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# Educommunication in nutrition and neurodegenerative diseases: a scoping review protocol

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<td>Complete List of Authors:</td>
<td>Coutinho, Karla; Federal University of Rio Grande do Norte, Postgraduate Program in Health Sciences; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health Vale, Sancha; Federal University of Rio Grande do Norte, Department of Nutrition; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health Bezerril, Manaces ; Federal University of Rio Grande do Norte, Postgraduate Program in Nursing Reis, Monica Karina; Federal University of Rio Grande do Norte, Department of Public Health; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health (LAIS/UFRN) Leite-Lais, Lucia; Federal University of Rio Grande do Norte, Department of Nutrition Lima, Kenio; Federal University of Rio Grande do Norte, Department of Public Health; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health - LAIS/UFRN</td>
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Educommunication in nutrition and neurodegenerative diseases: a scoping review protocol

Karla Mônica Dantas Coutinho, MsC1,5, Sancha Helena de Lima Vale, PhD3,5, Manacés dos Santos Bezerril, MsC4, Mônica Karina Santos Reis, PhD2,5, Lucia Leite-Lais, PhD3,5, Kenio Costa de Lima, PhD1,2,5.

1Postgraduate Program in Health Sciences, Federal University of Rio Grande do Norte, Natal, Brazil
2Department of Public Health, Federal University of Rio Grande do Norte, Natal, Brazil
3Department of Nutrition, Federal University of Rio Grande do Norte, Natal, Brazil
4Postgraduate Program in Nursing, Federal University of Rio Grande do Norte, Natal, Brazil
5Laboratory of Technological Innovation in Health (LAIS), Federal University of Rio Grande do Norte, Natal, Brazil

Word count (excluding title page, abstract, references, figures, and tables): 1,209

Keywords: neurodegenerative diseases, nutrition therapy, health education, patient education

Corresponding author: Lucia Leite-Lais. Email: lucia.leite@ufrn.br. Address:
Universidade Federal do Rio Grande do Norte, Departamento de Nutrição. Av. Senador Salgado Filho, 3000, 59078-970, Natal, RN, Brazil. Tel.: +55 84 3342-2291 (Ext. 337).
ABSTRACT

Introduction Neurodegenerative diseases affect the nervous system and are characterized by the deterioration and/or death of neurons. Nutrition care is essential for maintaining an adequate nutritional status, which influences the prognosis and survival of neurological patients. Caregivers participate assiduously in the care of these patients and must be integrated into the multidisciplinary team. They often need specific training or knowledge regarding food and nutrition to perform their role with patients. Health educommunication is a learning tool that can positively influence the appropriation of the theme and the construction of care autonomy.

Objective To identify and map nutrition education actions/strategies for patients with neurodegenerative diseases.

Methods and Analysis The scoping review will be designed based on the methodology of Arksey and O'Malley and it will follow the methodological guidance for conducting a JBI scoping review. The research question addressed by the scoping review will be: what actions/strategies for educommunication in nutrition and neurodegenerative diseases have been developed for patients or caregivers? Many search sites will be used in this review, such as Embase, PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar. No restrictions of date or language will be applied to the search strategy. Two reviewers will independently screen all abstracts and full-text studies for inclusion. Data, including study design, objective, study population, neurodegenerative diseases, nutrition topics, and educommunication strategies will be logically organized and tabulated in Microsoft® Excel. Dissemination of the results will be published in a peer-reviewed journal and presented at conferences.
**Ethics and dissemination** The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study.

**Keywords:** neurodegenerative diseases, nutrition therapy, health education, patient education

**Study registration:** The study follows a scoping review protocol, registered on the Home OSF platform on 07/28/2022 and entitled as ‘Educomunicação nutricional para pacientes com doenças neurodegenerativas: uma revisão de escopo’. It is available at [https://osf.io/zgg4x/](https://osf.io/zgg4x/).

**Strengths and limitations of this study**

- This will be the first scoping review on educommunication in nutrition and neurodegenerative diseases.
- This scoping review will be guided by the recommendations of the JBI Institute Reviewer's Manual, according to Arksey and O'Malley, and following the PRISMA ScR.
- The search strategy includes many search sites, including electronic databases with peer-reviewed literature, as well as grey literature.
- The data extraction will be done in a standardized way by two independent authors.
- This review will be limited to studies that address educommunication focused only on nutrition and neurodegenerative diseases.
1. Introduction

Neurodegenerative diseases (NDs) are characterized by the degeneration and/or death of neurons, causing progressive and gradual loss of motor, physiological, and cognitive functions. They have genetic origin or not and cover a large number of diseases that affect the peripheral and central nervous system. The most prevalent NDs include Alzheimer's Disease (AD), Parkinson's Disease (PD), and Motor Neuron Diseases (MND).

NDs have a major impact on the nutritional status of patients, especially those associated with swallowing disorders. Dysphagia largely affects respiratory safety due to the increased risk of aspiration and impaired coordination of swallowing, leading to malnutrition and dehydration. Thus, careful consideration of the nutritional condition of patients with NDs is essential for better management of these patients.

