Epidemiological Profile Of Deaths From Viral Hepatitis In The South Region, 2012-2022

Perfil Epidemiológico dos Óbitos por Hepatites Virais na Região Sul, 2012-2022

Perfil Epidemiológico De Las Muertes Por Hepatitis Virales En La Región Sur, 2012-2022

RESUMO

Objetivo: descrever o perfil epidemiológico dos óbitos por hepatites virais na região sul do Brasil, de 2012 a 2022. Métodos: estudo ecológico, descritivo, exploratório e retrospectivo. Os dados foram analisados usando estatística descritiva. Resultados: houve 5.781 óbitos por hepatites virais. O maior número de óbitos ocorreu em 2012 (667) e o menor em 2021 (336), com uma tendência de queda a partir de 2017. A maioria dos óbitos ocorreu em homens (62,6%), brancos (82,4%), com a faixa etária de 60 a 69 anos (30,4%). O Rio Grande do Sul apresentou o maior número de óbitos. A maioria dos óbitos no hospital (89,2%), e a hepatite viral crônica foi a mais frequente (84,5%). Conclusão: Os dados indicaram pouca eficácia das políticas de saúde e a necessidade de intervenções mais eficazes. A alta prevalência de hepatite crônica e as disparidades sociodemográficas destacam a importância do fortalecimento das estratégias de prevenção e educação.
DESCRITORES: Hepatite viral humana. Epidemiologia. Estudo observacional.

ABSTRACT

Objective: to describe the epidemiological profile of deaths from viral hepatitis in the southern region of Brazil from 2012 to 2022. Methods: ecological, descriptive, exploratory and retrospective study. The data was analyzed using descriptive statistics. Results: there were 5,781 deaths from viral hepatitis. The highest number of deaths occurred in 2012 (667) and the lowest in 2021 (336), with a downward trend from 2017 onwards. The majority of deaths occurred in men (62.6%), whites (82.4%), aged between 60 and 69 (30.4%). Rio Grande do Sul had the highest number of deaths. The majority of deaths were in hospital (89.2%), and chronic viral hepatitis was the most common (84.5%). Conclusion: The data indicate that health policies are not very effective and that more effective interventions are needed. The high prevalence of chronic hepatitis and sociodemographic disparities highlight the importance of strengthening prevention and education strategies.
DESCRIPTORS: Human viral hepatitis. Epidemiology. Observational study.

RESUMEN

Objetivo: describir el perfil epidemiológico de las muertes por hepatitis virales en la región sur de Brasil de 2012 a 2022. Método: estudio ecológico, descriptivo, exploratorio y retrospectivo. Los datos se analizaron mediante estadística descriptiva. Resultados: hubo 5.781 muertes por hepatitis viral. El mayor número de muertes se produjo en 2012 (667) y el menor en 2021 (336), con una tendencia descendente a partir de 2017. La mayoría de las muertes ocurrieron en hombres (62,6%), blancos (82,4%), con edades entre 60 y 69 años (30,4%). Rio Grande do Sul tuvo el mayor número de muertes. La mayoría de las muertes ocurrió en el hospital (89,2%), y la hepatitis viral crónica fue la más común (84,5%). Conclusión: Los datos indican que las políticas de salud no son muy eficaces y que se necesitan intervenciones más efectivas. La elevada prevalencia de hepatitis crónica y las disparidades sociodemográficas ponen de manifiesto la importancia de reforzar las estrategias de prevención y educación.
DESCRIPTORES: Hepatitis vírica humana. Epidemiología. Estudio observacional.

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INTRODUCTION

Human viral hepatitis is defined as inflammation of the liver that can be caused by infection by different etiological agents that have a common point in the characteristics of physiopathological and epidemiological evolution, hepatotropism, which is the predilection to affect the liver when they enter the human organism. [1] Characterized as a chronic and silent disease, viral hepatitis is diagnosed most often at an advanced stage, requires specific testing and additional exams for clinical investigation, and constitutes a major challenge to public health worldwide. [2]

