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# Overweight and obesity prevalence in individuals with HIV/AIDS: an integrative review

**ABSTRACT | OBJECTIVE:** To know the literature on the prevalence of overweight and obesity in individuals living with HIV/AIDS. **METHOD:** This is an integrative review using the databases VHL, SciELO, LILACS, Science Direct, Cochrane Library and MEDLINE/PubMed according to the instrument conceived by Pompeo, Rossi and Galvão, using the descriptors in DeCS "overweight", "obesity", "hiv". Publications were selected between 2012 and 2020 in English, Portuguese and Spanish, with HIV positive individuals. Inconclusive studies were excluded. **RESULTS:** Initially, 3029 studies were found, of which 18 met the inclusion criteria. There is a strong characteristic of weight gain at a high rate of sedentary lifestyle, a high prevalence of overweight women, with low schooling and age ranging from 38 to 50 years, black race, single, low income and with low schooling still used illicit drugs. These characteristics are present in more than 60% of patients with the clinical factor studied. **CONCLUSION:** The introduction of antiretroviral drugs in hiv treatment has led to an increase in the prevalence of overweight and obesity among HIV/AIDS patients.

**Keywords:** Overweight; Obesity; HIV.

**RESUMEN | OBJETIVO:** Conocer la literatura sobre la prevalencia del sobrepeso y la obesidad en las personas que viven con el VIH/SIDA. **METODO:** Se trata de una revisión integradora utilizando las bases de datos VHL, SciELO, LILACS, Science Direct, Cochrane Library y MEDLINE/PubMed según el instrumento concebido por Pompeo, Rossi y Galvão, utilizando los descriptores de DeCS "sobrepeso", "obesidad", "hiv". Las publicaciones fueron seleccionadas entre 2012 y 2020 en inglés, portugués y español, con individuos seropositivos. Se excluyeron los estudios no concluyentes. **RESULTADOS:** Inicialmente, se encontraron 3029 estudios, de los cuales 18 cumplían con los criterios de inclusión. Hay una fuerte característica del aumento de peso a una alta tasa de estilo de vida sedentario, una alta prevalencia de mujeres con sobrepeso, con baja escolaridad y edad que van de 38 a 50 años, raza negra, soltero, de bajos ingresos y con baja escolarización todavía se utilizan drogas ilícitas. Estas características están presentes en más del 60% de los pacientes con el factor clínico estudiado. **CONCLUSIÓN:** La introducción de medicamentos antirretrovirales en el tratamiento del vih ha dado lugar a un aumento de la prevalencia del sobrepeso y la obesidad entre los pacientes con VIH/SIDA.

**Palabras claves:** Sobrepeso; Obesidad; VIH.

**RESUMO | OBJETIVO:** Conhecer a literatura acerca da prevalência de sobrepeso e obesidade em indivíduos vivendo com HIV/AIDS. **MÉTODO:** Trata-se de uma revisão integrativa utilizando as bases de dados BVS, SciELO, LILACS, Science Direct, Cochrane Library e MEDLINE/PubMed segundo o instrumento pensado por Pompeo, Rossi e Galvão, com uso dos descritores em DeCS "sobrepeso", "obesidade", "hiv". Foram selecionadas publicações entre 2012 e 2020 em inglês, português e espanhol, com indivíduos HIV positivos. Foram excluídos estudos inconclusivos. **RESULTADOS:** Inicialmente foram encontrados 3029 estudos dos quais 18 atenderam aos critérios de inclusão. Há forte característica de aumento de peso a grande taxa de sedentarismo, grande prevalência de mulheres acima do peso, com baixa escolaridade e idade variando de 38 a 50 anos, raça negra, solteiros, baixa renda e com baixa escolaridade ainda faziam uso de drogas ilícitas. Essas características estão presentes em mais de 60% dos pacientes com o fator clínico estudado. **CONCLUSÃO:** A introdução de medicamentos antirretrovirais no tratamento do HIV trouxe o aumento da prevalência de sobrepeso e obesidade entre os portadores de HIV/AIDS.

