

RESEARCH

Positive mental health in adolescents who study high school during COVID-19 pandemic**Salud mental positiva en adolescentes que cursan bachillerato en tiempos de COVID-19****Saúde mental positiva em adolescentes que cursam o ensino médio durante a pandemia de COVID-19**Marcela Padilla-Languré ^{1*} <https://orcid.org/0000-0002-3370-072X>Blanca Escobar-Castellanos ² <https://orcid.org/0000-0001-9239-0461>Juan Alberto López-González ³ <https://orcid.org/0000-0001-5751-6137>Narce Dalia Reyes-Pérez ⁴ <https://orcid.org/0000-0001-9735-1402>

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Abstract

Introduction: Positive mental health involves a mix of personal and psychosocial resources, as well as attitudes, affections, and positive behaviors that allow the person to face the challenges that arise in life, at a personal, family, social, and school level. **Objective:** Determine the association between personal factors and positive mental health in high school students during COVID-19. **Methodology:** Descriptive correlational study. Intentional non-probabilistic sampling. The sample consisted of 210 students of both sexes, ages 15 to 19, enrolled in cycle 2022-1 of the morning shift. Adolescents with visual conditions were excluded. A personal factors study and Positive

Mental Health Scale were applied, with prior assent and informed consent. The statistical analysis was descriptive and inferential. **Results:** The students were 64.8% female, 76.1% were under 17 years of age, 53.3% were in the sixth semester, 42% presented COVID-19 and 45% reported losses due to COVID-19. Global positive mental health was low in 50.5% of students. There was a significant positive statistical association in overall positive mental health with sex $p=0.01$, and a negative one with suffering from a mental illness $p=0.01$ and having family members who suffered from a mental illness $p=0.05$. **Conclusion:** Mental health of young people was not very positive. It needs to be studied to generate nursing interventions for promotion and prevention of school health to result in effective stress management of young people who are in high school when considering the family, society, and the educational field.

Key words: Mental health; Adolescents; COVID-19; Nursing (DeCS).

Resumen

Introducción: La salud mental positiva involucra una mezcla de recursos personales y psicosociales, actitudes, afectos y comportamientos positivos que permiten a la persona enfrentar los retos que se le presentan en la vida, a nivel personal, familiar, social y escolar. **Objetivo:** Determinar la asociación entre factores personales y la salud mental positiva en estudiantes de bachillerato en tiempos de COVID-19. **Metodología:** Estudio descriptivo correlacional. Muestreo intencional no probabilístico, en una muestra de 210 estudiantes de ambos sexos, edades de 15 a 19 años, inscritos en ciclo 2022-1 del turno matutino. Se excluyeron adolescentes con afecciones visuales. Se aplicó encuesta de factores personales y Escala de Salud Mental Positiva, previo asentimiento y consentimiento informado. El análisis estadístico fue descriptivo e inferencial. **Resultados:** Los estudiantes fueron 64.8 % del sexo femenino, 76.1 % eran menores de 17 años, 53.3 % cursaban sexto semestre, 42 % presentó COVID-19 y 45 % manifestó pérdidas por COVID-19. La salud mental positiva global fue baja en 50.5 % de los estudiantes. Hubo asociación estadística significativa positiva en salud mental positiva global con sexo $p=0.01$, y negativa con padecer alguna enfermedad mental $p=0.01$ y contar con familiares que padecían alguna enfermedad mental $p=0.05$. **Conclusión:** La salud mental positiva de los jóvenes fue baja; se requiere ser estudiada para generar intervenciones de enfermería en promoción y prevención de la salud escolar para favorecer un afrontamiento efectivo del manejo el estrés de los jóvenes que cursan bachillerato al considerar a la familia, la sociedad y al ámbito educativo.

Palabras clave: Salud mental; Adolescentes; COVID-19; Enfermería (DeCS).

Abstrato

Introdução: A saúde mental positiva envolve um conjunto de recursos pessoais e psicosociais, atitudes, afetos e comportamentos positivos que permitem à pessoa enfrentar os desafios que surgem na vida, a nível pessoal, familiar, social e escolar. **Objetivo:** Determinar a associação entre fatores pessoais e saúde mental positiva em estudantes do ensino médio em tempos de COVID-19. **Metodologia:** Estudo descritivo, preditivo e correlacional. Amostragem não probabilística intencional, amostra 210 estudantes de ambos os sexos, com idades entre 15 e 19 anos, matriculados no ciclo 2022-1 do turno da manhã. Foram excluídos os adolescentes com problemas visuais. Foram aplicados inquérito de fatores pessoais e Escala de Saúde Mental Positiva, com