There are currently five known types of viral hepatitis: hepatitis A (HAV), hepatitis B (HBV), hepatitis C (HCV), hepatitis D (HDV) and hepatitis E (HEV), corresponding respectively to the families Picornaviridae, Hepadnaviridae, Flaviviridae, Deltaviridae and hepeviridae. [3] In 2017, the World Health Organization reported that there were approximately 2 billion people infected with HBV worldwide; among them, 350 million are chronic carriers of the virus, with HBV infection representing the tenth leading cause of death worldwide, resulting in 1 to 2 million deaths per year. [4]

The Notifiable Diseases Information System (Sinan) recorded the occurrence of 673,389 cases of viral hepatitis in Brazil, from 1999 to 2019. [5] A study carried out in 2023 also signaled an increase in cases across the country, and highlights the Northeast region of Brazil with the highest incidence of hepatitis A, the Southwest region with a predominance of cases of hepatitis B and C, and the northern region with hepatitis D (Delta). [2] It should be noted that the evolution of the infectious condition can vary from acute forms (even fulminant) to chronic outcomes, and can also be symptomatic or asymptomatic, depending on the viral agent involved and the immunogenetic factors of each individual. [6]

In Brazil, the Unified Health System (SUS) must provide users with strategies for preventing diseases, considering local and regional needs, and continually implementing policies and actions aimed at reducing the incidence of diseases, such as viral hepatitis. Continuous evaluation and monitoring favor the strategic im-

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plementation of actions, such as vaccination coverage for viruses A, B and D and health education through literacy among the population regarding prevention measures. [7-8]

Since 2002, with the creation of the National Program for the Prevention and Control of Viral Hepatitis (PNHV), guidelines and actions have been recognized in an attempt to organize hepatitis care within the scope of the SUS. However, this approach is weakened on a daily basis when considering the irregular distribution of health services for hepatitis care, the incorporation of advanced technologies for diagnosis and treatment, in addition to the inequality of access within the Health Care Networks. [9]

Although several studies point out gaps that should be investigated to guide policies aimed at preventing and controlling the factors that cause viral hepatitis in the Brazilian population, it is necessary to understand the local and regional needs, as well as the sociodemographic and clinical characteristics that involve negative outcomes associated with this pathology. In this sense, the present study aims to describe the epidemiological profile of deaths from viral hepatitis in the southern region of Brazil, in the years 2012-2022.

METHODS

Ecological, descriptive, exploratory and retrospective study, which was constructed according to the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist. [10]

The data were extracted from the public health data platform of the Department of Information Technology of the Unified Health System (Datasus). The data were accessed through the Public Domain Generic Tabulator (TABNET) interface, in the vital statistics section, subtopic mortality by place of residence. The research was conducted from May to July 2024. All deaths reported in individuals over 20 years of age were used as inclusion criteria.

The study setting was the southern region of Brazil, and data relating to the period from 2012 to 2022 were investigated. Considering the characterization of the study locus, in 2022, the population of the southern region represented 14.7% of the total population of Brazil, and was 29,933,315 inhabitants. The southern region is composed of the states of Paraná, Santa Catarina and Rio Grande do Sul. Paraná is the most populous state in the region, with 11,443,208 inhabitants, followed by Rio Grande do Sul with 10,882,965. [11]

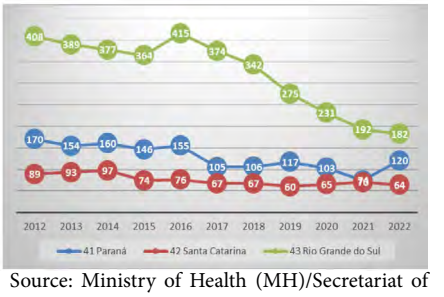
The study population consisted of 5,781 deaths. Data were tabulated in a spreadsheet using Microsoft Excel®. The description was made using descriptive statistics with percentages and absolute numbers considering the following variables: I) Number of deaths per year/Region/States in southern Brazil; II) Age range: >19 years to 80 and over; III) Education: none, 1 to 3 years, 4 to 7 years, 8 to 11 years, 12 years and over, unknown; IV) Sex: male, female and unknown; V) Race: white, black, yellow, brown, indigenous and unknown/white; VI) Marital status: single, married, widowed, legally separated and unknown; VII) Place of occurrence of deaths from viral hepatitis; VIII) ICD-10 category.

