



Gastric carcinoma and dysfunction: a systematic review

Carcinoma gástrico e disfagia: uma revisão sistemática

Carcinoma gástrico y disfagia: una revisión sistemática

*Eduarda Besen**

*Claudia Tiemi Mituuti**

*Emanuelle Moreira**

*Deivid de Souza Silveira**

*Patrícia Haas**

Abstract

Introduction: Gastric carcinoma, also known as stomach cancer, is one of the types of cancer with great incidence in Brazil, according to INCA data. The forms of treatment for gastric carcinomas are related to the stage in which the disease is, may vary from surgeries, resections to gastrectomies and lymphadenectomies, and the presence of chemotherapy may be necessary. It is known that some of the many types of cancers can lead to the presentation of some dysphagia, characterized by changes in the swallowing process. **Objective:** to verify the impact of gastric cancer on dysphagia. **Material and Method:** Searches for articles in the Medline (Pubmed), Cochrane Library, SciELO, LILACS and MEDLINE databases without restrictions on location or languages, published between January 2010 and August 2018. The research was carried out on the basis of data with descriptors (“Deglutition Disorders” or “Dysphagia” or “Esophageal Dysphagia” or “Oropharyngeal Dysphagia” or “Swallowing Disorders”) and (“Stomach Neoplasms” or “Cancer of Stomach” or “Cancer of the Stomach” or “Gastric Cancer” or “Gastric Cancer, Familial Diffuse” or “Gastric Neoplasms” or “Neoplasms, Gastric or Neoplasms

* Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil.

Authors' contributions:

EB: Contributed significantly to the study conception and design, data acquisition, writing of the article and final approval of the version to be presented.

CTM and EM: Study conception and design, data acquisition, writing of the article, critical review of the relevant content and final approval of the version to be presented.

DSS: Study conception and design, data analysis and interpretation, writing of the article, critical review of the relevant content and final approval of the version to be presented.

PH: Contributed significantly to the study conception and design, writing of the article and final approval of the version to be presented.

Correspondence e-mail: Eduarda Besen - dudabesen@gmail.com

Received: 04/05/2019

Approved: 03/03/2020



”, “Stomach” or “Stomach Cancer”). Results: The relationship between gastric cancer and dysphagia is addressed as an important consequence of the types of treatments. Five studies were found that answered the guiding question. Three of the five selected studies deal with patients’ quality of life after treatment. Conclusion: It was found that dysphagia is seen as a consequence of gastric carcinoma and its treatment.

Keywords: Deglutition Disorders; Stomach Neoplasm; Quality of life.

Resumo

Introdução: O carcinoma gástrico, também conhecido como câncer de estômago é um dos tipos de câncer com grande incidência no Brasil, segundo dados do INCA. As formas de tratamento para carcinomas gástricos estão relacionadas ao estágio em que a doença se encontra, podem variar de cirurgias, ressecções a gastrectomias e linfadenectomias, podendo ser necessária a presença de quimioterapia. Sabe-se que alguns dos muitos tipos de cânceres podem levar à apresentação de algum quadro de disfagia, caracterizada pelas alterações no processo de deglutição. **Objetivo:** verificar qual o impacto do câncer gástrico na disfagia. **Material e Método:** Buscas de artigos nas bases de dados Medline (Pubmed), Cochrane Library, SciELO, LILACS e MEDLINE sem restrição de localização ou idiomas, publicados no período de janeiro de 2010 até agosto de 2018. A pesquisa foi realizada na base de dados com os descritores (“Deglutition Disorders” or “Dysphagia” or “Esophageal Dysphagia” or “Oropharyngeal Dysphagia” or “Swallowing Disorders”) and (“Stomach Neoplasms” or “Cancer of Stomach” or “Cancer of the Stomach” or “Gastric Cancer” or “Gastric Cancer, Familial Diffuse” or “Gastric Neoplasms” or “Neoplasms, Gastric or Neoplasms”, “Stomach” or “Stomach Cancer”). **Resultados:** A relação entre o câncer gástrico e a disfagia é abordada como uma importante consequência dos tipos de tratamentos. Foram encontrados cinco estudos que responderam a pergunta norteadora. Três dos cinco estudos selecionados tratam da qualidade de vida dos pacientes posteriormente ao tratamento. **Conclusão:** Foi verificado que a disfagia é observada como uma possível consequência do carcinoma gástrico e seu tratamento.

