

## Basic Human Needs Theory and SARS-CoV-2: An integrative literature review

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**Keywords**— COVID-19; Basic Human Needs; Pandemic; SARS-CoV-2.

**Abstract**— Purpose: To relate the SARS-CoV-2 virus to Basic Human Needs (BHN) proposed by nurse Wanda de Aguiar Horta. Methodology: Qualitative method of literature review, through exploratory research of bibliography. Results and discussions: 22 materials were analyzed and organized in a table of 5 topics: Title, authors, methodology, year and description. The basic human needs were divided into 2 categories: Psychobiological needs and psychosocial needs. Each need was related to the interaction of the virus in the human body and to social changes during the pandemic. Conclusion: The direct influence of SARS-CoV-2 on the individual's body and the consequences of the pandemic on interpersonal relationships were observed. Also, the studies on the topic are scarce and need to be expanded.

### I. INTRODUCTION

Wanda Aguiar Horta, born on 1926 (Belém - Pará - Brazil), was a nurse of remarkable importance and prominence since she created the Theory of Basic Human Needs. The theory was created from the need to establish nursing as a science that views the human being in all its complexity, which interacts with the environment where it is inserted [1].

According to Horta [2], Basic Human Needs (BHN) are conceptualized as "[...] states of tension, conscious or unconscious, resulting from the homeodynamic imbalances of vital phenomena." Therefore, when the individual is in dynamic balance, the basic human needs

are not manifested, but they are latent and can manifest when there is some imbalance. Thus, BHN are universal, common to all human beings, differing in the type of

manifestation and how to satisfy it so the homeodynamic balance become reestablished [2].

It is possible to observe the influence of Abraham Maslow and João Mohana at Wanda's theory, both have their own theories on Basic Human Needs [3] and from that and their own impressions on the theme, they created the following classification for the Basic Human Needs: Psychobiological, psychosocial and spiritual.

#### Psychobiological needs:

Oxygenation: The respiratory system has as its main function gas exchange, absorbing oxygen and eliminating carbon dioxide, when the air is inhaled it makes its way to the lungs, reaching the pulmonary alveoli. [4]

Hydroelectrolytic balance: The hydroelectrolytic balance is the balance between water and electrolytes, which are important in the permeability of the cell membrane and the consequent acid-base balance. [5]

**Nutrition:** Food is a source of energy that make the human body functions properly. It is responsible for the growth and maintenance of the body. Good nutritional status comes from adequate intake of essential nutrients and energy-producing foods. [5]

**Urinary and intestinal elimination:** During the physiological process, many residues are produced and go directly into the bloodstream. They must be removed through the elimination organs, which are the kidneys, intestines, lungs and skin. [6]

The mechanism of renal elimination is the urine production and occurs through three processes: filtration, reabsorption and secretion. Thereafter, the detoxification process is maintained, eliminating superfluous and toxic substances and metabolites. [6]

**Comfort, sleep and rest:** Changes in the pattern of sleep modifies the homeostatic balance, moods, and psychological and immunological functions. In addition to that, they cause fatigue and increase the need of naps. Sleep and rest have the importance of restoring the body to prevent physiological changes [7].

**Locomotion, mobility and body mechanics:** The basic human need for body mechanics is a process that involves the participation of the musculoskeletal and nervous systems. Both use their mechanisms and particularities to perform the basic movements of daily life, in addition to maintaining posture and balance. [8]

**Sensory perception:** Sensory need is based on the 5 senses of the organism: sight, hearing, touch, smell and taste. In order to be interpreted by the brain, there must be a stimulus in the receptors located in the organs responsible for each sense. They can be affected by excessive or insufficient stimuli, or by deficiencies in the organs [5]

#### **Psychosocial needs:**

**Sexuality:** For Diamantino et al. [9], sexuality "refers to the impulse and emotion that the proximity of sex can produce. It transcends physical definitions and places itself as something more diffuse permeating all moments of life". Given this, it can be understood that the meaning of sexuality goes beyond what is culturally disseminated, that it was linked only to human reproduction. [10]

**Security:** According to Benedet and Bub [11], security is related to the emotional and sentimental trust of other people to themselves. An imbalance on that can result in mental and emotional consequences for the individual [5].

