 – 55.834	0.003	11.494	1.945-71.428	0.009
Tangible	Marital status (not married vs married)	2.958	1.189 – 7.361	0.020	2.963	0.857-10.245	0.086
	Location (oropharynx vs oral cavity)	3.921	1.085 – 14.084	0.037	5.524	0.846-35.714	0.074
	Location (oropharynx vs larynx)	10.416	2.032 – 52.631	0.005	20.833	2.314-200.000	0.007
Emotional/Informational	Clinical stage (III vs I)	5.235	1.273 – 21.739	0.022	14.925	2.409-90.909	0.004
	Marital status (not married vs married)	2.333	1.035 – 5.262	0.041	2.099	0.777-5.672	0.144
Affectionate	Sex (female vs male)	5.229	1.216 – 22.480	0.026	2.993	0.600-14.933	0.181
	Consumption of alcohol (severe vs teetotaler)	11.477	2.236 – 58.909	0.004	10.309	1.697-62.500	0.011
Positive interaction	Location (oral cavity vs larynx)	3.520	1.348 – 9.191	0.010	4.003	1.113-14.394	0.034
	Location (oropharynx vs larynx)	6.134	1.543 – 24.390	0.010	4.149	0.870-19.607	0.074
Family functioning	Marital status (not married vs male)	3.280	1.290 – 8.338	0.013	3.157	1.011-9.863	0.048
	Alcoholic (vs teetotaler)	5.813	1.432 – 23.809	0.014	6.410	1.096-37.037	0.039
	Ex-alcoholic (vs teetotaler)	5.347	1.152 – 25.000	0.032	6.944	0.928-52.631	0.059

Abbreviations: SE: Standard error; OR: odds ratio;

All values are considered statistically significant at $p < 0.05$

4 DISCUSSION

4 DISCUSSION

The results of this study show that most of the patients treated with HNSCC had high levels of global social support (mean score of 78.32 measured by MOS-SSSs), 34.9% of them had partial levels of support. These results are consistent with those found in patients with other types of cancer who displayed similar MOS-SSS values, such as breast³⁵, lung³⁶ and colorectal³⁷ cancer. Most of patient treated for laryngeal cancer (81.5%) displayed maximum score for global social support, a larger number than patients treated for oral (63.1%) and oropharynx (47.1%) cancer. Patients treated with oropharynx cancer had lower score of tangible social support when compared to patients with oral cavity and larynx cancer. To our knowledge, this data has not yet been shown in previous studies. Patients with oropharynx cancer usually have a history of more severe alcohol and tobacco³⁸, which could influence the perception of support received by these patients.

Having the treated primary tumor located in the oropharynx and clinical stage III were independent predictors of lower levels of tangible support. Tumor site profoundly impacts quality of life and choice of treatment modality.³⁹ Due to anatomy, oropharynx cancers are diagnosed in late stages of the disease, with the probable presence of regional metastases. Treatment for oropharynx cancer often requires intensification by concomitant radiotherapy and/or chemotherapy, with the risk of serious and permanent sequelae, such as dysphagia and xerostomia.⁴⁰ These consequences can last for a long time after treatment, leading to low levels of social functioning, social eating and social contact.⁴¹ Having the treated tumor located in the larynx was found to be an independent predictor for higher levels of positive social interaction. Physical changes resulting from post-treatment are associated with functional declines, such as low physical fitness, problems with food intake, recurrent cough and impaired communication.⁴¹ However, Katoke et al.⁴² showed that high levels of social support and alternative voice acquisition, whether as esophageal speech, electrolarynx, Tapia's artificial larynx, speech with tracheoesophageal shunt, or speech through computer software, enhance the psychological adjustment of laryngectomized patients. Recognizing one's limitations and the search for alternatives for a new physical condition are considered factors for social adaptation.⁴² Since 70% of patients treated with cancer located in the larynx undergo laryngectomy, our findings corroborate with the results from Katoke et al., which showed that high levels of social

support influenced post-treatment positive social interaction in laryngectomized patients.

