

## Health promotion and quality of life of people affected by obstructive sleep apnea

Promoção da saúde e qualidade de vida de pessoas acometidas por apneia obstrutiva do sono

Promoción de la salud y calidad de vida de las personas con apnea obstructiva del sueño

### RESUMO

Objetivo: Evidenciar em publicações científicas quanto estratégias de promoção da saúde como possibilidade de qualidade de vida de pessoas acometidas por Apneia Obstrutiva do Sono. Método: Revisão Integrativa de Literatura, realizada nas bases de dados Medical Literature Analysis and Retrieval System Online, Scientific Electronic Library Online, com leitura e análise crítica de estudos publicados nos anos de 2010 a 2020. Resultados: Foram selecionados 23 artigos, categorizados pelos campos de atuação da Promoção da Saúde: Reforço a ação comunitária; Desenvolvimento de habilidades pessoais; e reorientação dos serviços de saúde. As estratégias de ação de promoção da saúde foram: aplicação de protocolos, formulários e questionários de avaliação aos pacientes, treinamento de atividade física, educação em saúde e emprego de tecnologias da comunicação e informação. Conclusão: As evidências revelaram ações de promoção da saúde com grandes potenciais e possibilidades de capacitação das pessoas, conseqüentemente motivação e preparo para atuação em prol da saúde e qualidade de vida.

**DESCRIPTORIOS:** Apneia Obstrutiva do Sono; Doenças Otorrinolaringológicas; Promoção da Saúde; Qualidade de Vida.

### ABSTRACT

Objective: Evidence in scientific publications regarding health promotion strategies as a possibility of quality of life for people affected by Obstructive Sleep Apnea. Method: Integrative Literature Review, performed in the databases Medical Literature Analysis and Retrieval System Online, Scientific Electronic Library Online, with reading and critical analysis of studies published in the years 2010 to 2020. Results: Twenty-three articles were selected, categorized by the fields of action of Health Promotion: Strengthening community action; developing personal skills; and reorienting health services. The health promotion action strategies were application of protocols, evaluation forms and questionnaires to patients, physical activity training, health education and use of communication and information technologies. Conclusion: The evidence revealed health promotion actions with enormous potential and possibilities for empowering people, consequently motivating, and preparing them to act in favor of health and quality of life.

**DESCRIPTORS:** Obstructive Sleep Apnea; Otorhinolaryngologic Diseases; Health Promotion; Quality of Life.

### RESUMEN

Objetivo: Analizar las publicaciones científicas sobre estrategias de promoción de la salud como forma de mejorar la calidad de vida de las personas afectadas por Apnea Obstrutiva del Sueño. Método: Revisión bibliográfica integradora, realizada en las bases de datos Medical Literature Analysis and Retrieval System Online, Scientific Electronic Library Online, con lectura y análisis crítico de los estudios publicados entre 2010 y 2020. Resultados: Fueron seleccionados 23 artículos, categorizados por los campos de acción de la Promoción de la Salud: Refuerzo de la acción comunitaria; Desarrollo de habilidades personales; y Reorientación de los servicios de salud. Las estrategias de actuación de la promoción de la salud fueron: aplicación de protocolos, formularios y cuestionarios para evaluar a los pacientes, entrenamiento en actividad física, educación para la salud y uso de las tecnologías de la comunicación y la información. Conclusión: Las pruebas revelaron que las acciones de promoción de la salud tienen un gran potencial y posibilidades de empoderar a las personas y, en consecuencia, motivarlas y prepararlas para actuar en favor de la salud y la calidad de vida.

**DESCRIPTORIOS:** Apnea Obstrutiva del Sueño; Enfermedades ORL; Promoción de la Salud; Calidad de Vida.

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**INTRODUCTION**

In response to the discussions in search of new perspectives on public health policies for all at the global level, the Ottawa Charter was created at the First International Conference on Health Promotion in 1986 in Canada. This document represented a historic milestone in public health, in which it assumed equity in health, with the intention of reducing differences in people's health status and ensuring access to resources and goods for a better quality of life<sup>1</sup>.

