

Social Determinants of Health and Adult Respiratory Distress Syndrome.

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DOI: <https://doi.org/10.52845/IJND/2024/14-03-1>

Abstract: Objective: to determine whether socio-environmental factors produce outcomes for human viral respiratory illness.

Method: Systematic Review carried out from July to November 2020. The search for studies took place in the Virtual Health Library, SCOPUS, Web of Science, PubMed, CINAHL, SAGE Journals. The software R 4.0.1 was used for statistical analysis and IRaMuTeQ for lexical analysis of the abstracts. 2721 articles were found. After reading the titles and abstracts, 208 studies were selected and after reading in full, 43 publications were chosen. After reverse search, 14 articles were included, making the sample 57 studies. **Results:** there were more publications in 2020, predominantly in the United States of America. Quantitative, cross-sectional studies with Regression Models lead the publications. Influenza and Covid were the most prevalent diseases. Regarding lexical analysis, three classes emerged: human behavior and transmission of viral etiological agents; social impacts of viral respiratory illness and environmental impacts of viral respiratory illness. There was a significant outcome between environmental factors and respiratory illness of viral etiology (91.67%) and between social factors and human viral respiratory illness (97.44%). **Conclusion:** Socio-environmental factors produce significant outcomes for human viral respiratory illness.

Descriptors: Social Determinants of Health; Respiratory Distress Syndrome, Adult; Environment; Virus Diseases; Coronavirus Infections; Nursing.

INTRODUCTION

Discussions related to the environment and contemporary lifestyle have been influenced by the increase in air, soil and water pollution, the use of pesticides in agriculture and the occupational risks present in work activities. In this scope, several concepts have emerged, such as the exposome, which considers the harmful exposures to which individuals are subjected throughout their lives and social determinants, with an emphasis on the importance of environmental and cultural factors that can determine health and illness characteristics in populations.¹⁻⁴

The concept of social determinants emerged between the end of the 1970 and the beginning of the 1980, based on individual and collective living and working conditions that increase the process of maintaining health or human illness. Therefore, the Dahlgren and Whitehead model was proposed in 2007, which sets out the structuring layers such as socioeconomic, cultural, environmental characteristics and unsatisfactory basic human needs that interfere with the process of healthy living⁵.

The environment in which the person is inserted, as a set of natural or synthetic elements responsible for guiding human life in the physical, chemical, cultural, social and urban planning within the web of social and individual

relationships, participates in maintaining well-being and quality of life. In addition to the possibility of interfering in the illness process⁶.

A study carried out with 25,700 individuals in South Korea between 2002 and 2013 showed that there is a relationship between environmental pollution, especially air pollution, with respiratory illness and changes in the lifestyle of people living in a polluted environment⁷. In India, an investigation that took place in Kodungaiyur described that 62% of participants suffered dyspnea and that several individuals presented eosinophilia with evidence that air pollution is related to allergic respiratory diseases⁸.

The World Health Organization (WHO) launched the Global Alliance Against Respiratory Diseases (GARD) in 2006 with the aim of unifying the knowledge built by different sectors to improve the quality of life of people affected by chronic and acute respiratory diseases. With this, he proposed the Sustainable Development Agenda (SDG) for the year 2030 during the United Nations (UN) Summit in New York, coming into force on January 1, 2016⁹.

Respiratory tract infections are common throughout the world. Around 25 million medical appointments are made annually in the United States of America (USA). In the European Union, they have a lethality rate of 8.2% when considering the causes of death¹⁰. For a long period of time, acute respiratory tract infections were among the three main causes of death and disability, representing more than 10% of loss of human activity and productivity in terms of health problems, falling behind in the ranking only for cardiovascular diseases¹¹. Although it is a disabling condition for individuals belonging to different classes and social positions, there is an incidence of respiratory illness in a large number of people from poor places, where crowding, environmental exposures and, in general, poor living conditions exacerbate this illness⁹.

In the context of respiratory illness, infectious disease represents an important cause of morbidity and mortality in the world, being responsible for more than four million deaths per year. Despite the importance of bacteria as agents of respiratory tract infections, viruses are the microorganisms responsible for around 80% of these infections¹².

In this sense, humanity was surprised by Covid-19, resulting from the Sars-COV-2 infection and which culminates in Severe Acute Respiratory Syndrome (SRAG). Cases of pneumonia requiring intensive care without a specific agent were initially reported in China, with rapid spread across all continents, and was then declared a pandemic by the WHO¹³⁻¹⁵. It is believed that in addition to respiratory illness due to SARS, Covid-19 generates other systemic deleterious effects on the human body. These signs are observed through coagulation cascades responsible for generating thrombophilia in individuals with severe Covid-19¹⁶.