Our results revealed that female HNSCC patients were more likely to have lower levels of global and affective social support than male patients, but these effects were lost when the model was adjusted for clinical stage and marital status, respectively. Karney et al.⁴³ assessed gender differences between spouses in providing better social support in stressful situations. They found that wives tended to provide better support when their husbands experienced greater stress. However, when wives experienced high stress levels, their husbands were less supportive⁴³. Traditionally, men have been considered breadwinners, while women are expected to carry out most of the household activities, including caregiving. Women may be prepared to care for men, but men may lack experience and practice in caring for women and, therefore, may be less willing to take responsibility for an ill partner⁴⁴. Proposed explanations include greater difficulty among men in performing the role of caregiver, resulting in lower levels of support in women. Our findings highlight the importance of guidance for men in performing the role of caregiver and emphasize the need for a support network for women treated for HNSCC.

Severe alcohol consumption was an independent predictor of lower levels of global and affective support, as well as for family dysfunction in HNSCC patients. Abusive alcohol use is a known risk factor for developing HNSCC; continued alcohol use after diagnosis is associated with many adverse outcomes, including cancer recurrence, significant physical comorbidities, and poor psychosocial outcomes, including depression and reduced quality of life in HNSCC patients.^{45,46} Low levels of social support are related to the increase and persistence of alcohol use disorders.⁴³ Heavy drinking leads to decreased contact with family due to increased contact with friends who drink and time spent drinking alone, reducing the number of individuals in social networks over time. The cyclical nature of this relationship suggests that heavy alcohol use decreases social contact, which indirectly increases subsequent alcohol use through reductions in perceived social support available.⁴⁷ Studies show that alcohol abuse disorder affects functioning family,^{48,49} affecting all family members. In our results, being an active or former alcoholic or former alcoholic before cancer treatment increased the chances of family dysfunction in post-treatment period by more 5 times. Although our study was not able to assess changes in alcohol consumption after cancer treatment and its correlation with family support data, the

results indicate that events prior to tumor development may affect the perception of family relationships in patients treated for HNSCC. Family dysfunctionality is characterized by physical and emotional conflicts that deteriorate relationships and lead to negative outcomes such as loss of child custody, unemployment, marital separation, physical and psychological abuse, depression, car or domestic accidents and crimes.⁵⁰ These are indicators of alcoholics that can contribute to family dysfunction inducing.⁵⁰

The importance of marital relationship history for family functioning in the post-treatment period of HNSCC was demonstrated in our findings. Patients who were not married (single, widowed or divorced) before cancer treatment had higher levels of family dysfunction in the follow-up period. This is consistent with previous research, which has shown that marital support is associated with improved physical and emotional well-being and better quality of life in patients with breast cancer.⁵¹ Seaman et al.⁵² analyzed the association between marital status and survival in HNSCC patients. They found that married patients and those with partners are more likely to continue with survival care and stay in it longer.⁵² Forsythe et al.⁵³ assessed social support and decision-making self-efficacy in survivors of different types of cancer in the long term and found that married marital status and social support are crucial factors in survival care. Marital relationships, especially those considered of high quality, can promote a feeling of obligation to take care of one's own health⁵³. Marital support can also facilitate access to medical care, including cancer-related follow-up care, through greater financial resources, access to health insurance, transportation assistance, or reminders to attend medical appointments.⁵²

The present study has some limitations. First, the research intervention was carried out cross-sectionally in patients treated for HNSCC who were at different times of post-treatment follow-up. Although the results of the multivariate analysis indicated that the time elapsed from the end of the treatment was not an influencing factor for the levels of social support, a possible interference of the non-standardization of a follow-up time on the profile of social support perceived by the HNSCC patients cannot be ruled out. In addition, sociodemographic, clinicopathological and biobehavioral variables were measured before cancer treatment. Changes in the dynamics and profile of these variables after cancer treatment could also affect the levels of social support and family functioning, which could not be explored in the present study. Therefore, further longitudinal studies should be conducted to characterize the social support throughout

the disease treatment process, from diagnosis to follow-up, mapping possible changes and, consequently, the patient's needs. Finally, although the present study is one of the first to evaluate the influence of a wide variety of predictors for social support levels in patients with HNSCC, it did not cover the assessment of psychological factors and the patient's adaptation to the cancer treatment and its consequences.