**Palavras-chaves:** Sobrepeso; Obesidade; HIV.

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## INTRODUCTION

The Human Immunodeficiency Virus (HIV) is transmitted by unprotected sexual practice, sharing sharps contaminated with blood and vertically. Therefore, after being infected, the person does not immediately develop the Acquired Immunodeficiency Syndrome (AIDS), going through several phases from the acute phase to the last of AIDS itself. <sup>(1)</sup>

AIDS was recognized in the middle of 1981, in the United States of America, from the identification of a high number of adult male and homosexual patients, who had Kaposi's sarcoma, *Pneumocystis carinii* pneumonia and impaired immune system. Therefore, although the first deaths attributable to this cause may have occurred in the 1950s, it is believed that the infection appeared in the central and eastern African regions, since it started there most frequently and where primate infection occurs in nature. <sup>(2)</sup>

Currently, weight gain, fat redistribution and obesity are nutritional problems that individuals with HIV/AIDS using therapy are presenting. The body brand, the image to be cared for and cared for, with the emergence of side effects produced by inhibitors such as: Lipodystrophy and supporting factors associated with HIV/AIDS. Furthermore, food is not only a source of nutrition, but is linked to roles related to social, religious and economic aspects. <sup>(3)</sup>

Before, the problem was focused on mitigating only the issue of immunodeficiency and combating the virus with the use of therapy, but now there is already a concern for food and nutritional security as a way to minimize the effects of obesity through various methods (anthropometry, consumption food and physical examination). The quality of food has become an important aspect in the lives of patients as part of the treatment.

Given the above, the question is: What is the prevalence of overweight and obesity in individuals living with HIV/



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AIDS? Would the prevalence be higher in women or men? And in what age group are they most affected?

In addition to food and nutrition security for obesity prevention, the World Health Organization added to its agenda, the incentive to practice physical activities. For this, nursing acts with great importance in monitoring this practice, which is an approach to monitor physical activity over time, also identifying changes. <sup>(1)</sup>

Nursing is a field of applied knowledge in the great area of health and as such it is aligned with health policies in a more general way. Thus, the alignment of researchers to this reality means, not only adhering to a certain policy, but also potentiating efforts to solve some major national health problems. Therefore, the objective of the research was to analyze the literature on the prevalence of overweight and obesity in individuals living with HIV/AIDS.

## METHOD

This is a study carried out using the integrative literature review method with a qualitative and quantitative approach.

The term "integrative" comes from the integration of opinions, concepts or ideas from the research used. It is at this point that the potential to build science becomes evident. A good integrative review contributes to the development of theories. The integrative review method is an approach that allows the inclusion of studies that adopt different methodologies, that is, experimental and non-experimental research. <sup>(4)</sup>

The study now proposed used the model described by Mendes, Silveira and Galvão <sup>(5)</sup>, which was divided into six stages: a) First stage: identification of the theme and selection of the hypothesis for the elaboration of the integrative review; b) Second stage: establishment of criteria for inclusion and exclusion of studies/sampling and literature search; c) Third stage: definition of the information to be extracted from the selected studies/cate-

gorization of the studies; d) Fourth stage: evaluation of the studies included in the integrative review; e) Fifth stage: interpretation of results; f) Sixth stage: presentation of the knowledge review/synthesis.

The first step was constituted in the selection of the hypothesis through the guiding question using the PICO method regarding the problem, intervention, comparison and outcome. The question was guided by the questioning of the prevalence of overweight and obesity in individuals living with HIV/AIDS, whether it is higher in women or men and in which age group they are most affected by knowing the literature on the subject.

The second stage took place through the establishment of inclusion and exclusion criteria in order to guide the search and selection of articles. The inclusion criteria were articles published from 2012 to 2020 in English, Portuguese and Spanish, given the great scarcity of studies on the subject, participants were adults or children diagnosed with HIV/AIDS with any outcome. Inconclusive or methodological assessment studies with little evidence were excluded.

