Literature Review

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Non-instrumental clinical evaluation for oropharyngeal dysphagia in Parkinson's disease: systematic review

Instrumentos de avaliação clínica para disfagia orofaríngea na doença de Parkinson: revisão sistemática

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ABSTRACT

Introduction: Parkinson's disease (PD) is the second most prevalent neurodegenerative disease in the world, with a predominance of motor and non-motor symptoms. Among these, dysphagia stands out. **Purpose:** Systematically review the non-instrumental clinical evaluations available for the screening and assessment of dysphagia in individuals with PD. **Research strategy:** For the selection of the studies, we used the descriptors: Parkinson disease, swallowing, dysphagia, deglutition disorders, questionnaire, health surveys, evaluation, screening, and evaluation, in a variety of combinations, aiming at a greater number of studies. The databases were PubMed, Cochrane Library, and SciELO. **Selection criteria:** Articles published in English, Portuguese, and Spanish that were published between January 2006 and July 2016 were selected, whose methodological approach met the objective of this review. A descriptive analysis was performed. Two independent reviewers reviewed the articles in order to verify the eligibility. When there was disagreement, a consensus was reached by the evaluation of a judge who did not know the previous evaluations. **Results:** Eight hundred forty-six articles were founded. After considering the inclusion/exclusion criteria and the judge's analysis, only four studies were analyzed, which were four different instruments, and all of the instruments were self-perception questionnaires of dysphagia. There was no instrument that performed a clinical evaluation of dysphagia with the food supply. **Conclusion:** It has been verified there are no instruments for the screening and clinical evaluation of dysphagia in patients with PD who use a food supply and not only the self-perception of the patient in the period that included the bibliographic survey of this study.

Keywords: Parkinson disease; Deglutition disorders; Evaluation; Surveys and questionnaires

RESUMO

Introdução: A doença de Parkinson (DP) é a segunda doença neurodegenerativa mais prevalente no mundo, com predomínio de sintomas motores e não motores. Dentre estes, destaca-se a disfagia. **Objetivo:** Realizar a revisão sistemática da literatura que trata das avaliações clínicas não instrumentais disponíveis para rastreio e avaliação da disfagia em indivíduos com DP. **Estratégia de pesquisa:** Para a seleção dos estudos, foram utilizados os descritores *Parkinson disease, swallowing, dysphagia, deglutition disorders, questionnaire, health surveys, evaluation, screening* e *assessment,* em combinações variadas, nas seguintes bases de dados: PubMed, Biblioteca Cochrane e SciELO. **Critérios de seleção:** Artigos em inglês, português e espanhol, publicados no período de janeiro de 2006 a julho de 2016, cuja abordagem metodológica atendesse ao objetivo desta revisão. Dois revisores independentes analisaram os artigos, a fim de verificar a elegibilidade. Quando houve discordância, o consenso foi alcançado pela avaliação de um juiz que não conhecia as avaliações anteriores. **Resultados:** Foram encontrados 846 artigos. Após consideração dos critérios de inclusão/exclusão e análise do juíz, apenas 4 estudos foram analisados, nos quais foram utilizados 4 instrumentos diferentes, todos eles questionários de autopercepção da disfagia. Não houve nenhum instrumento que tivesse realizado avaliação clínica da disfagia com oferta de alimentos. **Conclusão:** Verificou-se que não existem instrumentos de rastreio e de avaliação clínica da disfagia em paciente com DP que utilizem oferta de alimento e não somente auto-percepção do paciente, no período que compreendeu o levantamento bibliográfico deste estudo.

Palavras-chave: Doença de Parkinson; Transtornos de deglutição; Avaliação; Inquéritos e questionários

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INTRODUCTION

Parkinson's disease (PD) is the second most prevalent neurodegenerative disease in the world with a worldwide incidence of 1 to 20, per 1,000 individuals/year[1]. Brazilian studies have estimated an incidence of 36,000 new cases per year, with a prevalence of 0.7% individuals with PD in the 60-69 age group and 1.5% in the 70-79 age group[2]. In a Brazilian population study, a prevalence of 3.3% was observed in individuals over 64 years old[3].

According to the London Brain Bank Criteria[4], PD is a predominant disease of motor symptoms, characterized by stiffness, postural tremor, and bradykinesia, but the prevalence of non-motor symptoms is high. Among these, dysphagia is observed, which, even though it is an alteration involving the musculature of phonoarticulatory organs, it is classified as a non-motor symptom according to the Movement Disorders Society[5]. Dysphagia is an aggravating symptom in PD, which is not directly associated with the severity of the disease and may have an adverse impact on the quality of life, impairs the intake of food and medication, and may frequently lead to laryngotracheal aspiration. According to the literature, it is verified that the prevalence rates of dysphagia in PD range from 70% to 100%. Moreover, there is a relative risk of 3.2% of the presence of this symptom in individuals with PD when compared with healthy control groups[6,7,8,9,10].