5 CONCLUSIONS

5 CONCLUSIONS

The current study indicates that patients with HNSCC can display dysfunctional social and family support after treatment. The results show that clinical and behavioral factors, some of them measured before cancer treatment such as the history of alcohol consumption, are independent predictors for lower levels of social support and family dysfunction after HNSCC treatment. Given the direct association between social support deficit and family dysfunction with unfavorable clinical outcomes of cancer, the results from this study reinforce the importance of a care network for the patient even after the treatment of HNSCC, in addition to the attention of the interdisciplinary oncology team to the predictive factors shown in the present study.

6 REFERENCES

6 REFERENCES

1. Lin CC. The roles of social support and coping style in the relationship between gratitude and well-being. *Pers Individ Dif* 2016;89:13–18.
2. Lin N. Conceptualizing social support. In: Lin N, Dean A, Ensel WM, editors. *Social support, life events and depression*. Saint Louis: Academic Press; 1986. p. 17-30.
3. Nausheen B, Gidron Y, Peveler R, Moss-Morris R. Social support and cancer progression: a systematic review. *J Psychosom Res*. 2009;67(5):403-15.
4. Bouchard V, Robitaille A, Perreault S, Cyr MC, Tardif JC, Busseuil D, et al. Psychological distress, social support, and use of outpatient care among adult men and women with coronary artery disease or other non-cardiovascular chronic disease. *J Psychosom Res*. 2023;165:111131.
5. Curtis R, Groarke A, Coughlan R, Gsel A. Psychological stress as a predictor of psychological adjustment and health status in patients with rheumatoid arthritis. *Patient Educ Couns*. 2005;59(2):192-8.
6. Dao-Tran TH, Lam LT, Balasooriya NN, Comans T. The Medical Outcome Study Social Support Survey (MOS-SSS): a psychometric systematic review. *J Adv Nurs* Forthcoming 2023.
7. Sherbourne CD, Stewart AL. The MOS social support survey. *Soc Sci Med* 1991;32:705–14.
8. Kelley DE, Kent EE, Litzelman K, Mollica MA, Rowland JH. Dyadic associations between perceived social support and cancer patient and caregiver health: An actor-partner. interdependence modeling approach. *Psychooncology*. 2019;28(7):1453-1460.
9. Yoon H, Chatters L, Kao TA, Saint-Arnault D, Northouse L. Predictors of quality of life and depression among Korean-American cancer patients and their family caregivers. *Psychooncology* 2018;27:2717–2724.
10. Smith SK, Herndon JE, Lysterly KH, Coan A, Wheeler JL, Staley T, et al. Correlates of quality of life-related outcomes in breast cancer patients participating in the Pathfinders pilot study. *Psychooncology*. 2011;20(5):559-64.

11. Haviland J, Sodergren S, Calman L, Corner J, Din A, Fenlon D, et al. Social support following diagnosis and treatment for colorectal cancer and associations with health-related quality of life: Results from the UK ColoREctal Wellbeing (CREW) cohort study. *Psychooncology*. 2017;26(12):2276-2284.
12. Lutgendorf SK, Geest K, Bender D, Ahmed A, Goodheart MJ, Dahmouch L. Social influences on clinical outcomes of patients with ovarian cancer. *J Clin Oncol*. 2012;30(23):2885-90.
13. Kiecolt-Glaser JK, Gouin JP, Hantsoo L. Close relationships, inflammation, and health. *Neurosci Biobehav Rev*. 2010;35(1):33-8.
14. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: a meta-analytic review. *PLoS Med*. 2010;27;7(7):e1000316.
15. Nausheen B, Gidron Y, Peveler R, Moss-Morris R. Social support and cancer progression: a systematic review. *J Psychosom Res*. 2009;67(5):403-15. doi: 10.1016/j.jpsychores.2008.12.012.
16. Howren MB, Christensen AJ, Pagedar NA. Problem alcohol and tobacco use in head and neck cancer patients at diagnosis: associations with health-related quality of life. *Support Care Cancer*. 2022 ;30(10):8111-8118.
17. Koster ME, Bergsma J. Problemas e comportamento de enfrentamento de pacientes com câncer facial. *Soc Sci Med*. 1990;30(5):569-78.
18. Karnell LH, Christensen AJ, Rosenthal EL, Magnuson JS, Funk GF. Influence of social support on health-related quality of life outcomes in head and neck cancer. *Head Neck*. 2007;29(2):143-6.
19. Mathieson CM, Logan-Smith LL, Phillips J, MacPhee M, Attia EL. Caring for head and neck oncology patients. Does social support lead to better quality of life? *Can Fam Physician*. 1996;42:1712-20.
20. Hammerlid E, Silander E, Hörnemark L, Sullivan M. Health-related quality of life three years after diagnosis of head and neck cancer--a longitudinal study. *Head Neck*. 2001;23(2):113-25.