The Covid-19 pandemic demonstrates that social organization in the world is extremely fragile as the economy and inter-human relations underwent drastic changes at the beginning of 2020, with a strong impact on

the geopolitical, meteorological and social scope of human relations¹⁷. This demonstrates that viral respiratory illness has an important outcome in the different dimensions of human life, causing negative experiences and social disorganization, especially during a viral respiratory pandemic.

It is inferred that due to the high incidence of respiratory illness related to viral infections, the morbidity and possible mortality resulting from the disease and the negative effects that the condition can have on the individual, there is a need to explain its relationship with socio-environmental factors. Given the above, this review had the following question: is there an impact of socio-environmental factors on human viral respiratory illness? In order to answer the proposed question, the objective was defined as: determining whether socio-environmental factors produce outcomes for human viral respiratory illness.

METHODS

The present investigation is a Systematic Review of Etiology (SRE) on the socio-environmental factors of viral respiratory illness. In an SRE, the researcher aims to determine whether there is a relationship between two or more quantifiable variables in studies that evaluate an exposure in addition to describing the degree of this relationship¹⁸.

The SRE construction steps proposed by Joanna Briggs Institute reviewers¹⁹ were followed, described below: 1 - Composition of the question and objective of the review, 2 - delimitation of the study inclusion criteria, 3 - Recovery, analysis and judgment of data relating to the studies included in the SRE and 4 - Data extraction and description of the synthesis created from the knowledge constructed.

Initially, a survey of Health Sciences descriptors (DeCS/MeSH) was carried out on the Virtual Health Library (VHL) website by consulting DeCS > Query by Word > Word or Term. The terms: "respiratory", "environment", "determinants", "coronavirus", "COVID-19", and virus were searched, and the descriptors that answered the initial question were found: Environment; Social Determinants of Health; Respiratory Distress Syndrome, Adult; Respiratory Syncytial Virus Infections; Respiratory Syncytial Virus Vaccines; Coronavirus Infections; Influenza A virus; Influenza B virus and Middle East Respiratory Syndrome Coronavirus.

In SRE, the research question must describe the health condition of interest, the population and the context, so the mnemonic traditionally used in systematic reviews PICO¹⁹ - population, intervention, comparator and results - does not allow for these characteristics. Thus, this SRE included in its research question the Population (people suffering from viral respiratory illness), Exposure of interest (socio-environmental factors) and the Result or response (relationship between viral respiratory illness and the environment and/or the social determinants of health), in accordance with what is recommended by SRE⁸.

To select the works, eligibility criteria were adopted, considering observational studies (retrospective,

prospective, cross-sectional, longitudinal, case-control, cohort, epidemiological and reflection) and review studies that discussed the relationship between the impact of socio-environmental factors on the human viral respiratory illness, which were available in full, online and in any language and published in the last five years. Material from gray literature (books, dissertations and theses) was not included in this review due to the difficulty of finding databases that allow the retrieval of this information in addition to editorials from scientific journals or letters to the editor as they do not present methodological rigor in the construction of these textual typologies.

The search for studies was carried out in July 2020, using the following databases: VHL Nursing, SCOPUS, Web of Science, PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), SAGE Journals through the

Periodicals Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES).

The 2721 pre-selected studies were transported to the EndNote software, which makes it possible to archive, organize and select articles in folders, facilitating reading in pairs²⁰. After reading the titles and abstracts, 208 articles were selected, and after reading the works in full by peers, 43 studies published in journals were selected. To expand the search, aiming for data saturation, a reverse search was carried out, which consists of observing the bibliographic references used by the studies selected to compose the sample²¹. Preliminarily, another 17 articles were included after reading the titles, and after reading in full, meeting the inclusion criteria, 14 articles were selected, constituting a total of 57 studies as a sample for the present investigation. The study retrieval and selection algorithm is shown in Figure 1.