Palavras-chave: Transtornos de Deglutição; Neoplasias Gástricas; Qualidade de Vida.

Resumen

Introducción: el carcinoma gástrico, también conocido como cáncer de estómago, es uno de los tipos de cáncer con gran incidencia en Brasil, según datos de INCA. Las formas de tratamiento para los carcinomas gástricos están relacionadas con la etapa en que se encuentra la enfermedad, pueden variar de cirugías, resecciones a gastrectomías y linfadenectomías, y puede ser necesaria la presencia de quimioterapia. Se sabe que algunos de los muchos tipos de cáncer pueden conducir a la presentación de cierta disfagia, caracterizada por cambios en el proceso de deglución. **Objetivo:** verificar el impacto del cáncer gástrico en la disfagia. **Material y método:** búsquedas de artículos en las bases de datos Medline (Pubmed), Cochrane Library, SciELO, LILACS y MEDLINE sin restricciones de ubicación o idiomas, publicadas entre enero de 2010 y agosto de 2018. La investigación se realizó sobre la base de datos con descriptores (“Trastornos de la deglución” o “Disfagia” o “Disfagia esofágica” o “Disfagia orofaríngea” o “Trastornos de la deglución”) y (“Neoplasias estomacales” o “Cáncer de estómago” o “Cáncer de estómago” o “Cáncer gástrico” o “Cáncer gástrico, difuso familiar” o “Neoplasias gástricas” o “Neoplasias, gástricas o neoplasias”, “Estómago” o “Cáncer de estómago”). **Resultados:** la relación entre el cáncer gástrico y la disfagia se aborda como una consecuencia importante de los tipos de tratamientos. Se encontraron cinco estudios que respondieron a la pregunta guía. Tres de los cinco estudios seleccionados abordan la calidad de vida de los pacientes después del tratamiento. **Conclusión:** se encontró que la disfagia se considera una posible consecuencia del carcinoma gástrico y su tratamiento.

Palabras clave: Trastornos de Deglución; Neoplasias Gástricas; Calidad de Vida.

Introduction

According to data from the Brazilian National Cancer Institute José Alencar Gomes da Silva (INCA), gastric carcinoma, also known as stomach cancer, is one of the types of cancer with great incidence in Brazil. Stomach cancer is the third type of cancer with the highest incidence in men and the fifth with the highest incidence in women. It is estimated that 21,290 new cases were reported in 2018, of which 13,540 were male and 7,750 female^{1,2}.

Despite showing a decrease in reported cases, gastric carcinoma is still the fifth most common type of cancer worldwide. In addition, most patients in Western countries have a late diagnosis, which compromises the effectiveness of treatment and increases the risk of relapse after surgery for healing purposes³. Gastric carcinoma can have an endogenous (genetic) or exogenous origin, that is, related to the environment. *Helicobacter pylori* is one of the most related external agents, generating infections that may aggravate inflammation already present in the patient, such as ulcers and gastritis, leading to tumors, in addition to hereditary factors and the use and abuse of substances, such as tobacco and alcohol^{4, 2}.

As the subject's nutritional habits are directly related to tumor onset, the patient's nutrition is seen as an exogenous factor, since food may affect and change the gastric mucosa, enabling the onset of a neoplasia. Nutrition is considered a key factor during treatment, as it may directly affect the outcomes of the treatment^{5,6}.

Gastric carcinomas treatment options are related to the stage of the disease, and may range from surgeries and resection to gastrectomies and from lymphadenectomies to chemotherapy. In most cases, the tumor is found at a more advanced stage, which reduces the possibilities of treatment and cure^{7,8}. Surgery has been reported as the most common and effective treatment. This surgery includes the removal of the area affected by the tumor, that is, the space of the gastric chamber is reduced, or even total surgical resection, thus changing the normal functioning of the organ that must go through an adaptation phase that impacts the nutrition process of the patient^{9,10,11}.

