GLP-1A in Improving Sleep Quality in Overweight Individuals: Systematic Review

AGLP-1 na Melhoria da Qualidade do Sono de Pessoas com Excesso de Peso: Revisão Sistemática

AGLP-1 en la Mejora de la Calidad del Sueño en Personas Con Sobrepeso: Revisión Sistemática

RESUMO

Objetivo: Analisar na literatura a eficácia do uso de aGLP-1 na melhoria da qualidade do sono em pessoas com excesso de peso. **Método:** Revisão sistemática conduzida nas bases PubMed, LILACS, BDENF, CINAHL, COCHRANE, Web of Science, Embase e Scopus, em setembro de 2025, nos idiomas português, inglês e espanhol. O risco de viés foi analisado na ferramenta Risk of Bias 2.0. **Resultados:** Dos 32 estudos identificados, 7 compuseram a amostra final. O uso de aGLP-1 promoveu redução de peso corporal, essa perda promoveu uma diminuição do Índice de Apneia-Hipopneia, além de elevação da saturação mínima de oxigênio. Foi reportada melhora na qualidade subjetiva do sono. Contudo, em alguns estudos, a Escala de Sonolência de Epworth não apresentou diferença estatisticamente significativa entre os grupos. **Conclusão:** aGLP-1 são promissores para tratar a apneia e melhorar o sono em obesos através da perda de peso, embora apresentem efeitos inconclusivos na sonolência diurna.

DESCRITORES: Excesso de peso; Qualidade do sono; Agonistas do Receptor do Peptídeo 1 Semelhante ao Glucagon.

ABSTRACT

Objective: To analyze the literature on the effectiveness of using GLP-1 in improving sleep quality in overweight individuals. **Method:** Systematic review conducted in the PubMed, LILACS, BDENF, CINAHL, COCHRANE, Web of Science, Embase, and Scopus databases in September 2025, in Portuguese, English, and Spanish. The risk of bias was analyzed using the Risk of Bias 2.0 tool. **Results:** Of the 32 studies identified, 7 comprised the final sample. The use of aGLP-1 promoted weight loss, which led to a decrease in the Apnea-Hypopnea Index, as well as an increase in minimum oxygen saturation. An improvement in subjective sleep quality was reported. However, in some studies, the Epworth Sleepiness Scale did not show a statistically significant difference between the groups. **Conclusion:** GLP-1 agonists are promising for treating apnea and improving sleep in obese individuals through weight loss, although they have inconclusive effects on daytime sleepiness.

DESCRIPTORS: Glucagon-like Peptide-1 Receptor Agonists; Overweight; Sleep Quality.

RESUMEN

Objetivo: Analizar en la literatura la eficacia del uso de aGLP-1 en la mejora de la calidad del sueño en personas con exceso de peso. **Método:** Revisión sistemática realizada en las bases de datos PubMed, LILACS, BDENF, CINAHL, COCHRANE, Web of Science, Embase y Scopus, en septiembre de 2025, en los idiomas portugués, inglés y español. El riesgo de sesgo fue evaluado mediante la herramienta Risk of Bias 2.0. **Resultados:** De los 32 estudios identificados, 7 conformaron la muestra final. El uso de aGLP-1 promovió la reducción del peso corporal, lo que a su vez condujo a una disminución del Índice de Apnea-Hipopnea, además de un aumento de la saturación mínima de oxígeno. Se informó una mejora en la calidad subjetiva del sueño. Sin embargo, en algunos estudios, la Escala de Somnolencia de Epworth no mostró diferencias estadísticamente significativas entre los grupos. **Conclusión:** Los aGLP-1 son prometedores para el tratamiento de la apnea y la mejora del sueño en personas obesas mediante la pérdida de peso, aunque presentan efectos inconclusos sobre la somnolencia diurna.

DESCRIPTORES: Exceso de peso; Calidad del sueño; Agonistas del receptor del péptido similar al glucagón tipo 1.

