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## Are the autistic people at the Covid-19 risk group? An applied plausibility to dental health

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**Abstract** People within the autism spectrum may find it more difficult to adapt to changes in routines imposed by the COVID-19 pandemic. This change in behavior can lead to changes in habits, such as increasing the frequency of sugar consumption, which also increases the risk of cavities and the need for dental interventions, often without the cooperation of these individuals. This scenario can increase the risk of contagion by SARS-CoV-2, a virus that binds via protein S to the Angiotensin-Converting Enzyme 2 (ACE-2), which may be in greater number in the oral and nasal mucosa cells of these individuals, exposing them to contagion during dental care, hence the question: are autistic people in the COVID-19 risk group?

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Letter to the Editor/ Dentistry for Patients with Special Needs

## Are the autistic people at the Covid-19 risk group? An applied plausibility to dental health

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***The authors declare that there is no conflict of interest.***

**Dear Editor,**

Sars-CoV-2, the virus that causes COVID-19, the agent responsible for the 2020 pandemic, can develop severe clinical conditions, increasing the risk of death in the elderly and in people with comorbidities, such as: diabetes, immunosuppressive diseases, hypertension, and some others. This is justified by the low organic resistance to the inflammatory process developed by COVID-19, especially when it triggers a “cytokine storm”, which specially compromises the lungs, heart, kidneys and even increasing the risks of thrombosis and secondary infections by fungus and bacteria. However, the risk of autistic people will be justified under behavioral and biological aspects.<sup>1-4</sup>

As well as in other viral infections, the higher the host's viral load is, the greater the risk of developing a more serious disease, considering that Sars-CoV-2 enters in cells carried by type 2 cytoplasmic receptors, the angiotensin converters (ACE- 2), abundantly found in the epithelial cells of the oral and nasal mucosa, and also considering that there is evidence that people within the autism spectrum have a greater number of these receptors,<sup>5</sup> it is suggested that there is biological plausibility for autistic individuals, when contracting Sars-CoV-2, to be at a higher risk of developing the severe form of COVID-19.<sup>6</sup>

It is important to highlight that most people within the autism spectrum need help to develop their daily activities,<sup>7</sup> which makes the practice of social isolation more difficult, especially some components of the affected family. During the quarantine period, a lot of people had their own routines changed, but for autistic people, in addition to that, there was also a discontinuity in their face-to-face therapies, making them even more vulnerable to behavioral changes, because of that, some may become less cooperative with the guidelines given to them.<sup>8,9</sup>

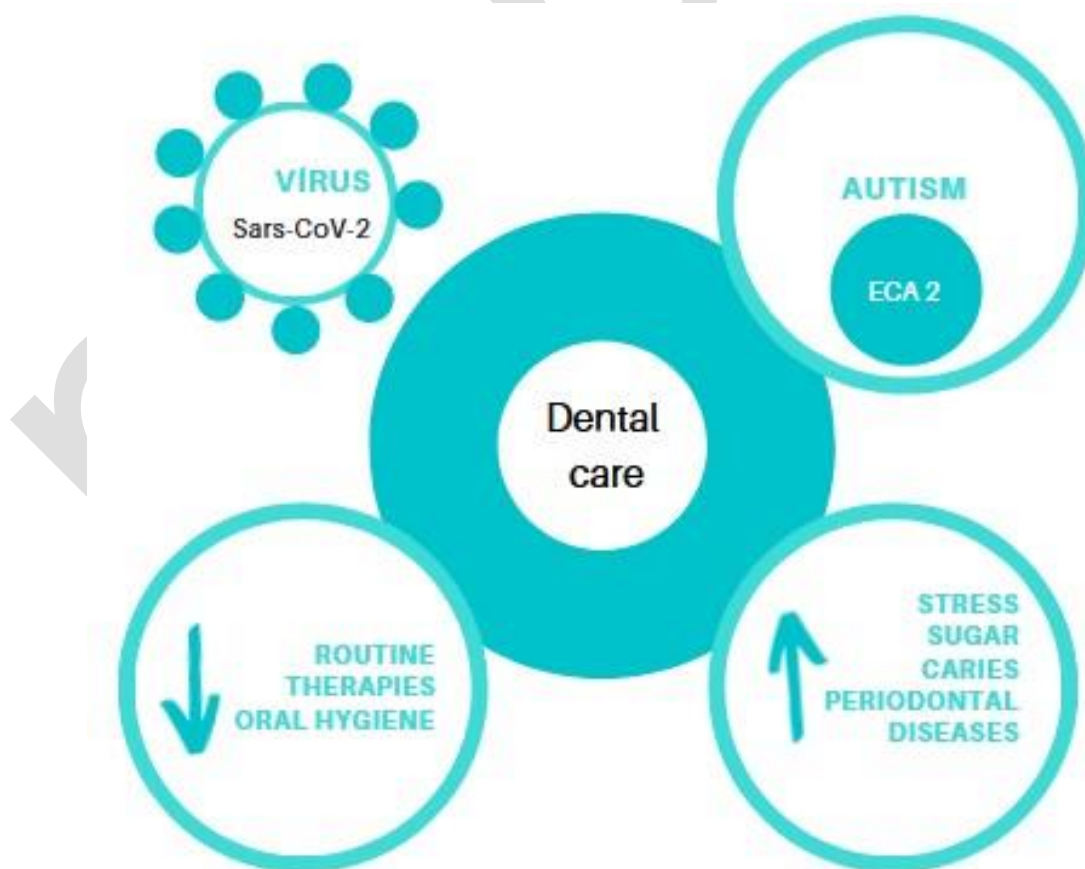
Considering that all changes that occur abruptly, and without any prior and structured preparation, may reduce tolerance levels, as sensitivity and anxiety increase, with an exacerbation of anxiety, there will be also an increment of stress and serum cortisol levels, providing conditions for an immunosuppression, which combined with behavioral factors (stress), provides a reduction in concentration (focus) and, consequently, making them less cooperative to the requests made by their caregivers, for example, not practicing a good virus threat etiquette, including: not accepting to use masks, sneezing without covering the nose and touching their eyes, mouth and nose with contaminated hands..<sup>10-12</sup>