As a result of some cancers, the affected individual may have some change in swallowing, that is, a dysphagia. Swallowing is a very complex

neuromotor action and involves the transportation of the food from the mouth to the stomach, for the nutrition and hydration of the individual. It should be noted that any type of change at any stage of this process can be called dysphagia^{12,13}. Swallowing has four phases that must be noticed, such as the preparatory, oral, pharyngeal and esophageal phases. Oral and preparatory phases are voluntarily developed, while pharyngeal and esophageal phases are involuntarily performed from a neurological control, in which the stomach must participate^{14,15}. Dysphagia may have a mechanical, neurogenic, senile or psychogenic origin, and can have a great impact on the patient's life and thus compromise their nutrition, hydration, pulmonary functions or even their social life. In the case of a hospitalized patient, dysphagia can worsen the clinical condition resulting in death^{16,17,18,19}.

Scientific knowledge on the reasons that lead individuals with gastric cancer to develop dysphagia has been discussed, as well as which stage of the cancer (pre-, during and/or post-treatment) has the highest occurrence of dysphagia, in addition to understanding the impact of the treatment chosen for each individual. This study suggests a greater importance in the care of patients' quality of life.

The primary goal of this study is to check scientific evidence on the relationship between stomach cancer and dysphagia in order to answer the following guiding question: What is the impact of gastric cancer on dysphagia?

Methods

Research characteristics and search strategies

The systematic review was conducted according to the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)²⁰.

The searches for scientific articles were conducted by two independent researchers in the Medline (Pubmed), Cochrane Library, SciELO, LILACS and MEDLINE electronic databases without restrictions on location or languages, for studies published from January 2010 to August 2018. The research was structured and organized according to the PICO process, which represents an acronym for **P**opulation, **I**ntervention, **C**omparison and **O**utcome.

Descriptors were selected from the Health Sciences Descriptors (DeCS) and Medical Subject Heading Terms (MeSH) dictionaries, given their wide use by the scientific community for indexing articles in the PubMed database. The suitability for the other bases used was conducted according to the descriptors. At first, the following keywords and Boolean operators were proposed for the searches: (“Deglutition Disorders” or “Dysphagia” or “Esophageal Dysphagia” or “Oropharyngeal Dysphagia” or “Swallowing Disorders”) and (“Stomach Neoplasms” or “Cancer of Stomach” or “Cancer of the Stomach” or “Gastric Cancer” or “Gastric Cancer, Familial Diffuse” or “Gastric Neoplasms” or “Neoplasms, Gastric or Neoplasms”, “Stomach” or “Stomach Cancer”).

Eligibility criteria

Inclusion criteria

The designs of the selected studies included case reports, case control studies, controlled clinical trials, cohort studies, screening studies, observational studies and randomized studies. The research included studies in Portuguese, English and Spanish. Period from 2010 to 2018 (Chart 1).

Exclusion criteria

Studies published as Letters to the editor, guidelines, systematic reviews, meta-analysis and abstracts were excluded. Studies published before 2010 were also excluded. Chart 1 shows studies that have not described or that were unclear or unavailable.

Chart 1. Inclusion and exclusion criteria.

Inclusion Criteria	
Design	Case studies, longitudinal studies and randomized or non-randomized clinical trials with interventions
Patients	<ul style="list-style-type: none"> • Dysphagia • Stomach cancer
Location	Unrestricted
Language	Unrestricted
Exclusion Criteria	
Design	Prevalence studies, interventions by other professionals
Studies	Unclear, poorly described or inadequate studies
Publication form	Only abstracts

Study selection

Study selection was conducted by two independent researchers. Initially, duplicate studies were excluded, then studies were removed based on the title, and finally abstracts were analyzed and only those that were potentially eligible were selected for full evaluation. The disagreements were resolved by consensus between the authors and the third researcher, when required.

Data extraction

Data extraction for the study eligibility process was conducted through a form prepared by the researchers in the Excel, in which the extracted data were initially introduced by one researcher and then checked by the other researcher. The data

from the eligible studies were also entered into an Excel spreadsheet in order to organize the results.

Results

In total, 268 articles were identified in the primary search (Figure 1). However, 258 articles remained after deleting duplicates, and then 244 were excluded after analyzing titles and abstracts. Thus, 14 articles were selected for evaluation in accordance with the title and their revised abstracts. When evaluating the studies in their entirety, only five met all the proposed inclusion criteria and answered the guiding question. This inclusion selection was conducted according to the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA).

