Social determinants in the survival of patients with head and neck cancer

Determinantes Sociais na Sobrevida dos Pacientes com Câncer de Cabeça e Pescoço

Determinantes Sociales en la Supervivencia de Pacientes con Cáncer de Cabeza y Cuello

Ana Paula Freitas Braga dos Santos[1], Larissa Porto Quintella[2], Ana Clara Barbosa de Sousa[3], Felipe Santos Cardoso[4], Ângela Guimarães Martins[5], Joana Dourado Martins Cerqueira[6]

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1. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0009-0001-2832-3958

2. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0009-0005-1035-6187

3. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0009-0009-7654-6628

4. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0009-0006-8932-2699

5. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0000-0002-7281-8966

6. State University of Feira de Santana. Feira de Santana, Bahia, Brazil. https://orcid.org/0000-0001-8606-0220

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RESUMO

Objetivo: Compreender como os Determinantes Sociais em Saúde impactam na sobrevida dos pacientes com câncer de cabeça e pescoço. **Métodos**: Trata-se de uma revisão integrativa de literatura, realizada em janeiro de 2023 nas bases de dados Scientific Electronic Library Online, Literatura Latino-Americana e do Caribe em Ciências da Saúde e PubMed e com a string de busca ((determinantes sociais de saúde OR condição de vida OR condição sócio-demográfica OR condição socioeconômica OR fatores sociais) AND (análise de sobrevida)). **Resultados:** Dos 315 artigos encontrados e, após os critérios de elegibilidade e etapas de seleção, apenas 12 correspondiam aos critérios escolhidos. Tais estudos indicam que dentre as pessoas com câncer de cabeça e pescoço o homem, negro, com idade superior a 50 anos, solteiro e/ou divorciado e com baixo nível socioeconômico está propenso a ter uma pior sobrevida. **Conclusão:** Com base nos artigos selecionados, compreendeu-se que os determinantes sociais em saúde influenciam na melhora ou piora da sobrevida do paciente com câncer de cabeça e pescoço.

Descritores: Neoplasias de Cabeça e Pescoço; Determinantes Sociais da Saúde; Fatores Socioeconômicos; Análise de Sobrevida; Condições Sociais.

ABSTRACT

Objective: Understand how Social Determinants of Health impact the survival of patients with head and neck cancer**. Methods:** This is an integrative literature review, carried out in January 2023 in the Scientific Electronic Library Online, Latin American and Caribbean Literature in Health Sciences and PubMed databases and with the search string ((social determinants of health OR living condition OR socio-demographic condition OR socioeconomic condition OR social factors) AND (survival analysis)). **Results:** Of the 315 articles found and, after the eligibility criteria and selection steps, only 12 corresponded to the chosen criteria. Such studies indicate that among people with head and neck cancer, black men, over the age of 50, single and/or divorced and with low socioeconomic status are likely to have a worse survival rate. **Conclusion:** Based on the selected articles, it was understood that social determinants of health influence the improvement or worsening of survival of patients with head and neck cancer.

Descriptors: Head and Neck Neoplasms; Social Determinants of Health; Socioeconomic Factors; Survival Analysis; Social Conditions.

RESUMEN

Objetivo: Comprender cómo los Determinantes Sociales en Salud impactan en la supervivencia de los pacientes con cáncer de cabeza y cuello. **Método**: Se trata de una revisión integrativa de la literatura, realizada en enero de 2023 en las bases de datos Scientific Electronic Library Online, Literatura Latinoamericana y del Caribe en Ciencias de la Salud y PubMed, utilizando la cadena de búsqueda ((determinantes sociales de salud OR condición de vida OR condición socio-demográfica OR condición socioeconómica OR factores sociales) AND (análisis de supervivencia)). **Resultados:** De los 315 artículos encontrados y, después de aplicar los criterios de elegibilidad y etapas de selección, solo 12 cumplían con los criterios elegidos. Estos estudios indican que entre las personas con cáncer de cabeza y cuello, los hombres negros, mayores de 50 años, solteros y/o divorciados y con bajo nivel socioeconómico, tienen una peor supervivencia. **Conclusión:** Con base en los artículos seleccionados, se comprendió que los determinantes sociales en salud influyen en la mejora o empeoramiento de la supervivencia del paciente con cáncer de cabeza y cuello.

