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# Manifest anxiety and quality of life in schoolchildren with ADHD during confinement due to the COVID-19 pandemic

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## ABSTRACT

The pandemic generated by COVID-19 forced the governments of all countries to enter into quarantine, modifying the daily coexistence among family members.

**Objective:** To evaluate manifest anxiety and quality of life in schoolchildren with ADHD during confinement due to the COVID-19 pandemic.

**Methods:** Comparative, observational, non-experimental cross-sectional study of 105 schoolchildren with ADHD and 80 in the Control Group evaluated with the "Manifest Anxiety in Children Scale-Revised (CMAS-R)". And the quality of life with the questionnaire (AUQUEI).

The school children were diagnosed with ADHD in the Neurosciences Laboratory of the National Rehabilitation Institute, and treated with Cognitive Behavioral Therapy (CBT) to control their behavioral symptoms, before the Pandemic and were invited through the informed consent of their parents to participate in this research.

**Results.** The CMAS-R questionnaire showed significant differences in its five dimensions between the groups with different ADHD subtypes and the control group. And the AUQUEI questionnaire showed differences in 4 of its 5 dimensions between schoolchildren with and control group 3 of 5 factors between the combined and hyperactive impulsive subtypes and control group and between the combined subtype and the hyperactive impulsive subtype.

There were correlations between: Leisure, Physiological Anxiety, Total Quality of Life and Restlessness/Hypersensitivity; as well as between Separation, Achievement and Total Anxiety in the ADHD-Combined subtype and Control Group.

**Conclusions.** An increase in anxiety indicators and a decrease in their quality of life were observed in schoolchildren with ADHD.

**Key words.** Schoolchildren, Attention Deficit Hyperactivity Disorder, Manifest Anxiety, Quality of Life.

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## ANSIEDAD MANIFIESTA Y CALIDAD DE VIDA EN ESCOLARES CON TDAH DURANTE EL CONFINAMIENTO POR LA PANDEMIA DEL COVID-19

**Resumen.** La pandemia generada por COVID-19 obligó a los gobiernos de todos los países entrar en cuarentena, modificando la convivencia diaria entre los miembros de la familia.

**Objetivo.** Evaluar la Ansiedad manifiesta y la Calidad de vida en escolares con TDAH durante el confinamiento por la pandemia del COVID-19.

**Método.** Estudio transversal comparativo, observacional, no experimental de 105 escolares con TDAH y 80 formado por el Grupo Control evaluados con la Escala de Ansiedad manifiesta en niños Revisada (CMAS-R). Y la calidad de vida con el cuestionario (AUQUEI).

Los escolares fueron diagnosticados con TDAH en el Laboratorio de Neurociencias del Instituto Nacional de Rehabilitación, y tratados con terapia Cognitivo Conductual (TCC) para control de sus síntomas conductuales, antes de la Pandemia y fueron invitados a través del consentimiento informado de sus padres a participar en esta investigación.

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**Resultados.** El cuestionario CMAS-R mostró diferencias significativas en sus cinco dimensiones entre los grupos con diferente subtipo de TDAH y el grupo control. Y el cuestionario AUQUEI mostró diferencias en 4 de sus 5 dimensiones entre escolares con y grupo control 3 de 5 factores entre los subtipos combinado e hiperactivo impulsivo y grupo control y entre el subtipo combinado y el hiperactivo Impulsivo.

Hubo correlaciones entre: Ocio, Ansiedad Fisiológica, Calidad de vida total e Inquietud/Hipersensibilidad; así como entre Separación, Rendimientos y Ansiedad total en el subtipo TDAH-Combinado y Grupo Control.

**Conclusiones.** Se observó aumento en los indicadores de ansiedad y disminución en su calidad de vida, en los escolares con TDAH.

**Palabras Clave.** Escolares, Trastorno de Déficit de Atención con Hiperactividad, Ansiedad Manifiesta, Calidad de Vida.