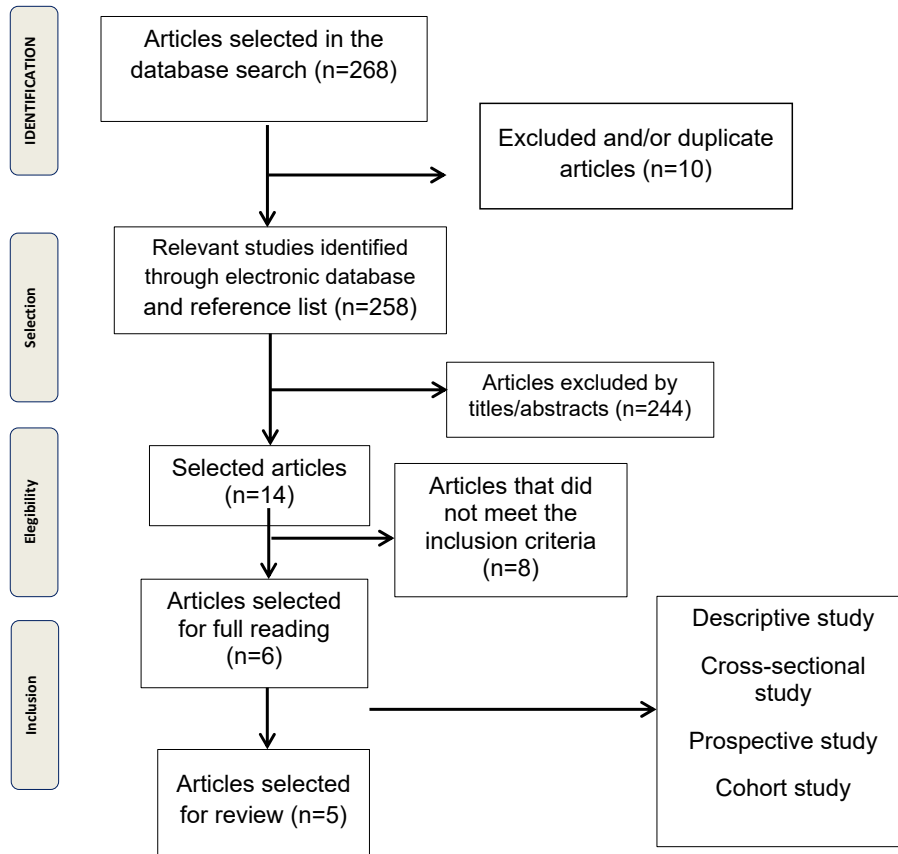


Figure 1. Flowchart of the search and refinement process of articles.

The methodological quality was noticed and the score obtained were indicated through a qualitative scoring protocol for studies. The included studies scored ≥ 11 points. This score indicates that the studies included in this systematic review have reached high quality.

Chart 2 describes the results of the articles included in this research. It should be noticed that all studies that met the inclusion criteria were published in the last six years, that is, from 2014 to 2016, pointing out that this is an important issue discussed by the scientific community due to its relevance. Three of the five articles included in this scientific review are from South Korea, while one is from Ireland and one from Sweden.

Chart 2. Summary of the studies included.