It should be noted that this study does not require assessment by the Research Ethics Committee, since it is a study with secondary, non-nominal and public domain data. However, the researchers will strictly follow the ethical aspects and the rules and guidelines that regulate according to Resolution No. 466/201212 and Resolution No. 510/2016 of the National Health Council. [13]

RESULTS

Between 2012 and 2022, 5,781 deaths from viral hepatitis were recorded in the southern region of Brazil. The highest number of deaths occurred in 2012, with 667 deaths, and the lowest occurrence was in 2021, with 336 deaths. The state of Rio Grande do Sul had the highest incidence of deaths from viral hepatitis in all years surveyed; however, from 2017 to 2022, a downward trend in deaths was observed. On the other hand, the state of Santa Catarina had the lowest number of deaths, compared to the other states in the southern region (figure 1).

Figure 1 -Deaths from viral hepatitis in the Mortality Information System (SIM) in the Southern region of Brazil, 2012-2022 (n=5,781).



Source: Ministry of Health (MH)/Secretariat of Health Surveillance (SVS - Secretaria de Vigilância Sanitária)/General Coordination of Epidemiological Information and Analysis (CGIAE - General Coordination of Epidemiological Information and Analysis) - Mortality Information System (SIM - Sistema de Informações sobre Mortalidade).

Considering the racial profile of deaths from viral hepatitis, the white race was the most affected, with 4,762 deaths (82.4%). The most frequent occurrence was among men, 3,621 (62.6%) deaths, and when we evaluate patients diagnosed with the disease by age group, 60 to 69 years was the most frequent age group, with 1,760 (30.4%) deaths.

Regarding marital status, the majority of deaths, 2,215 (38.3%), were registered as married, and in terms of education, 1,465 (25.3%), had 4 to 7 years of schooling. Regarding the place of occurrence of deaths, the hospital setting was the most frequent, with 5,154 (89.2%), followed by deaths in the home context, with 434 (7.5%). Finally, regarding the type of viral hepatitis, with 4,886 (84.5%), chronic viral hepatitis (ICD-B18) was the most frequent, as shown in (Table 1).

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Tabela 1 – Características sociodemográficas e clínicas dos óbitos por hepatites virais na região Sul do Brasil, 2012-2022 (n= 5.781).

CARACTERÍSTICAS/VARIÁVEIS 1	N=5,781	%
COLOR/RACE		
White	4762	82,4%
Black	314	5,4%
Yellow	18	0,3%
Brown	467	8,1%
Indigenous	6	0,1%
Ignored	214	3,7%
CARACTERÍSTICAS/VARIÁVEIS 1	N=5,781	%
GENDER		
Male	3621	62,6%
Female	2159	37,3%
Ignored	1	0,0%
AGE GROUP		
20 to 29 years	43	0,7%
30 to 39 years	175	3,0%
40 to 49 years	689	11,9%
50 to 59 years	1639	28,4%
60 to 69 years	1760	30,4%
70 to 79 years	1008	17,4%
80 years and older	467	8,1%
MARITAL STATUS		
Single	1385	24,0%
Married	2215	38,3%
Widowed	838	14,5%
Legally separated	664	11,5%
Other	171	3,0%
Ignored	508	8,8%
EDUCATION		
None	272	4,7%
1 to 3 years	1004	17,4%
4 to 7 years	1465	25,3%
8 to 11 years	1204	20,8%
12 years and older	423	7,3%
Ignored	1413	24,4%
LOCATION OF OCCURRENCE		
Hospital	5154	89,2%
Other health facility	125	2,2%
Home	434	7,5%
Public road	10	0,2%
Others	58	1,0%
CATEGORY ICD-10		
B15 Acute hepatitis A	20	0,3%
B16 Acute hepatitis B	296	5,1%
B17 Other acute viral hepatitis	393	6,8%

Source: Ministry of Health (MH)/Secretariat of Health Surveillance (SVS - Secretaria de Vigilância Sanitária)/General Coordination of Epidemiological Information and Analysis (CGIAE - General Coordination of Epidemiological Information and Analysis) - Mortality Information System (SIM - Sistema de Informações sobre Mortalidade).

