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Article Review

Relationship between metabolic syndrome and cardiovascular risk with quality of life in people living with HIV: an integrative review

Relação entre a síndrome metabólica e o risco cardiovascular com a qualidade de vida em pessoas vivendo com HIV: uma revisão integrativa

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ABSTRACT: *Introduction*: With the advent of antiretrovirals, the life expectancy of people living with HIV (PLHIV) has increased, however, on the other hand, this population has developed more comorbidities, such as metabolic syndrome (MetS) and increased cardiovascular risk (CVR), which can impact quality of life (QoL). *Objective*: To analyze the relationship between QoL and CVR and MetS in PLHIV. *Method*: The study is an integrative review according to the guidelines of the Systematic Reviews and Meta-Analyses. The search for manuscripts was carried out in five databases, without time or language restrictions. The findings were exported to the Rayyan platform, where duplicates and articles with a central theme not related to the subject were excluded. Subsequently, the full article was read to verify its inclusion in the review. *Results*: Initially, 995 articles were exported to the Rayyan system, of which 981 were excluded for being duplicates, or after reading the titles or abstracts. Subsequently, 14 studies were evaluated in full by the researchers, of which none were included in the review, as they did not meet the eligibility criteria. *Conclusion*: The lack of studies that evaluated the relationship between QoL, MetS, and CVR in PLHIV does not allow direct inferences to be made. However, a decrease in QoL associated with comorbidities linked to MetS and CVR is postulated in PLHIV.

KEYWORDS: Metabolic syndrome; Heart disease risk factors; HIV; Quality of life; Cardiovascular risk.

RESUMO: Introdução: Com o advento dos antirretrovirais, pessoas vivendo com HIV (PVHIV) aumentaram sua expectativa de vida e, por outro lado, desenvolveram mais comorbidades, como a síndrome metabólica (SM) e o aumento do risco cardiovascular (RCV) que podem impactar na qualidade de vida (QV). **Objetivo**: Analisar a relação da QV com o RCV e a SM em PVHIV. **Método**: O estudo é uma revisão integrativa segundo as orientações do *Systematic Reviews and Meta-Analyses*. A busca de manuscritos foi realizada em cinco bases de dados, sem controle de tempo e idioma. Os achados foram exportados para a plataforma Rayyan, onde se excluíram as duplicatas e aqueles cujo tema central não se relacionavam com o assunto. Posteriormente, realizada a leitura na íntegra do artigo para verificar sua inclusão na revisão. **Resultados**: Foram exportados para o sistema Rayyan 995 artigos, dos quais 981 foram excluídos por duplicata, título ou resumo. Posteriormente, 14 estudos foram avaliados na íntegra pelos pesquisadores, os quais não incluíram nenhum artigo na revisão, pois não se enquadraram nos critérios de elegibilidade. **Conclusão**: A carência de estudos que avaliaram a relação da QV com a SM e o RCV em PVHIV não permite fazer inferências diretas. Contudo, postula-se uma diminuição da QV associada as comorbidades ligadas a SM e ao RCV nas PVHIV.

PALAVRAS-CHAVE: Síndrome metabólica; Fatores de risco de doenças cardíacas; HIV; Qualidade de vida; Risco cardiovascular.

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INTRODUCTION

The advent of antiretroviral therapy (ART) has led to a considerable increase in the expectation and quality of life of people living with HIV (PLHIV), with noticeable changes in the epidemiological profile of this population. A 24.6% reduction in the mortality rate of PLHIV in Brazil between the period 2014-2021 stands out[1], as well as changes in the causes of death in this population. For example, a comparative study between the state of Rio de Janeiro and other Brazilian regions, carried out through the analysis of data from the Mortality Information System, including all Death Certificates from 1999-2015, showed that, although HIV-related diseases still constitute the major cause of mortality in PLHIV, other causes have become more relevant since the implementation of the use of ART, such as genitourinary causes, external causes, and tuberculosis[2].