Author/ Year	Location	Purpose	Sample	Methods	Results
PARK, Ji Yeon et al. (2014)	South Korea	Quality of life after gastric cancer.	N=30	The EORTC QLQ-C30 questionnaire was used with the gastric cancer specific module (QLQ-STO22) before the operation and at 1, 3, 6 and 12 months after surgery. The HRQoL data of the patients were compared with the reference values obtained in the general population.	The worst scores for most domains were recorded within one week post-surgery, and scores generally returned to baseline within 3 months, except for fatigue, dysphagia, pain and food restriction.
PARK, Jung-hoon et al. (2014)	South Korea	Metal stenting in patients with recurrent malignant obstruction in the surgically altered stomach.	N=196	Patients treated with five different types of gastric surgery performed for gastric cancer. Evaluation of technical and clinical success rates, complications, dysphagia score and impact of chemotherapy.	The stenting process was technically successful, improving the mean dysphagia score. While chemotherapy was significantly associated with increased survival.
SUNDE, B. et al. (2016)	Sweden	Dysphagia relief during neoadjuvant treatment for esophageal cancer or gastroesophageal junction	N=25	Patients scheduled for neoadjuvant therapy were recruited and evaluated for dysphagia and appetite at baseline, after the first preoperative treatment cycle with chemotherapy or chemoradiotherapy and before surgery. Watson and Ogilvie dysphagia scores were used to assess dysphagia, while the appetite-visual scale questionnaire of the Edmonton Symptom Assessment System was used for appetite assessment.	No association was shown between the relief of dysphagia and the degree of histological response to neoadjuvant therapy in the surgical specimen. The study shows that platinum-based neoadjuvant chemotherapy - 5FU, with or without concomitant radiotherapy, effectively and promptly relieves dysphagia in patients with esophageal cancer or gastroesophageal junction after the first cycle.
Goh YM, et al. (2015)	Ireland	Quality of life after gastric carcinoma	N=261	Patients identified from a prospectively collected database and submitted to the Central Questionnaire of the European Organization for Research and Treatment of Cancer, ELCR QLQ-C30 v.3, and to the specific gastric module (QLQ-STO22).	The study showed no differences in overall QoL in patients with TG or SG, although dietary restrictions and dysphagia are worse after TG.
YU, Wansik et al. (2016)	South Korea	Chronological Changes in the Quality of Life in Survivors after gastric cancer.	N=254	QoL data from the QLQ-C30 questionnaire of the European Organization for Research and Treatment of Cancer were used before surgery and 1, 2, 3, 4 and 5 years after surgery. The QLQ-STO22 questionnaire was also used.	There was no statistically significant change in global health status/QoL during the 5 years.

Although the articles had heterogeneity in their evaluations, it is important to highlight that the association of dysphagia with gastric cancer has been increasingly studied in recent years, focusing on the patient's well-being and evaluating the best clinical approach.

Results allowed noticing that the quality of life of patients after gastric cancer was included in three studies as a variable. In addition, three studies included different types of treatments performed for gastric cancer that influence dysphagia. Although some authors reported that quality of life was positively affected, no significant improvements were observed in other studies. As for dysphagia, although some authors have pointed out that there was an improvement in the mean score of dysphagia, it was not effective for another study.

Discussion

The relationship between gastric cancer and dysphagia has been scientifically discussed as a major consequence of the different types of treatment. Three of the five studies included address the patients' quality of life after treatment. The well-being of patients has been discussed on a larger scale in recent years in order to improve the conditions of the individual under treatment.

Park et. al (2014) decided to evaluate patients with early gastric cancer, not including patients with other types of cancers or diseases that could compromise the results of the research. Dysphagia was addressed in a module in the questionnaire of quality of life, along with pain indicators, reflux symptoms, dietary restrictions and anxiety scales, dry mouth, taste, body image and hair loss. Dysphagia was the indicator that required the longest time to recover among all indicators²¹.

251 patients were included in the studies by Goh et. al (2015) divided into groups by the form of treatment, and it was possible to notice that, in the event of total gastrectomy, dysphagia and dietary restrictions were more severe and with a greater impact on post-treatment quality of life. The researchers indicate that the study showed no differences in overall quality of life in patients with TG or SG, although dietary restrictions and dysphagia are worse after TG.

On the other hand, the study by Yu et. al (2016) reports chronological changes in long-term quality of life after gastrectomy, and shows that dysphagia

is still present in the patient's life five years after surgery, that is, it affects the long term²³. The authors also highlight that the treatment of gastrointestinal symptoms should be addressed specifically as part of the patient's prolonged treatment after a gastrectomy. The proper nutritional care favors food intake, thus resulting in weight gain and better physical functioning, role functioning and body image.

The studies by Sunde et. al (2015) and Park et. al (2014) found an improvement in dysphagia through the use of metallic stents in order to control dysphagia in the event of malignant obstruction in surgical interventions resulting from gastric cancer. In addition to the result, the research also confirms the relationship and one of the effects of gastric carcinoma on swallowing, leading to dysphagia²³²⁴. Chemotherapy was associated with increased stent migration and prolonged survival.