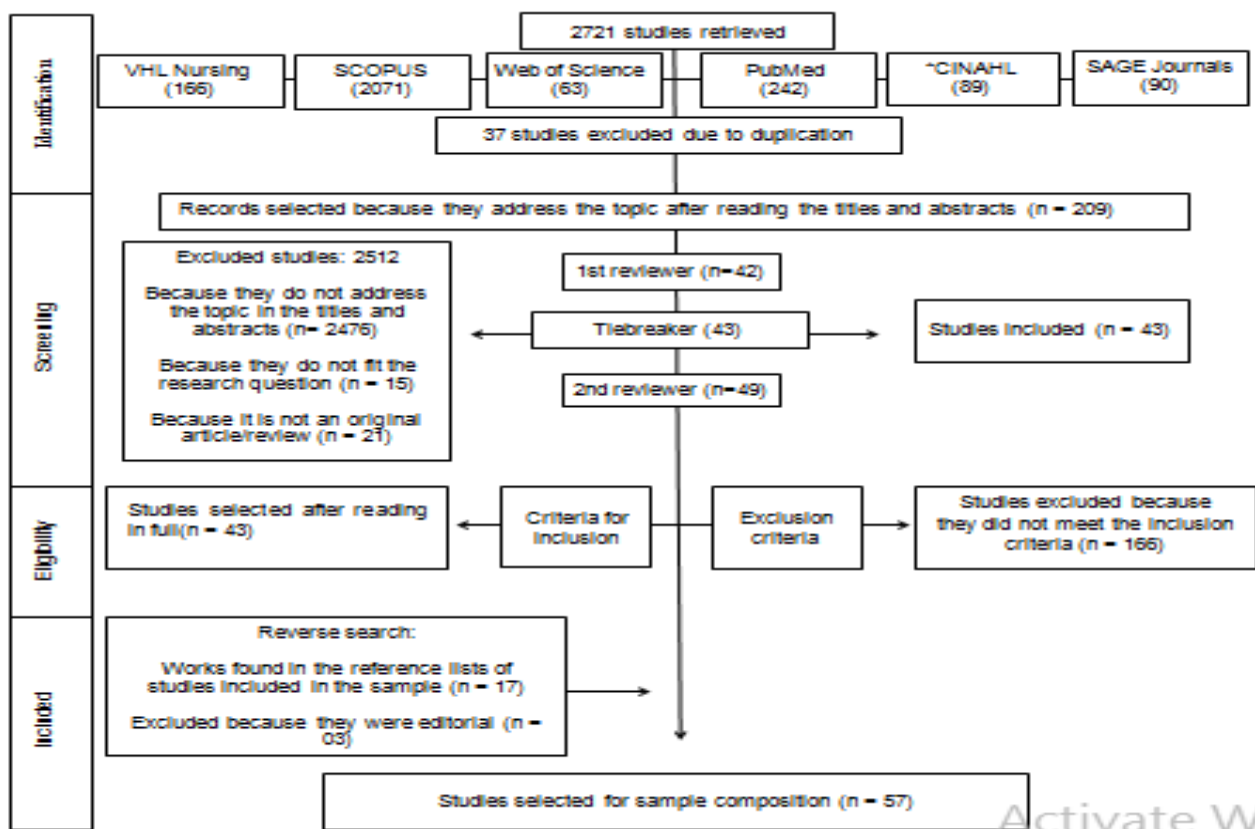


Figure 1. PRISMA flow diagram of included studies. Brazil, 2020 (N=57)

*CINAHL = Cumulative Index to Nursing and Allied Health Literature

The reading of the articles during the sample composition stages was carried out in a double-blind manner as recommended by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) method, ensuring the feasibility of the review protocol and the inclusion and exclusion criteria¹⁹. The divergences between the reviewers were discussed with a third reviewer, who, together with the previous two, decided on their inclusion or exclusion. Subsequently, the data contained in the empirical material was extracted using an instrument built by the authors in Microsoft Excel 2010, consisting of the following information: type of study, year, location, socio-environmental variables used, respiratory diseases

investigated in the association, type of population, sample, main outcomes found. To assess the consistency of the articles, minimizing the risk of bias, the Methodological Index for Non-Randomized Studies (MINORS) instrument was used, which scores productions as 0 for information not reported, 1 for information reported, but inadequately, and 2 for information reported. Appropriately in the items for studies without a control group: 1) Clearly stated objective; 2) Inclusion of consecutive patients; 3) Prospective data collection; 4) Outcomes appropriate to the objective of the study; 5) Impartial assessment of study outcomes; 6) Follow-up period appropriate to the objective of the study; 7) Loss to follow-up less than 5%; and 8) Prospective

calculation of sample size²² In the next stage, quantitative treatment of statistical data was carried out using the R 4.0.1 software.