## INTRODUCTION

The pandemic generated by COVID-19 obligated the governments of all of the countries of the globe; co-existence among families changed radically, modifying daily co-existence among members of the family. The child population in general was affected and important changes were observed in their behavior, anxiety, depression, aggressiveness, quality of life, etc.,[1] all of this having a psychological impact on all families worldwide.[2]

The Sars-Cov-2 (COVID-19) disease emerged in the Chinese city of Wuhan in December, 2019 and, due to its rapid expansion, it was declared a pandemic by the World Health Organization (W.H.O.) on March 11, 2020. COVID-19 has in a few months changed the lives of children and adolescents.[3] And to other parts of the world brought the risk of death also unbearable psychological pressure.[4]

During the pandemic of the Coronavirus 2019 (COVID-19) disease, boys and girls with neurodevelopmental diseases were observed to be affected in their behavior, emotional factors, anxiety, depression and sleep alterations. The confinement, social distancing, frequent hand washing, and the use of a mask generated an increase in the behavioral problems in this children.[5]

Specifically, the attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disease that is neurobiological in character, one that originates in infancy and whose effects are felt throughout life, and which is characterized by the presence of three typical symptoms: attention deficit; impulsivity, and motor or vocal hyperactivity.[6]

There are few studies that have been carried out on the validity, prognosis, and other measurements of ADHD conducted in school population but the importance of early detection is transcendental in order to avoid the negative consequences and comorbility of this disorder.[7, 8.]

Generally, children diagnosed with ADHD present comorbidity as oppositional-defiant disorder, dissocial disorder, behavior disorder, and sleep disorder. Among the most frequently found comorbilities in ADHD are the following: anxiety; Giles de la Tourette syndrome (GTS); depression; and oppositional negativistic defiant disorder.[9]

COVID-19 quarantine is a challenge for all children, adolescents, and even more so for those with ADHD; therefore, it is necessary to evaluate quality of life and manifest anxiety, which present in children with ADHD, and to look for the significant differences with children without ADHD.[10]

Generalized anxiety disorder (GAD) is a mental disorder in which a child is often worried or anxious about many things and feels like they have difficulties in controlling their anxiety.[11]

The cause of GAD is unknown. Genes can entertain participation. Children with family members with anxiety can also be more prone to suffering from it. Stress can also be a factor for developing GAD.

The events in the life of the child that can cause stress and anxiety include the following:

- A loss, such as the death of a loved one or a parental divorce
- Important life changes, such as moving to a new city
- Antecedents of abuse
- Living in a family whose members are fearful, anxious, or violent.

Anxiety can begin to manifest itself in children from the age of 2 years. It is important to intervene as soon as possible to avoid the problem from transforming into something more important. Before beginning treatment, it is necessary for a specialist to perform a diagnosis, one based on the criteria of the DSM V (Diagnostic and Statistical Manual of Mental Disorders, V Edition).

Knowledge of the quality of life and the measurement of it is a priority for the professionals who attend to patients

with ADHD, with the aim of improving the patients' quality of life. There are many studies that make reference to social and emotional behavior, and to the academic functioning of children and adolescents with ADHD; however, there are few works, to our knowledge, on the theme of how individuals with ADHD self-evaluate their quality of life.[12]

In order to know in detail how ADHD affects the integral development of children and adolescents, it is necessary to know what the experience is in the lives of the individuals who have this disorder.[13]

According to the World Health Organization (W.H.O.), quality of life is: the perception that an individual has of their place in existence, within the context of the culture and the system of values in which they live and in relation to their objectives, their expectations, their norms, their concerns. It is about a very broad concept that is influenced in a complex manner by the subject's physical health, their psychological state, their level of independence, and their social relations, as well as their relationship with the essential elements of their environment.[14]

There are, to our knowledge, no specific instruments designed to measure quality of life in children with ADHD. In this work, we utilized the Pictured Child's Quality of Life Self-Questionnaire (AUQUEI), in that it can facilitate for us the identification and measurement of the quality-of-life components that are related with the behavior of the child in school and at home.