Out of a routine, sometimes performed for years, some people on the autism spectrum may be uncomfortable, and seek to stimulate themselves, for example by performing stereotyped movements, self-mutilation and loss of good habits that had been acquired<sup>13,14</sup>, such as brushing their own teeth alone or calmly allow others to do it, in addition to possible changes in their eating habits, increasing the frequency of

consumption of sugary foods to occupy the most idlest time, providing for some, a pleasant tranquility that was lost along with their old routine.<sup>10,15-17</sup>

It is worth mentioning that in this context, which combines a reduction in the oral hygiene quality, an increase in sugar consumption and the need for social isolation, during the COVID-19 pandemic period, or while Sars-CoV-2 is circulating, the risk of infection by this virus, during dental care,<sup>18</sup> will be greatly increased, both for preventive actions and for therapeutic interventions, consequently with less access to dentists, the altered routine will provide an increase of stress, and as a possible consequence, there may be an increase in the demand for sweet food, unconsciously seeking to increase the endorphins levels, generating a reassuring pleasure, however, with the risk of caries incidence, which can even be aggravated if there is little awareness of family members about the importance of taking care of oral hygiene, because less collaborative behavior is already expected for some people on the autism spectrum.<sup>15,19</sup>

Therefore, the effects of the pandemic on some people on the autism spectrum may compromise gains obtained in face-to-face therapies, given that many of them needed to be put at hold.<sup>12,15</sup> Already-established life routines were suddenly modified, providing the emergence of other compensatory behaviors, exposing them to psychic risks, such as new stereotypes, and physical ones, such as caries, gingivitis, and even the possibility of developing a serious form of COVID-19 if exposed to Sars-CoV-2, for example during dental care,<sup>18</sup> considering the possibility of having a greater amount of ACE-2 in autistic people (Figure 1). However, although there was already a hypothesis raised about the risk of the autistic people developing COVID-19 from the behavioral aspect<sup>20</sup>, the biological aspect of this risk hasn't been explored, just as we have difficulty in finding data in the literature about autistic people with COVID-19. Thus, we hope to have warned the scientific community to seek evidence to confirm or refute the hypothesis that autism fits the profile of people at risk of developing the severe form of COVID-19, with the additional fact that they don't always know how to inform their symptoms, increasing the risk of severity of COVID-19.



**Figure 1.** Risk factors for COVID-19 in autistic people. Abbreviations: ACE-2 (Angiotensin-converting enzyme 2)

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**Abstract**

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**Keywords:** Autism spectrum disorder; Group of risk; COVID-19; Dental health; Dental care

**As pessoas autistas estão no grupo de risco Covid-19? Uma plausibilidade aplicada à saúde bucal**

**Resumo**

Algumas pessoas do espectro do autismo podem ter mais dificuldades em se adaptar às mudanças de rotinas impostas pela pandemia da COVID-19, essa mudança de comportamento pode levar a mudanças de hábitos, como aumentar a frequência do consumo de açúcares, aumentando também o risco de cáries e a necessidade de intervenções odontológicas, muitas vezes sem a cooperação destes indivíduos, o que pode aumentar o risco de contágio pelo SARS-CoV-2, vírus que se liga através da proteína S à enzima conversora de angiotensina tipo 2 (ACE-2) que poderá estar em maior número em células da mucosa oral e nasal destas pessoas, expondo-as ao contágio durante o atendimento odontológico, por isso a pergunta: As pessoas autistas estão no grupo de risco COVID-19?

**Palavras-chave:** Transtorno do espectro do autismo; Grupo de risco; COVID-19; Saúde oral; Higiene oral

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