In the Ottawa Charter, Health Promotion (HP) is consolidated in different dimensions that go beyond the health sector, towards socioeconomic, political, cultural, environmental, and other aspects that provide intersectoriality. Thus, HP was defined as "the process of empowering the community to act to improve their quality of life and health, including greater participation in the control of this process", in order to enable people to be able to intervene in favor of their own health and well-being<sup>2,3</sup>.

In this sense, coping with morbidities such as otorhinolaryngological diseases, which affect the ear, nose, and throat, is an important public he-

alth problem, since many of them can compromise people's physical, social, professional development and quality of life, even leading to death<sup>4</sup>.

Obstructive Sleep Apnea (OSA) or Obstructive Sleep Apnea Syndrome (OSAS), for example, is characterized by repetitive blockage of the airways during sleep, leading to partial or total obstruction of the air passage to the lungs. OSA affects approximately 38% of adults worldwide, and is associated with several comorbidities, with complications ranging from the onset of cardiometabolic disorders, neuro-cognitive abnormalities, and mood changes. The main signs and symptoms include excessive sleepiness, difficulty concentrating, fatigue, gastroesophageal reflux, morning headache, depressive symptoms, among others that can interfere with people's quality of life, compromising the functioning of daily activities, increasing the risk of work and traffic accidents due to sleep deprivation<sup>5,6</sup>.

Despite being common, OSA is still underdiagnosed and undertreated, associated with factors such as difficulty in accessing specialized health services, lack of knowledge, both by people in general and by health professionals, regarding signs and symp-

toms, risk factors, as well as comorbidities resulting from its worsening. Sociodemographic and economic characteristics, disease severity, psychological factors and side effects may also affect adherence to treatment, which involves the use of oral appliances, surgery, weight reduction, physical exercise, and the use of continuous positive airway pressure (CPAP)<sup>7-9</sup>.

In this perspective, the importance of strengthening and incorporating health promotion strategies is emphasized, in order to enable the empowerment of people affected by OSA so that they can intervene on their conditions and quality of life and health. However, it is believed that literature review studies based on national and international scientific evidence can contribute to the production of knowledge, in order to enable decision-making regarding care interventions that enhance health promotion, in view of the general determinants of health and disease.

Thus, this study was guided by the following question: What health promotion strategies have been developed as possibilities for a better quality of life for people with OSA, from the perspective of the strategic fields of health promotion of the Ottawa Charter?

Therefore, this study aimed to highlight in national and international scientific publications the main health promotion strategies that enable improvement in the quality of life of people affected by OSA.