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INTRODUCTION

Obstructive sleep apnea (OSA) is characterized as a chronic health condition marked by recurrent episodes of partial or total obstruction of the upper airways during sleep, resulting in intermittent hypoxemia, sleep fragmentation, and significant systemic impairment[1]. It is a highly prevalent condition in the global population, yet it remains underdiagnosed and often addressed in a limited manner, despite its clinical complexity and significant impacts on public health[2].

It is estimated that in the United States, only about 20% of adults with OSA receive adequate diagnosis and follow-up; even so, the annual costs related to the diagnosis, treatment, and monitoring of the condition reach approximately US$ 12.4 billion[3].

Among the main factors associated with the development and progression of OSA, excess body weight stands out[2]. The term excess weight refers to the accumulation of body fat that exceeds healthy standards, encompassing both overweight and obesity, defined by Body Mass Index (BMI) values ≥25 kg/m² and ≥30 kg/m², respectively. Obesity, in turn, is a chronic condition of multifactorial etiology, characterized by excessive accumulation of adipose tissue, the understanding of which requires a broad approach that considers biological, behavioral, psychological, and social determinants.

In this context, obesity plays a central role in the pathophysiology of OSA. Excess weight contributes to mechanical and functional changes in the respiratory system, leading to reduced lung volumes and respiratory functional capacity[2].

In addition, the accumulation of adipose tissue in regions such as the neck and upper airways increases the collapsibility of these structures during sleep, favoring the occurrence of apneic and hypopneic episodes, characteristic of OSA[1]. Considering their chronic nature, both obesity and OSA are associated with short-, medium-, and long-term complications, reinforcing the need for integrated strategies for prevention, diagnosis, and clinical management.

Given this, the weight loss process promoted by the use of glucagon-like peptide-1 (GLP-1) analogues emerges as a therapeutic alternative. However, there is very little literature investigating the relationship between the use of GLP-1 and sleep quality. In view of this, this study aims to analyze the literature on the effectiveness of aGLP-1 in improving sleep quality in overweight individuals.

METHOD

This is a systematic review of the literature conducted in accordance with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), involving the steps of formulating the research question, systematic search of databases, selection of studies, assessment of methodological quality, data extraction, and synthesis of evidence[9].

To conduct the study, the following guiding question was defined: "Is the use of GLP-1 receptor analogues effective in improving sleep quality in overweight individuals?" The question was structured according to the PICO strategy, considering: Population/Problem (P) overweight individuals; Intervention (I) use of GLP-1 receptor agonists; Comparison (C) not applicable; and Outcome (O) improvement in sleep quality

After defining the research question, a search was conducted in the databases to identify eligible studies. Controlled descriptors from the DeCS and MeSH vocabularies were selected to compose the search strategies, which are described in Table 1.

Table 1. Construction of the search strategy for the systematic review. Floriano, PI, Brazil, 2025.

Objective	To analyze the effectiveness of GLP-1 analogues in improving sleep quality in overweight individuals.			
	P	I	C	O
Extraction	Excess Weight	Glucagon-like Peptide-1 Receptor Agonists	-	Sleep Quality
Conversion	Overweight	Glucagon-Like Peptide-1 Receptor Agonists	-	Sleep quality
Combination	Overweight; Obesity.	Glucagon-Like Peptide-1 Receptor Agonists; GLP-1 Agonists; GLP-1 analogues	-	Sleep quality; Sleep qualities; Sleep qualities.
Construction	("Overweight" OR "Obesity")	("Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists" OR "GLP-1 analogues")	-	("Sleep quality" OR "Qualities, Sleep" OR "Sleep Qualities")
Use	("Overweight" OR "Obesity") AND ("Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists;" OR "GLP-1 analogues") AND ("Sleep quality" OR "Qualities, Sleep" OR "Sleep Qualities")			

Source: Adapted from Araújo, 2019.