There has been a considerable increase in deaths from cardiovascular diseases (CVD) among PLHIV, as opposed to the general population, which in the period 2000-2019 showed a 27% drop in this cause of death[3]. In PLHIV, between 2001 and 2012, the incidence of CVD increased from 6 to 15%. Due to the prolonged time of infection and the use of ART, in addition to CVD, the onset of chronic diseases can occur up to a decade earlier in PLHIV when compared to the general population. PLHIV aged 41-50 years have a profile for comorbidity equivalent to that of the age group 51-60 years in the general population[4]. The accumulation of chronic conditions leads to an increased incidence of metabolic syndrome (MetS) in PLHIV, a condition defined by the association of factors such as obesity, diabetes mellitus (DM), dyslipidemia, and systemic arterial hypertension (SAH), as well as a predisposition to the development of other chronic diseases and a direct impact on their life expectancy and quality of life (QoL)[5].

The main negative effects of CVD on QoL are linked to physical, emotional, social, and pain issues. In HIV-negative patients, symptoms such as fatigue, dyspnea, or chest pain can considerably affect and limit daily activities, coexistence and social well-being, and even impact emotional state. In addition, CVD is related to comorbidities, that is, 69% of patients with coronary disease have at least one other comorbidity, such as DM, SAH, or dyslipidemia, so that with each new comorbidity, the negative impact on QoL increases[6].

Likewise, MetS leads to a decrease in the QoL of patients without a diagnosis of HIV infection, since it impairs the psychological, physical, and social domains, as MetS is fundamentally a confluence of chronic diagnoses (dyslipidemia, DM, SAH, and abdominal obesity), each one carrying with it its respective impact on the patient's QoL[7].

Therefore, the chronic use of ART, added to the inflammatory effects of HIV infection, increase the incidence and risk of developing metabolic diseases, such as MetS or CVD[8] and directly impact the QoL of PLHIV[6,7]. As this is a significant public health issue and due to the lack of studies on this theme, the current review aimed to analyze the relationship between QoL and cardiovascular risk and MetS in PLHIV.

METHODS

The current integrative review was performed in accordance with the structure and guidelines of the Systematic Reviews and Meta-Analyses (PRISMA)[9]. The search to find potentially eligible articles for this study was carried out using the following databases: Pubmed Central (PMC); Scopus; Web of Science; Scientific Eletronic Library Online (SciELO); and Virtual Health Library (VHL).

Case-control, observational, cross-sectional, and comparative descriptive studies, including the assessment of the relationship between QoL and cardiovascular risk (CVR) and/or MetS in PLHIV, were considered eligible. The search did not restrict the language of the studies or their date of publication. Systematic review studies, other types of literature review, studies that addressed populations other than PLHIV, or that did not assess the association/relationship of MetS and/or CVR with QoL were excluded.

Searches for studies in the databases, as well as their extraction, took place from 06/07/2022 to 06/17/2022. The search strategy adopted different combinations, using the Boolean operators OR or AND in Portuguese, Spanish, and English. The descriptors, in Portuguese, used were: HIV; Acquired immunodeficiency syndrome; quality of life; metabolic syndrome; and cardiovascular risk.

The findings from these searches were exported to the Rayyan system, in which the duplicates, titles, and abstracts were verified in sequence. Finally, the remaining articles were analyzed in full by two experienced researchers regarding their inclusion, according to the proposed eligibility criteria.

RESULTS

According to the highlighted strategies, 995 articles were exported to the Rayyan system, of which 254 were excluded as they were duplicates. Subsequently, after reading the titles and abstracts, 727 studies were discarded. Thus, 14 studies were selected for full reading by two researchers, who did not include any article in the present review, as none of the articles met the eligibility criteria (Figure 1).