**Love and gregariousness:** This need (belonging to a group) is important, as it is a type of social need for interaction and social communication. Love and affection bring a feeling of well-being and home, where you feel safe, understood and accepted [2].

**Freedom:** According to Health Sciences Descriptors [12], freedom is the "Individuals' right to act and make decisions without external constraints". In other words, the individual must have the power to follow what he or she best evaluates for himself. [13]

**Self-image and self-esteem:** Self-image is the body's way of seeing the individual in the face of society and its standards. Self-esteem is directly proportional to self-image, it is the reflex that it produces about itself, in the face of their social interaction and through feelings, such as anguish, fear of acceptance, insecurity, or happiness and satisfaction [14].

**Religiosity and spirituality:** Religiosity has a structured basis and standardized behaviors. On the other hand, spirituality is an abstract concept [15].

**Self-realization:** It represents what a person believes is destined to be, involving abilities, talents and vocations. The characteristics of self-fulfilled people are creativity, spontaneity, autonomy, resistance to indoctrination, and also identification with the human species in general [16].

**Health Education:** Dialogue is essential for an educator, since there is a need of reflection and action on the individual in order to become a transforming agent. To establish this dialogue in a positive and effective way, trust and patience are required, as it is in the educator's observation that individuals are encouraged to talk about themselves and their health [17].

**Philosophy of life:** Philosophy of life fits into the natural need of human beings to seek the meaning of things, as a way of organizing their point of view and vision about the world [18].

Therefore, it is possible to relate BHNs to COVID-19 disease, caused by the new coronavirus, SARS-CoV-2 [19]. It was discovered on December 31, 2019 in China, where in 1 month it accumulated 11,821 cases and 259 deaths. On March 11, 2020, according to World Health Organization, it became a pandemic, when more than 110 thousand cases were registered in 114 countries [20]. By the beginning of October 2020, it had accumulated 34,706,736 cases worldwide with 1,029,969 deaths [21], whereas in Brazil this number is 4,915,289 cases and 146,352 deaths [22].

Coronavirus is a family of viruses that cause respiratory infections. There are seven types that are known as pathogens in humans. In general, they are associated with flu-like syndromes and were responsible for more contagious epidemics, being the Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS) [19]. They are RNA-type viruses, enveloped and single-stranded. [23]

The Covid-19 transmission occurs through air or contact with contaminated saliva droplets, aerosols and fomites followed by contact with the mouth, nose or eyes [24]. According to the Ministry of Health, symptomatic people may have a flu-like condition with the following symptoms: "Cough, Fever, Runny nose,odynophagia, anosmia, ageusia, nausea, hermia, diarrhea, asthenia, hyporexia, Dyspnea", which can develop into a condition pneumonia [25].

Due to the fact that SARS-CoV-2 acts mainly on the respiratory tract, some people are included in the risk group, as there is the possibility of a more serious stage of the disease. Among them are: "Age 65 or older; people interned in long-term institutions; patients with chronic obstructive pulmonary disease, asthma (moderate to severe) and oxygen-dependent; people with serious or decompensated heart problems; decompensated hypertensive patients; diabetics; carriers of chromosomal diseases or a state of immune weakness; individuals with advanced chronic renal failure; high-risk pregnant women; people of any age with severe obesity (BMI> 40);and medical conditions (Silva, Moreira, & Martins, 2000)"[26].

Hypertensive patients, for example, are present in this group due to the fact that the virus uses the same receptors drugs in the ACE inhibitor (angiotensinogen converting enzyme) class [27].

