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Lifestyles of university students: analyzing the role of social support and family dynamics

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Abstract

Background Youth is a critical stage for developing healthy lifestyles, as the habits and behaviors formed during this period can persist into adulthood. Understanding the relationship between family factors and the lifestyles of university students can contribute to creating strategies to improve this important health determinant. This research aimed to analyze the relationship between social support, family dynamics, and lifestyles in young university students. Design: A cross-sectional descriptive study.

Methods A probability sample of 530 young university students was analyzed. The main measurements included social support, family dynamics, and lifestyles. Descriptive analysis of quantitative and qualitative variables was performed. Pearson correlation coefficient was used for bivariate analysis, and Student's t-test was used to analyze differences between male and female participants. Additionally, multivariate analysis was conducted using multiple linear regression.

Results For the total sample, a positive and moderate association was found between family dynamics ($r=0.28$) and social support ($r=0.32$) with the lifestyles of young individuals.

Conclusions Our results indicated that social support and family dynamics are possible protective factors that have a positive effect on the lifestyles of university students. The findings of this study highlight the importance of family and familial support in adopting healthy lifestyles among university students.

Keywords Young adult, Healthy lifestyle, Family dynamics, Social support, Student health

Background

Lifestyle has become an important determinant of health in the development of public policies in the fields of health promotion and disease prevention [1]. According to Cockerham [2], lifestyles are forms of collective behavior determined by decisions made within a context and

in relation to different life opportunities. Additionally, these factors influence well-being and reflect inequalities based on age, gender, ethnicity, and socioeconomic status, shaped by complex social determinants. The concept of healthy lifestyles encompasses a wide range of health behaviors supported by group norms and identity [1, 3]. These decisions include behaviors that can reduce the risk of disease, such as stress management, recreation and healthy use of time, nutrition, adequate sleep patterns, and physical activity. Other behaviors are associated with an increased risk of disease, such as alcohol consumption, smoking, the use of psychoactive substances, and psychotropic medications, among others.

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The university stage often coincides with the transition to early adulthood, marked by the formation of new social relationships within the university context and the emergence of behaviors that increase both present and future risks. The behaviors and habits adopted during university life tend to persist, making this stage crucial for the development of prevention, promotion, and health education initiatives [4–6].

Socioecological models of health highlight the importance of the family system and describe family environments as the most intimate context of influence on health [7, 8]. Family relationships (behavioral, psychological, and social) and social support in young people's lives directly influence health and well-being well into adulthood [9]. These two interrelated elements can exert a notable influence both in terms of physical and psychological health [10]. Family dynamics is a key concept in the lifestyles of young people that highlights the importance of relationships between family members. It refers to the outcome of the interaction among family members, influenced by a set of norms, rules, boundaries, hierarchies, and roles that allow for harmonious family functioning. Therefore, family dynamics is considered a critical factor for promoting well-being and preventing disease [11–13].

Understanding the relationship between family factors (family dynamics and social support) and university students' lifestyles could enable the creation of measures to improve students' health and quality of life, which would impact aspects related to personal, family, and work life. Most previous studies have analyzed the relationship between family dynamics and lifestyles, such as substance use (tobacco, alcohol, and illicit drugs) [14–16] or eating habits [17], focusing on adolescent populations. Research on university students is scarce and limited to understanding the relationship between family dynamics and illegal drug use [18] and alcohol consumption [19]. Despite the relevance of understanding this relationship, there is little evidence available. Additionally, there are no previous studies that relate family dynamics to a comprehensive measure of lifestyles in university students.

Social support, according to Sarason et al. [20], is understood as the existence or availability of people we can rely on who make us feel that they care about us, value us, and love us. Social support encompasses two dimensions: perceived social support, which represents an individual's assessment of the social support they receive, and received social support, which refers to the nature and frequency of supportive interactions [21, 22]. Cantero et al. [23] found a wide variety of providers of social support, which can include different types of individuals in an individual's life, such as family, friends, partners, parents, school, community, and neighbors, among others. When positively valued, perceived social support can promote healthy lifestyle behaviors and coping

with daily stressors and personal crises [24, 25]. Previous studies that have evaluated the relationship between perceived social support and lifestyles in university students have focused on analyzing this relationship in a limited way, considering only one or two health behaviors. Available studies have primarily investigated the relationship between social support and physical activity [26–28], alcohol consumption [29], eating habits [30], and sleep [31]. These studies highlight the importance of social support in successfully navigating this stage of life and the lifestyles present within it.