Identification of quality of life is fundamental for providing counseling at the familial level in an adequate and timely fashion, as well as for proposing the integration of patients into group intervention programs, directed toward promoting "favorable" lifestyles.[15]

The child population with developmental disorders exhibits greater affectation in emotional, behavioral, and cognitive areas. In this investigation, our objective was to evaluate the effects of confinement due to the COVID-19 pandemic in children with Attention Deficit Hyperactivity Disorder (ADHD) and a control group.

## MATERIALS AND METHODS

### Subjects

We evaluated 185 subjects with a chronological age ranging from 7 to 12 years who were registered in public primary schools in Mexico City (CDMX), who had been previously diagnosed with ADHD by means of neurological, child-psychiatric evaluation, psychological evaluation, and neuropsychological evaluation at the Mexico City-based National Rehabilitation Institute to receive pharmacological treatment and Behavioral Cognitive Psychological Therapy (BCT) for behavioral control referred as the specific characteristics of ADHD, prior to confinement due to the pandemic.

During the months of December (2020) and of January and February (2021), the subjects were localized with a diagnosis of ADHD with similar characteristics in terms of age and gender, and a control group was formed. The subjects' parents or legal guardians were informed of the scope of the intervention and its purposes and it's possible, benefits for their children, and those in agreement proceeded to respond to the Questionnaire on Quality of Life and Manifest Anxiety Revised (CEMAS R) and the AUQUEI questionnaire through programmed video calls.

## METHOD

The 185 subjects who had been previously diagnosed with ADHD (sent from their schools with suspicion of ADHD) by means of neurological, child-psychological, and neuropsychological evaluations. The exclusion criteria were all patients with mental deficiency, epilepsy, or some other important neurological or psychiatric harm or alteration, such as autism, or who had been submitted to some type of psychological or neuropsychological tests in their ADHD treatment during the last 6 months and chronic diseases that give rise to absence from school or that had been examined by Wechsler tests in the last 6 months. The control group was made up of asymptomatic children of the same age and from the same schools who did not comply with the criteria of the DSM-V for ADHD.

The parents and teachers of the children were provided with questionnaires entitled "Diagnostic Criteria of ADD and Hyperactivity (ADD-H)" of the DSM-V these behaviors, on being evaluated, should have been observed during at least during the last 6 months.

The subject's parents or legal guardians were informed of the scope of the investigation and its purposes and possible benefits for their children. Those in agreement proceeded to sign the corresponding National Rehabilitation Institute (INR) form.

To identify children with ADHD, a multidisciplinary assessment was carried out in which the services of Neurology, Psychology, Child Psychiatry, Neuropsychology, and Neurophysiology, as well as the opinion of parents and teachers, were involved through the DSM-V questionnaires, respectively. Diagnosis was performed in terms of the


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coincidence of all of the evaluations in at least two different ambits. The children were classified according to each of the following three subtypes of Attention Deficit Disorder (ADHD) recognized by the DSM-V: Combined (ADHD-C), with a predominance of Inattention, ((ADHD-I) and with a predominance of Hyperactivity-Impulsivity (ADHD-HI)

Manifest anxiety was evaluated in the children through the CMAS-R questionnaire, subtitled "What I Think and Feel" by means of programmed video calls. This instrument that consists of 37 items, designed to assess the level and nature of the anxiety in children and adolescents from 6-19 years of age, consists of five scores: The Anxiety score is based on 28 anxiety items. These 28 items are also divided into three anxiety subscales: Physiological anxiety (10 items); Restlessness/ Hypersensitivity (11 items), and Social/concentration concerns (7 items). The nine CMAS-R remaining are part of the Lies subscale to detect conformity, social convenience, or the deliberate falsification of answers. The natural score in each subscale is the number of items marked "Yes" for that subscale.