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After defining the research question, a search was conducted in the databases to identify eligible studies. Controlled descriptors from the DeCS and MeSH vocabularies were selected to compose the search strategies, which are described in Table 1. The bibliographic search was conducted between August and September 2025, through the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES), covering the Latin American and Caribbean Health Sciences Literature (LILACS) and Nursing Database (BDENF) databases, via the Virtual Health Library (BVS), as well as Embase, Scopus, Web of Science, CINAHL, Cochrane Library, and PubMed via the Medical Literature Analysis and Retrieval System Online (MEDLINE).

Clinical trials published in English, Portuguese, and Spanish were included, with no time restrictions. Case studies, case reports, reviews, dissertations, theses, monographs, abstracts of proceedings, and similar documents were excluded, considering their lower level of scientific evidence.

Additionally, a search was conducted in the gray literature and using the artificial intelligence tool Research Rabbit, based on the references of the studies identified in the primary search. The search strategies used the Boolean operators "AND" and "OR" and were adapted according to the specificities of each database, as shown in Table 2.

Table 2. Adaptation of the systematic review search strategy according to the database used. Floriano, PI, Brazil, 2025.

Database	Search strategy	Articles
BVS	("Overweight" OR "Obesity") AND ("Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists" OR "GLP-1 analogues") AND ("Sleep quality" OR "Qualities, Sleep" OR "Sleep Qualities") AND type_of_study:("clinical_trials") AND la:("en") AND (year_cluster:[2020 TO 2025]) AND instance:"regional"	1
CINAHAL	(obesity or overweight or fat or obese or unhealthy weight or high bmi) AND (sleep quality or quality of sleep or sleep problem or sleep duration or sleep disorders) AND (glp-1 receptor agonist or glp-1 agonists or glp-1 ra)	0
PubMed	(("overweight"[MeSH Terms] OR "overweight"[All Fields] OR "overweighted"[All Fields] OR "overweightness"[All Fields] OR "overweights"[All Fields]) AND ("sleep quality"[MeSH Terms] OR ("sleep"[All Fields] AND "quality"[All Fields]) OR "sleep quality"[All Fields]) AND ("glucagon like peptide 1 receptor agonists"[Pharmacological Action] OR "glucagon like peptide 1 receptor agonists"[Supplementary Concept] OR "glucagon like peptide 1 receptor agonists"[All Fields] OR "glp 1 agonists"[All Fields] OR "glucagon like peptide 1 receptor agonists"[MeSH Terms] OR ("glucagon like"[All Fields] AND "peptide 1"[All Fields] AND "receptor"[All Fields] AND "agonists"[All Fields]))) AND ((y_5[Filter]) AND (ffrft[Filter]) AND (clinicaltrial[Filter] OR controlledclinicaltrial[Filter]))	3
Embase	(('obesity' OR 'overweight') AND ('sleep quality') AND ('Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists" OR "GLP-1 analogues"))/br AND ([Controlled Clinical Trial]/lim OR [Randomized Controlled Trial]/lim) AND [2020-2025]/py	14
Scopus	(TITLE-ABS-KEY ("Overweight" OR "Obesity") AND TITLE-ABS-KEY ("Sleep quality" OR "Qualities, Sleep" OR "Sleep Qualities") AND TITLE-ABS-KEY ("Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists" OR "GLP-1 analogues")) AND PUBYEAR > 2019 AND (LIMIT-TO (DOCTYPE , "ar"))	5
Web of Science	TS=("Overweight" OR "Obesity") AND TS=("Glucagon-Like Peptide-1 Receptor Agonists" OR "GLP-1 Agonists" OR "GLP-1 analogues") AND TS=("Sleep quality" OR "Qualities, Sleep" OR "Sleep Qualities")	0
Cochrane	("overweight"):ti,ab,kw AND ("glucagon like peptide-1"):ti,ab,kw AND ("sleep quality"):ti,ab,kw (Word variations have been searched)" in Trials (Word variations have been searched)	4
Literatura cinzenta	Consulta em Google Acadêmico e referências bibliográficas dos artigos: "Current perspectives on the use of GLP-1 receptor agonists in obesity-related obstructive sleep apnea: a narrative review", "Efficacy and safety of GLP-1 receptor agonists in the management of obstructive sleep apnea in individuals without diabetes: A systematic review and meta-analysis of randomized, placebo-controlled trials" e "Glucagon-like peptide-1 receptor agonists for the treatment of obstructive sleep apnea: a meta-analysis".	3
Research rabbit	Consulta por meio de seed paper em interface de inteligência artificial no software Litmaps.	2