prévio assentimento e consentimento informado. A análise estatística foi descritiva e inferencial. **Resultados:** Os alunos eram 64,8% do sexo feminino, 76,1% tinham menos de 17 anos, 53,3% estavam no sexto semestre, 42% apresentaram COVID-19 e 45% relataram perdas por COVID-19. A saúde mental positiva global foi baixa em 50,5% dos estudantes. Houve associação estatística positiva significativa na saúde mental geral positiva com sexo $p=0,01$, e negativa com sofrer de doença mental $p=0,01$ e ter familiares que sofriam de doença mental $p=0,05$. Conclusão: A saúde mental positiva dos jovens foi baixa, necessita ser estudada para gerar intervenções de enfermagem na promoção e prevenção da saúde escolar para promover o enfrentamento eficaz do manejo do estresse dos jovens que estão no ensino médio quando se considera a família, a sociedade e o campo educacional.

Palavras-chave: Saúde Mental; Adolescentes; COVID-19; Enfermagem (DeCS).

Introduction

Mental health (MH) is considered a state of well-being and an integral component, in which individuals tend to recognize the skills and abilities they adopt to cope with stress in everyday life ⁽¹⁾. For its part, the World Health Organization (WHO) ⁽²⁾ defines positive mental health (PMH) as a series of guidelines that do not involve biomedical or behavioral models; understood as the state of optimal functioning of individuals and the promotion of the qualities of the human being to facilitate its maximum potential ⁽¹⁻³⁾. It is noted that mental disorders are increasing every day, since half of the cases occur since early adolescence, but the majority are not detected on time, which is why they do not receive adequate treatment in a timely manner, thereby increasing the number of suicides that represent the third cause of death worldwide among adolescents between the ages of 15 and 19, mainly ⁽⁴⁾.

Adolescents worldwide comprise one sixth of the population, of which approximately 1.5 million young people and young adults between the ages of 10 and 24 died by 2021 ⁽⁵⁾. In Mexico, the number of pathologies related to MH are in high percentages, since 7.6 % of the adolescent population once thought about suicide with a prevalence of 6.5 % in 2022 ⁽⁵⁻⁶⁾, it was women who appeared with the highest prevalence compared to men, both in thoughts and attempts of suicide ⁽⁶⁾. Regarding this population in the State of Sonora, Mexico, according to INEGI in the years from



2020 to 2022, it was calculated that of the population of 2,944,840, a percentage of 8.6 % were adolescents between 15 and 19 years old, registering 304 of them as deaths due to suicide, represented by 11.2% in relation to the total number of violent deaths reported, and the population with limitation in mental activity registered 12,400 persons ^(2,7). This age group shows a high degree of vulnerability, although they are considered healthy, many of them die prematurely due to accidents, suicides, violence, complications related to pregnancy and preventable or treatable diseases ^(2,4,8).

The presence of the Sars-Cov2 virus that causes the COVID-19 disease that led to a pandemic, in addition to the lack of knowledge about it and its complications, has negatively affected the MH of the entire population, and especially groups population in vulnerable conditions such as adolescents, who are victims of abuse toward their person and identity. It has been reported that 20.4% of them expressed suicidal ideation and presented depression at mild, moderate, and severe levels ^(3,9), this combined with the isolation, social distancing and quarantine to which they were exposed; generated other types of situations that continue to put the PMH in risk. At the same time, various investigations have identified symptoms of anxiety, stress, depression, personal depreciation, psychological and physical manifestations, as well as alteration in the sleep pattern, including suicidal ideations in high school and higher education students ^(2,6).

Another fact to consider is that, in this stage of development which includes great changes at a physical, psychological, emotional, cognitive, and social level, there are very high rates of suicide due to problems in family coexistence or love situations, depression, alcohol abuse and drugs, among others; problems that are often emphasizes when they attend high school ^(6,9,10,13).