21. Derks W, Leeuw R, Winnubst J, Hordijk GJ. Elderly patients with head and neck cancer: physical, social and psychological aspects after 1 year. *Acta Otolaryngol.* 2004;124(4):509-14.
22. Breuer N, Sender A, Daneck L, Mentschke L, Leuteritz K, Friedrich M, et al. How do young adults with cancer perceive social support? A qualitative study. *J Psychosoc Oncol.* 2017;35:292–308.
23. Smilkstein G. The family APGAR: a proposal for a family function test and its use by physicians. *J Fam Pract.* 1978 Jun;6(6):1231-9.
24. Lekka D, Pachi A, Tselebis A, Zafeiropoulos G, Bratis D, Evmolpidi A, Ilias I, et al. Pain and Anxiety Versus Sense of Family Support in Lung Cancer Patients. *Pain Res. Treat.* 2014, 2014, 312941.
25. Tao L, Zhong T, Hu X, Fu L, Li J. Higher family and individual resilience and lower perceived stress alleviate psychological distress in female breast cancer survivors with fertility intention: a cross-sectional study. *Support Care Cancer.* 2023;31(7):408.
26. Baider L, Ever-Hadani P, Goldzweig G, Wygoda MR, Peretz T. Is perceived family support a relevant variable in psychological distress?. A sample of prostate and breast cancer couples. *J Psychosom Res.* 2003;55(5):453-60.
27. Chen B, Wang W, Yang S. The impact of family functioning on depression in college students: A moderated mediation model. *J Affect Disord.* 2023;340:448-455.
28. Park YY, Jeong YJ, Lee J, Moon N, Bang I, Kim H, Yun KS, Kim YI, Jeon TH. The influence of family adaptability and cohesion on anxiety and depression of terminally ill cancer patients. *Support Care Cancer.* 2018;26(1):313-321.
29. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. *J. Chron. Dis.* 1987;40:373–383.
30. Bertero L, Massa F, Metovic J, Zanetti R, Castellano I, Ricardi U, et al. Eighth Edition of the UICC Classification of Malignant Tumours: an overview of the

changes in the pathological TNM classification criteria-What has changed and why? 2018;472(4):519-531.

31. Sarafim-Silva BAM, Duarte GD, Sundefeld MLMM, Biasoli ÉR, Miyahara GI, Bernabé DG. Childhood trauma is predictive for clinical staging, alcohol consumption, and emotional symptoms in patients with head and neck cancer. *Cancer*. 2018;124:3684–3692.
32. Figueira JA, Sarafim-Silva BAM, Gonçalves GM, Aranha LN, Lopes FL, Corrente JE, et al. Predisposing factors for increased cortisol levels in oral cancer patients. *Compr Psychoneuroendocrinol*. 2022; 6;9:100110.
33. Griep RH, Chor D, Faerstein E, Werneck GL, Lopes CS. Validade de constructo de escala de apoio social do Medical Outcomes Study adaptada para o português no Estudo Pró-Saúde. *Cad. Saúde Pública*, Rio de Janeiro. 2005; 21, 3, 703-714.
34. Duarte YAO, Cianciarullo TI. Família: rede de suporte ou fator estressor. A ótica de idosos e cuidadores familiares. Livro programa. São Paulo: EEUSP, 2002.
35. Zamanian H, Amini-Tehrani M, Jalali Z, Daryaafzoon M, Ramezani F, Malek N, et al. Stigma and quality of life in women with breast cancer: mediation and moderation model of social support, sense of coherence, and coping strategies front psychol. 2022; 13: 657992.
36. Chambers A, Damone E, Chen YT, Nyrop K, Deal A, Muss H, et al. Social support and outcomes in older adults with lung cancer *J Geriatr Oncol*. 2022;13(2):214-219.
37. Haviland J, Sodergren S, Calman L, Corner J, Din A, Fenlon D, et al. Social support following diagnosis and treatment for colorectal cancer and associations with health-related quality of life: Results from the UK ColoREctal Wellbeing (CREW) cohort study *Psychooncology*. 2017;26(12):2276-2284.
38. Bastos DB, Sarafim-Silva BAM, Sundefeld MLMM, Ribeiro AA, Brandão JDP, Biasoli ER, et al. Circulating catecholamines are associated with biobehavioral factors and anxiety symptoms in head and neck cancer patients. *PLoS One*. 2018;13(8):e0202515.
39. Holt-Lunstad J, Birmingham W, Jones BQ. Is there something unique about marriage? The relative impact of marital status, relationship quality, and network