Source: Prepared by the authors, 2025.

The screening process took place in three stages. Initially, the retrieved records were exported to Rayyan software, where duplicates were identified and removed. In the second stage, the titles and abstracts were read to exclude studies that did not meet the eligibility criteria. Finally, the full texts of potentially relevant studies were evaluated according to the previously defined inclusion criteria.

The *Risk of Bias* 2.0 (RoB 2.0) tool was used to assess the risk of bias in systematic reviews. This tool is or-

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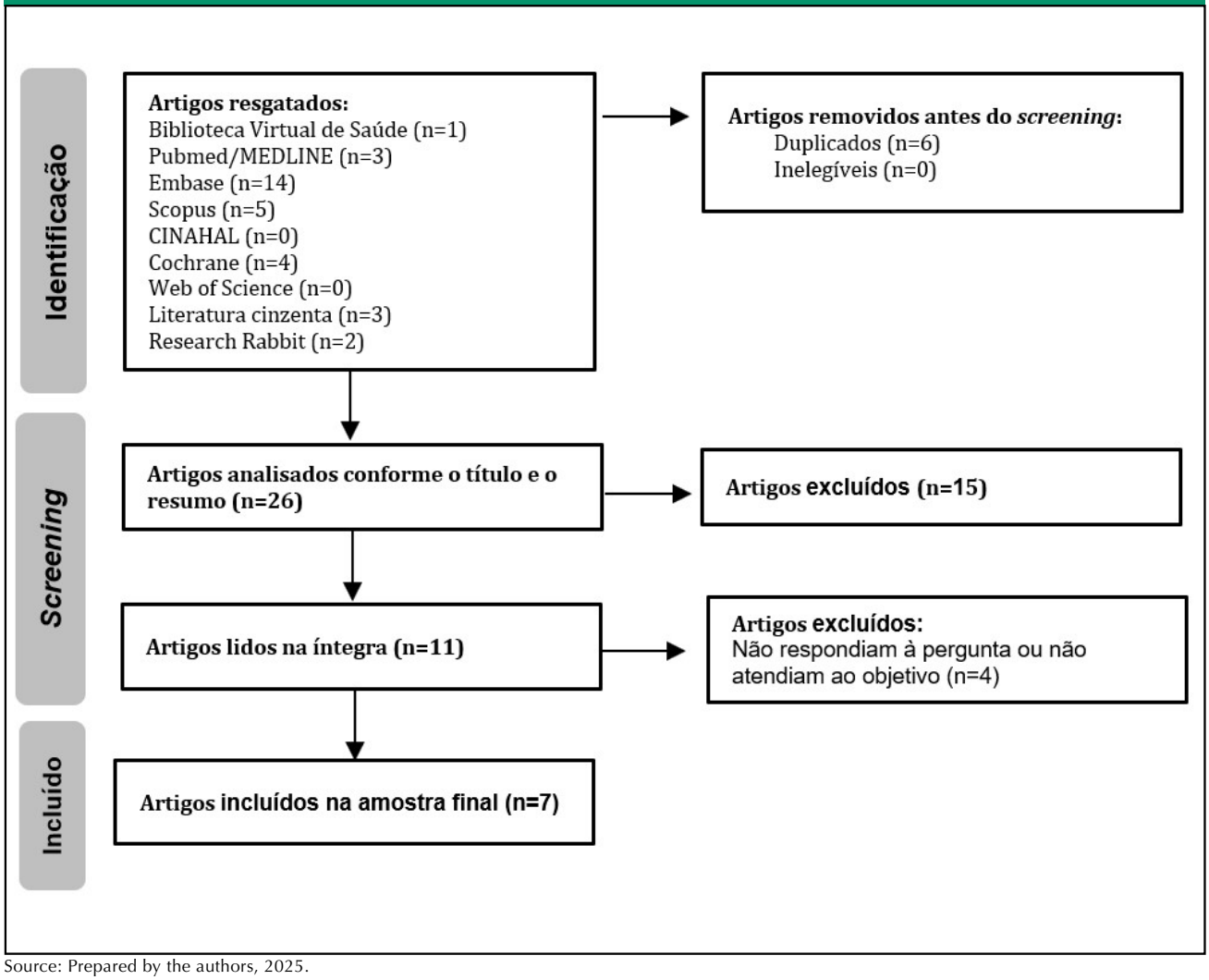
ganized into five domains, namely D1 - Bias due to the randomization process; D2 - Bias due to deviations from the intended interventions; D3 - Bias due to missing outcome data; D4 - Bias in outcome measurement; and D5 - Bias in the selection of the reported result and overall risk[10].