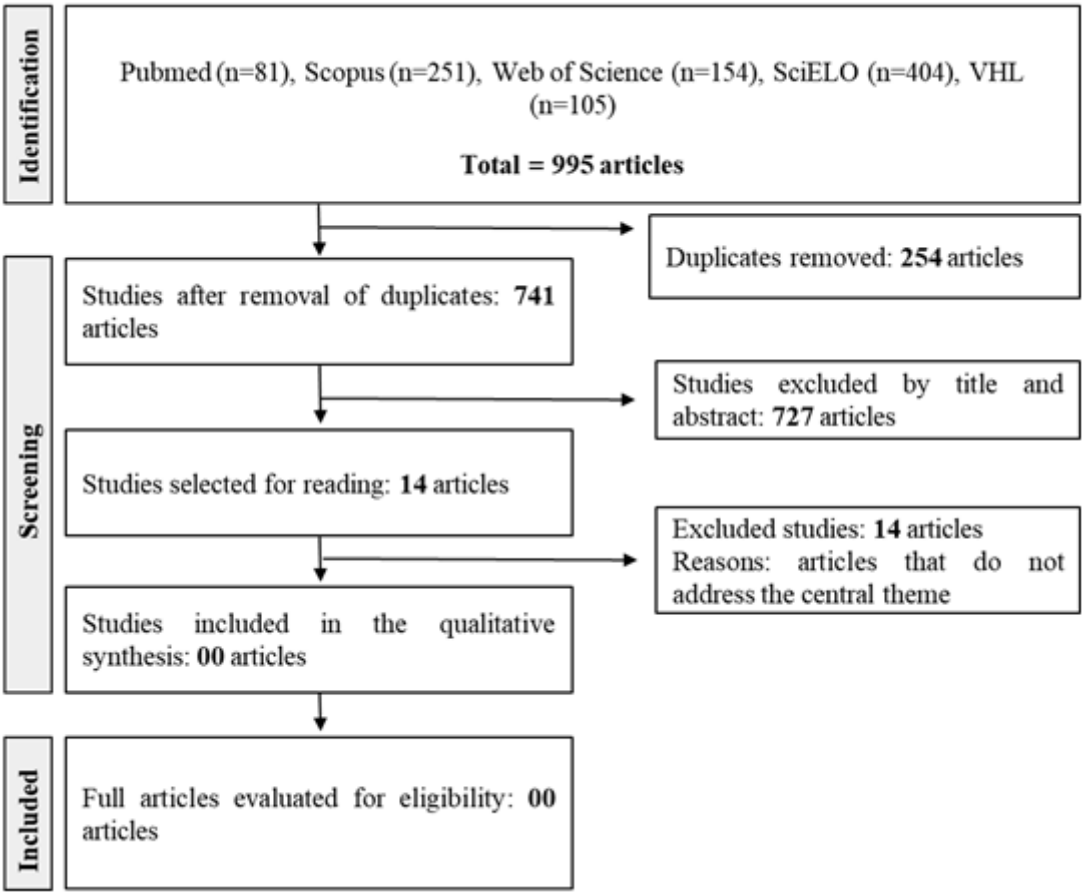

Figure 1 - PRISMA flowchart for screening the articles selected for the study.

DISCUSSION

The current review highlighted the lack of scientific production on the relationship between MetS and CVR with quality of life in PLHIV. However, evidence related to its factors demonstrates an impact on quality of life.

First, it is noted that PLHIV, when compared to HIV-negative people, present impaired QoL, not only in the field of sexuality, but also in the professional, in the perception of health, in the general quality of life, and in the psychological aspect[10]. This relationship was demonstrated in a study carried out in the city of João Pessoa - PB, which compared 43 PLHIV and 43 HIV-negative people, all over 50 years of age. The average QoL score among PLHIV was slightly lower compared to the general population (55.3±14.6 points vs. 59.3±17.1 points)[11].