To evaluate the quality of life of the subjects, we applied the AUQUEI instrument to them through programmed video calls. AUQUEI is a specific questionnaire for the child population that provides a satisfaction profile from the child's point of view, adapted and validated in the Spanish language (García Fernández et al., 2000) directed to children from 6-12 years of age. It comprises 26 questions that explore familial, social, activity, health, body functions, and separation dimensions. Scores of 0, 1, 2, and 3 correspond, respectively, to very unhappy, unhappy, happy, and very happy, which entertain the possibility of achieving a unique score of as the result of the sum of the scores attributed to the items.

These are grouped into four factors: F1: Family and relational life; F2: Idleness F3: Separation; F:4 Performances explores the physical and mental state of the child in terms of their classroom performance. The questionnaire has four sections, which are utilized to facilitate understanding.

Prior to the COVID-19 pandemic, the Wechsler (WISC-IV) test was applied with the child present. This is the Intelligence Scales Revised for Scholastic Level, in order to know the Intelligence Quotient (IQ) of the subjects, to discard those with an IQ of less than 90.

## STATISTICS

Central tendency and dispersion measurements were calculated for quantitative variables. For qualitative measurements, we calculated percentages. The inferential analysis was carried out calculating the Spearman correlation coefficient test-retest and the uni- and multivariate Analysis Of Variance (ANOVA) with the Tukey post-hoc determination. The internal consistency of the questionnaire (AUQUEI) was calculated with the Alpha-Cronbach reliability coefficient for the 126 items making up the instrument, and likewise for the CMAS-R questionnaire. The statistical analysis was performed with a significance level of $p = 0.05$. The SPPS version 21 statistical software package was utilized.

## RESULTS

The sample was made up of 185 subjects including 134 boys (72%) and 51 girls (27%) aged between 7 and 12 years, with a 7.7 ± 2.5 Mean+ Standard deviation [SD).

There were 136 subjects with ADHD, distributed in the clinical subtypes: 62 (33.3%) subjects with Combined type; 41 (22.2%); Inattentive, 33 (17.0%); Impulsive-Hyperactive and 49 (26.3%) with (Without ADHD). **(Table 1)**

**Table 1** Distribution of the population by the clinical subtype of ADHD

| Group | n | % |
|---|---|---|
| ADHD-C | 62 | 34 |
| ADHD-I | 41 | 21 |
| ADHD-H | 33 | 18 |
| Controls | 49 | 27 |
| | 85 | 100 |

ADHDC: Attention Deficit Hyperactivity Disorder-Combined Type; ADHD-I Attention Deficit Hyperactivity Disorder-Inattentive type; ADHD-H Attention Deficit Hyperactivity Disorder-Hiperactive type

There were 136 subjects with ADHD, distributed in the clinical subtypes: 62 (33.3%) subjects with Combined type; 41 (22.2%); Inattentive, 33 (17.0%); Impulsive-Hyperactive and 49 (26.3%) (Control group).

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Regarding clinical subtype and sex, it is observed that in the subtypes Hyperactive-Impulsive and Combined, there are more subjects of masculine gender, 75.8% and 71.0%, respectively, and in the Inattentive subtype, 31.7%, there are more subjects of feminine gender.

The means and standard deviations of the CMAS-R questionnaire and ADHD subtypes and control group were calculated

Significant differences were observed in the CMAS-R questionnaire (F = 0.98 gl 3, $p$ = 0.05 and F= 0.87 gl 3 $p$ = 0.05) under the heading of Physiological anxiety and in Total anxiety. The post-hoc analysis demonstrated differences between the ADHD-C and Control Group. **(Table 2)**

The internal consistency was investigated of the questionnaire (CMAS-R) with the Alpha-Cronbach reliability coefficient for the 27 items that made up the instrument, obtaining 37 items that make up the instrument, obtaining (α: 0.85), and the Spearman correlation coefficient test-retest, obtaining ($r$ = 0.84).