Multidisciplinary care interventions aimed at managing symptoms and maintaining/recovering nutritional status contribute to improving the quality of life and the survival of neurological patients. This contribution is aligned with the Sustainable Development Goals of the United Nations, supporting targets of the third goal about good health and well-being.

Caregivers of patients with NDs, whether family members, professionals, or volunteers, participate assiduously in the care of these patients and must be integrated into the multidisciplinary team. Training caregivers in general and specific knowledge and skills related to their patients’ main disease and all nutritional implications related is fundamental for the quality of care provided.
In this sense, educommunication emerges as a tool that integrates different media into the health area, strengthening communicative and creative ecosystems in learning spaces for caregivers and patients with NDs. Therefore, educommunication consists of the use of communication technologies that, when applied to the health area are powerful learning tools, are capable of positively influencing the quality of life of these patients.

2. Study Rationale

To our knowledge, this scoping review will be the first to identify and map studies that address educommunication in nutrition and NDs, focusing on caregivers or patients as active subjects of the teaching and learning process. This research will bring important insights to guide learning strategies that can positively influence the construction of care autonomy, as well as identify strengths and weaknesses with the implementation and development of educommunication.

3. Study Objectives

The main objective for the proposed scoping review is to identify and map the literature on actions/strategies of educommunication in nutrition and NDs used in caregivers or patients.

4. Methods and Analysis

4.1 Protocol and registration

The study follows a scoping review protocol, registered on the Home OSF platform on 07/28/2022 and entitled as ‘Educomunicação nutricional para pacientes com doenças neurodegenerativas: uma revisão de escopo’. It is available at https://osf.io/zgq4x/.
4.2 Study design

This is a scoping review (ScR) guided by the recommendations of the JBI Reviewer’s Manual (JBI, 2020). It is according to the theoretical framework proposed by Arksey and O’Malley (2005) and Peters et al. (2020), following the PRISMA ScR.

4.3 Identifying relevant studies

Studies that address actions/strategies of educommunication in nutrition and NDs used in caregivers or patients.

4.4 Research question

To formulate the question, the PCC strategy will be used, as described below:

- **P (Population):** neurodegenerative diseases OR degenerative diseases of the nervous system
- **C (Concept):** educommunication OR health education OR health literacy OR education OR communication OR educational communication OR educational communication OR learning OR health literacy
- **C (Context):** nutrition OR nutrition science OR nutritional therapy

Research question: what actions/strategies of educommunication in nutrition and NDs have been developed for caregivers or patients dealing with this condition?

4.5 Inclusion and exclusion criteria

Studies available in full text that respond to the purpose of the study will be included. No restrictions of date or language will be applied to the search strategy. Duplicate articles,
editorials, manuals, books, experience reports, reflection studies and studies without abstract will be excluded.

4.6 Search strategy

A broad search strategy will be carried out, including the following databases: Embase, PubMed/MEDLINE, Scopus, and Web of Science. Google Scholar also will be included as a search engine, including records of both academic and grey literature. No restrictions of date or language will be applied to the search strategy.

The search strategy will include the following combinations: Neurodegenerative diseases OR Degenerative Diseases Central Nervous System OR Degenerative Diseases Nervous System OR degenerative disease AND Education OR educommunication OR Literacy OR Teach-Back Communication AND nutritional sciences OR nutritional status OR nutrition education OR Nutrition, according to MeSH. The crossing method used will be modified according to the particularities of each database.

4.7 Selection of eligible studies

For all identified studies, at least two authors (KMDC and LLL) will independently select and review titles and abstracts using the Rayyan QCRI® tool. Papers that meet the inclusion criteria will be ordered for a full review. Any disagreement will be resolved by discussion with a third reviewer (SHdLV). The information on the phases of the selection process will be described through PRISMA flow diagram14.

4.8 Data extraction
The data extraction will be done in a standardized way using Microsoft® Excel (by two independent authors (KMDC and LLL). Discrepancies between the data extraction will be resolved by consensus. The standardization of the data extraction is described in Table 1. In case of incomplete information or missing data, the corresponding authors of the studies will be contacted. If we do not receive the necessary information, the data will be excluded from our analysis and will be dealt with in the Discussion section.

Table 1 - Standardization of the data extraction.

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In case of incomplete information or missing data, the corresponding authors of the studies will be contacted. If we do not receive the necessary information, the data will be excluded from our analysis and will be dealt with in the Discussion section.

4.9 Data summary and synthesis of results

The data will be mapped to answer the research question. Also, it will be summarized descriptively (n and %) and qualitatively, with the use of tables, charts, and graphs, when appropriate. The synthesis of results will be developed based on the findings of the scoping review to best capture the answers to the research question. Gaps and limitations of the current literature will also be addressed.

4.10 Patient and public involvement

Patients and/or public were not involved in this scoping review protocol.

5 Discussion

As the scoping review follows a systematic approach to map evidence on a topic and identify key concepts, theories, sources, and knowledge gaps, the results of this review will be related to the objective and research question, being discussed as they are...
associated with practice and education. Gaps and limitations of the current literature will also be identified.