Currently, given the situation due to the COVID-19 pandemic, it is possible to use the conceptual framework of the PMH as a multifaceted construct since Lluç, based on Johada's positive psychology ⁽¹⁴⁻¹⁶⁾, proposed mechanisms to work in the PMH of people in special situations, due



to the negative impact on the health of population, particularly in vulnerable population groups such as health professionals, women, adolescents, older adults among others ⁽¹⁷⁾. Therefore, it is of great interest to work on the PMH due to the increase in the presence of mental disorders, with depression and anxiety being the main causes of mental pathology and disability in adulthood, among other factors that violate well-being and the PMH ⁽⁴⁾. It is important to identify when young people are showing normal or pathological symptoms of these disorders, as it constitutes a public health problem that must be addressed early ⁽⁶⁻⁹⁾. The PMH highlights the positive and healthy aspects of the MH ⁽¹⁴⁻¹⁶⁾ of psychologically healthy people, determined by the factors of Autonomy, Prosocial Attitude, Self-control, Personal Satisfaction, Problem Solving and Self-actualization, and Interpersonal Relationship Skills, *i.e.*, of those people who do not and will not suffer from psychiatric disorders, which corresponds to 80% or 90% of the population according to Lluich ⁽¹⁶⁾. Within the field of research, the nursing professional contributes to providing a continuous and close interaction among people, families, and communities, allowing a relevant and timely assessment of the adolescent population, as well as implementing interventions in those where risk factors are present or suffer from a mental condition, in order to provide effective care to promote and protect health ⁽¹⁷⁾. The nursing discipline faces new challenges in health services that imply the generation of strategies and policies that involve the service and care of MH and, above all, work at the community level at the first level of care, highlighting the protective factors with which adolescents count on, therefore, the study aims to determining the association between personal factors and PMH in adolescents who are studying high school in times of COVID-19.

Methodology

Descriptive correlational study. The population was made up of students belonging to a public high school educational institution in Hermosillo, Sonora, Mexico. Selected by intentional non-probabilistic sampling, with a sample of 210 students who met the inclusion criteria of being



between 15 and 19 years old, being of both sexes, being enrolled in the 2022-1 cycle in the morning shift, and who voluntarily accepted to participate in the research and complied with the necessary ethical considerations. Students with visual conditions and who were not present at the time of applying the instrument were excluded.

A study was applied which collected information on personal factors such as age, sex, semester, whether they experienced COVID-19 or any mental illness, whether they had family members with mental illnesses or if they had losses during the COVID-19 pandemic. The Positive Mental Health Scale (PMHS) built by Lluch in 1999, validated by Martínez in 2015 in the Mexican population was administered using a factorial structure of the scale through principal components analysis and Varimax rotation, obtaining a Cronbach's Alpha of 0.86⁽¹⁸⁻¹⁹⁾.

The SMP study consists of 39 items, it integrates six factors to be evaluated: a) Personal satisfaction (8 items), b) Prosocial attitude (5 items), c) Self-control (5 items), d) Autonomy (5 items), e) Problem solving and self-actualization (9 items) and, f) Interpersonal relationship skills (7 items)⁽¹⁹⁾. It has a four-level Likert-type measurement scale, the scores for positive items (+) always/almost always = 1, quite frequently = 2, sometimes = 3 and never/almost never = 4. This scale allows obtaining a global score for each factor, qualifying for a low level of 39 to 78 points, medium level of 79 to 117 and high level between 118 to 156⁽²⁰⁻²²⁾.

The study had an approval from the Ethics and Research Committee of the Department of Nursing with registration 134-2022 and authorization from directors of the educational establishment, in addition to this, the requirements stipulated in the General Health Regulations regarding research were respected and what is described in the articles that mention the protection of the privacy of the individuals. The research was considered risk-free, and the acceptance of assent and informed consent was taken into account⁽²³⁾. The study was



administered in the classrooms of the educational center with the support of the teachers within a period of 20 minutes after explaining the objective of the research to the participants.

The statistical analysis was carried out in the statistical software Statistics Package for the Social Sciences (SPSS v.25), through descriptive and inferential statistics with non-parametric tests, such as Mann-Whitney's U, Kruskal Wallis and Rho of Spearman to measure association.

Results

Participants were in an even semester from the second to the sixth semester, the majority of them were under 17 years of age, with a standard deviation (SD=1.0) with a predominance of the female sex, with 64.8 % enrolled, 53.8% in the last semester. 42 % presented COVID-19, of which 7 % suffered from some type of mental illness, at the same time, 45 % of the students had family losses caused by Covid-19, (Table 1).

Table 1. Personal factors of High School students of a public institution of Sonora, Mexico, 2022 (n=210).