Descriptores: Neoplasias de Cabeza y Cuello; Determinantes Sociales de la Salud; Factores Socioeconómicos; Análisis de Supervivencia; Condiciones Sociales.

REVIEW

Introduction

Head and neck cancer (HNC) includes any type of tumor that develops in the head region, including the oral cavity and sinuses, nasal cavity, larynx, pharynx, salivary glands, and thyroid.[1] According to the World Health Organization, malignant head and neck tumors account for 3% of all types of cancer worldwide, which leads to the need to broaden the debate on this topic.[2]

CCP represents the 5th most incident neoplasm in Brazil, affecting both men and women, being the cause of about 10 thousand deaths per year and with social factors that only increase these rates, according to data from the National Cancer Institute.[3]

The diagnosis of these neoplasms occurs in many cases late, for various social and structural reasons, which results in patients with advanced cancer totaling more than 70% of these diagnoses.[3]

The main risk factors for the incidence of HNC are smoking and alcoholism, which are part of the patient's lifestyle.[4] In addition, there are factors that also increase the chances of occurrence of HNC cases, these sources of risk being infection by human papillomavirus (HPV) and excessive exposure to solar irradiation. At the same time, damage to the health of individuals already diagnosed is caused by their living conditions.[5]

Thus, some Social Determinants of Health (SDH), including income and education level, in the case of socioeconomically vulnerable people, play a considerable negative role in increasing diagnoses and decreasing survival of people with CCP. Consequently, SDH influences deaths, especially in individuals with late diagnosis, and in the treatment and survival of the patient.[5,6]

Thus, this study aims to understand how Social Determinants of Health impact the survival of patients with head and neck cancer.

Methodology

This is an integrative literature review, whose approach is descriptive and qualitative, adopting the standard of methodological rigor presented by Oliveira et al (2015).

The search was carried out in January 2023 in the Scientific Electronic Library Online (SCIELO), Latin American and Caribbean Literature in Health Sciences (LILACS), and PubMed databases, whose eligibility criteria included the articles available in full, published within a period of up to 10 years, in English and Portuguese. Thus, articles published outside the proposed period, not available in the full version, as well as the annals of events, letters to the editor, and articles that were not related to the theme were excluded.

To search the databases, the search string (((Head and Neck Neoplasms AND ("social determinants of health OR life conditions OR socio-demographic conditions OR socioeconomic conditions OR social factors") AND Survival Analysis)) OR (head and neck cancer) AND (social determinants of health OR living condition OR socio-demographic condition OR socioeconomic condition OR social factors) AND survival analysis))).

The selected articles were read and evaluated by two independent examiners and after evaluating the articles in full and applying the criteria, they became part of the review.

Results

The searches in the databases resulted in 315 articles, after applying the eligibility criteria and reading the articles in full, 12 articles were selected for the study (Figure 1) and their findings presented in detail (Chart 1).

Figure 1 - Flowchart of the results of the search and analysis of the studies.