6 Ethics and Dissemination

The results of this scoping review will be published in a peer-reviewed journal. The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study.

Acknowledgements

The authors thank the Laboratory of Technological Innovation in Health (LAIS) at the Federal University of Rio Grande do Norte (UFRN) and its researchers who are part of the revELA project.

Contributors

All authors conceived the design and methodology. KMDC registered the scoping review protocol. KMDC and LLL drafted the initial manuscript. SHLV, MSB, MKSR, LLL, and KCL revised the intellectual content of the manuscript and served as scientific advisors. KMDC and LLL critically reviewed the study and edited the final version. KMDC, LLL, and KMDC obtained the funding. All authors read and approved the final manuscript that was submitted for publication.

Competing interests

None declared.

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References


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**Complete List of Authors:**
Coutinho, Karla; Federal University of Rio Grande do Norte, Postgraduate Program in Health Sciences; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health
Vale, Sancha; Federal University of Rio Grande do Norte, Department of Nutrition; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health
Bezerril, Manaces; Federal University of Rio Grande do Norte, Postgraduate Program in Nursing
Reis, Monica Karina; Federal University of Rio Grande do Norte, Department of Public Health; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health (LAIS/UFRN)
Leite-Lais, Lucia; Federal University of Rio Grande do Norte, Department of Nutrition
Lima, Kenio; Federal University of Rio Grande do Norte, Department of Public Health; Federal University of Rio Grande do Norte, Laboratory of Technological Innovation in Health - LAIS/UFRN

**Primary Subject Heading:** Nutrition and metabolism

**Secondary Subject Heading:** Neurology

**Keywords:** Neurology < INTERNAL MEDICINE, Nutrition < TROPICAL MEDICINE, MEDICAL EDUCATION & TRAINING
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Authors: Karla Mônica Dantas Coutinho, MSc1,5, Sancha Helena de Lima Vale, PhD1,3,5, Manacés dos Santos Bezerril, PhD4, Mônica Karina Santos Reis, PhD2,5, Lucia Leite-Lais, PhD3,5, Kenio Costa de Lima, PhD1,2,5.

1Postgraduate Program in Health Sciences, Federal University of Rio Grande do Norte, Natal, Brazil
2Department of Public Health, Federal University of Rio Grande do Norte, Natal, Brazil
3Department of Nutrition, Federal University of Rio Grande do Norte, Natal, Brazil
4Postgraduate Program in Nursing, Federal University of Rio Grande do Norte, Natal, Brazil
5Laboratory of Technological Innovation in Health (LAIS), Federal University of Rio Grande do Norte, Natal, Brazil

Corresponding author: Lucia Leite-Lais. Email: lucia.leite@ufrn.br. Address: Universidade Federal do Rio Grande do Norte, Departamento de Nutrição. Av. Sen. Salgado Filho, 3000, 59.078-970, Natal-RN, Brasil. Tel.: +55 84 3342-2291 (Ext. 337).
ABSTRACT:

Introduction Neurodegenerative diseases affect the nervous system and are characterized by the deterioration and/or death of neurons. Nutrition care is essential for maintaining an adequate nutritional status, which influences the prognosis and survival of neurological patients. Caregivers participate assiduously in the care of these patients and must be integrated into the multidisciplinary team. They often need specific training or knowledge regarding food and nutrition to perform their role with patients. Health educommunication is a learning tool that can positively influence the appropriation of the theme and the construction of care autonomy.

Objective To identify and map nutrition education actions/strategies for patients with neurodegenerative diseases.

Methods and Analysis The scoping review will be designed based on the methodology of Arksey and O'Malley and it will follow the methodological guidance for conducting a JBI scoping review. The research question addressed by the scoping review will be: what actions/strategies for educommunication in nutrition and neurodegenerative diseases have been developed for patients or caregivers? Many search sites it will be used in this review, such as electronic databases (Embase, PubMed/MEDLINE, Scopus, Web of Science), Google Scholar and grey literature sources. No restrictions of date or language will be applied to the search strategy. Two reviewers will independently screen all abstracts and full-text studies for inclusion. Data, including study design, objective, study population, neurodegenerative diseases, nutrition topics, and educommunication strategies will be logically organized and tabulated in Microsoft® Excel. Dissemination of the results will be published in a peer-reviewed journal and presented at conferences.

Ethics and dissemination The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study.

Keywords: Neurodegenerative disease, Educommunication, Nutrition.

Strengths and limitations of this study

- This will be the first scoping review on educommunication in nutrition and neurodegenerative diseases.

- This scoping review will be guided by the recommendations of the JBI Institute Reviewer's Manual, according to Arksey and O'Malley, and following the PRISMA ScR.
The search strategy includes many search sites, including electronic databases with peer-reviewed literature, as well as gray literature sources.

The data extraction will be done in a standardized way, by two independent authors.

This review will be limited to studies that addresses educommunication focused only in nutrition and neurodegenerative diseases.

1. Introduction

Neurodegenerative diseases (NDs) are characterized by the degeneration and/or death of neurons, causing progressive and gradual loss of motor, physiological, and cognitive functions. They have genetic origin or not [1] and cover a large number of diseases that affect the peripheral and central nervous system [2]. The most prevalent NDs include Alzheimer's Disease (AD), Parkinson's Disease (PD), and Motor Neuron Diseases (MND) [3].