Variables		f/ %
Sex	Man	74 (35.2 %)
	Woman	136 (64.8 %)
Age	< 17	160 (76.2 %)
	> 18	50 (23.8 %)
Semester	Second	64 (30.5 %)
	Fourth	33 (15.7 %)
	Sixth	113 (53.8 %)
Showed Covid-19 (Yes	88 (42.0 %)
	No	122 (58.0 %)
Presented mental illness	Yes	15 (7.0 %)
	No	195 (93.0 %)
Relatives with mental illness	Yes	45 (21.0 %)
	No	165 (79.0 %)
Losses due to Covid-19	Yes	95 (45.0 %)
	No	115 (55.0 %)

Source: Own-development

According to the PMHS factors, the highest averages were observed in personal satisfaction with 22.8 points, interpersonal relationship skills with an average of 18.4 points, problem resolution and self-actualization 17.6 points; the lowest averages were in autonomy with an average of 13.6 points,



self-control 11.7 points and prosocial attitude with an average of 8.2 points. According to the level obtained by factor, it was identified that all had a high level: interpersonal relationship ability 69.0%, personal satisfaction 67.1 %, self-control with 65.7 %, autonomy in 62.4 %, prosocial attitude with 59.0 % and problem resolution and self-actualization with 57.6 %. At a global level, the PMH reached a low level in 50.5 % of the students, and 49.5 % achieved a high score, (Table 2).

Table 2. Global positive mental health level in accordance to PMHS factors, 2022. (n=210)

Factors	Min.	Max.	Avg.	Deviation	High	Low	Alpha Cronbach
					% > Avg.	% < Avg.	
Prosocial attitude	5	16	8.2	2.2	59.0	41.0	0.526
Self-control	5	20	11.7	3.2	65.7	34.3	0.765
Personal satisfaction	11	42	22.8	4.5	67.1	32.9	0.792
Interpersonal Relationship Skills	11	25	18.4	2.6	69.0	31.0	0.657
Autonomy	5	20	13.6	3.7	62.4	37.6	0.781
Problem solving and self-actualization	9	29	17.6	4.6	57.6	42.4	0.767
Global positive mental health	45	116	79.1	16.1	49.5	50.5	0.898

Source: Own-development

In relation to the association of the PMH with the personal factors of the adolescents, it was found that age, sex, and suffering from a mental illness showed significant statistical associations with $p < 0.05$, (Table 3).

Table 3. Association of positive mental health with personal factors of students, 2022 (n=210).

Personal Factors	Positive mental health		
	Statistician	gl	P
Age	38.308a	3	0.000
Sex	4124b		0.013
Semesters	0.2294a	2	0.863
Has been sick due to COVID-19	5307b		0.871
Present some mental illness	772.5b		0.000
Relatives who present mental illness	3427.5		0.362
Losses due to COVID-19	5142.5		0.399

Source: Own-development

a. Kruskal Wallis test b. Mann-Whitney test.



When performing correlations between global PMH and its factors, a significant positive statistical association was shown only with prosocial attitude and self-control, with $p= 0.01$, (Table 4).

Table 4. Association of factors with global positive mental health in High School students, 2022.

Factors	Global positive mental health
Prosocial attitude	.379**
Self-control	.394**
Personal satisfaction	-0.605
Interpersonal relationship skills	-0.99
Autonomy	-0.548
Relation of problems and self-actualization	0.56

Source: Own-development

**The significant correlation at level 0.01

Discussion

Based on determining the association between personal factors and PMH in high school adolescents during times of COVID-19, it was possible to identify that the students were mostly women, under 17 years of age, who attended the sixth semester of high school. These results are coincident with some studies reporting that women constituted the largest population studied at this level of schooling ⁽⁶⁾, even though it is mentioned that there are more men in the age ranges of 15 to 19 years, and that women correspond to a little more than half of the total population ⁽⁷⁾. Regarding the educational sector, upper secondary education in the state of Sonora reported that there is a greater enrollment of women at this level and the ages of 17 years correspond to the semesters taken according to their age ⁽²²⁻²⁵⁾.

It was evident that less than half of the students suffered from COVID-19, a minority presented some type of mental illness, a quarter of their family members had mental pathology and just under half reported having had some family loss due to COVID-19. The fact that one or some of the family members had to go out to work with the consequent risk of contracting the disease, constituted a constant danger for the family due to the possibilities of contagion to the rest of its members, which generated the presence of depressive states, high stress levels and fear of suffering



from the disease, as well as situations of grief in the event of the loss of loved ones, which would lead to the possibility of affecting both the physical and psychological well-being of the adolescent and its family ⁽¹²⁾.