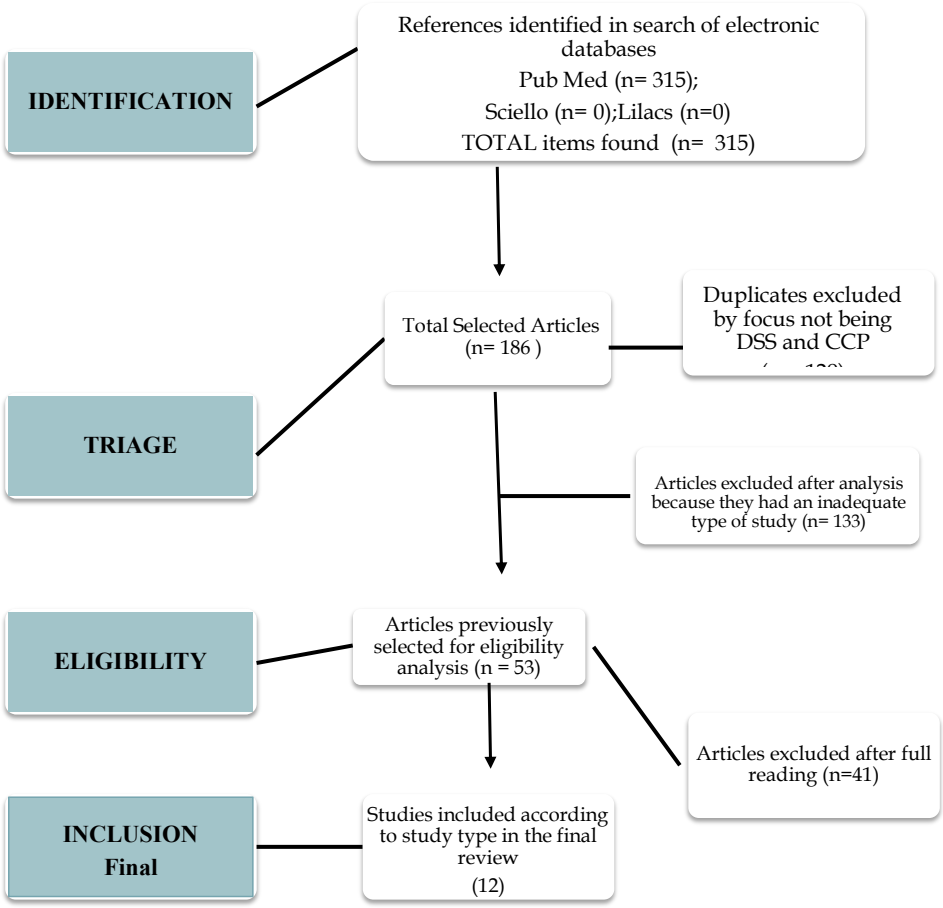

Chart 1 - Characterization of the studies included for qualitative analysis.

Author/Year	Country	Type of study	Methodology	Main Results
Hagedoorn *et al.* (2016)	Belgium	Cross-Sectional Study	The data on men aged 40 to 64 years based on the 2001 Belgian census linked to registration data on emigration and mortality from 2001 to 2011. Individual Socioeconomic Position (SEP) is measured using education, employment status, and housing conditions. Deprivation at the municipal level is measured by a deprivation index.	Interactions between levels indicate that the association between individual (SEP) and mortality from CCP is conditioned by area deprivation. Mortality from CCP in disadvantaged areas is especially high among men with high SEP. As a result, social disparities appear to be smaller in the poorest areas, and regional variation in CCP mortality

			Absolute differences in mortality are estimated by age-standardized mortality rates.	was significant.
Carey *et al*. (2020)	United States	Cohort Study	This retrospective cohort study included patients from the National Cancer Database, a hospital database prospectively maintained cancer registry of patients treated at more than 1,500 hospitals in the U.S. Participants were diagnosed with malignant tumors of the head and neck from January 1, 2004 to December 31, 2016. The data were analyzed from May 1 to November 30, 2019.	There was an association between the social determinants of health and the place of treatment, implying better or worse survival. The social determinants of health found were: race/ethnicity, income, educational level and the type of community in which they live.
Menvielle *et al*. (2022)	France	Cross-Sectional Study	Data from a representative sample including 1% of the French population were analyzed. Educational differences between people aged 30 to 74 years were quantified with hazard ratios and relative indices of inequality (RII) calculated using Cox regression models, as well as mortality rate difference and attributable fraction of the population	In the period 1999–2007, large relative inequalities were found among men for total cancer and mortality from smoking- and/or alcohol-related cancer (lung, head and neck, esophagus). Among women, a large increase in absolute inequalities (difference in mortality rate (RD) between the higher and lower education groups) in mortality was observed for all cancers combined, lung, head and neck, and colorectal cancer.
Wong *et al*. (2017)	Singapore	Cohort Study	A historical cohort study of patients at a tertiary referral center with CCP was identified in the multidisciplinary cancer database from 1992 to 2014. Pathological data were extracted for analysis. The patients' residential zip codes were matched to the type of housing. Logistic regression was performed to assess the relationship between all-cause mortality and predictors of interest, as well as the association between housing type and disease stage at	Male gender, 64 years, stage at presentation, survival time since diagnosis, and smoking status were significant predictors of mortality. Patients living in smaller apartments with higher subsidies had worse survival, although they were not more likely to have advanced disease, suggesting that the difference in survival was not due to delayed presentation.