The studies were selected through an electronic search in the Virtual Health Li-

brary (VHL) and the Medical Literature Analysis and Retrieval System Online databases (MEDLINE/PubMed), Latin American and Caribbean Literature in Health Sciences (LILACS/BIREME) and Scientific Electronic Library Online (SciELO), ScienceDirect and Cochrane Library, using the descriptors in DeCS: "sobrepeso", "obesidade" and "HIV", using the Boolean AND operator.

The third stage consisted of categorizing the results through the composition of a table composed by Author/year/Database, objectives, outcome, reliability and quality (average), level of evidence, a table with characteristics related to the years, database data, languages of publications and another table with the profile of overweight and obese patients living with HIV/AIDS.

The fourth stage took place through the classification of the evidence level of the articles, proposed by Pompeo, Rossi and Galvão<sup>(6)</sup>, from the level of best methodological quality to the level of least evidence, which were as follows:

- Level I of evidence - Systematic review or meta-analysis (synthesis of evidence from all relevant randomized controlled trials).

- Level II of evidence - Evidence derived from at least one randomized, controlled, well-defined clinical trial.
- Level III of evidence - Evidence obtained from well-defined clinical trials, without randomization.
- Level IV of evidence - Evidence from well-defined cohort and case control studies.
- Level V of evidence - Evidence would originate from a systematic review of descriptive and qualitative studies.

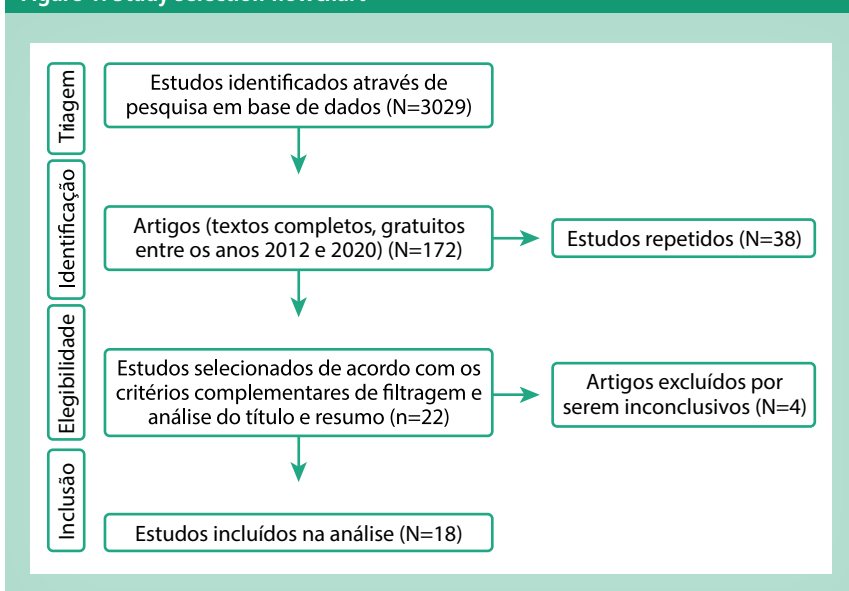
The fifth stage, occurred through the interpretations of the articles. At this stage, it was possible to notice that, in the researched bases, there were articles about the theme in the given period.

An instrument was used, contemplating the following variables: clear and adequate objective and methodology, methodological procedures presented and discussed, sample adequacy, detailed data collection, ethical aspects considered, rigorous data analysis, explicit contribution, research limitations and statement clear results. Scoring maximum scores from 06 to 10 with articles classified with good methodological quality and reduced bias, and scores = or <05 points, classified as a study with satisfactory methodological quality, but with increased risk of bias.<sup>(7)</sup>

## RESULTS

3029 studies were identified, 425 of which were in MEDLINE/PubMed, 11 in SciELO, 10 in LILACS, 2593 in ScienceDirect and 11 in Cochrane Library. Of this total, 172 studies were pre-selected according to the established criteria. After conducting an analysis, 18 studies were included to support the present review. Figure 1 summarizes aspects related to search for studies and Table 1 below summarizes general and methodological characteristics of the selected studies.