The initial estimate of the basic breeding number (R0) of SARS-CoV-2 ranged from 1.6 to 4.1, meaning that an infected person could transmit on average to an additional

2 to 4 people [28]. Therefore, it was necessary to implement social distance as a way of prevention. Also washing your hands with soap and water frequently and using 70% alcohol; wearing masks; avoid physical contact; not sharing objects for personal use; social isolation in case of symptoms; cover your mouth and nose with the inside of your elbow when coughing or sneezing; among others [25].

Taking into consideration the emergence of the SARS-CoV2 pandemic, the importance of basic human needs for the functioning of the organism and the well-being of the individual, and the scarcity of scientific publications relating these issues, the need to link them was noted.

## II. METHODOLOGY

In order to make this study, exploratory bibliographic research was used with a descriptive study of articles, thesis and books between the months of October and November of the year 2020. With that, the following keywords were used: "Covid-19", "Pandemic" and "Basic Human Needs).

Thus, this work was developed from the analysis of 51 articles, 11 of which were published between 1974 and 2003 and 40 between 2010 and 2020. These were researched on digital platforms such as: "Google Scholar", "SciELO" and "PubMed". The data collected were analyzed and organized in order to relate the emergency issue of Covid-19 with Basic Human Needs, in view of the scarcity of publications focused on this theme.

Table1: Distribution of materials according to: title, authors, methodology, year and description.

| Títulos   | Autores  | Metodologia | Ano  | Descrição  |
|---|--|-------------|------|--|
| COVID-19 should concern nephrologists? Why? The Emerging Stalemate of Angiotensin Blockade. | Luca Perico; Ariela Benigni; Giuseppe Remuzzi.   | QUALITATIVE | 2020 | To analyze Analyze the latest findings on the effects of SARS-infection CoV-2 in kidney disease and review the effects of SARS-CoV-2 infection on kidney diseases. |
| COVID-19: renal and cardiac system  | Carolina Magalhães Britto Rodrigues<br>Nathália Barboza da Costa<br>Vinícius Rosseto<br>Vieira<br>Edmo Atique<br>Gabriel<br>Sthefano Atique<br>Gabriel | QUALITATIVE | 2020 | An article that will relate the physiology of SARS-CoV-2 to the renal and cardiac systems  |
| Nutritional intervention in Covid-19 patient  | Lino Mendes,<br>Marisa Cebola,<br>Diana Mendes,<br>Aníbal Marinho,   | QUALITATIVE | 2020 | To present a possible nutritional intervention to patients with covid-19 and preserve their nutritional status   |

|  |  |              |      |   |
|--|--|--------------|------|---|
|  | Antônio Sousa<br>Guerreiro   |              |      |   |
| Technical note and clinical guidelines on Injury Kidney Disease in patients with Covid-19: Brazilian Society of Nephrology and Brazilian Intensive Care Associations | José Hermógenes<br>Rocco Suassuna;<br>Emerson Quintino de Lima;<br>Eduardo<br>Rocha; Alan<br>Castro;<br>Emmanuel de<br>Almeida<br>Burdmann; Lilian Pires de<br>Freitas   | QUALITATIVE  | 2020 | Informations about how Covid-19 affects the renal system and a guideline to health professionals.   |
|  | do Carmo; Luis Yu; Mauricio<br>Younes Ibrahim;<br>Gustavo Navarro<br>Betônico;<br>Américo Lourenço<br>Cuvello Neto;<br>Maria Olinda<br>Nogueira Ávila; Anderson R.<br>Roman<br>Gonçalves; Ciro<br>Bruno Silveira<br>Costa; Nilzete<br>Liberato Bresolin;<br>Andrea Pio de<br>Abreu; Suzana<br>Margareth Ajeje<br>Lobo; Marcelo<br>Mazza do<br>Nascimento |              |      |   |
| Acute renal failure in patients with COVID-19: an uroanalysis perspective  | José Antônio Tesser Poloni   | QUANTITATIVE | 2020 | Reports the implications of Covid-19 at the patient's renal system  |
| Clinical case of covid-19 with gastrointestinal symptoms (coronavirus)   | Sanar Medicina   | QUALITATIVE  | 2020 | Clinical case of a covid-19 patient who presented gastrointestinal symptoms   |
| What has changed in the sleep routine with the pandemic?   | PNEUMOSONO   | QUALITATIVE  | 2020 | Explain the changes In the sleep during the COVID-19 pandemic and its impacts   |
| National plan to combat the covid-19 pandemic  | ABRASCO, CEBES, Rede Unida, ABrES, ABRASME, ABRASST, ABEn, SBV, SBB, CNS, SBMT, SOBRASP, RMMP, ABMMD, SBMFC  | QUALITATIVE  | 2020 | Propose policies and coordinate emergency actions based on scientific evidence to control overcoming and reduce the economic and social impacts on the Brazilian nation due to the covid 19 |