DISCUSSION

The data obtained in this study reveal a complex and worrying panorama of deaths from viral hepatitis in the southern region of Brazil between 2012 and 2022. The high number of deaths, totaling 5,781 during the period analyzed, highlights the inadequacy of public policies and health strategies implemented to date. Detailed analysis of sociodemographic and clinical data on deaths allows us to identify patterns and vulnerable groups, which is essential for formulating more targeted and effective interventions.

Certain populations are more vulnerable to infection by viral hepatitis. Among these, we highlight users of injectable and inhalable drugs, individuals in prison or deprived of liberty, residents of institutions for minors, homosexuals, sex workers, carriers of Sexually Transmitted Infections (STIs), populations in settlements and camps, police officers, as well as garbage collectors and homeless people. [14]

The predominance of deaths among men (62.6%) and white individuals (82.4%) suggests that specific social, cultural and biological factors may be contributing to this disparity. The greater vulnerability of men may be associated with a lower demand for health and prevention services, more frequent risk behavior, such as alcohol and drug use, and lower adherence to ongoing treatment. The predominance of white individuals may reflect the demographic composition of the region, but it may also indicate differences in access to and quality of health services offered to different ethnic groups. [15]

The age group most affected, between 60 and 69 years old (30.4%), highlights the need for special attention to this population, which often faces additional challenges related to aging, such as chronic comorbidities and barriers to access to health services. A study conducted in João Pessoa, Paraíba, also observed that the highest incidence of hepatitis occurred among individuals aged 60 to 64 years old, mainly from HBV. This phenomenon may be associated with the maintenance

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of the process of autonomy at the beginning of the third age, in which many elderly people have an active sex life, and need to be made aware of the risks of contamination, minimizing vulnerabilities associated with the stigmas of old age.[1] Furthermore, this population may be underdiagnosed and undertreated due to the silent nature of the disease, which is often only discovered in advanced stages. [16]

A study carried out, based on the analysis of hepatitis cases in Brazil, between 2018 and 2023, reinforces the higher prevalence of deaths in the state of Rio Grande do Sul, in the male and elderly population, compared to other states in the region, which can be attributed to several factors, including differences in health infrastructure, in the effectiveness of local prevention and treatment policies, in addition to variations in the population's awareness of the disease. [17]

The downward trend in deaths since 2017 may reflect the positive impacts of vaccination campaigns, improvements in diagnostic and treatment practices, as well as the possible decrease in transmission due to educational and preventive programs. However, this decrease may also be related to underreporting or changes in diagnostic and reporting criteria, which requires further analysis.

Viral hepatitis represents a serious public health problem due to its high prevalence, incidence, and mortality. Although reports of hepatitis cases in Brazil have decreased over the years, this reduction, which was most evident between 2014 (22%) and 2018 (18%), may be related to underreporting. Underreporting occurs when a case that meets the surveillance criteria is identified by a health professional but is not recorded in the reporting system, compromising the results and implementation of prevention and treatment policies. [18]

Chronic viral hepatitis (ICD-B18), responsible for 84.5% of deaths, highlights the need for continuous and long-term interventions that go beyond early diagnosis and treatment, including education of the population and promotion of healthy lifestyle habits. The high prevalence of the chronic form of the disease suggests possible failures in the health system to identify and treat hepatitis in its early stages, contributing to the progression of acute to chronic cases, increasing the risk of serious complications, such as cirrhosis and liver cancer.

Between 2010 and 2014, a mapping of chronic hepatitis in Brazil revealed that, of the 167,040 confirmed cases of hepatitis B, C and D, 20,820 (12.5%) evolved to cure in the acute phase, while 146,220 (87.5%) progressed to chronic hepatitis, with a prevalence of 75.38 per 100,000 inhabitants. São Paulo (43,674), Rio Grande do Sul (19,591) and Paraná (14,748) presented the highest absolute numbers of chronic cases, while Acre (578.95), Santa Catarina (184.26) and Rio Grande do Sul (140.50) recorded the highest prevalence rates. [19]

The differences observed in marital status and education variables highlight the importance of considering socioeconomic factors when addressing viral hepatitis. Married individuals and those with low education levels appear to be more vulnerable, possibly due to limited access to health information and services, as well as living conditions that may facilitate transmission and worsening of the disease. These findings suggest that public health interventions should be culturally sensitive and tailored to the specific needs of different populations.