Figure 1: Study selection flowchart



Source: Elaborated by the authors (2020)

Chart 1: Study characteristics

Autor/ ano	Objetivos	Desfecho	Confiabilidade e qualidade	Nível de evidência
TANAKA <sup>(1)</sup>	Verificar a prevalência de sedentarismo entre adolescentes com HIV/Aids e seus fatores associados.	Alta prevalência de sedentarismo entre adolescentes com HIV/Aids e obesidade em mais de 12% dos casos	8	VI
KROLL <sup>(8)</sup>	Conhecer a Prevalência de sobrepeso, obesidade e Risco cardiovascular em pacientes ambulatoriais com HIV / AIDS de acordo com o sexo, Tratamento antirretroviral e Outras Variáveis.	O sobrepeso e a obesidade têm elevada prevalência. As mulheres São mais frequentemente obesas e seu risco cardiovascular é frequentemente mais alto	8	VI
JOHNSON <sup>(9)</sup>	Investigar a associação longitudinal do IMC no diagnóstico de HIV com progressão da doença avaliada pela contagem de CD4	Indivíduos infectados pelo HIV que eram obesas no momento do diagnóstico tiveram aumentos maiores na contagem de CD4 ao longo do tempo	6	IV
MESSINA <sup>(3)</sup>	Determinar a prevalência de sobrepeso e obesidade em pacientes ambulatoriais, infectadas pelo HIV urbanas	Os canadenses infectados pelo HIV, semelhantes aos dos EUA, estão cada vez mais acima do peso e obesos	8	VI
VILLAHERM <sup>(10)</sup>	Determinar a prevalência e fatores de risco e preditores de excesso de peso, obesidade ou desnutrição em pacientes adultos HIV (+)	O tempo da terapia anti-retroviral dos pacientes em uso de inibidores de protease é fator de risco para obesidade	10	VI
ESPIRITO SANTO <sup>(11)</sup>	Avaliar o uso dos indicadores de adiposidade como discriminadores de risco cardiovascular (RCV) em portadores de HIV	De acordo com o IMC, 51,2 por cento apresentava sobrepeso/obesidade.	6	VI
TATE <sup>(12)</sup>	Avaliar os fatores associados à mudança de peso entre os pacientes que receberam antirretrovirais	Quase metade dos pacientes estavam acima do peso ou obesos no início do tratamento	8	IV
THOMPSON <sup>(2)</sup>	Comparar a prevalência de obesidade entre os vírus da imunodeficiência humana (HIV) infectados adultos que recebem cuidados.	A obesidade é comum, afetando 2 em 5 mulheres infectadas pelo HIV e 1 em cada 5 homens infectados pelo HIV.	6	VI
SENNA <sup>(13)</sup>	Avaliar o estado nutricional de pacientes HIV-positivos em um hospital na cidade de Niterói, Rio de Janeiro, Brasil	Excesso de peso é cada vez mais comum entre as pessoas que vivem com HIV / AIDS	8	VI
KOETHE <sup>(14)</sup>	Verificar se a obesidade e infecção pelo HIV estão associadas	indivíduos com excesso de O uso de antirretrovirais têm um risco maior de desenvolver doenças não transmissíveis em comparação com indivíduos normais IMC	8	IV
KAGARUK <sup>(15)</sup>	Explorar e estabelecer informações sobre a magnitude e distribuição de fatores de risco DNT entre as pessoas que vivem com HIV	A monitorização regular dos fatores de risco de DNT é de suma importância entre os pacientes em uso de antirretrovirais	6	VI
SIROTIN <sup>(16)</sup>	Determinar a relação entre a insegurança alimentar e obesidade neste grupo de mulheres de risco urbanas, HIV-infectados	A insegurança alimentar foi associada com a obesidade nessa população de mulheres urbanas infectadas pelo HIV	6	VI
TAYLOR <sup>(17)</sup>	Determinar as disparidades raciais e ganho de peso significativo em pacientes HIV +	60% estavam com sobrepeso ou obesos no início do estudo, e os pacientes ganharam peso mais rapidamente.	8	IV
BLASHILL <sup>(18)</sup>	Avaliar a natureza prospectiva do índice de massa corporal (IMC), depressão e sua interação em prever o uso do preservativo durante a relação sexual anal entre homens infectados pelo HIV	Obesidade, no contexto de depressão, é um fator de risco entre infectados pelo HIV	8	IV