NDs have a major impact on the nutritional status of patients, especially those associated with swallowing disorders. Dysphagia largely affects respiratory safety due to the increased risk of aspiration and impaired coordination of swallowing, leading to malnutrition and dehydration. Thus, careful consideration of the nutritional condition of patients with NDs is essential for better management of these patients [4]. On the other side, diet and nutrition play an important role in the pathogenesis of NDs. Deficiency of energy, nutrients, and bioactive compounds accentuate pathophysiological processes such as inflammation, oxidative stress, gut dysbiosis, and immune dysfunction, while a proper nutrition can prevent, mitigate, or slow the progression of NDs [5,6]. This fact highlights the importance of diet and nutrition for patients with NDs.

Multidisciplinary care interventions aimed at managing symptoms and maintaining/recovering nutritional status contribute to improving the quality of life and the survival of neurological patients [7]. This contribution is aligned with the Sustainable Development Goals of the United Nations, supporting targets of the third goal about good health and well-being [8].

Caregivers of patients with NDs, whether family members, professionals, or volunteers, participate assiduously in the care of these patients and must be integrated into the
multidisciplinary team. Training caregivers in general and specific knowledge and skills related to their patients’ main disease and all nutritional implications related is fundamental for the quality of care provided [9].

In this sense, nutrition education plays a pivotal role in NDs. However, strategies of nutrition education are lacking in neurological diseases [10] and many times the health professionals are not prepared or aligned to strengthen nutrition education as a component of the multidisciplinary care [11,12]. Nutrition education can be provided in many ways and formats [13]. Educommunication (Education + Communication) emerges as a tool that can integrate the health and nutrition education process. Educommunication started in Latin America in the late 1960s and 1970s and since then it has had an enormous impact across these region [14]. According to Soares (2000) [15], educommunication is a pedagogical methodology that uses communication as an element of education in a simple, procedural, mediatic, transdisciplinary, and interdiscursive way. Educommunication uses different communication technologies or integrates different media [16] that, when applied to the health or nutrition area, becomes a creative tool capable of strengthening communication and learning process [17] positively influencing the quality of life of patients and caregivers.

2. Study Rationale
This scoping review will be the first, to our knowledge, to identify and map studies that address educommunication in nutrition and NDs, focusing on caregivers or patients as active subjects of the teaching and learning process. This research will bring important insights to guide learning strategies that can positively influence the construction of care autonomy, as well as identify strengths and weaknesses with the implementation and development of educommunication.

3. Study Objectives
The main objective for the proposed scoping review is to identify and map the literature on actions/strategies of educommunication in nutrition and NDs used in caregivers or patients.

4. Methods and Analysis
4.1 Protocol and registration
The study follows a scoping review protocol, registered on the Home OSF platform on July 2022, with DOI 10.1765/OSF.IO/ZGQ4X and entitled as ‘Educomunicação nutricional para pacientes com doenças neurodegenerativas: uma revisão de escopo’.

4.2 Study design
This is a scoping review (ScR) guided by the recommendations of the JBI Reviewer’s Manual (JBI, 2020) [18]. It is according to the theoretical framework proposed by Arksey and O’Malley (2005) [19] and Peters et al. (2020)[20,21], according to the PRISMA Extension for Scoping Reviews [22].

4.3 Patient and public involvement
No patient or public have been involved in this scoping review protocol.

4.4 Identifying relevant studies
Relevant studies were those addressing or using actions/strategies of educommunication in nutrition and NDs for caregivers and/or patients.

4.5 Research question
To formulate the question, the PCC strategy will be used, as described below:

- **P (Population):** neurodegenerative diseases OR degenerative diseases of the nervous system
- **C (Concept):** educommunication OR health education OR health literacy OR education OR communication OR educational communication OR educational communication OR learning OR health literacy
- **C (Context):** nutrition OR nutrition science OR nutritional therapy

Research question: what actions/strategies of educommunication in nutrition and NDs have been developed for caregivers or patients dealing with this condition?

4.6 Inclusion and exclusion criteria
Observational studies, experimental studies, and gray literature, including dissertation and thesis, available in full text, will be included. No restrictions of date or language will be applied to the search strategy. Duplicate articles, editorials, reviews, manuals, books, experience reports, reflection studies, studies without abstract will be excluded.
4.7 Search strategy

A broad search strategy will be carried out, including the following databases: Embase, PubMed/MEDLINE, Scopus, Web of Science, Google Scholar and Theses and Dissertations from Latin America, grey literature sources. No restrictions of date or language will be applied to the search strategy.

The search strategy will include the following combinations: Neurodegenerative diseases OR Degenerative Diseases Central Nervous System OR Degenerative Diseases Nervous System OR degenerative disease AND Education OR educommunication OR Literacy OR Teach-Back Communication AND nutritional sciences OR nutritional status OR 'nutrition education OR Nutrition, according to MeSH. The crossing method used will be modified according to the particularities of each database. A draft of our search strategy in two databases (Embase and PubMed/MEDLINE) has been provided as a supplemental material.