After selecting the final sample, the study data were extracted using a predetermined form created in *Microsoft Excel*. The information collected from each study refers to the authors, year of publication, location of the study, research title, level of evidence, objective, and main results on the impacts of weight loss on sleep quality.

RESULTS

The initial search of the databases yielded 32 articles. After removing 6 duplicates, 26 articles were submitted for title and abstract screening. Of these, 15 were excluded because they did not address the intervention (GLP-1 analogs) or the outcome (sleep quality). The full text of 11 studies was retrieved for detailed evaluation of eligibility criteria. At the end of the process, seven articles were selected for synthesis. Details of the screening and selection process are illustrated in the PRISMA flowchart (Figure 1).

Figure 1. PRISMA flowchart showing the selection of articles included in the review. Floriano, Piauí, Brazil, 2025.



Source: Prepared by the authors, 2025.

To better illustrate the available evidence, data on authors, year of publication, study location, research title, study type, duration, and dose used were extracted and exported to *Microsoft Excel*. These data were synthesized and displayed in Table 3.

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Table 3. Characterization of the studies captured, according to authors, year of publication, study location, title, sample, study type, study duration, and dose used. Floriano, Piauí, Brazil, 2025.

No.	Author (Year)	Location	Title	Sample	Type of Study	Duration of Study	Dose
1	Malhotra et al. (2024)[15]	United States, Australia, Germany, Japan	Tirzepatide for the Treatment of Obstructive Sleep Apnea and Obesity	Gi= 234 Gc= 235	Randomized Clinical Trial	52 weeks	10 to 15 mg
2	Kanu et al. (2025)[17]	United States, Australia, Germany, Japan	Effect of tirzepatide treatment on patient-reported outcomes among SURMOUNT-OSA participants with obstructive sleep apnea and obesity	Gi= 234 Gc= 235	Randomized Clinical Trial	52 weeks	10 to 15 mg
3	Jiang et al. (2022)[13]	China	Efficacy and Safety of liraglutide in patients with type 2 diabetes mellitus and severe obstructive sleep apnea	Gi= 45 Gc=45	Randomized Clinical Trial	12 weeks	0.6 to 1.8 mg
4	Song et al. (2025)[19]	China	Comparison of Effects of Glucagon-Like Peptide-1 Receptor Agonists Compared to Long-Acting Insulin, Addet to Oral Anti-Diabetc Agents on Self-Managemente Behaviors, Anxiety, and Sleep Quality in Patients with Type 2 Diabetes	Gi= 94 Gc=177	Randomized Clinical Trial	12 weeks	Not specified
5	Dogan et al. (2022)[18]	Denmark	Effects of Treatment with Liraglutide on Health Related Quality of Life and Obstructive Sleep Apnea in People with Obesity and Chronic Obstructive Pulmonary Disease	Gi= 20 Gc= 20	Randomized Clinical Trial	40 weeks	3.0 mg
6	Sprung et al. (2020)[14]	United Kingdom	Randomised, Controlled Multicentre trial of 26 weeks subcutaneous liraglutide (a glucagon-like peptide-1 receptor Agonist), with or without contiNuous positive airway pressure (CPAP), in patients with type 2 diabetes mellitus (T2DM) and obstructive sleep apnoEa (OSA) (ROMANCE): study protocol assessing the effects of weight loss on the apnea–hypnoea index (AHI)	Gi=132 Gc=132	Randomized Clinical Trial	26 weeks	1.8 mg
7	Blackman et al. (2016)[16]	United States, Canada	Effect of liraglutide 3.0 mg in individuals with obesity and moderate or severe obstructive sleep apnea: the SCALE Sleep Apnea randomized clinical trial.	Gc=179 Gi=180	Randomized Clinical Trial	32 weeks	3.0 mg