KOETHE; HULGAN; NISWENDER <sup>(19)</sup>	Verificar a relação entre HIV e obesidade	Como a proporção de indivíduos infectados pelo HIV com sobrepeso e obesidade continua a aumentar, a compreensão do papel do tecido adiposo na patogênese da ativação imune será fundamental	6	V
WAND; RAMJEE <sup>(20)</sup>	Descrever a prevalência de obesidade em uma coorte de mulheres sul-Africano e discutir as implicações para as práticas de saúde pública.	Aproximadamente 70% da população da amostra foram classificadas como sendo excesso de peso ou obesos.	8	III
LAKEY et al <sup>(21)</sup>	Verificar relação entre ganho de peso e HIV	As altas taxas de sobrepeso / obesidade em pessoas infectadas pelo HIV	10	IV
POURCHER; COSTAGLIOLA; MARTINEZ <sup>(22)</sup>	Descrever a prevalência de obesidade no HIV	A prevalência da obesidade é de 15,1% em mulheres e 5,3% em homens.	8	VI
Fonte: Elaborado pelos autores				

**Table 1: Table demonstration of the number of articles available in each database and in which languages they were found.**

Característica do estudo	Número encontrado	% em relação ao total
<b>Idiomas das publicações</b>		
Inglês	15	83,3
Português	3	16,7
<b>Base de dados</b>		
PubMed/MEDLINE	12	66,7
SciELO	2	11,1
LILACS	2	11,1
Science Direct	2	11,1
Cochrane Library	0	0
TOTAL	18	100

Source: Elaborated by the authors (2020)

The following table 1 shows the databases in which the articles were hosted and the languages in which they were written.

Below, Table 2 shows some characteristics described by the authors that the analyzed patients had. The order of the profile characteristics was removed following the order of studies from top to bottom presented in Table 1.

## DISCUSSION

Most authors determined to know the prevalence of overweight and obesity among patients who had HIV/AIDS.

**Table 2: Patient profile**

Perfil mais prevalente dos pacientes com sobrepeso e obesidade vivendo com HIV/AIDS	Número de pacientes com a característica (exceto sexo)	Porcentagem referente ao número de pacientes (%)
Pouca atividade física, idade de 10 a 19 anos, proporção maior de meninas, diagnóstico de HIV de 0 a 2 anos, terapia antirretroviral tripla, HDL colesterol alterado, renda >= a 1 salário mínimo	91	0.14
Maior parte do sexo feminino, muita prevalência de risco cardiovascular, baixo número de células CD4	354	0.53
Idade acima de 18 anos, taxas menores de CD4 para pessoas mais obesas, 60% masculino, raça negra, solteiros, ensino médio completo	396	0.60
90% masculino, 35% já usaram drogas injetáveis e ilícitas, raça negra mais prevalente a obesidade	886	1.33
O uso do tempo da terapia anti-retroviral que os pacientes têm de se relacionar o uso de inibidores de protease como um fator de risco	246	0.37
Média de 35 anos, parâmetros aumentados de razão cintura/quadril (RCQ) e da razão cintura/estatura (RCEst)	102	0.15
Maior parte homens, IMC elevado, alteração de adiposidade em média 24 meses depois de início do tratamento	681	1.02

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Idade entre 40 e 60 anos, CD4 < 200 cél/ml, baixa escolaridade, raça negra, baixa renda	4006	6.03
Maior proporção de mulheres, idade de 41 a 50 anos	235	0.35
IMC elevado, uso de antirretroviral acima de 2 anos, alta prevalência de sobrepeso e obesidade	1089	1.64
Colesterol total aumentado, grande prevalência de diabetes e hipertensão, idade > de 40 anos	754	1.13
Uso de álcool e outras drogas, maioria negros	231	0.35
Maioria brancos, femininas, escolaridade média e baixa renda	1214	1.83
Obesidade e depressão com altas taxas de prevalência	490	0.74
Brancos, alto peso	1214	1.83
Idades > 35 anos, IMC superior a 25	5495	8.27
Média de idade de 38 anos, sexo feminino prevalente	92	0.14
Sedentarismo, mulheres, altas taxas de obesidades e comorbidades associadas.	48897	73.56
<b>TOTAL</b>	<b>66473</b>	<b>100</b>