4.8 Selection of eligible studies

For all identified studies, at least two authors (KMDC and LLL) will independently select and review titles and abstracts using the Rayyan QCRI® tool. Papers that meet the inclusion criteria will be ordered for a full review. Any disagreement will be resolved by discussion with a third reviewer (SHLV). The information on the phases of the selection process will be described through PRISMA flow diagram [22].

4.9 Data extraction

The data extraction will be done in a standardized way using Microsoft® Excel (by two independent authors (KMDC e LLL). Discrepancies between the data extraction will be resolved by consensus. The process for standardization of the data extraction was adapted from the JBI Reviewer’s Manual (JBI, 2020) [20] and will include many variables (Table 1). In case of incomplete information or missing data, the corresponding authors of the studies will be contacted. If we do not receive the necessary information, the data will be excluded from our analysis and will be dealt with in the Discussion section.

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Table 1 - Standardization of the data extraction.
Database According to the origin of the study during the selection process
Publication year Year the study was published
Country Country where the study was performed
Objective Describe in detail the objective of the study
Study design and approach Describe the study design and approach used
Level of evidence According to the recommendations of the JBI
Study population Patients, family members, caregivers and/or health professionals
Educommunication actions/strategies Describe actions, strategies, and tools used in the educommunication process
Neurodegenerative/neuromuscular diseases Amyotrophic lateral sclerosis, multiple sclerosis, Duchenne muscular dystrophy, Parkinson's disease, Alzheimer's disease, etc.
Feeding route Oral or enteral
Nutrition topics and teaching/learning format In person or virtual
Facilitating aspects and/or challenges Adherence, access to technology, level of education, dissemination, etc.

4.10 Data summary and synthesis of results
The data will be mapped to answer the research question. Also, it will be summarized descriptively (n and %) and qualitatively, with the use of tables, charts, and graphs, when appropriate. The synthesis of results will be developed based on the findings of the scoping review to best capture the answers to the research question. Gaps and limitations of the current literature will also be addressed.

5. Discussion
As the scoping review follows a systematic approach to map evidence on a topic and identify key concepts, theories, sources, and knowledge gaps [23], the results of this review will be related to the objective and research question, being discussed as they are associated with practice and education. Gaps and limitations of the current literature will also be identified.
6. Ethics and Dissemination

The results of this scoping review will be published in a peer-reviewed journal. The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study.

References


Acknowledgements

The authors thank the Laboratory of Technological Innovation in Health (LAIS) at the Federal University of Rio Grande do Norte (UFRN) and its researchers who are part of the revELA project.

Authors' contributions

KMDC, LLL, MSB, KCL participated in the development and design of this Protocol. KMDC, LLL, MSB, MKSR contributed to discussions and initial tests to choose the best search terms and strategies. KMDC, LLL, MSB, MKSR, and SHLV were involved in the acquisition, analysis, and interpretation of data for this work. KMDC and LLL wrote the drafts of this Manuscript. All authors critically reviewed, edited, and approved the final version of this Manuscript to be published. Furthermore, all authors agree to be accountable for all aspects related to this work.

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Competing interests

None declared.
**Supplemental Material 1 [Draft of Search Strategies]**

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| **Primary Subject Heading:** | Nutrition and metabolism |
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| **Keywords:** | Neurology < INTERNAL MEDICINE, Nutrition < TROPICAL MEDICINE, MEDICAL EDUCATION & TRAINING |
Educommunication in nutrition and neurodegenerative diseases: a scoping review protocol

Authors: Karla Mônica Dantas Coutinho, MSc\textsuperscript{1,5}, Sancha Helena de Lima Vale, PhD\textsuperscript{1,3,5}, Manacés dos Santos Bezerril, PhD\textsuperscript{4}, Mônica Karina Santos Reis, PhD\textsuperscript{2,5}, Lucia Leite-Lais, PhD\textsuperscript{3,5}, Kenio Costa de Lima, PhD\textsuperscript{1,2,5}.

\textsuperscript{1}Postgraduate Program in Health Sciences, Federal University of Rio Grande do Norte, Natal, Brazil

\textsuperscript{2}Department of Public Health, Federal University of Rio Grande do Norte, Natal, Brazil

\textsuperscript{3}Department of Nutrition, Federal University of Rio Grande do Norte, Natal, Brazil

\textsuperscript{4}Postgraduate Program in Nursing, Federal University of Rio Grande do Norte, Natal, Brazil

\textsuperscript{5}Laboratory of Technological Innovation in Health (LAIS), Federal University of Rio Grande do Norte, Natal, Brazil

Corresponding author: Lucia Leite-Lais. Email: lucia.leite@ufrn.br. Address: Universidade Federal do Rio Grande do Norte, Departamento de Nutrição. Av. Sen. Salgado Filho, 3000, 59.078-970, Natal-RN, Brasil. Tel.: +55 84 3342-2291 (Ext. 337).
ABSTRACT:

Introduction Neurodegenerative diseases affect the nervous system and are characterized by the deterioration and/or death of neurons. Nutrition care is essential for maintaining an adequate nutritional status, which influences the prognosis and survival of neurological patients. Caregivers participate assiduously in the care of these patients and must be integrated into the multidisciplinary team. They often need specific training or knowledge regarding food and nutrition to perform their role with patients. Health educommunication is a learning tool that can positively influence the appropriation of the theme and the construction of care autonomy. This scoping review will map educommunication actions/strategies in nutrition and neurodegenerative diseases.