In this sense, further research is needed to deepen the understanding of social support perceptions among university students and their impact on lifestyles. Despite the importance of understanding this relationship, studies conducted in our country on university populations in this area are scarce and do not include a comprehensive measure of lifestyles. For all these reasons, our objective is to analyze the relationship between family dynamics, social support, and lifestyles in university students.

Methods

Study design

Cross-sectional descriptive study.

Population and sample

The study population consists of undergraduate students enrolled in public universities in Andalusia/Spain for the academic year 2021/2022.

The sampling method used was multistage cluster sampling (primary sampling units: universities, secondary units: academic departments, tertiary units: degree programs, and final sampling units: class groups), followed by simple random sampling. The sample selection was carried out in 5 phases: (1) Given the heterogeneity in the number of enrolled students at each Andalusian public university, in the first phase, we stratified the universities into large (>15,000 students) or small (<15,000 students) categories. The large universities selected randomly were those in Seville and Granada, and the small universities selected were those in Huelva and Jaén. (2) To ensure representativeness of each stratum (large/small universities), the number of students included in the sample was proportional to the number of students enrolled in each stratum. (3) To ensure representativeness of the different fields of knowledge, we distributed the class groups across each field. (4) To ensure representativeness of the academic year and thus account for the age of the students, we selected 4 class groups from the 1st year, 4 from the 2nd year, 3 from the 3rd year, and 3 from the 4th year. (5) Convenience sampling was used to select class groups in each university.

A minimum sample size of 361 participants was calculated. This sample size was determined based on three

considerations: (1) to estimate the mean of the Personal Lifestyle Questionnaire (PLQ) with a precision of ± 1 units, considering the estimated standard deviation to be 8.0. (2) This size is sufficient to detect a correlation coefficient of at least 0.13, with a statistical power of 80% and a statistical significance level of 5%. (3) This size can detect an r^2 of at least 0.05 attributed to 1 independent variable adjusted for 3 control variables with an additional r^2 of at least 0.01, all with a statistical power of 80% and a significance level of 5%. Sample size calculations were performed with PASS 2021 (NCSS, LLC. Kaysville, Utah, USA). The sample comprised 530 university students.

Eligibility criteria

Inclusion criteria Being a member of the selected sample classroom (class group), voluntary acceptance to participate in the study, and being between 18 and 24 years of age.

Exclusion criteria Suffering from a visual impairment that hinders questionnaire reading and insufficient understanding of the Spanish language to comprehend the questionnaires.

This study was approved by the Research Ethics Committee of the Provincial Research Ethics Committee of Jaén (1192-N-21.CEI). All participants signed the informed consent form.

Measures

Independent variables

Family dynamics Assessed through the Family APGAR questionnaire. The instrument consists of 5 questions with three response options on a Likert scale. Scores can range from 0 to 10, and the score value is considered a dichotomous variable (Apgar > 6 functional and Apgar < 6 dysfunctional) [32]. In the Spanish validation, the test-retest reliability of this instrument is 0.86, and it presented a Cronbach's alpha value of 0.84 [33].

Social support Assessed through the Duke-UNC-11 questionnaire, adapted for the Spanish population [34], it is a self-administered instrument comprising 11 items that use a Likert-type response scale from 1 to 5. Scores range from 11 to 55 points, and a cutoff point of 32 or higher indicates normal social support. This instrument has a Cronbach's alpha of 0.90 and test-retest correlations of 0.92 [34].

Dependent variable

Lifestyles This variable is measured through the Personal Lifestyle Questionnaire (PLQ) developed by Muhlenkampy and Brow [35]. In this research, we used the version of the instrument validated in Spanish university population (PLQ-Youth) [36]. The Cronbach's alpha for internal

consistency was 0.691 for males and 0.606 for females. The questionnaire comprises 28 items for females and 27 for males, with items measured on a Likert scale from 1 to 4. The questionnaire ranges from 28 to 112 points for females and from 27 to 108 for males. The PLQ-Youth is a synthetic health variable obtained through the measurement of personal lifestyles, where a higher score indicates better health behaviors. The mean value of PLQ-Youth obtained in the total population will be considered as the classification criterion for the subjects [36].