When the mechanics of airway protection are deficient, the symptom of dysphagia tends to result in complications, such as aspiration pneumonia, malnutrition, and dehydration, with the latter two resulting from lower food intake or changes in consistency, according to the severity of the disease. The data from the literature indicate that respiratory infection is the leading direct cause of death in patients with PD and is highly associated with immobility and dysphagia.

There is a prevalence of 30% to 45% of pneumonia among the causes of death in patients with PD[7,8,9,10]. In Brazil, recent data indicate pneumonia as the leading cause of death in this population[11].

Dysphagia in PD can affect all of the phases of swallowing, with the most prevalent signs and symptoms: increased oral transit time; Difficulty in forming the bolus; Residue in oral cavity; Poor bolus ejection of food; Multiple swallows; Posterior escape of the bolus; Decreased swallowing reflex; Oropharyngeal bradykinesia; Alteration in vocal fold closure; Reduction in the anterior movement of the hyoid bone; Reduction in pharyngeal and esophageal motility; Pharynx food stasis; Esophageal sphincter dysfunction; gastroesophageal reflux; Laryngeal penetration and tracheal aspiration[12,13,14,15].

OBJECTIVE

In view of the high prevalence of dysphagia in PD and its significant impact on the course of the disease, the aim of this article was to make a systematic review of the literature about non-instrumental clinical evaluations available for screening and evaluation of dysphagia in individuals with Parkinson's disease.

RESEARCH STRATEGY

The literature review was conducted with the delimitation of the following steps: identification of the problem with the formulation of the research question; keyword establishment; determination of the criteria for the inclusion and exclusion of articles; selection of papers; analysis of articles by a blind judge; information to be extracted. The question that led to this review was: "What are the non-instrumental assessments available for the screening and clinical evaluation of swallowing in Parkinson's disease?".

A survey of the national and international literature was conducted in the online databases PubMed, Cochrane Library, and SciELO. The descriptors based on the DeCS (Health Sciences Descriptors) and free terms used for the research were: Parkinson disease, swallowing, dysphagia, deglutition disorders, questionnaire, health surveys, evaluation, screening, and assessment, in varied combinations, aiming at a greater number of studies.

SELECTION CRITERIA

We included articles whose methodological approach referred to screening instruments and a clinical evaluation of oropharyngeal dysphagia, elaborated for patients with PD; The publications from January 2006 to July 2016 in the English, Portuguese, and Spanish languages, with full texts available, describing the use of non-instrumental assessments; Articles referring to swallowing, swallowing, or dysphagia. Publications that did not have the abstract or full text, review articles, dissertations were excluded, those that were not compatible with the topic covered, and those that were repeated in the databases.

Two independent reviewers reviewed the original abstracts and publications selected, by the inclusion and exclusion criteria, in order to verify eligibility. In articles where there was disagreement between the two reviewers, a consensus was reached by the evaluation of a third judge who did not know the previous evaluations.

DATA ANALYSIS

After the judges' analysis, the articles included were analyzed in their complete texts and the following data was extracted: authors, year of publication, country where the research was conducted, instrument of screening used, characterization of the instrument, number of subjects, results of the research, Cronbach's α value, and the sensitivity

and specificity of the instrument. Descriptive analysis was performed.

RESULTS

Initially, 846 articles were found. After considering the inclusion/exclusion criteria and the judge's report, only four studies were analyzed and, in these articles, four different instruments were found (Figure 1).

Concerning instruments for the screening and clinical evaluation of swallowing in Parkinson's disease, the four studies (100%) used self-perception questionnaires for dysphagia, in which higher scores were related to higher perceived dysfunctions (Chart 1).