HIV infection, in addition to requiring continuous clinical follow-up, brings the need for daily use of ART, which leads to an improvement in QoL[12]. The better QoL of patients after initiation of ART was noted by Gakhar, Kamali and Holodniy[13] who, through a review study, observed improvement in all QoL domains after the first year of ART introduction; however, this improvement stabilized after 4 years.

In addition to the effect on QoL, the use of different antiretroviral drugs provided an increase in the longevity of PLHIV, although with more evident adverse effects. However, it is still not possible to say how much these deleterious effects result from the chronic use of drugs or from the prolonged time of life with HIV infection. It is recognized that many PLHIV clinically evolve with metabolic alterations, such as dyslipidemia, increased insulin resistance, overweight, obesity, and MetS, all of which contribute to a higher risk of CVD[4,5,14].

In this sense, one should take into account the impact on the QoL of these people, regardless of their serological status. The presence of CVD, for example, whether mild, moderate or severe, has a considerable negative impact on the QoL of patients, as shown by Ko et al.[15], in Korean HIV-negative patients. Similarly, De Visser et al.[16], analyzed 281 Dutch patients with DM and observed that those who had episodes of CVD during the study presented impairments in several domains of their QoL, when compared to those who did not have such episodes.

Likewise, the presence of MetS is shown to be a negative factor in the QoL of North American patients, HIV negative, aged ≥20 years, evaluated by Ford and Li[17]. This relationship was also observed by Saboya et al.[18], through a systematic review, consisting of more than 62,000 patients. The study demonstrated the worsening of

QoL of people living with MetS, especially among women and depressive patients.

However, the treatment of comorbidities that lead to MetS and changes in lifestyle, such as regular physical activity, nutritional and psychological guidance, have been shown to improve risk factors associated with MS, as well as QoL in people without a diagnosis of HIV infection[19].

According to the information presented, it is noted that ART improved the QoL of PLHIV, however the treatment presents the possibility of favoring the emergence of metabolic diseases that increase the chance for the development of MetS and CVR. In people without positive serology for HIV, a reduction in QoL is observed in the presence of MetS and CVR. Thus, in PLHIV, it is postulated that the worsening in QoL may be related to the number of diseases, as well as polypharmacy, symptoms, and necessary care caused by comorbidities associated with PLHIV.

As a limitation of the study, it is noteworthy that no article was found that analyzed the relationship between QoL with MetS and/or CVR in PLHIV, which does not allow the present study to make direct inferences on the subject. In this sense, attention is called to the need for studies involving this theme, in order to elucidate more precisely what happens to QoL in the presence of MetS and/or CVR in PLHIV. Furthermore, better understanding of these factors may favor protective measures and better adherence to treatment.

CONCLUSION

There is a lack of studies that evaluated the relationship between QoL and MetS and CVR in PLHIV. However, a decrease in QoL associated with comorbidities linked to MetS and CVR is postulated in PLHIV.

Conflict of interest: The authors declare that there is no conflict of interest. There was no third-party funding for the production of this research.