Methods and Analysis The scoping review will be designed based on the methodology of Arksey and O'Malley and it will follow the methodological guidance for conducting a JBI scoping review. The research question addressed by the scoping review will be: what actions/strategies for educommunication in nutrition and neurodegenerative diseases have been developed for patients or caregivers? Many search sites it will be used in this review, such as electronic databases (Embase, PubMed/MEDLINE, Scopus, Web of Science), Google Scholar and grey literature sources. No restrictions of date or language will be applied to the search strategy. Two reviewers will independently screen all abstracts and full-text studies for inclusion. Data, including study design, objective, study population, neurodegenerative diseases, nutrition topics, and educommunication strategies will be logically organized and tabulated in Microsoft® Excel.

Ethics and dissemination The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study. Dissemination of the results will be published in a peer-reviewed journal and presented at conferences.

Keywords: Neurodegenerative disease, Educommunication, Nutrition.

Strengths and limitations of this study

- This will be the first scoping review on educommunication in nutrition and neurodegenerative diseases.
- This scoping review will be guided by the recommendations of the JBI Institute Reviewer's Manual, according to Arksey and O'Malley, and following the PRISMA ScR.
The search strategy includes many search sites, including electronic databases with peer-reviewed literature, as well as gray literature sources.

The data extraction will be done in a standardized way, by two independent authors.

This review will be limited to studies that addresses educommunication focused only in nutrition and neurodegenerative diseases.

1. Introduction

Neurodegenerative diseases (NDs) are characterized by the degeneration and/or death of neurons, causing progressive and gradual loss of motor, physiological, and cognitive functions. They have genetic origin or not [1] and cover a large number of diseases that affect the peripheral and central nervous system [2]. The most prevalent NDs include Alzheimer's Disease (AD), Parkinson's Disease (PD), and Motor Neuron Diseases (MND) [3].

NDs have a major impact on the nutritional status of patients, especially those associated with swallowing disorders. Dysphagia largely affects respiratory safety due to the increased risk of aspiration and impaired coordination of swallowing, leading to malnutrition and dehydration. Thus, careful consideration of the nutritional condition of patients with NDs is essential for better management of these patients [4]. On the other side, diet and nutrition play an important role in the pathogenesis of NDs. Deficiency of energy, nutrients, and bioactive compounds accentuate pathophysiological processes such as inflammation, oxidative stress, gut dysbiosis, and immune dysfunction, while a proper nutrition can prevent, mitigate, or slow the progression of NDs [5,6]. This fact highlights the importance of diet and nutrition for patients with NDs.

Multidisciplinary care interventions aimed at managing symptoms and maintaining/recovering nutritional status contribute to improving the quality of life and the survival of neurological patients [7]. This contribution is aligned with the Sustainable Development Goals of the United Nations, supporting targets of the third goal about good health and well-being [8].

Caregivers of patients with NDs, whether family members, professionals, or volunteers, participate assiduously in the care of these patients and must be integrated into the
multidisciplinary team. Training caregivers in general and specific knowledge and skills related to their patients’ main disease and all nutritional implications related is fundamental for the quality of care provided [9].

In this sense, nutrition education plays a pivotal role in NDs. However, strategies of nutrition education are lacking in neurological diseases [10] and many times the health professionals are not prepared or aligned to strengthen nutrition education as a component of the multidisciplinary care [11,12]. Nutrition education can be provided in many ways and formats [13]. Educommunication (Education + Communication) emerges as a tool that can integrate the health and nutrition education process. Educommunication started in Latin America in the late 1960s and 1970s and since then it has had an enormous impact across these region [14]. According to Soares (2000) [15], educommunication is a pedagogical methodology that uses communication as an element of education in a simple, procedural, mediatic, transdisciplinary, and interdiscursive way. Educommunication uses different communication technologies or integrates different media [16] that, when applied to the health or nutrition area, becomes a creative tool capable of strengthening communication and learning process [17] positively influencing the quality of life of patients and caregivers.

2. Study Rationale
This scoping review will be the first, to our knowledge, to identify and map studies that address educommunication in nutrition and NDs, focusing on caregivers or patients as active subjects of the teaching and learning process. This research will bring important insights to guide learning strategies that can positively influence the construction of care autonomy, as well as identify strengths and weaknesses with the implementation and development of educommunication.

3. Study Objectives
The main objective for the proposed scoping review is to identify and map the literature on actions/strategies of educommunication in nutrition and NDs used in caregivers or patients.

4. Methods and Analysis
4.1 Protocol and registration
The study follows a scoping review protocol, registered on the Home OSF platform on July 2022, with DOI 10.1765/OSF.IO/ZGQ4X and entitled as ‘Educomunicação nutricional para pacientes com doenças neurodegenerativas: uma revisão de escopo’.