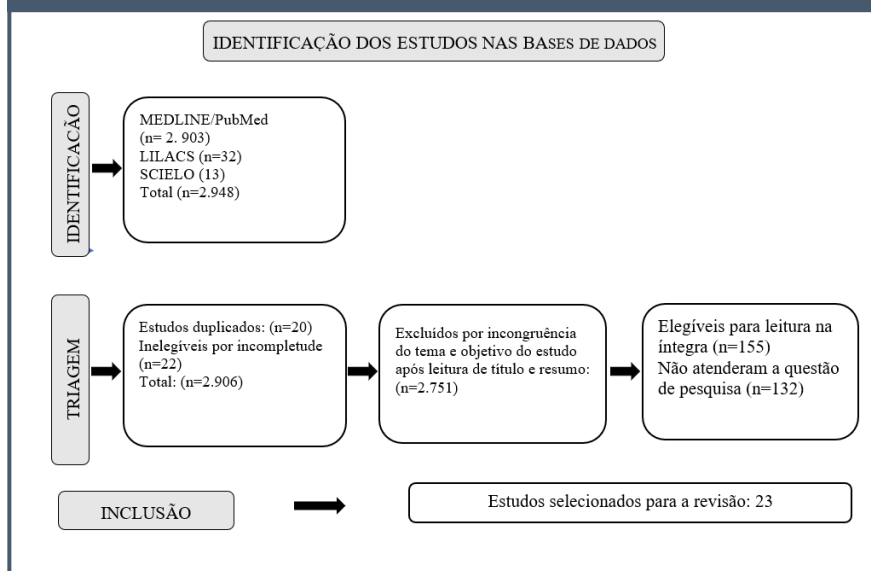
## METHOD

Integrative literature review (ILR) study, which allows synthesizing information available in the scientific literature in a systematic and organized way, in order to enable greater understanding of the topic addressed for the production of knowledge. The course of the study was guided by five stages: elaboration of the research question (identification of the problem); definition of databases, inclusion, and exclusion criteria; definition of the information contained in the selected studies (categorization of information); critical evaluation of the selected studies; interpretation of the results; presentation of the results. To formulate the research question, the Population of Interest and Context (PICO) strategy was used.<sup>10-11</sup>

To guide the study, a protocol was developed and submitted to the evaluation of professionals with expertise in RIL and in the thematic area. The search was conducted in the databases Medical Literature Analysis and Retrieval System Online (MEDLINE), accessed through the PubMed portal, Latin American and Caribbean Literature in Health Sciences (LILACS) and Scientific Electronic Library Online (SCIELO), using the search terms: Obstructive Sleep Apnea; ENT Diseases; Health Promotion; and Quality of Life, with their equivalent terms and respective boolean AND and OR.

The inclusion criteria adopted were articles published in the last ten years, between 2010 and 2020, as they are more recent data, available in full, in Portuguese, English and Spanish. Duplicate articles in the databases

Picture 1: Flowchart of the study selection process, Manaus, Amazonas, Brazil, 2023.



Source: adapted by the authors, 2023

and those that did not represent original research were excluded, namely: editorials, opinions, reviews, reports of experiences, communications, as well as those that did not answer the research question and the objective of the study. The search was carried out between the months of May and July 2021, with peer review, independently and with the same standardization of the search strategy for each database.

A total of 2,948 articles were found in the databases investigated, of which, according to the inclusion and exclusion criteria, 23 articles were chosen, organized with the aid of the Microsoft Excel© program, with the following information: identification, authorship, place and year of publication, study objective, design, and main results. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations were used to critically evaluate the publications, as shown in Figure 1<sup>12</sup>.

After careful reading of the selected studies, a critical, qualitative, and descriptive analysis was carried out,

obtaining three analytical categories according to the strategic fields of action of health promotion derived from the Ottawa Charter.

## RESULTS

The relevant results of the 23 articles analyzed are presented in Table 1. Four national and twenty international publications were identified, with a predominance of publications between 2014 and 2019, most of which were randomized clinical trials.

In the search for the definition of the categories of analysis of the selected studies and presentation of the results in line with the proposed objective, health promotion strategies were identified within the following fields of action:

### Strategies enabling quality of life in the countryside "strengthening community action."

In this field, one study (A10) was identified that described the development of a customized website, in-

cluding visuals, messages, and video narratives to raise awareness about OSA among Black people in a given community<sup>22</sup>.

### Strategies enabling quality of life in the field "personal skills development."

Most of the articles presented interventions in this field of health promotion, interventions such as physical exercise with an impact on weight reduction, improvement in sleep quality, mood, daytime functioning, and reduction of complications due to diabetes. AOS<sup>13,17,24,29, 31-32</sup>.

Health education activities, carried out by means of motivational telephone interviewing, were also shown to increase participants' adherence to OSA assessment<sup>14, 19-20</sup>, resulting in better acceptance of CPAP therapy in people with a new diagnosis of OSA; education programs for patients using CPAP significantly improved the disturbance regarding the use of the device and consequently provided more hours of use of the device per night<sup>16,29</sup>; the adoption of intensive programs (additional visits, telephone call, education) enabled better sleep quality, decreased depression, hospitalization and mortality rate due to cardiovascular disease in the intervention group<sup>20,26-27</sup>.