Research indicates that sociodemographic factors, such as age, gender, socioeconomic status, and education level, influence the prevalence of HBV infection. Infection is more common in low-income and low-educated populations, especially in rural areas, due to limited access to health services, poor living conditions, and low vaccination coverage. Education level acts as a protective factor, reflecting greater access to preventive information. These findings highlight the need for integrated strategies that include education, access to health care, and vaccination programs to reduce disparities. [20]

Additionally, the predominance of deaths occurring in hospitals (89.2%) suggests that many patients seek health services in advanced stages of the disease, which may indicate a delay in diagnosis and initiation of treatment. This scenario highlights the need to strengthen Primary Health Care (PHC), ensuring early identification and treatment of hepatitis cases, with the aim of preventing complications and progression to terminal stages, and consequently, reducing mortality and the public burden of hospital treatments.

PHC has great potential, with due investment, to develop preventive and educational actions aimed at viral hepatitis, including early diagnosis and monitoring of cases. This would allow for a more integrated and focused approach, expanding care beyond specialized services. It is essential to create strategies that optimize the time of PHC professionals, allowing comprehensive and qualified monitoring of users, with a focus on prevention, promotion and treatment, strengthening coverage and universal access to health. [21]

CONCLUSION

In conclusion, the epidemiological profile of deaths from viral hepatitis in the southern region of Brazil between 2012 and 2022 highlights the persistence and severity of this problem, as well as the implications of these findings for public health, suggesting the need for integrated policies that address not only the clinical aspects, but also the social and economic determinants of viral hepatitis. Promoting awareness campaigns, improving access to health services, and strengthening prevention strategies are essential to reduce mortality and the impact of viral hepatitis in the southern region of Brazil.

Future research should continue to explore the gaps identified in this study,

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especially in relation to socioeconomic variables and regional differences, in order to develop more effective interventions adapted to the specific needs of the affected population. It is also essential to evaluate the impact of policies and interventions over time, ensuring that the strategies adopted are truly efficient, contributing to the reduction of deaths and the improvement of the quality of life of patients with viral hepatitis.

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REFERENCES

1. Brasil. Ministério da Saúde. Portaria MS nº 84, de 19 de dezembro de 2018 [Internet]. Diário Oficial da União, Brasília (DF), 2018. Disponível em: https://www.gov.br/saude/pt-br/assuntos/pcdt/arquivos/2018/pcdt-hepatite-c-e-coinfeccoes.pdf.

2. Gleriano JS, Chaves LDP. Aspectos que fragilizam o acesso das pessoas com hepatites virais aos serviços de saúde. Esc Anna Nery. 2023; 27:e20220334. DOI:10.1590/2177-9465-EAN-2022-0334pt.

3. Nunes HM, Sarmento VP, Malheiros AP, Paixão JF, Costa OSG da, Soares MCP. As hepatites virais: aspectos epidemiológicos, clínicos e de prevenção em municípios da Microrregião de Parauapebas, sudeste do estado do Pará, Brasil. Rev Pan-Amaz Saude. 2017; 8(2):31-37. DOI: 0.5123/s2176-62232017000200004.

4. World Health Organization. Global hepatitis report, 2017 [Internet]. Disponível em: https://www.who.int/publications/i/item/9789241565455.

5. Brasil. Ministério da Saúde. Boletim Epidemiológico de Hepatites Virais - 2020. Disponível em: https://antigo.aids.gov.br/pt-br/pub/2020/boletim-epidemiologico-hepatites-virais-2020.

6. Thomas DL. Global elimination of chronic hepatitis. N Engl J Med. 2019;380(21):2041-50. DOI:10.1056/NEJMra1810477.

7. Gleriano JS, Chaves LDP, Krein C, Henriques SH. Contribuições da avaliação para a gestão do sus no enfrentamento das hepatites virais. CuidArte, Enferm. 2022; 16(2):176-187. https://docs.fundacaopadrealbino.com.br/media/documentos/cc786d61253a0ff4c703f-82badc7844e.pdf.