The literature reports that the quality of life may be influenced by the malignant tumor process, with the induction of situations such as family support, treatment, presence of ostomies, among others²⁵. The studies also reinforce that the quality of life of cancer patients is very relevant in order to verify the effectiveness and impact of treatments and interventions, in addition to compare procedures to control morbidity and mortality, planning the best procedures and palliative care and with an early detection of emotional and physical problems. All of these aspects corroborate with the studies included in this research.

According to Silva (2007), therapeutic techniques and the efficacy of rehabilitation in pharyngeal dysphagia have been studied in recent decades. Some studies have reported the efficacy of rehabilitation in oropharyngeal dysphagia, more frequently for studies that have focused on proving the effects of the therapeutic technique on the dynamics of swallowing²⁶.

Therefore, it is possible to notice a relationship between gastric cancer and dysphagia confirmed by the literature. It can be noted that dysphagia may be directly related to the treatment provided to the patient, directly impacting on their quality of life and, consequently, on their nutrition.

Conclusion

Despite the careful refinement in the search, it was not possible to retrieve studies that specifically

address the association of dysphagia as a consequence of gastric carcinoma, which may be seen as a limitation of the studies. However, many authors in the literature report dysphagia as a symptom noticed after cancer treatment, suggesting that the change in the quality of swallowing would be a consequence in cases of gastric neoplasms that would be directly related to the chosen treatment.

Among the selected studies, the questionnaires made to patients were the main tool to address the dysphagia. However, despite being efficient in reflecting the perspective of the affected subject, the questionnaire does not assess specific conditions of swallowing quality, as in exclusive swallowing protocols and tests, being able to effectively assess clinical signs of the risk of dysphagia.

In addition, there was no pattern regarding the form and duration of treatment among patients in each study, which, on the one hand, impaired the association between cases; but, on the other hand, showed the range of cases and the differences between them.

Finally, it is noteworthy that, despite being addressed, studies still present dysphagia superficially and only according to the perspective of patients. Thus, further studies in tests and evaluations are suggested in order to investigate the relationship and the impact of gastric cancer on the swallow process.

