

**Point of View**

## **Role of nutrition and sedentariness in children's health in times of SARS-COV-2 pandemics – A viewpoint from Italy**

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*Sri Lanka Journal of Child Health*, 2020; **49**(3): 276-278

<http://dx.doi.org/10.4038/sljch.v49i3.9147>

(Key words: Nutrition, sedentariness, children's health, SARS-COV-2 pandemic, Italy)

The current pandemic fortunately only marginally affected children and adolescents, but the lockdown imposed by many Governments, as a means of prevention, lead to significant lifestyle changes and possible nutritional and psychological consequences, especially in children. In this article we will evaluate these aspects, trying to rationalize them on the basis of available data.

The SARS-CoV2 pandemic has undoubtedly determined a significant and sudden change of lifestyle in each of us, through social isolation and the obligation to stay at home, not without possible nutritional consequences. Children and adolescents have fortunately been little affected by the current pandemic, both in terms of the number of infections and clinical manifestations, but the health of children can still be compromised during a prolonged lockdown, such as the one we had in Italy from 9<sup>th</sup> March to 4<sup>th</sup> May 2020.

This period has in fact determined:

1. A reduction in physical activity, which is basically linked to daily activities such as going to school or walking;
2. A simultaneous increase in sedentariness, particularly linked to the increased use of television and computer;
3. A frequent use of high-calorie, sweetened or savoury packaged foods.

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The author declares that there are no conflicts of interest

Personal funding was used for the project.

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There are various reasons that lead to the frequent use of high-calorie foods; among them the confinement in the home environment which, having caused a reduction in the purchase of fresh food (fruits, vegetables, fish), in order to reduce the number of outings from home, has led to an increase in supplies with processed food (snacks, pre-cooked food).

Another cause is the seductive effect of television advertising, especially when it invites the purchase of industrial snacks and over-calorie foods or drinks. During children's television programmes in fact, commercials for packaged food are broadcast very frequently, even more than other commercials such as for toys and books, contributing to an increase in risk factors for non-communicable diseases related to overconsumption of industrial foods, rich in salt or refined sugars<sup>1,2</sup>. This contributes significantly to the obesogenic environment, a well-described cause of childhood obesity<sup>3</sup>.

Another reason why a child can resort to "unhealthy" food is boredom, which is inevitably linked to the interruption of a series of daily activities, as well as the forced stay-at-home requirements. It should be noted that boredom is often associated with stress and nervousness so as not to be able to play with peers and the same obligation to take lessons on-line via the internet. Such a state of mind leads one to consider food, especially sweet food, as a refuge to which the child is very happy to resort to. Such foods, particularly rich in simple sugars, would be able to improve the mood by stimulating the production of serotonin<sup>4</sup>.

The necessary confinement indoors, during an extended lockdown period, inevitably reduces sun exposure. Under such conditions, children are exposed to low levels of Vitamin D, with potential consequences on bone metabolism and therefore on statural growth. It would therefore be desirable that children and adolescents eat traditional Mediterranean foods, preferring foods with Vitamin D (eggs, milk and some fish).

It is well known that the more time children spend sitting at the TV or computer, the greater is the risk of creating newly obese children or worsening the obesity of children already overweight, with negative cardio-metabolic effects<sup>5</sup> and further worsening of their eating habits<sup>6</sup>. In this regard, it is good to remember that adipose tissue is not "only" a reserve of energy, but it is also fully involved in the regulation of inflammatory processes<sup>7</sup>, due to its production of cytokines (adipokines). This production of inflammatory cytokines will be accentuated, as the greater the fat mass is, more would be the incriminated cytokines. It has been recently shown that if a child sits for 3 hours, he only needs to get up every 30 minutes and walk for 3 minutes in order to reduce insulinaemia and blood levels of Free Fatty Acids<sup>8</sup>. Therefore, it is very important to promote, even during the stay-at home periods, moderate physical activity, together with a correct diet, without excesses of undesirable elements and privileging the provision of foods of the Mediterranean diet.

Another aspect to consider, in a context of lockdown and lack of school socialization, is the accumulation of anxiety and stress, which may be followed by an alteration in the rhythm of cortisol secretion and therefore alteration in the quality of sleep. All this can lead in a child to an increase in fear of the cause of quarantine, and in particular apprehensions of his or her family members becoming ill. In addition, poor attention to psychological manifestations already described for other traumatic events<sup>9</sup>, can in some cases lead to a reduction in appetite and growth.

### Conclusion

Prolonged confinement within the domestic environment can lead to a significant deterioration in children and adolescents' quality of life and consequently in their state of health, particularly from a nutritional and psychological point of view. It is essential, in such circumstances, that children are actively engaged, involving them in domestic activities (cooking, tidying-up their room), avoiding as much as possible that they watch TV or use the computer for recreational activities. Food is a cornerstone. It must be without excesses, using traditional Mediterranean food in the diet and providing the classic 3 meals plus 2 snacks a day. It is advisable to always have carrots, fennel and fresh fruit available at home, which can be used when the child/adolescent asks for a snack. All this is not always easy to do, but the goal is so important that you have to create the conditions to try and achieve it.

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