Legend: Gc = Control group; Gi = Intervention group

Source: Prepared by the authors, 2025.

Data were also collected on the main results found, including the instrument used for evaluation, the GLP-1 used, and whether there was an improvement in sleep quality. These data were grouped in a table and presented in Table 4.

Table 4. Characterization of studies according to the instruments used, main results, and medication used. Floriano, Piauí, Brazil, 2025.

Nº	Instrument used	Main results	Did sleep improve?	aGLP-1 used
1	Apnea-Hypopnea Index and Epworth Sleepiness Scale	Tirzepatide significantly reduced the apnea-hypopnea index by up to 58.7%, with half of the participants achieving mild or normal levels of apnea. The treatment also resulted in significant weight loss, improved sleep quality, and reduced daytime sleepiness, in addition to decreasing inflammatory factors and blood pressure. The medication was well tolerated, with mild to moderate gastrointestinal side effects, proving to be a promising option for managing OSA in obese individuals.	Yes	Tirzepatide
2	Apnea-Hypopnea Index, Epworth Sleepiness Scale, PROMIS-SD, and PROMIS-SRI	The main sleep-related outcomes were significant improvements in patients' perception of sleep-related impairment (PROMIS-SRI) and sleep disturbance (PROMIS-SD) compared to placebo. In addition, there was a reduction in excessive daytime sleepiness and improvements in participants' functioning and overall quality of life. These benefits occurred in parallel with a reduction in OSA severity (AHI) and body weight.	Yes	Tirzepatide
3	Apnea-Hypopnea Index	The main results focused on objective improvements indicating better sleep quality: there was a significant reduction in AHI, which means fewer respiratory events per hour and, consequently, less sleep fragmentation. In addition, an improvement in minimum oxygen saturation was observed, reducing nocturnal hypoxia. These findings, together with a significant reduction in body weight (BMI), prove the effectiveness of liraglutide in reducing the severity of OSA and associated risk factors.	Yes	Liraglutide