8. Santos NCC dos, Velasquez LS, Silva BRM. Perfil dos portadores de hepatite A no Estado do Rio de Janeiro, no período de 2010 a 2018. Research Society and Development. 2018; 10(4):1-9. DOI: 10.33448/rsd-v10i4.14212.

9. Gleriano JS, Chaves LDP, Pantoka VJC, Caminada S. 20 Anos do Programa Nacional para a Prevenção e o Controle das Hepatites Virais: Processo Histórico e Contribuições para a Gestão. APGS. 2023; 15(3). https://www.redalyc.org/journal/3515/351575316007/html/.

10. Elma E von, Altmanc DG, Eggera M, Pocokd SJ, Gotzschee PC. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Journal of clinical epidemiology. 2008; 61(4):344–9. DOI: 10.1016/j.jclinepi.2007.11.008.

11. Instituto Brasileiro de Geografia e Estatística. Disponível em:https://www.ibge.gov.br/cidades-eestados/pr.html. Acessado em: 1 abr. 2024.

12. Brasil. Ministério da Saúde. Resolução nº 466, de 12 de dezembro de 2012. Diário Oficial [da] República Federativa do Brasil, Brasília, DF, 13 jun. 2013.

13. Brasil. Ministério da Saúde. Resolução nº 510, de 07 de abril de 2016. Diário Oficial [da] República Federativa do Brasil, Brasília, DF, 24 mai. 2016.

14. Alban LL, Silva GF da, Almeida BEM de, Schneider EC, Sales MS, Sousa S de MS de. Ação multiprofissional contra as hepatites virais: um relato de experiência. RSD [Internet]. 13º de setembro de 2021 [citado 6º de agosto de 2024];10(12):e55101220235. DOI: 10.33448/rwsd-v10i12.20235.

15. Costa LPC da, Fernandes JPM, Dias NLC, Okada LM, Oliveira SV. Epidemiologia e possíveis intervenções para as hepatites virais em Juiz de Fora, Minas Gerais. SANARE. 2022; 21(2). DOI: 10.36925/sanare.v21i2.1636.

16. Araújo JMD de, Cândido MB, Silva WYL, Silva TWM da, Junior FPA. Perfil Epidemiológico de Idosos Acometidos por Hepatites Virais em João Pessoa - PB. JMHP. 2021; 6(1): 577 - 587. Disponível em: https://jmhp.unifip.edu.br/index.php/jmhp/article/view/141/77.

17. Azevedo RSR, Assis LC, Sampaio BR, Araújo EFM de, Costa JFO, Cruz LCAO da. Análise do Perfil Epidemiológico e Sociodemográfico dos casos de Hepatite B no Brasil durante o período de 2018 a 2023. Braz J Infect Dis. 2023; 27(S1):102812. DOI: 10.1016/j.bjid.2023.103065.

18. Timóteo MVF, Araujo FJ da R, Martins KCP, Silva HR da, Silva Neto GA da, Pereira RAC, Paulino J de S, Pessoa GT, Alvino V de S, Costa RHF. Epidemiological profile of viral hepatitis in Brazil. RSD. 2020. 1; 9(6): e29963231. DOI: 10.33448/rsd-v9i6.3231.

19. Farias CS de, Oliveira AD de, Luz MRMP da. O mapa das hepatites crônicas no Brasil no período de 2010 a 2014. Hygeia: Revista Brasileira de Geografia Médica e da Saúde. 2020; 16. 49. DOI: 10.14393/Hygeia16052244.

20. Santos MESAR dos, Silva VLN da, Alencar IG, Lima LCS, Bessa RS, Miranda DR, et al. Fatores associados à infecção pelo vírus da Hepatite B: Um estudo integrativo. RICS. 2024 ;1(1):1-10. DOI: 10.70209/rics.v1i1.4.

21. Lima EVA da S, Santos T de OCG, Andrade AGSS de, Lima DS de OG, Lima JGB, Ferreira IP, Moia L de JMP, Santos VRC dos, Moraes PM de O, Duarte XMF. Nurses' perception of viral hepatitis screening in primary health care. Research, Society and Development. 2022;11(12):e232111234662. DOI: 10.33448/rsd-v11i12.34662.

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