The data indicated that the global PMH had a significant statistical correlation with the sex of the students, suffering from a mental illness and having relatives with disorders of this type, which may result that the characteristics of each sex in the stage of development they go through, and the role they play in the school, family and social environment, as well as the fact of living in an urban area can affect their mental health, since they are established as sources of stress ^(10,26). The PMH is a construct that still does not have a single definition, since it has only focused on working on mental health from a biological perspective, seeking only negative aspects of MH without considering the protective factors and coping resources with which in this case, adolescents count, who, having faced stressful contexts such as the international emergency due to the presence of COVID-19, declared as global pandemic in March 2020, placed them at high risk of presenting mental disorders and illnesses that influenced their well-being, taking into account that during adolescence factors such as a high level of energy and socialization converge, which were altered by confinement ^(20,27).

Regarding all the PMHS factors such as prosocial attitude, self-control, personal satisfaction, interpersonal relationship skills, autonomy, problem solving and self-actualization, a high level was revealed in just over half of the students, this showed high scores. Moreover, obtained in the factors of interpersonal relationship skills, personal satisfaction, self-control and autonomy reported in a study ⁽²⁸⁾.

The global SMP was low in just over half of the population studied; these results are contrary to a study ⁽²⁹⁾ that showed that three quarters of its sample obtained a high level. On the contrary,



another study reported that three quarters of the students obtained a medium level, followed by low by just over a tenth and only a minority obtained high.

In relation to the statistical correlations, significance was reflected in a prosocial attitude with suffering from a mental illness, the sex of the young people was significantly correlated with self-control, personal satisfaction, autonomy, problem solving and self-actualization. Similar aspects were reported in a study where similar results were identified in self-control, arguing that, at this stage of development, young people are still in the socialization phase, which allows them to progressively work towards achieving a certain degree of maturity ⁽²⁹⁾. Likewise, several researchers showed that students with an average age of 19 years had a significant statistical association with being satisfied with life, having good resilience, and doing some physical activity ⁽³⁰⁾. Another study reported that the PMHS factors obtained significant correlations between counting with the support perceived from family and friends ⁽¹⁹⁾ and showed an association in global PMH ⁽³¹⁾.

At the same time, suffering from a mental illness maintained statistical significance with the factors of prosocial attitude, personal satisfaction, interpersonal relationship skills, autonomy, problem solving and self-actualization, and the global PMH, with respect to the factors associated with the presence of some mental illness and relatives who suffered from these pathologies, these conditions affect family dynamics and relationships ⁽³²⁾, becoming risk factors for adolescents who are a vulnerable population, because emotions are relevant to life and health, affecting their educational development inside and outside the school environment, which is why it should be considered a primary aspect by teachers and school health professionals ^(33,34).

In relation to the use of the PMHS in the adolescent population, it obtained a good reliability of .898 in its overall construction, which indicates that it is a reliable instrument to be applied in future studies, this is similar to what was reported by Colombian authors, who considered young people



in their sample, where they showed in the factor analysis a correspondence with the six factors of the original version of the scale, with an explained variance of 43 %, and acceptable reliability indicators for each factor and correlations between items ⁽³⁵⁾.

It is important at this stage of the student's educational and psycho-emotional development to have the support of health professionals, especially nursing at the school level, teachers, and family members to help them develop social skills, which were necessary in the confinement stage. because researchers found an important correlation between social skills and functionality in family dynamics, which could manifest in a low level of development of the students ^(36,37), which is why it is relevant that adolescents work on consolidating and increasing their social skills that allow them to face and prevent certain cases of antisocial or disruptive behavior in the areas where they develop. A community care model in mental health care is recommended in order to be multi and interdisciplinary, emphasizing the value of creating job profiles that support the young people population by having social educators, occupational therapists, social workers and incorporate nurses who work to improve and maintain the mental health of children and adolescents in their developmental context ⁽³⁸⁾.

Conclusions

The population of high school adolescents studied in times of COVID-19 showed that more than half of the population presented high levels in all the factors of the PMH scale, however, at a global level it was low in just over half of the study population, probably attributed to the confinement situation caused by the COVID-19 pandemic and some characteristics corresponding to the personal factors of each student. The established containment strategies were important to prevent and contain the rate of infections and deaths from the disease, however, they affected the PMH of the general population, especially adolescents who presented consequences to the detriment of their mental health due to affectation in the physical, social, educational, economic, and psychological



environment. Therefore, it is a priority to establish nursing strategies aimed at preserving the mental health of the most vulnerable population, from the first stages of development such as childhood and adolescence, where the foundations of comprehensive mental health are forged, considering the family, society and the educational field; in addition to working from public health and with health professionals in the development of strategies and public policies that impact the community in the family environment, taking into consideration individual and social factors for the benefit of new generations.

Conflict of interests

The authors declare that there is no conflict of interests.

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