In the relation of the data of the AUQUEI questionnaire, it was observed that the average score under the heading of Total quality of life was higher in control group subjects 54.27%, the subjects of the group with ADHD was 50.85% on average, indicating to us a better quality of life in the control group.

In relation to the factors comprising the AUQUEI questionnaire including Family life, Idleness, Separation, and Performance, a difference was observed between between subjects in the control group and subjects with ADHD in Separation (F = 1.32, gl 3, p = 0.05), Performance (F = 2.6, gl 3, p = 0.05), and Total quality of life (F = 11.6, gl 3, $p$ = 0.05). The Tukey post-hoc analyses showed differences among the groups Control group and ADHD-C, ADHD-HI **(Table 3)**

Correlations were found between leisure and anxiety (rho = 0.74, $p$ = 0.01), total quality of life and restlessness/ hypersensitivity (rho= 0.76, p = 0.01), as well as between Separation and Total anxiety (rho = 0.84, p = 0.01) and

**Table 2** CMAS-R scale scores by subtest in the different groups of ADHD and the control group control

| CMAS-R questionnaire | Control group | | ADHD-C | | ADHDH-I | | ADHD-I | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | X | δ | X | δ | X | δ | X | δ | F | p |
| **Physiological Anxiety** | 4.51 | 1.37 | 4.5 | 1.35 | 4.27 | 1.48 | 4.15 | 1.42 | **0.98** | **0.05*** |
| **Restlesness/ Hypersensitivity** | 4.0 | 2.03 | .02 | 1.97 | 4.24 | 2.10 | 4.32 | 2.1 | 0.271 | 0.84 |
| **Social concerns/ Concentration** | 3.37 | 1.14 | 3.29 | 1.2 | 3.4 | 1.11 | 3.51 | 1.08 | 0.320 | 0.81 |
| **Total Anxiety** | 13.8 | 2.04 | 13.4 | 1.94 | 13.1 | 1.80 | 13.8 | 1.84 | 0.87 | **0.05*** |

*Statistically significant. CMAS-R: children's manifest anxiety scale-revisited; ADHD: attention deficit-hyperactivity disorder; C: combined type; I: inattentive type; H: hyperactive type; SD: standard deviation.
Significant differences were observed in the CMAS-R questionnaire (F = 0.98 gl 3, p = 0.05 and F= 0.87 gl 3 $p$ = 0.05) under the heading of Physiological anxiety and in Total anxiety. The post-hoc analysis demonstrated differences between the ADHD-C and Control Group.
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**Table 3** AUQUEI questionnaire scores by subtest in the different groups of ADHD and the control group

| Questionnaire AUQUEI | Control Group | | TDAH-C | | TDAH-H-I | | TDAH-I | | F | P |
|---|---|---|---|---|---|---|---|---|---|---|
| | X | δ | X | δ | X | δ | X | δ | | |
| **Family life** | 7.79 | 2.8 | 8.06 | 3.02 | 7.82 | 3.1 | 7.54 | 2.8 | 1.82 | 0.05 |
| **Idleness** | 14.8 | 2.3 | 14.6 | 2.5 | 14.37 | 2.9 | 14.09 | 2.2 | 3.02 | 0.05 |
| **Separation** | 4.36 | 1.8 | 3.53 | 1.82 | 3.55 | 2.1 | 3.9 | 1.8 | 1.32 | 0.05* |
| **Performance** | 10.8 | 3.08 | 9.73 | 2.8 | 10.22 | 2.9 | 9.1 | 2.9 | 2.6 | 0.05 |
| **Total quality of life** | 54.3 | 11.4 | 50.7 | 9.4 | 51.08 | 11.6 | 50 | 9.8 | 1 1.6 | 0.05* |

ADHDC: Attention Deficit Hyperactivity Disorder-Combined Type; ADHD-I Attention Deficit Hyperactivity Disorder-Inattentive type; ADHD-H Attention Deficit Hyperactivity Disorder-Hyperactive type.