- social support on ambulatory blood pressure and mental health. *Ann Behav Med*. 2008 ;35(2):239-44.
40. Roets E, Tukanova K, Govarts A, Specenier P. Quality of life in oropharyngeal cancer: a structured review of the literature. *Support Care Cancer*. 2018;26(8):2511-2518.
 41. Sluis KE, Kornman AF, van der Molen L, van den Brekel MWM, Yaron G. Women's perspective on life after total laryngectomy: a qualitative study. *Int J Lang Commun Disord*. 2020;55(2):188-199.
 42. Kotake K, Suzukamo Y, Kai I, Iwanaga K, Takahashi A. Social support and substitute voice acquisition on psychological adjustment among patients after laryngectomy. *Eur Arch Otorhinolaryngol*. 2017;274(3):1557-1565.
 43. Neff LA, Karney BR. Gender Differences in Social Support: A Question of Skill or Responsiveness? *Journal of Personality and Social Psychology*. 2005;88(1), 79–90.
 44. Syse A. Does cancer affect marriage rates? *J Cancer Surviv*. 2008;2(3):205-14.
 45. Howren MB, Christensen AJ, Pagedar NA. Problem alcohol and tobacco use in head and neck cancer patients at diagnosis: associations with health-related quality of life. *Support Care Cancer*. 2022;30(10):8111-8118.
 46. Marziliano A, Teckie S, Diefenbach MA. Alcohol-related head and neck cancer: Summary of the literature. *Head Neck*. 2020 ;42(4):732-738.
 47. Pérez Milena A, Pérez Milena R, Martínez Fernández ML, Leal Helmling FJ, Mesa Gallardo I, Jiménez PI. Family structure and function during adolescence: relationship with social support, tobacco, alcohol and drugs consumption, and psychic discomfort. *Aten Primaria*. 2007;39(2):61–65.
 48. Peirce RS, Frone MR, Russell M, Cooper ML, Muda P. A longitudinal model of social contact, social support, depression, and alcohol use. *Health Psychology*. 2000, 19(1), 28–38.
 49. Manguiera SO, Lopes MVO. Clinical validation of the nursing diagnosis of dysfunctional family processes related to alcoholism. *J Adv Nurs*. 2016;72(10):2401-12.

50. Tsai YF, Tsai MC, Lin YP, Weng CE, Chen CY, Chen MC. Facilitators and barriers to intervening for problem alcohol use. *J Adv Nurs*. 2010;66(7):1459-68.
51. Kornblith AB, Herndon JE, Zuckerman E, Viscoli CM, Horwitz RI, Cooper MR, Harris L, Tkaczuk KH, et al. Social support as a buffer to the psychological impact of stressful life events in women with breast cancer. *Cancer*. 2001;15;91(2):443-54.
52. Seaman AT, Seligman KL, Nguyen KK, Al-Qurayshi Z, Kendell ND, Pagedar NA. Characterizing head and neck cancer survivors' discontinuation of survivorship care. *Cancer*. 2022;1;128(1):192-202.
53. Forsythe LP, Alfano CM, Kent EE, Weaver KE, Bellizzi K, Arora N, et al. Social support, self-efficacy for decision-making, and follow-up care use in long-term cancer survivors. *Psychooncology*. 2014;23(7):788-96.