4.2 Study design

This is a scoping review (ScR) guided by the recommendations of the JBI Reviewer’s Manual (JBI, 2020) [18]. It is according to the theoretical framework proposed by Arksey and O’Malley (2005) [19] and Peters et al. (2020)[20,21], according to the PRISMA Extension for Scoping Reviews [22].

4.3 Patient and public involvement

No patient or public have been involved in this scoping review protocol.

4.4 Identifying relevant studies

Relevant studies were those addressing or using actions/strategies of educommunication in nutrition and NDs for caregivers and/or patients.

4.5 Research question

To formulate the question, the PCC strategy will be used, as described below:

- **P (Population):** neurodegenerative diseases OR degenerative diseases of the nervous system
- **C (Concept):** educommunication OR health education OR health literacy OR education OR communication OR educational communication OR educational communication OR learning OR health literacy
- **C (Context):** nutrition OR nutrition science OR nutritional therapy

Research question: what actions/strategies of educommunication in nutrition and NDs have been developed for caregivers or patients dealing with this condition?

4.6 Inclusion and exclusion criteria

Observational studies, experimental studies, and gray literature, including dissertation and thesis, available in full text, will be included. No restrictions of date or language will be applied to the search strategy. Duplicate articles, editorials, reviews, manuals, books, experience reports, reflection studies, studies without abstract will be excluded.
4.7 Search strategy

A broad search strategy will be carried out, including the following databases: Embase, PubMed/MEDLINE, Scopus, Web of Science, Google Scholar and Theses and Dissertations from Latin America, grey literature sources. No restrictions of date or language will be applied to the search strategy.

The search strategy will include the following combinations: Neurodegenerative diseases OR Degenerative Diseases Central Nervous System OR Degenerative Diseases Nervous System OR degenerative disease AND Education OR educommunication OR Literacy OR Teach-Back Communication AND nutritional sciences OR nutritional status OR 'nutrition education OR Nutrition, according to MeSH. The crossing method used will be modified according to the particularities of each database. A draft of our search strategy in two databases (Embase and PubMed/MEDLINE) has been provided as a supplemental material.

4.8 Selection of eligible studies

For all identified studies, at least two authors (KMDC and LLL) will independently select and review titles and abstracts using the Rayyan QCRI® tool. Papers that meet the inclusion criteria will be ordered for a full review. Any disagreement will be resolved by discussion with a third reviewer (SHLV). The information on the phases of the selection process will be described through PRISMA flow diagram [22].

4.9 Data extraction

The data extraction will be done in a standardized way using Microsoft® Excel (by two independent authors (KMDC e LLL). Discrepancies between the data extraction will be resolved by consensus. The process for standardization of the data extraction was adapted from the JBI Reviewer’s Manual (JBI, 2020) [20] and will include many variables (Table 1). In case of incomplete information or missing data, the corresponding authors of the studies will be contacted. If we do not receive the necessary information, the data will be excluded from our analysis and will be dealt with in the Discussion section.

Table 1 - Standardization of the data extraction.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Standardization</th>
</tr>
</thead>
</table>

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml
### Table 1: Key components of the scoping review

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Database</strong></td>
<td>According to the origin of the study during the selection process</td>
</tr>
<tr>
<td><strong>Publication year</strong></td>
<td>Year the study was published</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>Country where the study was performed</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>Describe in detail the objective of the study</td>
</tr>
<tr>
<td><strong>Study design and approach</strong></td>
<td>Describe the study design and approach used</td>
</tr>
<tr>
<td><strong>Level of evidence</strong></td>
<td>According to the recommendations of the JBI</td>
</tr>
<tr>
<td><strong>Study population</strong></td>
<td>Patients, family members, caregivers and/or health professionals</td>
</tr>
<tr>
<td><strong>Educommunication actions/strategies</strong></td>
<td>Describe actions, strategies, and tools used in the educommunication process</td>
</tr>
<tr>
<td><strong>Neurodegenerative/neuromuscular diseases</strong></td>
<td>Amyotrophic lateral sclerosis, multiple sclerosis, Duchenne muscular dystrophy, Parkinson's disease, Alzheimer's disease, etc.</td>
</tr>
<tr>
<td><strong>Feeding route</strong></td>
<td>Oral or enteral</td>
</tr>
<tr>
<td><strong>Nutrition topics and teaching/learning format</strong></td>
<td>In person or virtual</td>
</tr>
<tr>
<td><strong>Facilitating aspects and/or challenges</strong></td>
<td>Adherence, access to technology, level of education, dissemination, etc.</td>
</tr>
</tbody>
</table>

#### 4.10 Data summary and synthesis of results

The data will be mapped to answer the research question. Also, it will be summarized descriptively (n and %) and qualitatively, with the use of tables, charts, and graphs, when appropriate. The synthesis of results will be developed based on the findings of the scoping review to best capture the answers to the research question. Gaps and limitations of the current literature will also be addressed.