The summaries of the articles retrieved were structured in the Microsoft Word text editor to compose the research corpus, enabling qualitative analysis of the works using the IRaMuTeQ software, through lexical analysis, categorization by content analysis, descending hierarchical classification and word cloud²³. Subsequently, the results were analyzed in light of the scientific literature relevant to the topic investigated.

There was no assessment by a Research Ethics Committee, as the study addresses public domain data. However, ethical prerogatives regarding carrying out scientific research and citing the authorship of documents were strictly followed²⁴.

RESULTS

The search in the databases resulted in 2721 articles referring to the topic in question. After reading the titles and abstracts, 208 studies were selected, and subsequently, after reading in full, 43 publications were selected, and after a reverse search and inclusion of 14 articles, the sample comprised a total of 57 studies considering the eligibility criteria.

Regarding the year of publication, studies from 2020 represent 44.44% (24), followed by 2019 with 14.81% (8), 2016 with 12.96% (7), 2018 with 11.11% (6), 2017 with

9.26% (5) and 2015 with 7.41% (4). The United States of America leads the production of studies related to the topic with 44.44% (24), followed by China 16.67% (9), India and England with 3.7% (2) each. Germany, Saudi Arabia, South Korea, Netherlands, Ireland, Israel, Italy, Mexico, Nigeria, Norway, United Kingdom, Russia, Sweden, and Thailand had a frequency of 1.85% (1) each. In 5.56% (3) of the studies there was no specification of a country.

With regard to the statistical techniques used in the analyzed investigations, the majority with 48.15% (26) of the studies used analysis techniques using the Regression Model, followed by Fisher's chi-square test with 14.81% (8) and correlation analysis with 12.96% (7). In 11.11% (6) of the studies, only descriptive statistics of the data were presented and 5.56% (3) presented Multivariate statistical analysis, Mann-Whitney Test and T Test respectively.

Concerning the type of study, the majority of investigations were quantitative with 68.52% (37), followed by review studies with 14.81% (8). 5.56% (3) of the studies were cohort and mixed methods respectively. 3.7% (2) were reflection studies and 1.85% (1) Case Crossove. Among the publications, 77.78% (42) were cross-sectional and 22.22% (12) were longitudinal. Regarding population types, most studies focused on adults with 59.26% (32), followed by children with 12.96% (7) and elderly people with 1.85% (1). With regard to clinical and social characteristics related to viral respiratory illness, the data are described in table 1.

Table 1 – Characterization of clinical and social characteristics related to viral respiratory illness, Brazil (N=57)

Viral etiologic agent	Absolute frequency	Relative frequency (%)
Influenza (H1N1)	30	50,00
Covid-19	20	37,04
MERS	2	3,70
Avian influenza (H5N1)	1	1,85
respiratory syncytial virus	2	3,70
Unspecified virus	1	1,85
Did not specify	1	1,85
Social variables used in studies*		
Age	35	64,81
Access to receiving vaccine	14	25,93
Income	12	22,22
Sex	11	20,37
Ethnicity/Race	7	12,96
Education	4	7,41
Access to health insurance (health plan)	4	7,41
Population/inhabitant density	4	7,41
Environmental variables used in the study*		
Moisture	13	24,07
Temperature	11	20,37
Air pollution	8	14,81
Viral particles in sewage	3	5,56
air pressure	3	5,56

Precipitation	2	3,7
Wind speed	2	3,7
Outcomes between viral respiratory illness and Social variables*		
Yes	38	97,44
No	1	2,56
Inconclusive	0	0
Outcomes between viral respiratory illness and environmental variables*		
Yes	22	91,67
No	1	4,17
Inconclusive	1	4,17
*Variable with more than one answer.		

Of the manuscripts analyzed, 50% (30) had Influenza (H1N1) as the viral etiological agent, 37.04% (20) investigated Covid-19, 3.7% (2) used MERS and 1.85% (1) addressed Avian Influenza (H5N1).

In relation to the social variables of the studies analyzed, age, access to vaccination, income, sex, ethnicity/race, education, health insurance and population/housing density stand out. With regard to environmental variables, humidity, temperature, air pollution, precipitation and wind speed were addressed.

When analyzing the outcome between social and environmental variables and human viral respiratory illness, there was an impact between social variables and human viral respiratory illness in 97.44% (38) of the studies analyzed, and in 91.67% (22) between environmental variables and human viral respiratory illness.