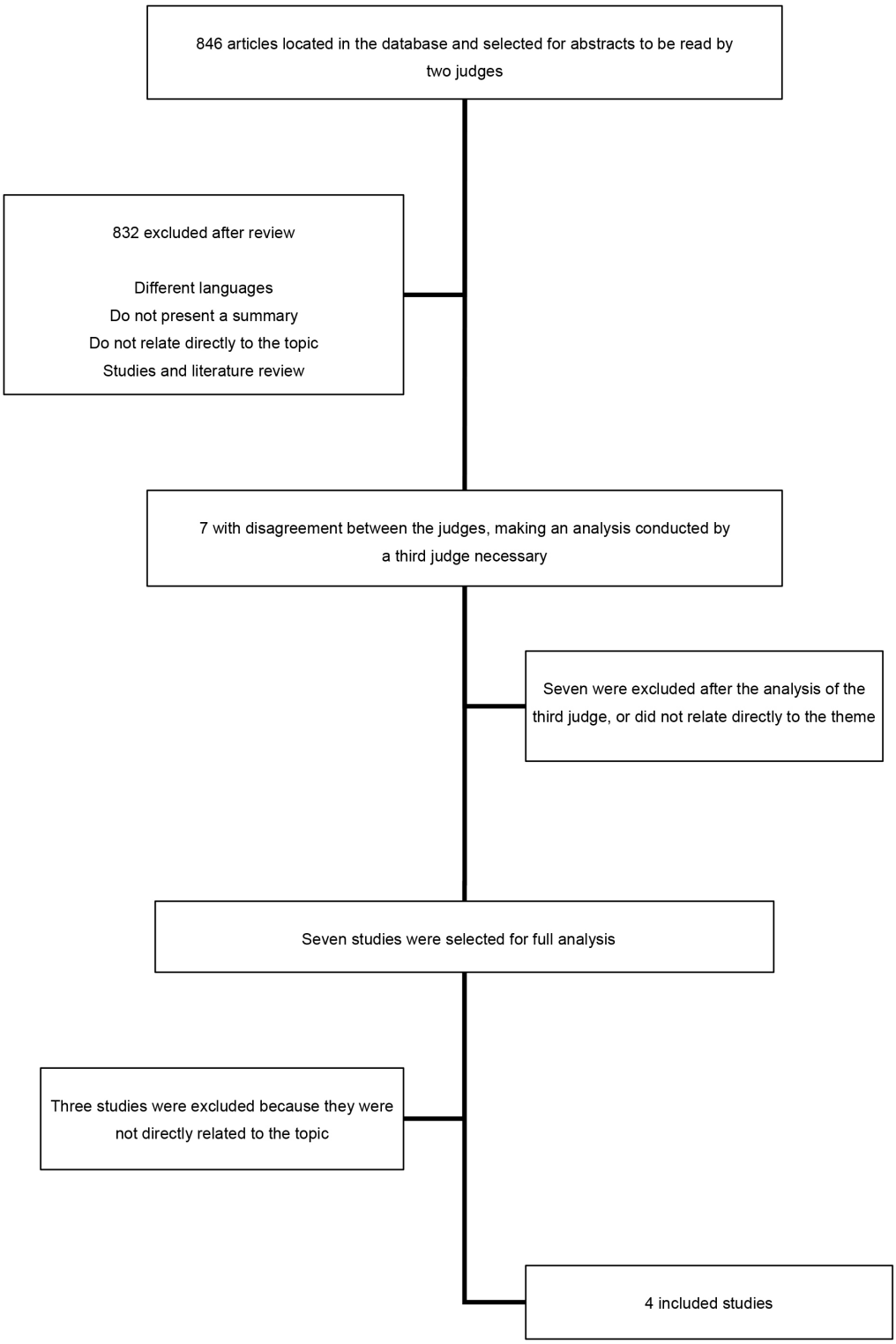

Figure 1. Search the selection strategies

Chart 1. Analysis of protocols found

Author/year	Article	Population	Screening Instrument	Characterization of the instrument	Psychometric measures and conclusions
Manor et al., 2007[14]	Validation of a Swallowing Disturbance Questionnaire for Detecting Dysphagia in Patients with Parkinson's Disease	57 patients with PD	Swallowing Disturbance Questionnaire (SDQ)	Five questions related to the oral phase of swallowing and ten questions related to the pharyngeal phase. Fourteen items were rated on a 4-point scale (0 for non-disability and 3 for severe disability), and one was a yes/no question.	Cronbach's α value: 0.89. Sensitivity: 80.5%. Specificity: 81.3%. SDQ has been shown to be a validated tool for detecting early dysphagia in patients with PD.
Simons et al., 2014[15]	Development and validation of a new screening questionnaire for dysphagia in early stages of Parkinson's disease	105 patients during questionnaire construction and 82 during validation	Munich Dysphagia Test and Parkinson's disease (MDT-PD)	Composed of four subscales that interrogate. Difficulty in swallowing food and liquids, difficulty in swallowing, regardless of food intake, how swallowing negatively influences aspects of daily life and general health issues. This questionnaire is available in an online version.	The Cronbach's α value: 0.91. Sensitivity: 82.4 to 90%. Specificity: 61.9 to 85.7%. MDT-PD is a valid screening tool for the early diagnosis of swallowing problems and risk of aspiration, in addition to assisting in the initial graduation of the dysphagia severity in patients with PD.
Jones and Ciucci, 2016[16]	Multimodal swallowing evaluation with high-resolution manometry reveals subtle swallowing changes in early and midstage Parkinson disease	26 patients with PD and 26 control group	Sydney Swallow Questionnaire (SSQ)	The SSQ has 17 items and is intended to obtain the individual's perception during swallowing. The values of each question range from 0 to 100. In all, the maximum possible score is 1,700. The SSQ was validated for use in patients with PD [33], and the range for healthy patients is between 10 and 235.	Individuals with PD present changes in swallowing and can self-assess the aspects of swallowing with the protocol studied at the beginning and some stages of PD.
Kalf et al., 2011[17]	Reproducibility and Validity of Patient-Rated Assessment of Speech, Swallowing, and Saliva Control in Parkinson's Disease	129 patients with PD or atypical Parkinsonism	Radboud Oral Motor Inventory for Parkinson's Disease (ROMP)	The protocol is divided into three subscales. Each question has up to 5 points (1 normal and five worst score) and limits the number per subscale to 7.	Reproducibility was 95% total. Cronbach's α value: 0.95. ROMP provides a valid and reliable instrument for assessing patients' perceived problems with speech, swallowing and saliva control in patients with Parkinson's disease or PD.

There was no instrument that had performed a clinical evaluation of dysphagia with the food supply.

DISCUSSION