Sociodemographic and control variables

Sex, age, field of study (Social Sciences and Law, Engineering and Architecture, Arts and Humanities, Health Sciences, Sciences), and educational level of the father/mother (None, Primary Education, Secondary Education, and University Studies) were collected through an ad hoc questionnaire. Sex, age, and field of study were used as control variables. For the multivariate analyses, the variable field of study was dichotomized into health sciences / other fields of study.

Data collection

Data collection was conducted in September and October 2021 in the selected class groups. Prior to data collection, young people were informed about the objective and method of the research, emphasizing the voluntary nature of their participation, the confidentiality of the entire process, and the approval by the ethics committee. In addition, informed consent was obtained from all participants. Only one student declined to participate in the study.

Data analysis

Descriptive analysis of quantitative variables was conducted using measures of central tendency and dispersion, and for qualitative variables, frequencies, and percentages were calculated, with respective confidence intervals (CI). Bivariate relations for independent (family dynamics and social support) and control variables (age, sex, and field of study) with the dependent variable were performed using Pearson's correlation coefficient (for quantitative independent variables and control variables) and Student's t-test (with Cohen's d measuring effect size) for the dichotomous control variables (sex and field of study). Differences between participants' sex were analyzed using Student's t-test.

Furthermore, a multivariate analysis was conducted using multiple linear regression by adjusting a model to analyze the effect on the dependent variable (lifestyle) and introducing the independent variables separately, resulting in two models (Model 1: Family dynamics and Model 2: Social support), along with the control variables (age, sex, and field of study). Assumptions of the linear

Table 1 Sociodemographic Characteristics of the sample analyzed (N=530)

Characteristic		N	%	M	SD	95% IC
Age		530		20,11	1.7	19.9; 20.2
Year of study	1º	127	23.9			20.3; 27.8
	2º	120	22.6			19.1; 26.4
	3º	165	31.1			27.2; 35.2
	4º	88	16.6			13.5; 20.0
Sex	Male	230	43.4			39.1; 47.8
	Female	300	56.6			52.2; 60.8
University	University of Seville	201	37.9			33.7; 42.2
	University of Huelva	107	20.2			16.9; 23.9
	University of Granada	108	20.4			17.0; 24.1
	University of Jaen	114	21.5			18.1; 25.2
Undergraduate studies	Social Sciences and Law	226	42.6			38.3; 46.9
	Engineering and Architecture	124	23.4			19.8; 27.2
	Arts and Humanities	78	14.7			11.8; 18.0
	Health Sciences	61	11.5			8.9; 14.5
Father's education level	Sciences	41	7.7			5.6; 10.3
	None	20	3.8			2.3; 5.8
	Primary Education	109	20.6			17.2; 24.2
	Secondary Education	222	41.9			37.6; 46.2
Mother's education level	University Studies	159	30			26.1; 34.1
	Don't know/No answer	20	3.8			2.3; 5.7
	None	11	2.1			1.0; 3.6
	Primary Education	92	17.4			14.2; 20.9
Secondary Education	231	43.6			39.3; 47.9	
	University Studies	188	35.5			31.4; 39.7
	Don't know/No answer	8	1.5			0.6; 2.9

M: Mean; DT: Standard deviation; CI: Confidence interval

Table 2 Descriptive data of study variables

Variable	Men N= 230				Women N= 300				p-value
	M	Theoretical range	SD	CI 95%	M	Theoretical range	SD	CI 95%	
Lifestyles	83.8	27–108	7.7	82.8;84.8	85.0	28–112	7.1	84.2;85.8	0.059
Family Dynamics	7.6	0–10	2.0	7.3; 7.8	7.4	0–10	2.5	7.1; 7.7	0.440
Social Support	43.9	11–55	7.8	42.9; 45.0	46.1	11–55	7.3	45.2; 46.9	0.001

SD: standard deviation; CI: confidence interval; M: mean

regression model were evaluated using the following criteria and analyses: (a) normality and homoscedasticity (residual plots), (b) linear relationship (partial regression plots), (c) independence of the residuals (Durbin-Watson statistic) and (d) no collinearity (collinearity statistics: Tolerance and Variance Inflation Factor).

A p -value<0.05 was used to define statistical significance in the bivariate and multivariate analyses. Analyses were performed using the SPSS Statistics 23 software, except for the CI of frequency measures, which were calculated using EpiDat 4.2.