|   |   |              |      |   |
|---|---|--------------|------|---|
| Early Physical Rehabilitation in the ICU:<br>A Review for the Neurohospitalist                | Pedro A. Mendez-Tellez, Rasha Nusr, Dorianne Feldman, Dale M. Needham   | QUALITATIVE  | 2012 | analyzes evidence related to safety, feasibility, barriers and benefits of early measures in ICU patients   |
| Anosmia and dysgeusia in the coronavirus patient: narrative review                            | Melyssa de Carvalho Cardoso<br>Letícia Silva<br>Guimarães   | QUALITATIVE  | 2020 | This is an article that will relate the physiology of sars-cov-2 with the symptoms of anosmia and dysgeusia   |
| Clinical case of covid-19 with gastrointestinal symptoms (coronavirus)                        | Sanar Medicina  | QUALITATIVE  | 2020 | Clinical case of a covid-19 patient who presented gastrointestinal symptoms   |
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| Performance Drop Sexuality in Men and Women During Pandemic of the New Coronavirus - Covid-19 | Leonardo de Souza Alves   | QUANTITATIVE | 2020 | This is a survey that will relate sexual dysfunction during the covid-19 pandemic   |

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|--|---|--------------|------|--|
| Physiotherapist performance in therapy units intensive in the context of the COVID-19 pandemic   | Fernando Guimarães                                      | EDITORIAL    | 2020 | Editorial about the physiotherapist's performance in the ICU in the Covid-19   |
| Prospective assessment of the occurrence of infection in critically ill patients in the intensive care unit                              | Mery Ellen Lima, Denise de Andrade, Vanderlei José Haas | QUANTITATIVE | 2007 | Article that seeks to evaluate cases of infections in ICU patients   |
| Lockdown is the world's biggest psychological experiment- and we will pay the price  | Elke Van Hoof   | QUANTITATIVE | 2020 | Analyze the increase in psychological illnesses in the COVID-19 lockdown   |
| Distanciamento e isolamento sociais pela Covid-19 no Brasil: impactos na saúde mental  | Rossano Cabral Lima                                     | QUALITATIVE  | 2020 | Analisar o impacto do distanciamento social na saúde mental em tempos de pandemia  |
| Distancing and social isolation by Covid-19 in Brazil: impacts on mental health  | INTER-AGENCY STANDING COMMITTEE                         | QUALITATIVE  | 2020 | Propose activities recommended for a humanitarian health programming, in relation to the current scenario of COVID   |
| Constitution and Restriction on Fundamental Rights in Pandemic times of COVID-19: a brief study of the blockade in the State of Maranhão | ANA PAULA DA SILVA SOTERO RICARDO;                      | QUALITATIVE  | 2020 | Chapter of a book that sought to analyze the lockdown in the state of maranhão, in a right view  |
| Self-image, self-esteem and self-realization: quality of life at university  | Juan José Mouriño Mosquera; Claus Dieter Stobäus.       | QUANTITATIVE | 2006 | Analyze the relationships between self-image, self-esteem and self-realization of students and their university professors, with consequences on their self-realization and quality of life. |
| Spirituality in times of pandemic  | Claudio Oliveira Ribeiro                                | QUALITATIVE  | 2020 | Analyze the effects of the new coronavirus pandemic on spirituality .  |
| Affection and relationships in times of isolation social: intensified use of social media for interaction during the COVID-19 pandemic   | Alex Primo  | QUANTITATIVE | 2020 | As the changes in social life in the face of the covid-19 pandemic reflect emotional well-being and the use of media in this coping process  |
| About the disease - how to protect yourself  | Brazilian Ministry of Health                            | QUALITATIVE  | 2020 | Prevention measures against coronavirus  |
| From disinformation to chaos: an analysis of   | João Henriques de Sousa Júnior, Michele Raasch,         | QUALITATIVE  | 2020 | Analysis on the use of the term "Coronavirus" in fake news   |