#### 5. Discussion

As the scoping review follows a systematic approach to map evidence on a topic and identify key concepts, theories, sources, and knowledge gaps [23], the results of this review will be related to the objective and research question, being discussed as they are associated with practice and education. Gaps and limitations of the current literature will also be identified.
6. Ethics and Dissemination

The results of this scoping review will be published in a peer-reviewed journal. The data used for this review are from secondary sources and available to the public, thus no ethical approval and human consent will be required for this study.

References


Acknowledgements

The authors thank the Laboratory of Technological Innovation in Health (LAIS) at the Federal University of Rio Grande do Norte (UFRN) and its researchers who are part of the revELA project.

Authors' contributions

KMDC, LLL, MSB, KCL participated in the development and design of this Protocol. KMDC, LLL, MSB, MKSR contributed to discussions and initial tests to choose the best search terms and strategies. KMDC, LLL, MSB, MKSR, and SHLV were involved in the acquisition, analysis, and interpretation of data for this work. KMDC and LLL wrote the drafts of this Manuscript. All authors critically reviewed, edited, and approved the final version of this Manuscript to be published. Furthermore, all authors agree to be accountable for all aspects related to this work.

Funding

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Competing interests

None declared.
Supplemental Material 1 [Draft of Search Strategies]

<table>
<thead>
<tr>
<th>Database</th>
<th>Equations</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMBASE</td>
<td>'degenerative disease'/exp AND 'nutrition education'/exp</td>
</tr>
</tbody>
</table>
### PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

<table>
<thead>
<tr>
<th>Section and topic</th>
<th>Item No</th>
<th>Checklist item</th>
<th>Reported on line</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMINISTRATIVE INFORMATION</td>
<td></td>
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</tr>
<tr>
<td>Title: Identification</td>
<td>1a</td>
<td>Identify the report as a protocol of a systematic review</td>
<td>1,2</td>
</tr>
<tr>
<td></td>
<td>1b</td>
<td>If the protocol is for an update of a previous systematic review, identify as such</td>
<td>NA</td>
</tr>
<tr>
<td>Registration</td>
<td>2</td>
<td>If registered, provide the name of the registry (such as PROSPERO) and registration number</td>
<td>136-137</td>
</tr>
<tr>
<td>Authors: Contact</td>
<td>3a</td>
<td>Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author</td>
<td>17-19</td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>Describe contributions of protocol authors and identify the guarantor of the review</td>
<td>299-303</td>
</tr>
<tr>
<td>Amendments</td>
<td>4</td>
<td>If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments</td>
<td>NA</td>
</tr>
<tr>
<td>Support: Sources</td>
<td>5a</td>
<td>Indicate sources of financial or other support for the review</td>
<td>308-310</td>
</tr>
<tr>
<td>Sponsor</td>
<td>5b</td>
<td>Provide name for the review funder and/or sponsor</td>
<td>308-310</td>
</tr>
<tr>
<td>Role of sponsor or sponsor or funder</td>
<td>5c</td>
<td>Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol</td>
<td>NA</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>6</td>
<td>Describe the rationale for the review in the context of what is already known</td>
<td>122-127</td>
</tr>
<tr>
<td>Rationale</td>
<td>7</td>
<td>Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)</td>
<td>155-162</td>
</tr>
<tr>
<td>METHODS</td>
<td>8</td>
<td>Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review</td>
<td>165-168</td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Information sources</td>
<td>9</td>
<td>Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage</td>
<td>171-174</td>
</tr>
<tr>
<td>Search strategy</td>
<td>10</td>
<td>Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated</td>
<td>Supplemental material</td>
</tr>
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<tr>
<td>Study records:</td>
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</tr>
<tr>
<td>Data management</td>
<td>11a</td>
<td>Describe the mechanism(s) that will be used to manage records and data throughout the review</td>
<td>187</td>
</tr>
<tr>
<td>Selection process</td>
<td>11b</td>
<td>State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)</td>
<td>186</td>
</tr>
<tr>
<td>Data collection process</td>
<td>11c</td>
<td>Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators</td>
<td>193,194</td>
</tr>
<tr>
<td>Data items</td>
<td>12</td>
<td>List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications</td>
<td>Table 1</td>
</tr>
<tr>
<td>Outcomes and prioritization</td>
<td>13</td>
<td>List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale</td>
<td>NA</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>14</td>
<td>Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis</td>
<td>NA</td>
</tr>
<tr>
<td>Data synthesis</td>
<td>15a</td>
<td>Describe criteria under which study data will be quantitatively synthesised</td>
<td>NA</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>15b</td>
<td>If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I², Kendall’s τ)</td>
<td>NA</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>15c</td>
<td>Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)</td>
<td>NA</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>15d</td>
<td>If quantitative synthesis is not appropriate, describe the type of summary planned</td>
<td>NA</td>
</tr>
<tr>
<td>Meta-bias(es)</td>
<td>16</td>
<td>Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)</td>
<td>NA</td>
</tr>
<tr>
<td>Confidence in cumulative evidence</td>
<td>17</td>
<td>Describe how the strength of the body of evidence will be assessed (such as GRADE)</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA: Not applicable.

* It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (site when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.