Other activities observed were the creation and application of videos with motivational narratives, through digital vehicles, in order to promote patients' awareness of treatment and self-care<sup>20,22</sup>.

### Strategies that enable quality of life in the field "reorientation of health services."

In this category, the creation of Virtual Sleep Units mediated through the telehealth service was evidenced, with a positive impact on better adherence and effective use of CPAP<sup>21,25-26</sup>; telemonitoring to reduce blood pressure and improve sleep quality in patients

Quadro 1: Síntese dos artigos segundo identificação, autoria, local e ano, tipo de estudo e estratégias de Promoção da Saúde, Manaus, Amazonas, 2023.

| Ident.            | Author/Year /Location                                     | Type of study                              | Health Promotion Strategies   |
|-------------------|---|--|---|
| A1 <sup>13</sup>  | Moss J et al.(2014); The United Kingdom                   | Randomized clinical trial                  | Supervised exercise; Dietary/nutritional counseling; Lifestyle changes using cognitive-behavioral techniques.   |
| A2 <sup>14</sup>  | Cukor D et al. (2018); THE USA                            | Participatory research                     | Motivational interviewing   |
| A3 <sup>15</sup>  | AbmaLL et al.(2019); Holland                              | Exploratory mixed methods study            | Individual patient guidance using the PRAQ instrument.  |
| A4 <sup>16</sup>  | Hu ST, Yu CC, Liu CY, Tsao LI.(2017); China.              | Randomized clinical trial.                 | Health education actions carried out by nursing regarding the use of CPAP.  |
| A5 <sup>17</sup>  | Kline CE et al. (2012); The USA                           | Experimental design                        | Physical training guidance and actions  |
| A6 <sup>18</sup>  | Silva MVFP et al. (2019); Brazil.                         | randomized controlled trial                | Actions/Acupuncture procedure   |
| A7 <sup>19</sup>  | Olsen S, Smith SS, Oei TPS, Douglas J. (2012); Australia. | Randomized clinical trial                  | Motivational interview  |
| A8 <sup>20</sup>  | Lugo VM et al.(2019);Spain                                | Randomized clinical trial                  | Activities by means of telemedicine   |
| A9 <sup>21</sup>  | Robbins R et al. (2018)The USA.                           | Mixed-methods study                        | Development of technologies (website) to raise awareness among OSA patients based on their experiences and lived realities.   |
| A10 <sup>22</sup> | Maanen JPV,Vries N.(2014); Holland.                       | Prospective, multi-center cohort study     | Use of sleep quality assessment tools.  |
| A11 <sup>23</sup> | Servante DM et al. (2018); Brazil.                        | Randomized clinical trial                  | Combined interventions: use of physical exercise and CPAP.  |
| A12 <sup>24</sup> | Isetta V et al. (2015);Spain                              | Randomized clinical trial                  | Telemedicine interventions in patient care.   |
| A13 <sup>25</sup> | Sparrow D et al. (2018) The USA.                          | Randomized clinical trial                  | Telemedicine intervention   |
| A14 <sup>26</sup> | Bouloukaki I et al. (2014); Greece.                       | Prospective, randomized, controlled study. | Telephone guidance on adherence to CPAP use and additional visits.  |
| A15 <sup>27</sup> | Garbarino S, Magnavita N. (2014);Italy.                   | The population-based study                 | Intervention with application of questionnaires regarding SDS and ESS.  |
| A16 <sup>28</sup> | Tuomilehto H et al. (2014); Finland                       | Randomized clinical trial.                 | Dietary counseling (fat reduction, increased intake of fruits, fish, and lean meats); Counseling on daily physical activity and endurance exercises (walking, running, and swimming). |

with cardiovascular complications<sup>31</sup>.

It was observed that in a sleep center, in clinical practice, the application of the Patient-Reported Apnea Questionnaire (PRAQ) was identified, with the aim of informing patients about OSA<sup>28</sup>. In addition, a health promotion program was evidenced for the detection of clinical risk for OSA and the non-adoption of the supine position during sleep, in order to avoid upper airway obstruction<sup>23,35</sup>.