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REFERENCES

1. Brasil. Ministério da Saúde. Boletim epidemiológico HIV/Aids. Brasília; 2022. Disponível em: https://www.gov.br/aids/pt-br/centrais-de-conteudo/boletins-epidemiologicos/2022/hiv-aids
2. Paula AA, Pires DF, Alves Filho A, Lemos KRV, Veloso VG, Grinsztejn B, et al. Mortality profiles among people living with HIV/AIDS: comparison between Rio de Janeiro and other federative units between 1999 and 2015. Rev Bras Epidemiol. 2020;23:e200017. doi: https://doi.org/10.1590/1980-549720200017
3. World Health Organization. World Health Statistics. Geneva, Switzerland; 2021. Disponível em: https://www.who.int/data/gho/publications/world-health-statistics
4. Aberg JA. Aging and HIV infection: focus on cardiovascular disease risk. Top Antivir Med. 2020;27(4):102-5. Disponível em: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7162677/
5. Nguyen KA, Peer N, Mills EJ, Kengne AP. A meta-analysis of the metabolic syndrome prevalence in the global HIV-infected population. PloS One. 2016;11(3):e0150970. doi: https://doi.org/10.1371/journal.pone.0150970
6. Chatzinikolaou A, Tzikas S, Lavdaniti M. Assessment of quality of life in patients with cardiovascular disease using the SF-36, MacNew, and EQ-5D-5L questionnaires. Cureus. 2021;13(9):e17982. doi: https://doi.org/10.7759/cureus.17982
7. Furlaneto CJ, Goulart RMM, Carmona RDM. A influência da síndrome metabólica sobre a qualidade de vida de pacientes em São Caetano do Sul. Nutrire Rev Soc Bras Aliment Nutr. 2009;34(2):85-99. Disponível em: http://sban.org.br/publicacoes/236.pdf
8. Castelo Filho A, Abrão P. Alterações metabólicas do paciente infectado por HIV. Arq Bras Endocrinol Metab. 2007;51(1):5-7. doi: https://doi.org/10.1590/S0004-27302007000100003
9. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Ann Intern Med. 2009;151(4):264-9. doi: https://doi.org/10.7326/0003-4819-151-4-200908180-00135
10. Martins Neto C, Pires EMC, Brito CS, Beserra OLMG, Silva Junior JF, Mota JV, et al. Qualidade de vida no contexto de pacientes com hiv/aids: um estudo comparativo. Saúde Pesqui. 2019;12(2):333-41. doi: https://doi.org/10.17765/2176-9206.2019v12n2p333-341
11. Oliveira JS, Lima FLA, Saldanha AAW. Qualidade de

vida em pessoas com mais de 50 anos HIV+: um estudo comparativo com a população geral. DST. 2008;20(3-4):179-84. Disponível em: https://bjstd.org/revista/article/view/945

12. Oguntibeju OO. Quality of life of people living with HIV and AIDS and antiretroviral therapy. HIV AIDS. 2012;4:117-24. doi: https://doi.org/10.2147/HIV.S32321

13. Gakhar H, Kamali A, Holodniy M. Health-related quality of life assessment after antiretroviral therapy: a review of the literature. Drugs. 2013;73(7):651-72. doi: https://doi.org/10.1007/s40265-013-0040-4

14. Raimundo P, Miranda A, Ribeiro J, Mansinho |K. Risco cardiovascular em doentes com infecção por vírus da imunodeficiência humana. Acta Méd Port. 2010;23(4):669-76. doi: https://doi.org/10.20344/amp.688

15. Ko HY, Lee JK, Shin JY, Jo E. Health-related quality of life and cardiovascular disease risk in Korean adults. Korean journal of family medicine. Korean J Fam Med. 2015;36(6):349-56. doi: https://doi.org/10.4082/kjfm.2015.36.6.349

16. De Visser CL, Bilo HJ, Groenier KH, De Visser W, Jong Meyboom-de B. The influence of cardiovascular disease on quality of life in type 2 diabetics. Qual Life Res. 2002;11(3):249-61. doi: https://doi.org/10.1023/A:1015287825660

17. Ford ES, Li C. Metabolic syndrome and health-related quality of life among US adults. Ann Epidemiol. 2008;18(3):165-71. doi: https://doi.org/10.1016/j.annepidem.2007.10.009

18. Saboya PP, Bodanese LC, Zimmermann PR, Gustavo AD, Assumpção CM, Londero F. Metabolic syndrome and quality of life: a systematic review. Rev Lat Am Enferm. 2016;24:e2848. https://doi.org/10.1590/1518-8345.1573.2848

19. Saboya PP, Bodanese LC, Zimmermann PR, Gustavo ADS, Macagnan FE, Feoli AP, et al. Lifestyle intervention on metabolic syndrome and its impact on quality of life: a randomized controlled trial. Arq Bras Cardiol. 2016;108:60-9. https://doi.org/10.5935/abc.20160186

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