			presentation.	
Sheth *et al.* (2020)	United States	Analytical Studs	Patients were identified from the Head and Neck Cancer Epidemiology Study (CCP), a population-based study in North Carolina. Cox proportional hazards regression models were used estimate hazard ratios and 95% confidence intervals (CI) for black versus white patients with Sequential adjustment sets.	The results point to the relationship between racial disparity between white and black patients undergoing treatment for HPV-associated oropharyngeal cancer and survival rates. The influence of racial disparity on the rate of reduced survival for black patients was associated with the action of socioeconomic factors such as age, level of education, and income.racial
Saxena *et al.* (2018)	India	Analytical Study	This study was conducted at a medical teaching hospital, which is a Multi specialized tertiary care. All confirmed and diagnosed cases of CCP seen in various departments of our hospital during the period 2013-2016 were included for this study.	The trends observed in patients with CCP showed a propensity of individuals under 50 years of age and married to have a longer survival. In addition, the patients had difficulties in continuing medical follow-up due to misinformation, obstacles in traveling to the hospital, and socioeconomic problems.
Stubbs *et al.* (2019)	United States	Analytical Study	Analytical sample consisting of patients diagnosed with primary parotid gland malignancy between 2004 and 2012, using univariate and multivariate Cox proportional hazard models to assess the relationship between overall survival rate and two major social determinants of health: demography and SES.	The factors associated with higher survival in patients with parotid gland cancer were: younger ages at diagnosis, higher income conditions, and high level of education. In addition, females tended to have higher survival. Aspects associated with race point to a propensity for longer survival for Asian patients when compared to white patients. In this context, Hispanic patients demonstrated advantages over patients who were not.
Xu *et al.* (2017)	China	Analytical Study	Eligible patients (n = 37,995) were identified from the United States Surveillance, Epidemiology, and End Results (SEER) Database between 2007 and 2012. Socioeconomic factors (i.e., median household income,	Survival rates were influenced by socioeconomic and ethnic factors. Patients with higher socioeconomic status were more likely to live with the consequences of head and neck cancer

			educational attainment, unemployment rate, insurance status, marital status, and residence) were included in the univariate/multivariate Cox regression analysis; validated factors were used to generate nomograms for cause-specific survival (CSS) and overall survival (OS) and a prognostic score model for stratification of low-risk and high-risk groups were compared for all cancer subsites.	and live longer, when compared to patients with lower status. Marital status, family conditions and psychological conditions showed an influence on the survival conditions of the patients observed.
Chu *et al.* (2016)	Canada	Analytical Study	Patients with newly diagnosed CCP from 2003 to 2010 (n = 2,124) were identified at the Princess Margaret Cancer Centre of Toronto. Principal component analysis was used to calculate a composite score using neighbourhood-level SES variables obtained from the 2006 Census of Canada.	Socioeconomic status (SES) was associated with survival, but this effect was lost after accounting for other factors (age, sex, TNM stage, smoking/alcohol). lower socioeconomic status (SES) was associated with higher smoking, alcohol consumption, comorbidity, and stage.
Naghavi *et al.* (2016)	United States	Analytical Study	Records of 1,802 patients with nonmetastatic squamous cell CCP treated between 1998 and 2013 were retrospectively evaluated from an institutional database. Patient demographics, tumor and treatment characteristics, and patient outcomes were extracted from the graph. Differences between the groups were assessed using multivariate logistic regression (MVA) analysis.	Black race is an independent prognosis for LRC and OS. Delays in treatment of CCP, such as tumor presentation in more advanced stages and delays in starting treatment, can be attributed to socioeconomic factors, such as employment status and social support.
Weizman *et al.* (2017)	Israel	Cohort Study	A retrospective national cohort based on the population of patients with CCP diagnosed in Israel between 2000 and 2017. The place of residence and the socioeconomic status were correlated with overall survival (OS), controlling for Prognostic factors that	The data pointed to disparities in survival rates between patients who lived in the periphery and in the center. In this context, patients who lived in peripheral areas and had socioeconomic difficulties had worse survival data, associated with factors such as misinformation and lack of access to adequate