ANEXOS

ANEXO A - PARECER CONSUBSTANCIADO DO CEP – FOA/UNESP

UNESP - FACULDADE DE
ODONTOLOGIA-CAMPUS DE
ARAÇATUBA/ UNIVERSIDADE
ESTADUAL PAULISTA "JÚLIO
DE MESQUITA FILHO"



PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Caracterização do perfil do suporte social recebido em pacientes com câncer de cabeça e pescoço.

Pesquisador: DANIEL GALERA BERNABÉ

Área Temática:

Versão: 3

CAAE: 63661922.9.0000.5420

Instituição Proponente: Universidade Estadual Paulista Júlio de Mesquita Filho

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 5.976.997

Apresentação do Projeto:

A Folha de Rosto encontra-se devidamente preenchida, datada e assinada pelo pesquisador e responsável pela instituição proponente, tratando-se de pessoas distintas que não configuram conflito de interesse. O principal patrocinador do projeto é a instituição proponente. A Grande Área de Conhecimento (CNPq) está corretamente assinalada, correspondendo às Ciências da Saúde, e a área temática especial não se aplica. O trabalho ocorrerá no território brasileiro, em uma única instituição, havendo a necessidade do parecer do CEP e apresentação do TCLE para a sua execução, pois no desenho de estudo há coleta de informações pessoais do participante. Consta no documento PDF denominado "Cronograma" que a pesquisa ocorrerá no período de 03/05/2023 a 03/05/2025, tendo como etapas a "coleta de dados", "tabulação dos dados", "análise estatística" e "redação do Relatório Final", que são compatíveis com o projeto proposto. A informação do cronograma nos documentos digitais "PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_2013996.pdf" também estabelece o período das atividades de 16/12/2022 a 01/10/2023, portanto, com início posterior à tramitação no Sistema CEP/Conep. Na questão do orçamento foi previsto a impressão dos questionários no custo de R\$ 100,00 (cem reais). A infraestrutura necessária para a pesquisa envolve a utilização dos ambientes odontológicos da instituição.

Endereço: JOSE BONIFACIO 1193

Bairro: VILA MENDONÇA

CEP: 16.015-050

UF: SP

Município: ARACATUBA

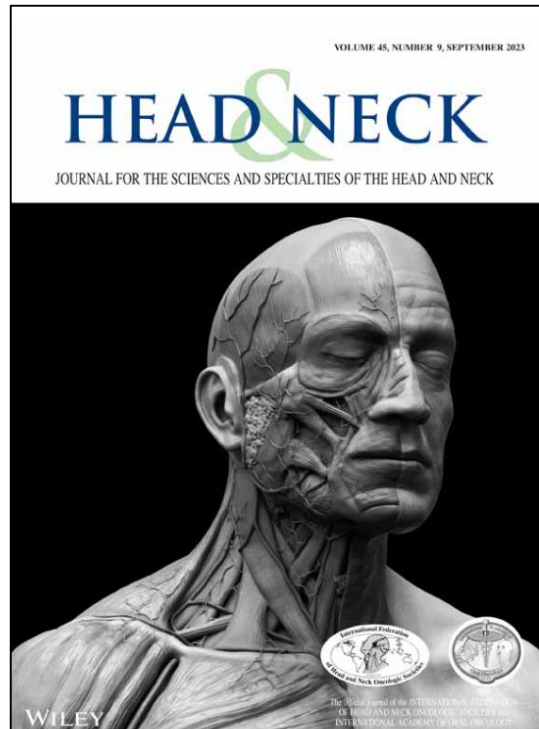
Telefone: (18)3636-3234

Fax: (18)3636-3203

E-mail: cep.foa@unesp.br

ANEXO B- Periódico de interesse para submissão

Head & Neck



Edited By: Patrick HA

Impact factor: 2.9

Online ISSN:1097-0347

Qualis CAPES: A1.