The main findings related to outcomes between social, environmental/meteorological factors and human viral respiratory illness are described in table 1.

Table 1. Main outcomes related to socio-environmental factors and viral respiratory illness, Brazil (N=57)

Category	Type of respiratory illness	Variable analyzed	Outcome
Aspectos físicos e meteorológicos e adoecimento respiratório viral	Influenza/H1N1 ⁽²⁵⁻³³⁾ Covid-19/Sars-Cov-2 ⁽³⁴⁻³⁸⁾ Respiratory Syncytial Virus ⁽³⁹⁻⁴⁰⁾ Middle East Respiratory Syndrome /MERS-CoV ⁽⁴¹⁾ Other etiological agents associated with viruses (bacteria, fungi or enteric viruses) ⁽⁴²⁻⁴⁵⁾	Atmospheric polluting particles; aerosolized viral particles; relationship between vaccination and environmental pollution; inhalation of cold air; temperature; plant pollen.	There was a significant outcome between the environmental/meteorological variables analyzed and human viral respiratory illness (91,67%).
Aspectos sociocomportamentais e Adoecimento respiratório viral	Influenza /H1N1 ⁽⁴⁶⁻⁵⁸⁾ Covid-19/Sars-Cov-2 ^(45, 59, 60-77) Middle East Respiratory Syndrome /MERS-CoV ⁽⁷⁸⁾ Respiratory Syncytial Virus ^(57-58,79) Avian Influenza/H5N1 ⁽⁸⁰⁾ Acute respiratory illness without a specific pathogen ⁽⁸¹⁾	Social distancing; nurses' behavior regarding vaccination; air, land and rail transport; behavioral differences between urban and rural residents; digital inequalities; indigenous population; human development index and mortality rates, biocidal agents; physical spaces at airports; legal incarceration and risks of contamination during work activity.	There was a significant outcome between the social variables analyzed and human viral respiratory illness (97,44 %).

It is observed that among the studies retrieved (n=57), atmospheric pollutant particles were analyzed; aerosolized viral particles; relationship between vaccination and environmental pollution; inhalation of cold air; temperature; plant pollen in addition to viral particles in wastewater/sewage.

With regard to socio-behavioral factors, there was an analysis of factors associated with social distancing; nurses' behavior regarding vaccination; air, land and rail transport; behavioral differences between urban and rural residents; digital inequalities; indigenous population; human development index and mortality rates, biocidal agents; physical spaces at airports and legal incarceration and risks of contamination during work activities.

Most studies showed good internal consistency in the items inclusion of consecutive patients, prospective data collection; outcomes appropriate to the study objective and impartial assessment of study outcomes. In relation to the clearly indicated objective items, adequate follow-up period for the study objective, loss of follow-up less than 5% and prospective sample size calculation, low scores were reported, with the worst value for the sample calculation item. The internal consistency of the studies is described in figure 2.

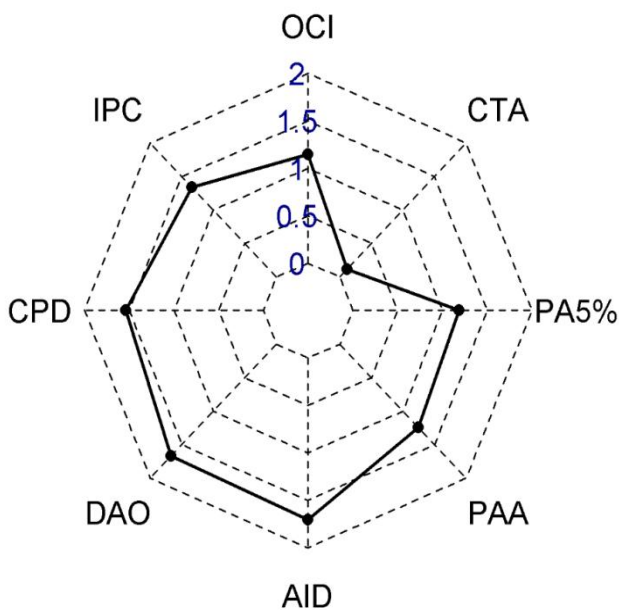


Figure 2. Internal consistency analysis of studies, Brazil (N=57)

Subtitle:

OCI-Objective clearly stated;

IPC-Inclusion of consecutive patients;

CPD-Prospective data collection;

DAO-Outcomes appropriate to the objective of the study;

AID-Impartial assessment of study outcomes;

PAA-Follow-up period appropriate to the objective of the study;

PA5% -Loss to follow-up less than 5%;

CTA-Prospective calculation of sample size.