After the full analysis of the articles, only the self-perception of swallowing questionnaires for the assessment of dysphagia in patients with PD was verified[16,17,18,19] in the period of the literature review of this study. However, it is known that, in this population, dysphagia may be subclinical or asymptomatic (patient does not report symptoms). Even with the presence of clinical signs, patients gradually adapt to them, believing it to be a natural consequence of the progression of the disease. The main examples of such adaptations are the decrease in the size of the bolus, change of alimentary consistency, and exclusion of foods that cause greater difficulty in feeding. In addition, cognitive impairment or sensory problems may hinder the self-perception of dysphagia symptoms. All of these factors tend to cause an increased risk of complications due to the underestimation of dysphagia and emphasize the need for a proactive clinical approach to dysphagia, primarily because of the serious clinical consequences of this symptom. Therefore, the instruments of self-perception of dysphagia are not sensitive for this population[6].

Studies with other neurological diseases, such as stroke, have presented several protocols for the clinical evaluation of swallowing, with an investigation of the clinical signs of dysphagia after food supply in the most various consistencies (liquid, pasty, and solid)[20]. However, the evaluation and treatment of patients with PD have a different approach than that for post-stroke patients, considering the degenerative factor of PD, which makes it impossible to use the same protocols.

An article that was aimed at the comparative analysis of an instrument for the clinical evaluation of swallowing with videofluoroscopy presented a sample of 85 patients wherein only 24 of them had different neurological diseases, and of those, only two had PD [21]. Although it was the only study found on the subject, the author did not describe the relevance of the protocol for patients with PD because of the reduced number of the sample.

Several studies have reported respiratory infection as the main direct cause of death in patients with PD[7,8,9,10,22]. Because such comorbidity is highly associated with immobility and dysphagia, the importance of speech-language therapy for dysphagia in these individuals is perceived as preventing or delaying the onset of aspiration pneumonia.

Limitations and prospects

Given the lack of clinical assessment instruments in the population with PD, in places where objective evaluation is not available, it is possible that patients are being diagnosed in more advanced stages, when there are complaints or complications related to the presence of dysphagia. This factor reduces the therapeutic possibilities in patients with PD and the possibility of a good prognosis.

The International Parkinson's and Movement Disorder Society (MDS) advocates the use of various scales of evaluation in the various changes in movement disorder. Among them, about speech-language pathology, there are only two vocal evaluation scales. Considering the absence of protocols for the clinical evaluation of dysphagia in PD, it is possible for future studies to create a clinical evaluation scale, which could positively impact the early diagnosis and quality of life of the patients, since these present a high mortality risk due to dysphagia.

CONCLUSION

In the period that included the bibliographic survey of this study, no clinical screening or clinical evaluation instruments of dysphagia were found in patients with Parkinson's disease who used a food supply and not only the self-perception of the patient. Therefore, it is necessary to establish rapid and sensitive protocols for the screening and evaluation of dysphagia in this population and not only to use self-perception, since the prevalence of dysphagia is high in Parkinson's disease and few patients, even with the presence of the symptom, report swallowing complaints.

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