			included tumor site, stage, age, sex, and ethnicity group.	treatment.
Harris *et al.* (2021)	United States	Cohort Study	This retrospective cohort study identified individuals diagnosed with CCP between 2005 and 2015 using the surveillance, epidemiology, and end-results database. Patients with cancers diagnosed in the following locations were included: lip, tongue, gums, floor of the mouth, palate and other/unspecified.	A total of 35,769 patients met the inclusion criteria. At the time of initial diagnosis, black patients had higher-grade and more advanced stage HNC ($p < 0.001$). A greater number of black subjects were dead at the time of the last follow-up compared to white subjects ($p < 0.001$). Residential racial segregation results in poorer long-term cancer survival among black patients.

Discussion

In the present study, according to the 12 selected authors, it is possible to understand that the Social Determinants of Health (SDH) affect the quality and chance of survival of patients with head and neck cancer.[8-20]

Among the SDH, issues involving education level, socioeconomic position, ethnicity/race, and housing conditions stand out, which are directly linked to the survival conditions of patients.[10,14,17,18] Thus, black men, over 50 years of age, single and/or divorced, and with low socioeconomic status are likely to have a worse survival.[14,17] For Saxena et al. (2018), most patients with HNC whose age is over 50 years are due to the fact that they have a longer exposure to tobacco and alcohol, which are considered one of the main causes of HNC.

Allied to this, studies show that black people are more likely to have a more advanced stage of the disease and higher mortality after diagnosis, especially when compared to white people.[9,11,12,17] According to Harris et al. (2021), residential racial segregation was also considered to be an aggravating factor for poorer survival, as it is considered an underlying catalyst for inequality in health outcomes. That is, black individuals, linked to a higher poverty rate, less access to education and greater economic inequality live in areas of greater racial segregation and this directly implies worse cancer survival in the long term or even in the first 5 (five) years after diagnosis.

For Chu et al. (2016) and Sheth et al. (2020), there is a relevant relationship between SDH, survival, and the incidence factors of CCP in individuals. Thus, it is worth highlighting alcoholism, smoking, and the presence of comorbidities as incidence factors.[8,14] These findings corroborate the study by Sheth et al. (2020), which also points to infection caused by human papillomavirus (HPV) as an important incidence factor. In short, regarding HPV-induced CCP, the Social Determinants of Health, especially ethnic/racial determinants, act to reduce the chance of survival and increase the mortality

rate of neoplastic patients.[8,14] In fact, HPV has increased the incidence of oropharyngeal cancer, which is also a type of HNC, by 60%.[11]

Finally, the limitations of the article include the scarcity of available articles on the topic addressed and the fact that several studies found in the electronic databases were not available in full, making the search and evaluation process difficult. The factors mentioned highlight the need to conduct studies that target the action of the various SDH and the survival of patients with HNC.

Final Considerations

The literature reviewed in this article, therefore, points to the association of Social Determinants of Health (SDH) as an influence on the quality and chances of survival of patients with HNC. It is essential to conduct studies that target this theme, in addition to the construction of measures aimed at reducing mortality from CCP by mitigating socioeconomic disparities.

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Autor de correspondência
Joana Dourado Martins Cerqueira
Avenida Transnordestina, s/n - Novo Horizonte. CEP: 44036-900 - Feira de Santana, Bahia, Brasil.
joana.cerqueira@uefs.br