## DISCUSSION

OSA is a topic frequently studied in the national and international scientific literature, noting the number of articles found in electronic databases, however, few studies allude to PS and focus and their fields of action.

The studies revealed that OSA is an important challenge for public health policies, although it affects one third of the adult population, it remains underdiagnosed and with low adherence to treatment. Factors such as chronic non-communicable diseases (CNCD), cranial and orofacial characteristics, age, race, gender, smoking, low income and education, difficulty in accessing health services and psychosocial problems are closely related to the clinical conditions of OSA, low adherence to treatment and its complications.<sup>20-21,24,27,35</sup>

The symptoms of OSA mentioned in the studies, such as excessive daytime sleepiness, decreased cognitive function, fatigue, mood impairment, depression, traffic accidents and metabolic dysfunction, were considered factors that negatively impact the health and quality of life of patients, leading to poor performance at work, family and social life<sup>17,20,23,30</sup>.

However, it was observed, in the studies, strategies of actions aimed at improving the quality of life of people affected by OSA, considering the broad concept of HP that goes beyond a

|                   |                                     |   |  |
|-------------------|-------------------------------------|---|--|
| A17 <sup>29</sup> | Ackel-D'Elia C et al.(2012); Brazil | Randomized clinical trial                 | Intervention with the Fletcher & Luckett sleep questionnaire, ESS, and sleep diaries.  |
| A18 <sup>30</sup> | Pépin JL et al. (2019); France.     | Multicenter, open-label, randomized study | Intervention with remote telemonitoring (collecting information on BP, symptoms, CPAP side effects and physical activity with home care providers) and self-measurement of BP at home. |
| A19 <sup>31</sup> | Schütz TC et al. (2013); Brazil.    | Randomized clinical trial                 | Use of CPAP; Physical training; ESS and Fletcher & Luckett sleep questionnaire.  |
| A20 <sup>32</sup> | Herkenrath SD et al.(2018); German  | Single, open pilot study.                 | Use of TMR   |
| A21 <sup>33</sup> | Lai A et al. (2017); China.         | Randomized clinical trial                 | Follow-up telephone interview  |
| A22 <sup>34</sup> | Jackson Met al. (2015); Australia.  | Randomized, controlled trial              | SASQ, ESS, FOSQ questionnaire and the profile of mood states at baseline and follow-up.  |
| A23 <sup>35</sup> | Gokmen GY et al. (2019);Turkey.     | Randomized, controlled trial              | Application of the ESS and the Pittsburgh Sleep Quality Index  |

\*Patient-Reported Apnea Questionnaire (PRAQ); \*Sleep Disorders Score (SDS); \*Epworth Sleepiness Scale (ESS); \*Blood Pressure (BP); \*Continuous Positive Airway Pressure (CPAP); \*Generalized Respiratory Muscle Training (RMT); \*\*Sleep Apnea Symptoms Questionnaire (SASQ); \*Functional Outcomes of Sleep Questionnaire (FOSQ). Source: authors' data, 2023.

healthy lifestyle, articulating with different sectors such as education, technologies, access to health services, leisure, environment, culture and among others that represent potential tools for the realization of the principles of equity in health and social justice<sup>1-2</sup>.

Among the fields of action of HP, the actions evidenced focused on strengthening community action, developing personal skills, and reorganizing health services, with an emphasis on training people and/or the community through health education actions, conveyed by various

technological resources, in the different scenarios of care services for ENT diseases. In the Ottawa Charter, community empowerment is realized when there is a guarantee of social and popular participation in decision-making, in search of better health levels, in the possibility of access to information and the achievement of political awareness in the action and control of general health determinants, as seen in action strategies proposed in the studies investigated, with great potential for HP<sup>136</sup>.