Source: Elaborated by the authors (2020)

The authors as Kroll<sup>(8)</sup>, Johnson<sup>(9)</sup>, Thompson-Paul<sup>(2)</sup>, Sirotin<sup>(16)</sup> and Pourcher; Costagliola e Martinez<sup>(22)</sup> share similar results with regard to the higher prevalence of overweight and obesity associated with HIV in a more prevalent way among women. In addition, cardiovascular disease and low CD4 rates during periods of peak weight are commonly found in patients.

This high rate of obesity is not only more prevalent in adulthood. Adolescents infected with HIV also demonstrated high BMI rates, being able to identify one of the origins of obesity in adulthood. This fact is usually the result of high rates of physical inactivity seen in the population, which when associated with other factors increase the chance of weight gain.<sup>(1)</sup>

Other authors like Villahermosa<sup>(10)</sup>, Koethe<sup>(14)</sup>, Kagaruki<sup>(15)</sup> and Lakey<sup>(21)</sup> share the premise that factors not fully known related to the medication in use may predispose the individual to weight gain. The most prevalent hypothesis concerns the influence of antiretrovirals with the metabolism of adipose tissue, increasing its formation mainly in the abdominal region.



This high rate of obesity is not only more prevalent in adulthood. Adolescents infected with HIV also demonstrated high BMI rates, being able to identify one of the origins of obesity in adulthood.



Kroll<sup>(8)</sup>, Senna<sup>(13)</sup>, Taylor<sup>(17)</sup> and Lakey<sup>(21)</sup> found a high prevalence of overweight women, with low education and age ranging from 38 to 50 years. These characteristics usually match the profile of patients with HIV and overweight. These factors are mainly associated with low levels of CD4 cells and associated genetic characteristics.

In contrast, the authors Johnson<sup>(9)</sup>, Messina; Mccall e Barron<sup>(3)</sup>, Thompson-Paul<sup>(2)</sup> and Tate<sup>(12)</sup> found more prevalent males, blacks, singles, low income and with low education. These characteristics may be associated with the selected sample, but it is an aspect that must be taken into account.

Protease inhibitors are the class of drugs that is most strongly associated with weight gain in users. Although the biochemical factors involved are not fully understood, due attention must be paid to more comprehensive health care.<sup>(10)</sup>

Sirotin<sup>(16)</sup>, Messina; Mccall E Barron<sup>(3)</sup> found that a large number of patients have also used or were still using illicit drugs. This fact can alter certain properties and correct action



of medications, predisposing to some change in weight.

Espírito Santo <sup>(11)</sup>, Koethe <sup>(14)</sup>, Kagaruki <sup>(15)</sup>, Wand; Ramjee <sup>(20)</sup> share the elevated anthropometric findings such as waist circumference, BMI, associated comorbidities such as hypertension beyond the time of diagnosis and antiretrovirals over two years. Only the author Blashill <sup>(18)</sup> found HIV-associated mental disorder (depression) and obesity together. Focusing on other clinical characteristics besides the main one is of great importance for a correct therapeutic management.

“  
...another medication-  
related characteristic  
was the increased  
prevalence of  
overweight and  
obesity among people  
with HIV/AIDS.”  
”

## CONCLUSION

The introduction of antiretroviral drugs in the treatment of HIV has brought a great improvement in the health standard of the people affected. However, another medication-related characteristic was the increased prevalence of overweight and obesity among people with HIV/AIDS.

Patients share characteristics such as being mostly single, low CD4 rates, being female, being normally sedentary, having low levels of education and income. These characteristics are present in more than 60% of patients with the studied clinical factor. 🐦

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