In relation to the factors comprising the AUQUEI questionnaire including Family life, Idleness, Separation, and Performance, a difference was observed between between subjects in the control group and subjects with ADHD in Separation (F = 1.32, gl 3, p = 0.05), Performance (F = 2.6, gl 3, p = 0.05), and Total quality of life (F = 11.6, gl 3, p = 0.05). The Tukey post-hoc analyses showed differences among the groups Control group and ADHD-C, ADHD-HI

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Performance and Total anxiety (rho = 0.74, p = 0.01), In subjects of the control group and ADHD-C

**Table 4** Significant correlations between the items of the Quality of Life questionnaire and the CMAS anxiety scale in children with ADHD and the control group

| Quality Life Questionnaire | Physiological Anxiety | Restlessness/ Hypersensitivity | Total Anxiety |
|---|---|---|---|
| Family and Relational Life | | | |
| Leisure | **0.74**** | | |
| Separation | | | **0.84**** |
| Performance | | | **0.74**** |
| Quality Life Total | | **0.79**** | |

Correlations were found between leisure and anxiety (rho = 0.74, p = 0.01), total quality of life and restlessness/hypersensitivity (rho= 0.76, p = 0.01), as well as between Separation and Total anxiety (rho = 0.84, p = 0.01) and Performance and Total anxiety (rho = 0.74, p = 0.01), In subjects of the control group and ADHD-C

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We calculated the internal consistency of the AUQUEI questionnaire with the Alpha-Cronbach reliability coefficient for the 26 items of the instrument, obtaining (α: 0.83), and we applied the Spearman correlation coefficient test-retest, obtaining ($r$ = 0.84).

## DISCUSSION

The objective of the present study was to evaluate anxiety and quality of life in schoolchildren with ADHD during the confinement due to the COVID-19 pandemic in a sample of schoolchildren.

Confinement due to COVID-19 has had a serious impact on children and adolescents. A low-risk community sample of each of four adolescents informed relevant clinically depressive symptoms during the first COVID-19 lockdown. Greater symptoms of early internalization and a lower quality of familial functioning increased the risks.[16]

In a similar manner, it was demonstrated that during the COVID-19 pandemic, confinement affected mental and emotional health and the quality of life of children, adolescents, and adults.[17]

Other studies were conclusive on mentioning the identification of stressful factors during the quarantine, such as fear, frustration, boredom, uncertainty on not knowing anything about the virus, and the pandemic was very impacting on the familial economy[18]

The infants and adolescents population affected by the SARS-CoV-2 virus pandemic has continued to entertain social stimuli, but it has been observed as radically decreased in its variety, due to confinement and to the social-distancing ordinance, which have led to a radical change in their life habits, with the closure of schools and the limitations in relations with peers and of psychomotor activities outside the home.[19]

In this sense, it is observed that the COVID-19 pandemic and confinement can exert a negative impact on the mental health of adolescents, although there are as yet no data, to our knowledge, on the long-term impact of this crisis. The individual, familial, and social vulnerability of adolescents, as well as the capabilities of individual and familial coping, are factors related with adolescent mental health in times of crisis. The global situation could be prolonged or be repeated.

After adjusting for the prior measurements of psychopathology, the worst mental health of adolescents during the COVID-19 lockdown was associated with few healthy activities, the worsening of relations with others, and a dysfunctional upbringing style. It appears that it is important to mitigate psychological stress in a situation of isolation due to a state of emergency, maintaining the adolescent active and engaged in their daily habits and routines in a non-conflictive environment and affording support to the parents.[20]

The results of this survey study suggest a high prevalence of mental-health problems among students who underwent confinement, which underscores the need to reinforce prevention, vigilance, and access to care.[21]

As the United Nations (U.N.) indicated recently, although the COVID-19 crisis is, in the first place, a crisis of physical health, If the measures are not taken, it will also be a great mental health crisis.