An analysis of association/frequency dependencies was carried out, considering year, social and environmental outcomes, environmental and social variables used in studies and diseases using Fisher's Exact test. In 2020, the frequency of studies on Covid-19 was higher than the expected frequency, which shows the association of these studies with the year 2020 (p-value<0.001). H1N1 had a higher observed frequency than expected in 2015 and 2018, and a lower frequency than expected in 2020 (p-value<0.001).

A greater probability was observed when evaluating the observed frequency and association test between the Race/Ethnicity variable in the study and the viral etiological agent (p-value 0.028) and when evaluating the observed frequency and association test between environmental outcome humidity and viral etiological agents (p-value 0.002) using Fisher's Exact test.

With regard to lexical analysis using the Word Cloud technique, the term Covid-19 is at the center of discussions related to viral respiratory illness today. The words health, influenza, virus and respiratory increase the discussion on the topic, being also impacted by the words risk, social, factor, population, inequities and socioeconomic. Still referring to the words that emerged in the lexical analysis, the presence of the terms syncytial, vaccination, Sars-Cov-2, time, information, determinant and environment is observed.

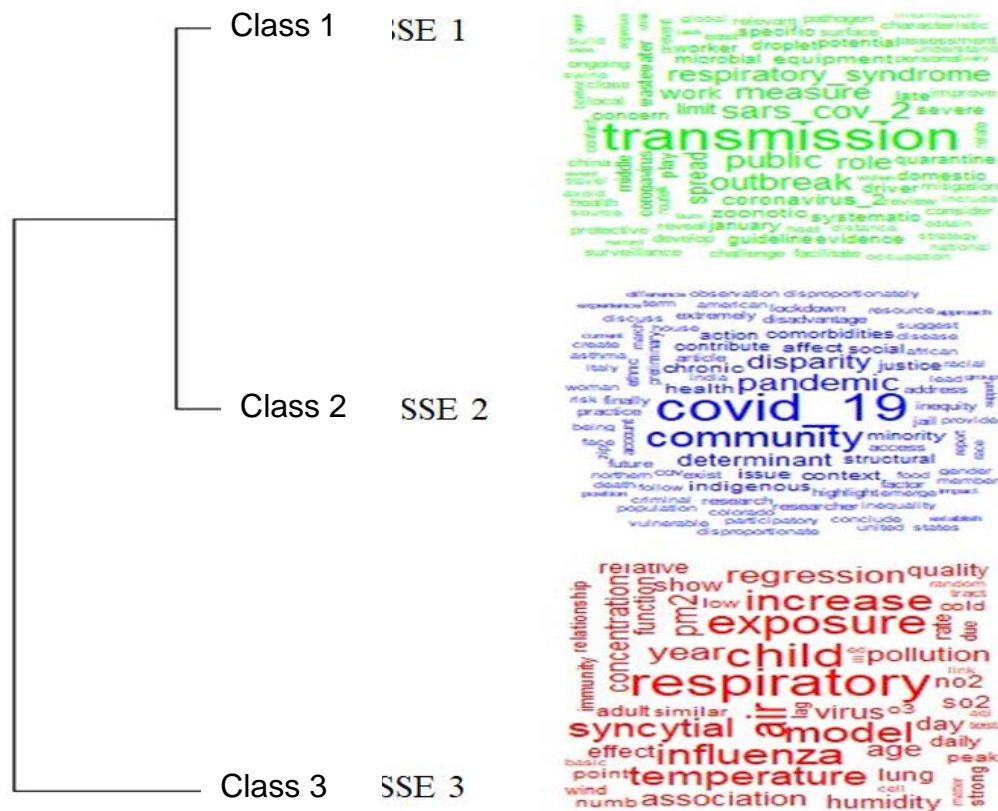


Figure 3. Class of Words about socio-environmental factors and viral respiratory illness. Brazil, 2020 (N=57)

Regarding the Word Class technique, three classes emerged that deepen the lexical analysis of the works recovered by this review. In the center of the first class “Human behavior and transmission of viral etiological agents” the term transmission is highlighted, linked to the terms Sars-Cov-2, respiratory syndrome, work, quarantine, spread and guidance evidence among others. Within the scope of the second class “Social impacts of viral respiratory illness” the highlighted term is Covid-19, linked to the terms pandemic, community, inequality, structural, indigenous, minorities and social impact. When observing the third class “Environmental impacts of viral respiratory illness” the respiratory term is linked to the terms syncytial, influenza, temperature, adult exposure, pollution, air, humidity. It is noteworthy that as only studies in the English language were retrieved, it was decided to use the word cloud figure in this language to maintain the reliability of the terms.