References

- Instituto Nacional de Câncer José Alencar Gomes da Silva [homepage na internet]. Câncer de Estômago [acesso em 09 set. 2018]. Disponível em: <https://www.inca.gov.br/tipos-de-cancer/cancer-de-estomago>
- Villaverde RM, Gordo AMJ, Moral SJ, Soto MAM. Câncer de estômago. *Medicine - Programa de Formación Médica Continuada Acreditado*. Elsevier BV. 2017; 129(32): 1904-10.
- Wagner AD; Syn NL, Moehler M, Grothe W, Yong WP, Tai BC et al. Chemotherapy for advanced gastric cancer. *Cochrane Database Syst Rev*. 2002; 8(2): 09-13.
- Santos TE; Silva AHO; Caldeira LM. Frequência de câncer gástrico no serviço de endoscopia de um hospital-escola de Goiânia. *GED -Gastronterologia Endoscopia Digestiva*. 2016; 3(35): 89-95
- Oliveira VA, Oliveira T W N, Alencar MVOB, Cerqueira, GS, Peron AP, Sousa JMC. Relação entre consumo alimentar da população nordestina e o alto índice de câncer gástrico nesta região. *Revinter*. 2014; 3(7): 6-24.
- Pinto AS; Grigoletti SS; Marcadenti A. Fasting abbreviation among patients submitted to oncologic surgery: systematic review. *Brazilian archives of digestive surgery*. 2015; 28(1): 70-3.
- Brito D, Raimundo A, Sousa O, Pereira H, Ribau E, Afonso LP et al. Recomendações para o diagnóstico e tratamento do adenocarcinoma gástrico. *Revista Portuguesa de Cirurgia*. 2014; 28(.2): 45-56.
- Wilches RO, Navia HF, González CEB, Pedraza RS. Terapia de conversión en cáncer gástrico estado IV: a propósito de un caso. *Rev Colomb Gastroenterol*. 2018; 33(1): 61-72.
- Laffitte AM; Polakowski CB; Kato M. Early Oral Re-Feeding On Oncology Patients Submitted To Gastrectomy For Gastric Cancer. *Arquivos brasileiros de cirurgia digestiva*. 2015; 28(3): 200-3.
- Toneto MG; Viola L. Current Status Of The Multidisciplinary Treatment Of Gastric Adenocarcinoma. *Arquivos brasileiros de cirurgia digestiva*. 2018; 31(2): 43-52.
- Ruivo EA, Fazeres FQ, Ventura J, Vasconcelos E, Terleira H, Veiga M et al. Impacto do suporte nutricional precoce na morbimortalidade em doentes submetidos a cirurgia de resseção por adenocarcinoma gástrico. *Revista Portuguesa de Cirurgia*. 2015; 34(.3): 65-77.
- Furkim AM, Santini CRQS. *Disfagia Orofaringea*. 2. ed. Barueri- Sp: Pró-fono, 2008. 237 p.
- Almeida RCA; Haguette RCB; Andrade, ISN. Deglutição com e sem comando verbal: achados videofluoroscópicos. *Revista da Sociedade Brasileira de Fonoaudiologia*. 2011; 16(3): 291-7.
- Zancan M, Luchesi KF; Mituuti CT, Furkim AM. Locais de início da fase faríngea da deglutição: meta-análise. *CODAS*. 2017; 29(2): 1-8.
- Dragone MLS. Disfonia e disfagia: interface, atualização e prática clínica. *Revista da Sociedade Brasileira de Fonoaudiologia*. 2010; 15(4): 624-5.
- Cola PC, Gatto AR; Silva RG; Schelp AO; Henry MACA. Reabilitação em disfagia orofaríngea neurogênica: sabor azedo e temperatura fria. *CEFAC*. 2008; 10(2):200-5.
- Wegner DA, Steidl EMS, Pasqualoto AS, Mancopes R . Deglutição orofaríngea, nutrição e qualidade de vida no indivíduo com doença pulmonar crônica. *CODAS*. 2018; 30(3): 327-32.
- Sassi F, Medeiros GC; Zambon LS, Zilberstein B, ECBC-SP4, Andrade CRF. Avaliação e classificação da disfagia pós-extubação em pacientes críticos. *Revista do Colégio Brasileiro de Cirurgiões*. 2018; 45(3): 200-9.
- Moher D; Liberati A; Tetzlaff J; Altman DG, PRISMA Group. Preferred reporting items of systematic review and meta-analyses: the PRISMA statement. *PLoS medicine*. 2009; 7(7): 121-32.
- Park JY, Eom BW, Jo MJ, Yoon HM, Ryu KW, Kim YW et al. Health-Related Quality of Life After Robot-Assisted Distal Gastrectomy in Early Gastric Cancer. *World Journal of Surgery*. 2014; 38(5): 1112-20.
- Goh YM, Gillespie C, Couper G, Paterson-Brown S. Quality of life after total and subtotal gastrectomy for gastric carcinoma. *The Surgeon*. 2015; 13(5): 267-70.
- Yu W, Ki BP, Ho YC, Oh KK, Seung SL. Chronological Changes of Quality of Life in Long-Term Survivors after Gastrectomy for Gastric Cancer. *Breast cancer research and treatment*. 2016; 48(3): 1030-6.



23. Sunde B, Ericson J, Kumagai K, Lundell L, Tsai JA, Lindblad M et al. Relief of dysphagia during neoadjuvant treatment for cancer of the esophagus or gastroesophageal junction. *Dis. Esophagus*. 2015; 29(5): 442-7.
24. Park J, Song HY, Kim SH, Shin JH, Kim JH, Kim BS et al. Metallic Stent Placement in Patients with Recurrent Malignant Obstruction in the Surgically Altered Stomach. *Annals of surgical oncology*. 2014; 21(6): 2036-43.
25. Vieira AR, Fortes RC. Qualidade de vida de pacientes com câncer gastrointestinal. *Com. Ciências Saúde*. 2015; 26(1/2): 45-56.
26. Silva RG. A eficácia da reabilitação em disfagia orofaríngea. *Pró-Fono R. Atual. Cient*. 2007; 19(1): 123-33.