Mental health, which is critical for the good functioning of society, should be at the front and center of the response of every country to the COVID-19 pandemic and recovery from it. The mental health and well-being of entire societies have been seen to be seriously affected by this crisis and are a priority that should be approached with urgency.[22]

Investigations carried out prior to the pandemic found that students with special educative needs present high indexes of anxiety and depression, influencing their perception of their quality of life.[23]

During the pandemic, it is mentioned that the fact of finding oneself under confinement affects mental health,

emotional health, and the quality of life of children, adolescents, and adults.[24]

In particular, this impact can be greater in children with ADHD due to the very characteristics of this disorder, this due to the lack of socialization to which they are accustomed and as well to the realization of extracurricular activities in the open air, affecting their quality of life in an important way.[25]

On the other hand, De Alba Villegas et al. in 2021 mention that social isolation, on-line classes, and the restriction of social interaction are affected on their having to change their contextual structure.[26]

In similar fashion, Lavigne et al. in 2021 noted that in adolescents during COVID-19 confinement, these individuals were affected in terms of their mood, feelings, familial life, and the recreational activities that they carried out in their free time.[27]

According to a study conducted by the Organization for Co-operation and Economic Development (OCED), in which male and females were surveyed throughout the Mexican Republic and between the ages of 13 to 25 years, the survey was responded to voluntarily by 3,726 individuals;15% of the surveyed population declared feeling that they were in failing health "nearly every day", and this rose to 22% in May 2020. These persons manifested feeling very stressed; as the months of confinement stretched on, tension and anxiety increased.[28]

We find the current COVID-19 pandemic and confinement to be a psychosocial adversity that threatens the stability of the family. Such a stressor can cause the exacerbation of the symptoms of a prior mental disorder. Children and adolescents with psychiatric disorders. Comprise a vulnerable population that requires specialized care. Telepsychiatry has become a modality of multiple advantages.[29]

According to the results of some investigations, it is necessary to put a halt to the negative effects of the COVID-19 blockade. We recommend parental supervision of the screen time of adolescents. Policy formulators should prioritize the health of adolescents in order to guarantee that the future confinement is not accompanied by negative effects.[30]

Abusive screen use and social isolation are some of the most common effects of confinement. Much information had also been received on cases with ADHD profiles and disruptive behaviors. The latter have required therapeutic accompaniment, above all with the families. The impression is that, when this accompaniment has been adequate, the families have undergone an improvement.[31]

These studies are congruent with our results, observing that from before the confinement due to the pandemic, adolescents already were observed to be affected in their mental health; our results demonstrate how the pandemic has created a worldwide crisis and an increase in mental-health disorders, the most affected being the vulnerable groups with neurodevelopmental diseases such as ADHD.

## LIMITATIONS

Our study entails some limitations. It is necessary to study a larger population in order to obtain more consistent results and to carry out a long-term, prospective follow-up, which will serve to strengthen our results.

## CONCLUSIONS

The pandemic has created serious concerns about the mental health of children and their families during confinement. According to our results, there is an increase in the indicators of anxiety in the group of subjects with ADHD on comparing them with the control group. Similarly, there is a diminution in the quality of life of subjects with ADHD; the subjects of the control group also experienced a decrease in their quality of life and presented indicators of anxiety, but to a lesser degree. It is observed that, in general, the characteristics of the children, such as disobedience, impulsivity, and hyperactivity and fluctuations in their behavior increased due to the pandemic, having repercussions on the emotional well-being of the family; therefore, there is the need for the intervention of specialists in the matter for the orientation of the parents and the care of boys and girls diagnosed with ADHD.

Likewise, measures should be adopted that can be implemented in mental- health care centers and in schools, and the use of therapies, principally behavioral cognitive therapy, with the objective of restructuring automatic negative catastrophic, and pessimistic thoughts about the future.

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