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4	Reported actual sleep time and subjective sleep assessment using the Pittsburgh Sleep Quality Index	The study comparing GLP-1 agonists with long-acting insulin in patients with type 2 diabetes found a significant difference related to sleep. The main result was that the group treated with GLP-1 showed an improvement in actual sleep time compared to the insulin group. In addition, treatment with GLP-1 was associated with better glycemic control, greater weight loss, and reduced anxiety, factors that indirectly contribute to better sleep quality in diabetic patients.	Yes	Liraglutide and Semaglutide
5	Apnea-Hypopnea Index, Sleep Quality Questionnaire, and Epworth Sleepiness Scale	The main results of this study focused on the reduction in the severity of apnea and subjective improvement in health: treatment resulted in reductions in objective measures of OSA, such as the Apnea-Hypopnea Index and the Oxygen Desaturation Index. Additionally, there was improvement in several domains of the SF-36v2 questionnaire, indicating that liraglutide improved Health-Related Quality of Life as reported by patients. A notable but unusual finding was the increase in Epworth Sleepiness Scale (ESS) scores in certain subgroups, suggesting a complex effect on daytime sleepiness.	Yes	Liraglutide
6	Apnea and Hypopnea Index	The ROMANCE study is a clinical trial protocol that aims to compare the impact of 26 weeks of liraglutide, alone or in combination with CPAP, on OSA in patients with type 2 diabetes and obesity. The main sleep-related outcome focus is the change in the Apnea-Hypopnea Index. The study was specifically designed to assess whether liraglutide-induced weight loss leads to a reduction in the severity of OSA and whether the combined effect is superior to CPAP alone. Secondary endpoints include the assessment of quality of life measures and symptoms.	Yes	Liraglutide
7	Apnea-Hypopnea Index and Epworth Sleepiness Scale	It was demonstrated that the drug, as an adjunct to diet and exercise, resulted in a significantly greater reduction in OSA severity compared to placebo, with a mean decrease in AHI of 12.2 events/hour with liraglutide versus 6.1 events/hour with placebo after 32 weeks. In addition, liraglutide promoted significantly greater body weight loss (5.7% versus -1.6% with placebo), and a strong association was established between the weight loss achieved and the improvement in OSA parameters. The treatment also resulted in notable improvements in cardiometabolic parameters, including greater reductions in glycated hemoglobin and systolic blood pressure. However, despite being used as a secondary endpoint, there was no statistically significant difference in the total score on the Epworth Sleepiness Scale, which measures daytime sleepiness, between the liraglutide and placebo groups. Finally, the drug was generally well tolerated, with nausea and diarrhea as the most common adverse events.	Yes	Liraglutide

Source: Prepared by the authors, 2025.

Finally, the sample underwent risk of bias analysis using the Risk of Bias 2.0 tool. It was observed that, despite being studies considered to be of high scientific relevance (randomized clinical trials), the domains explored in the tool present a high risk of bias. For better visualization, the results of the risk of bias are presented in Table 5.

Table 5. Representation of the type of bias in the studies included in the review. Floriano, Piauí, Brazil, 2025.

Author (Year)	D1	D2	D3	D4	D5	Risco total
Malhotra et al. (2024)[15]	🟢	🟢	🟢	🟢	🟢	🟢
Kanu et al. (2025)[17]	🟢	🟢	🟢	🟡	🟢	🟢
Jiang et al. (2022)[13]	🟡	🔴	🟢	🟡	🟡	🔴
Song et al. (2025)[19]	🔴	🔴	🔴	🔴	🟡	🔴
Dogan et al. (2022)[18]	🟢	🟡	🟡	🟡	🟡	🟡
Sprung et al. (2020)[14]	🟢	🔴	🟡	🔴	🟢	🔴
Blackman et al. (2016)[16]	🟢	🟡	🟢	🟢	🟢	🟢

Legend: D1 – Domain 1; D2 – Domain 2; D3 – Domain 3; D4 – Domain 4; D5 – Domain 5.
🟢 - Low risk of bias; 🟡 - Uncertain risk of bias; 🔴 - igh risk of bias.

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DISCUSSION

It should be separated from the results and present interpretations of the results in light of current and relevant literature. Present the relevant aspects and interpretation of the data obtained. Discuss with research results on the topic, implications, and limitations of the study. It should not repeat the data presented in the results.

This systematic review aimed to assess whether the use of GLP-1 receptor agonists is associated with improved sleep quality in overweight individuals. Overall, the findings suggest that the use of this class of drugs may be related to favorable sleep outcomes, especially indirectly, mediated by weight loss and improved metabolic profile. However, the available evidence is still limited in number and heterogeneous in terms of the outcomes evaluated, not allowing definitive conclusions about a direct and independent effect of GLP-1 agonists on sleep quality.