In the field of strengthening



community action, it is relevant to bring to discussion the concept of empowerment as an element of HP, within the critical-social perspective, which proposes individual and community empowerment regarding the political and critical understanding of the health problems faced, in order to act in favor of health and well-being<sup>37-38</sup>. Therefore, it does not refer to a simple acquisition of knowledge and induction of certain behavior through an educational process, it is an invitation to reflect on the reality experienced, individually, and collectively, people are empowered, trained, and strengthened to intervene in favor of their own health care and quality of life<sup>37-38</sup>.

Portanto, não se refere a uma simples aquisição de conhecimento e indução de determinado comportamento por meio de um processo educativo, trata-se de um convite a reflexão sobre a realidade vivenciada, de forma individual e coletiva, as pessoas se empoderam, capacitam-se e se fortalecem para intervirem em favor do próprio cuidado à saúde e qualidade de vida<sup>37,39</sup>.

Thus, it was found in the studies analyzed the use of information and communication technology in health, through a website containing videos for access to information on OSA, in order to strengthen the individual and the community, thus providing care for each other and the desire to participate in decisions on matters related to a collective<sup>22</sup>.

The development of personal skills, the most recurrent field among the studies investigated, evidenced health education activities through interviews and motivational programs, use of videos as audiovisual resources and monitoring of patients by telephone, impacting on greater adherence to the use of CPAP therapy, decreased daytime sleepiness, hospitalizations and mortality from cardiovascular diseases<sup>13-14,16,19-20,22,24,26-27,29,31-32</sup>. A similar stu-

dy that analyzed the practices of PS, comparing theory and concrete action, identified that the development of personal skills was the field of greatest action among the studies<sup>2</sup>.

It was observed in the studies that CPAP therapy is the most commonly used and considered the gold standard for the treatment of OSA, however, adherence to use is still low. Although CPAP is a non-invasive procedure and has proven efficacy, the success of the therapy depends on the proactive attitude of the patient<sup>16,24,27,31-32,40</sup>. Thus, personal training through the HP actions identified in this field of action is of paramount importance so that people affected by OSA can exercise control over their treatment and improve their quality of life<sup>1</sup>.

In the field of service reorganization, a virtual sleep unit used telehealth and telemonitoring to manage patients with suspected OSA, and those using CPAP. In this field, health services must adopt a comprehensive stance that brings together the efforts of the entire team to develop actions that support the global needs of users and that seek intersectoral articulation between the social, environmental, political, and economic sectors, in order to achieve greater effectiveness in health<sup>13</sup>.

Information and communication and health technologies have been used very frequently to mediate care, especially in disease prevention, education, and health promotion actions<sup>42</sup>. It was observed in the studies the wide use of these technologies, from evaluation forms and questionnaires, audio visual equipment to digital media. Such strategies proved to be fundamental for monitoring patients, sharing information, educational, motivational, and welcoming activities, encouraging self-care, cost-effectiveness of actions, as well as facilitating dialog and interaction between the service/professional and the user<sup>41-42</sup>.

This study had the limitations of

making a temporal cut of publications and including only scientific articles, however, the selected sample allowed the realization of a synthesis on the theme, thus contributing to highlight the SP strategies developed, their possibilities and implications in the quality of life of people with OSA. In addition, the importance of rethinking health practices is emphasized, considering the five fields of action of OS and intersectorality, in order to go beyond the health sector and prioritize the individual and/or community and their general health determinants and conditioning factors.

## CONCLUSION

The health promotion strategies evidenced in the studies focused on the fields of strengthening community action, developing people skills, and reorienting health services. The actions developed to implement such strategies were the use of health technologies, development of OSA assessment tools, supervised physical exercises, nutritional counseling, motivational interviews, telemedicine-mediated activities and health education regarding the use of CPAP, and repercussions with positive impacts on health recovery and quality of life of people affected by OSA were observed in all studies.

The adoption of these strategies considered health-promoting, in health practices, programs and services represents an immense potential for social transformation of people and communities, in their micro and macro-political spaces, enabling training and empowerment for healthy choices in favor of health and well-being. It is also suggested that more studies be carried out focusing on the strategic fields of health promotion, so that the commitment to health promotion can be concretely realized.

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