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|---|---|--|--|--|
| fake news in the face of the pandemic of coronavirus (covid-19) in Brazil | João Coelho<br>Soares, Letícia<br>Virgínia<br>Henriques Alves de Sousa<br>Ribeiro |  |  |  |
|---|---|--|--|--|

**Category I: The influence of SARS-CoV-2 on psychobiological needs**

Oxygenation: When SARS-CoV-2 invades the respiratory system, it starts the viral replication process, spreading rapidly through the lung, as stated by Cespedes [29]. This impairs hematosis and airway clearance, which triggers tissue hypoxia and acute respiratory distress syndrome (ARDS), due to poor oxygen uptake and distribution [30]. Hydroelectrolytic balance: SARS-CoV-2 can cause renal dysfunction or even worsening renal failure in chronic patients, which consequently compromises the hydroelectrolytic balance. There are 3 hypotheses as to how this can occur: the affinity of SARS-CoV-2 with ECA2 that is present in the kidneys; by the indirect action of cytokines generated by SARS-COV-2 and accumulation of immunocomplexes of SARS-COV-2 antigens. [31]

Nutrition: Preventing and treating an individual's malnutrition is of paramount importance to reduce complications in individuals who may contract COVID-19 in the future and in patients who already have the disease. Among the symptoms of COVID-19 are nausea, vomiting and diarrhea, which directly affects food intake and absorption and reduces the individual's nutritional status [32].

Urinary and intestinal elimination: The chances for infection in the renal system by covid-19 are: the process of crosstalk or crossed lines, leading to Acute Renal Failure (ARI), generating a systemic collapse that is caused when the intubation process starts orotracheal and mechanical ventilation in the affected individual [33]; or else, some cytopathic effect caused by the virus or a type of inflammatory response. The lesion in the podocytes leads to intense proteinuria, thus impairing the filtration process; The entry of SARS-CoV-2 into the systemic circulation can also lead to AKI [34].

Gastrointestinal symptoms in covid-19 are rarely reported, however research currently conducted has shown that the ECA2 receptor (angiotensin-converting enzyme 2) is also found in cell epithelial cells of the esophagus, ileum and colon. [35]

SARS-CoV-2 can cause mild leakage in the abdominal cavity, dilation and narrowing of segments of the intestine, viewed microscopically [35]. Another cause of gastrointestinal symptoms is related to the amount of drugs

that an individual infected with covid-19 takes, which can harm the organs of the digestive tract, altering the flora intestinal [36]

Comfort, sleep and rest: During the pandemic, there was an increase in sleep disorders and changes in habits. These changes reflect in productivity, concentration, irritability and tiredness, bringing to light situations of stress and anxiety. Therefore, these changes in sleep interfere negatively in the homeostatic balance and functions psychological and immunological. [37]

Locomotion, mobility and body mechanics: Due to restrictions such as social isolation and lockdown, individuals need to remain inside their homes, compromising the skeletal and nervous muscle systems [38]. Inpatients are subject to reduced muscle strength, disuse of muscles and loss of innervation. All of these factors cause the weakening of joint strength and atrophies [39].