DISCUSSION

The respiratory system is the tract most vulnerable to infections and injuries from the external environment, resulting from its chronic exposure to harmful agents such as small particles, chemicals and infectious organisms in atmospheric air. Globally, an estimated two billion individuals are exposed to toxic fumes from biomass fuel typically burned inefficiently in stoves or fireplaces in locations where adequate ventilation is insufficient. One billion people inhale the pollutants that make up the outdoor air and another billion people are exposed to tobacco smoke⁹.

Influenza, caused by the influenza virus, is an acute, self-limited respiratory disease that has a worldwide geographic distribution and occurs in annual epidemics of varying magnitude and severity. A person with flu-like symptoms varies between a common cold in the upper airways and pneumonia, which can be fatal⁸². The influenza virus has several subtypes, responsible for affecting both humans and animals, and its mutations occur due to genetic changes, through specific amino acid substitutions⁸³. After 2013, there were five major waves of human infection in China resulting from the avian influenza A (H7N9) virus with mortality exceeding 40%. It is known that infection with the H7N9 virus can cause Severe Acute Respiratory Syndrome (SARS), pneumonia, acute kidney injury (AKI), shock and rhabdomyolysis, thus emerging discussion about this infection whenever a respiratory viral epidemic emerges⁸⁴.

This review demonstrated that there was greater publication about the socio-environmental factors that interfere with human viral respiratory illness in 2020. This may be related to the fact that there was an important impact of Covid-19 on human relations worldwide, highlighting socio-environmental discrepancies in that humanity is faced with in particular economic, race/gender disparities and climatic factors arising from impacts caused by man on the environment, such as socioeconomic inequalities and anthropological interference in the environment and meteorology, called the Anthropocene⁸⁵.

In this sense, The United States of America leads the publication regarding the outcomes between social and environmental factors and human viral respiratory illness, which may be related to the importance of discussing the

serious problems arising from inequality and the absence of a system of healthcare capable of assisting those most in need⁵⁹. Furthermore, the reductionist view of health professionals who limit themselves only to the biological scope of the individual without considering the social and community variables that make it possible to emancipate individuals seems to confirm these disparities, promoting the hegemonic biological model centered on disease⁸⁶.

Despite the existence of intense social inequality and regional⁸⁷ and climatic differences⁸⁸ in Brazil, no work from that country has been recovered, demonstrating the importance of studies that address the impacts between social and environmental aspects and respiratory illness of viral etiology in this territory.

In the social sphere, the Covid-19 pandemic showed humanity the fragility of the current health and economic system, with a strong impact resulting from racial and socioeconomic disparities, especially in the population affected by Sars-Cov-2. There are differences in risk factors for infection and mortality, with locations with a higher population, lower education levels, income and disability rates being more prone to infection and poorer locations having a higher mortality rate, with a greater negative impact among black people, when compared to whites⁶³.

A study carried out in Nigeria that sought evidence between regional inequalities and symptoms of acute respiratory infections among children under five years of age shows that socioeconomic inequalities significantly interfere with the acute respiratory illness of these individuals. Being a member of a poor family, lack of maternal education, living in a rural area and cooking using biomass, having children in short periods of time between pregnancies (one child every six to 23 months), and absence of a vaccination card are highlighted as risk factors for respiratory illness⁸¹.

The terms time, information, determinant and environment emerged in the lexical analysis of the works highlighted in this CSR, which seem to be linked to the globalized behavior in which humanity is immersed today. With the advancement of the Covid-19 pandemic, it is observed that viral respiratory illness permeates several dimensions beyond the biological scope related to the pathophysiology of the virus and the human being, but permeates the consequences arising from urbanization, high global mobility, capitalism which considers unrestrained consumption, which originate from the Anthropocene⁸⁵.

In this regard, the term “pan-epidemic Anthropocene” was proposed as a model of integration in teaching in the health area to refer to large epidemics of multifocal infectious diseases resulting from the impacts caused by anthropogenic globalization activities, exponential growth in the human population and animals and industrialization on the Earth System⁸⁹. Therefore, the need to view human viral respiratory illness as a phenomenon that transcends biology, as it permeates the socio-environmental sphere, is evident.