The growing use of GLP-1 receptor agonists in the treatment of obesity and metabolic disorders has promoted a significant change in the clinical management of these conditions, traditionally focused on behavioral and pharmacological interventions with less sustained impact[11]. Although the initial focus of these drugs was glycemic control and weight reduction, their pleiotropic effects have sparked interest in potential additional benefits, including aspects related to sleep[12].

Considering that excess weight is a central factor in the pathophysiology of disorders such as OSA and in the worsening of subjective sleep quality, it is biologically plausible that interventions capable of inducing significant weight loss have a positive impact on these outcomes[12].

In this regard, a study conducted in China showed that the use of GLP-1 resulted in a significant reduction in the Apnea-Hypopnea Index (AHI), with a 53% improvement compared to the control group, an improvement in minimum oxygen saturation, and a significant reduction in body weight, averaging 11.2%, proving the drug's effectiveness in reducing the severity of OSA and associated risk factors. Similarly, the study by Sprung et al.[14] in the United Kingdom also reinforces the focus of research on the effect of medication-induced weight loss on improving OSA.

Despite this plausibility, there is a significant gap in the literature regarding studies specifically designed to investigate the relationship between GLP-1 receptor agonist use and sleep quality. Most of the studies included in this review evaluated sleep as a secondary or exploratory outcome, often associated with improvement in metabolic or anthropometric parameters. This scenario contributes to a still incipient body of evidence and limits the ability to establish robust causal relationships between pharmacological intervention and sleep outcomes.

A study on the subject, conducted in the United States and Canada, showed that the use of GLP-1 agonists as an adjunct to diet and exercise resulted in a significantly greater reduction in the severity of OSA, with an average decrease of 36.5% in AHI (average decrease of 12.2 events/hour) compared to placebo, also promoting greater body weight loss.

However, despite the improvement in OSA parameters and weight loss, there was no statistically significant difference in the total Epworth Sleepiness Scale (ESS) score, which measures daytime sleepiness, between the groups, suggesting that improvement in AHI does not always directly translate into less perceived sleepiness. This finding contrasts with the study by Dogan et al. in Denmark, which, using GLP-1, reported an unusual increase in ESS scores in certain subgroups, indicating a complex and sometimes paradoxical effect on subjective daytime sleepiness.

It was also observed that, among GLP-1 agonists, semaglutide was explored very limitedly in the context of sleep quality, being present in only one of the studies analyzed, representing approximately 12.5% of the total studies included. This data can be corroborated by research conducted in China, where a comparative study was conducted between GLP-1 agonists, including semaglutide, and long-acting insulin in patients with type 2 diabetes, in which an improvement in actual sleep time was found on the Pittsburgh Sleep Quality Index in the GLP-1 agonist group. This study demonstrates that the inclusion of Semaglutide in the scope of sleep research occurred in a comparative context and was not primarily focused on OSA.

Furthermore, this fact can be partially explained by its more recent approval for the treatment of obesity, as well as by the predominant focus of initial research on outcomes considered critical, such as the reduction of cardiovascular events and glycemic control. This gap indicates a relevant opportunity for future research, especially considering the magnitude of weight loss associated with semaglutide and its potential indirect impact on sleep disorders.

CONCLUSION

The findings discussed demonstrate that GLP-1 intervention promotes significant weight loss, which in turn positively impacts the pathophysiology of OSA. The relief of upper airway compression resulting from weight loss leads to a decrease in the frequency of respiratory events and optimization of physiological sleep parameters, such as oxygen satura-

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tion.

In addition, there is a concomitant improvement in the subjective perception of sleep quality, as evidenced by standardized instruments such as the ESS and PSQI. Thus, GLP-1 agonists are a promising therapeutic strategy to mitigate the severity of OSA and, consequently, improve sleep quality in overweight individuals.

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