Sensory perception: The reason for anosmia and ageusia for this to occur is not fully known, but there are hypotheses in order to explain. One of them is linked to the fact that SARS-COV-2 has an affinity with the angiotensin-converting enzyme 2 (ECA2) and with the transmembrane serine protease 2 (TMPRSS2), so that it spreads in the body. Both are present in olfactory neuroepithelial cells, but only in ACE2 is present in the oral mucosa. Thus, the binding of the virus with these enzymes causes neurotransmitter dysfunction and, consequently, the presentation of anosmia and ageusia. [40]

**Category II: The influence of SARS-CoV-2 on psychosocial needs**

Sexuality: The Covid 19 pandemic has also influenced sexual relations between men and women, whether they are married or single. Given this, there are two factors that may have contributed to this result: the physiological, where disturbances can be generated due to trauma and stress; and the physical, due to social confinement, where single people were unable to go out for dates and married women ended up losing their freedom due to the interaction of other people in the same property and because they often perform the same activities every day. [41]

**Safety:** With the worsening of covid 19 symptoms, 15% of hospitalized patients require a bed in an intensive care unit (ICU) [42]. This compromises their integrity and their safety, considering the patient's length of stay in the ICU and the invasive procedures performed are directly proportional to the risk of infection [43].

**Love and gregariousness:** Social detachment and isolation, has already been exposed as “the greatest psychological experiment in the world” [44] and brought a feeling of helplessness, irritability, boredom, sadness, loneliness, and a variety of fears (such as contracting illness, losing loved ones) [45,46]

**Freedom:** With the lockdown decree, there is the blocking of a certain area, interruption of economic activities, except the essential ones. These measures, even if they hurt the right to freedom, are justified by the fact that with the pandemic the territory is in public calamity, which gives extreme measures to contain the virus [47].

**Self-image and self-esteem:** The current context, of social isolation, causes the individual to withdraw from his environment, can bring psychological changes, such as frustrations, fear of what is to come, tensions and uneasiness. [48]

**Religiosity and spirituality:** Spirituality, religious or not, has been reinforced during the covid-19 pandemic, due to concerns, fears, fears and diverse reactions around the world. This is due to the confrontation of social, financial, emotional difficulties, physical weaknesses, deaths, insecurities. [49]

**Self-realization:** Since social interaction is an action that can balance relationships and reduce the state of loneliness, the lack of this social communication, with social isolation, alters the quality of life [50]. This prevents the individual from being full in the sense of feeling able and able to change the situation around him, to believe in his potential and to believe that these scenarios can change.

**Health education:** Health education actions become indispensable in the control and prevention of covid19, in view of the measures taken to do so. Therefore, one can exemplify with teaching the importance of frequent and correct washing of hands with soap and water or 70% gel alcohol, coughing and sneezing covering the mouth and nose, the correct use and handling of masks [25 ].

**Philosophy of life:** The covid-19 pandemic directly affects the philosophy of life of the human being from the moment that the media spread various news about the pandemic and also because of the changes in the daily lives of individuals. In addition, the internet propagates so-

called “fake news”, causing instability and inconsistency about information about pandemic. [51]

### III. FINAL CONSIDERATIONS

Based on Wanda Horta's Theory of Basic Human Needs, it was possible to relate nursing problems in the psychobiological and psychosocial categories with the impacts of the new coronavirus pandemic, comprehensively covering the individual, in the pathological repercussions, as identified, and also in the repercussions family and social. .

Among the most affected needs are: oxygenation, body mobility, sleep and rest, sensory perception and freedom.

It is expected that the identification of these affected NBs can contribute to greater attention by the multiprofessional team, aiming to eliminate possible gaps in care, thus favoring the collection of user data, the classification of diagnoses that can guide the planning of interventions, improving patient results, as well as ensuring safe care.

The limitations of the study refer to the lack of study materials that relate the two themes. It is suggested to produce other works that deal with this process, in view of the direct influence of SARS-CoV-2 on the organism and on interpersonal relationships.

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