In lexical analysis, Word Classes indicate three categories of discussion of published studies. In the first, the connection between respiratory illness and social and work relationships

emerges. In the second class, the link emerges between Covid-19 and the social impact of the problem resulting from ethnic, racial, economic and gender inequalities. Through the third class, it is observed that the works dealt with the relationship between the environment and meteorology and viral respiratory illness. This gives rise to a discussion about the impact caused by viral respiratory illness on people's lives, including several factors and dimensions, which permeates the need for comprehensive health care for individuals and their community, especially in the Anthropocene period⁸⁵.

Narrative review points out that environmental pollution and climatic factors can interfere with the spread and lethality of the new Coronavirus, which causes Covid-19, with strong evidence that these variables are associated with the outcomes investigated⁹⁰.

This RSE demonstrates that, through the studies retrieved, there is an increase in the physical and meteorological aspects of human viral respiratory illness^{25-33,35-37,39,40-41,43,45,52,57-58,66,68,91-92} in addition to social factors concerning the interrelationships of work, income and human behavior, economic, ethnic/racial inequality and lack of access to health services^{47-50,53-54,56,63-64,69,78-81,91}. The socio-environmental factors with an outcome for human viral respiratory illness became more evident during the Covid-19 pandemic, where there is a higher transmission and lethality rate of the infection in peripheral locations, with strong ethnic, racial, gender, economic inequality and difficulty accessing health services^{59-60,63,65,70-71,73-77,93}.

It is observed in this review that the environment, both due to its meteorological characteristics and characterized as a social arena of human integration in society, participates in the process of respiratory illness. A study carried out in Brazil corroborates this perspective, as it points to an increase in the number of hospitalizations for respiratory diseases, especially pneumonia, in relation to the sugarcane burning period in the region. There was an association between the increase in pollutants and the decrease in temperature, which was directly related to the total number of hospitalizations for respiratory diseases in the period studied⁹⁴.

Despite the low morbidity related to coronavirus infections, it is observed that in the epidemics of severe acute respiratory syndrome (SARS-CoV) and the Middle East respiratory syndrome coronavirus (MERS-CoV), there was an increase in the number of cases falling ill by 10,000 cumulative cases. Over the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV. Thus, it is observed that despite presenting mild symptoms, the infection can generate catastrophic effects like those experienced in recent epidemics⁴⁴.

The spread of Severe Acute Respiratory Syndrome (SARS), caused by the new Coronavirus (SARS-CoV-2), assumed pandemic proportions, affecting more than 100 countries in a few weeks, demonstrating the need for an immediate global response. Although containment measures in China have reduced new cases by more than 90%, this reduction has not occurred in other countries⁹⁵.

Therefore, in the fight against SARS-CoV-2, it is necessary to consider the heterogeneity of indicators between different regions with transmission, as they may vary according to actions, routines, availability of supplies, structure of health and surveillance services, in addition to the cultural and political characteristics of each location⁹⁶.

As it is an SRE that does not address randomized studies of interventions, but observes studies that indicate the exposure of individuals to a certain factor, the present study had as a limitation the difficulty in clearly obtaining the descriptive data of the methodologies, evidenced by the low internal consistency of the studies used, in particular the description of their statistical analysis, with items that were not mentioned, such as the sample calculation. This phenomenon may be a reflection of publications during periods of epidemics, including preprints, making it not possible to apply a homogeneous model to analyze outcomes at the individual level of articles. In this way, a generalist approach to the studies was used, with the description carried out by the authors for the statistical variables available in the retrieved investigations.

CONCLUSION

The present systematic review of etiology sought to elucidate outcomes between socio-environmental factors and human viral respiratory illness. It is considered that there is an impact between social and environmental factors and respiratory illness of viral etiology, constituting an important field for scientific research in health and especially in the area of nursing. One must consider the current moment of public calamity resulting from the Covid-19 pandemic that humanity is facing in the search for answers to this unexpected challenge of global magnitude.

It appears that viral diseases of the respiratory system constitute a vast spectrum of illness, ranging from a common cold, with little impact on the lives of individuals, to complications with a serious risk of death due to their lethality, such as SARS, in particular, SARS-CoV-2, caused by the new Coronavirus, responsible for the deaths of thousands of people. This characteristic points to the need for further studies that can understand viral respiratory illness and the factors involved in the lives of people who experience this experience in order to contribute to supporting the professional practice of nursing and health care.

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