Results

Description of the sample and the main variables

The total sample obtained comprised 530 university students from the Universities of Granada ($n=108$, 20.4%), Huelva ($n=107$, 20.2%), Jaén ($n=114$, 21.5%), and Seville

($n=201$, 37.9%); 56.6% were female, and the mean age of the participants was 20.1 years. Descriptive data of the sample are presented in Table 1.

Regarding the characteristics of family of origin, 71.9% of fathers and 79.1% of mothers had secondary or higher education.

Personal lifestyle questionnaire - PLQ-Youth

The average score for women on the PLQ-Youth was 85.1 (range: 66–105) with a standard deviation of 7.1. Considering the mean score as the cutoff point to determine healthy behaviors, 54% of women exhibit better health-related lifestyles. For men, the mean was 83.8 (range: 64–105), with a standard deviation of 7.7. The 57.8% of men exhibit better health-related lifestyles. The differences in means by sex were not statistically significant (Table 2).

Table 3 Bivariate correlations between the independent and control variables of the study and lifestyles

Independent variables	Dependent variable: Lifestyles		
	Effect size	Association size	p (Sig)
Family Dynamics	Pearson's r	0.28	0.000
Social Support	Pearson's r	0.32	0.000
Age	Pearson's r	-0.06	0.150
Sex (women)	Cohen's d	0.16	0.059
Field of study (Health sciences)	Cohen's d	0,44	0.001

Family dynamics

Regarding the family dynamics variable, the mean for women was 7.4 (range: 1 to 10) with a standard deviation of 2.4. 76.3% of women have functional families. For men, the mean was 7.6 (range: 0 to 10), with a standard deviation of 2.0. The 83.0% of men have functional families. The differences in means by sex were not statistically significant (Table 2).

Social support

The average social support score for women was 46.1 (range: 23 to 55), with a standard deviation of 7.3. The 85.6% of girls have a normal perception of social support. For men, the mean was 43.9 (range: 14 to 55) with a standard deviation of 7.8. The 91.7% of men have a normal perception of social support. The differences in means by sex were statistically significant (Table 2).

Bivariate analysis

Lifestyles were statistically positively and moderately associated with family dynamics ($r=0.28$; $p=0.000$), social support ($r=0.32$; $p=0.000$) and field of study (Health sciences; Cohen's $d=0.44$, $p=0.01$). There was no statistically significant association between lifestyles and sex (women; $p=0.059$) and age ($p=0.150$) (Table 3).

Multivariate analysis

The multivariate analysis (Table 4), adjusted for sex, age, and field of study, showed a positive and moderate association between the PLQ-Youth with family dynamics

($\beta=0.275$, $p=0.000$) (model 1) and social support ($\beta=0.325$, $p=0.000$) (model 2).

No assumptions were violated in the regression model. For example, the Durbin-Watson statistic for family dynamics was 1.928 and 1.921 for social support, and all tolerance levels were greater than 0.995.

Discussion

Our findings show that the majority of university students, both men and women, exhibit better health-related lifestyles; these results differ from previous studies. Research conducted in 37 countries with 148.839 adolescents aged 11 to 15 analyzed how age affects adolescents' healthy lifestyles and concluded that as adolescents grow older, the prevalence of healthy lifestyles decreases [37]. A systematic review that included articles published between 2014 and 2020 found that most university students in health-related fields have moderate levels of physical activity, unhealthy diets, high levels of stress, and inadequate sleep. Additionally, a high prevalence of tobacco and alcohol consumption was observed among these university students, and the authors concluded that health students do not practice a healthy lifestyle [38]. Another systematic review published in 2017 involving Hispanic American university students concluded that young people tend to adopt risk behaviors [39].

In youth and university life, young people may face a series of challenges that hinder both the adoption and maintenance of healthy lifestyles [6]. At this stage of life, substance use and lack of physical activity [40], can be exacerbated by external factors such as social pressure, media, social networks, and the environment in which they live. During this stage, social determinants become progressively more important, including the influence of friends, social networks, media, and the educational or work context [13, 38]. The Social Determinants of Health Model has demonstrated that contextual factors such as education, access to resources, physical and social environment, public policies, and culture, among other factors, significantly influence the choice of lifestyles [41]. In this context, it is important to explain the process of

Table 4 Multivariate Analysis of Family Dynamics and Social Support on lifestyles

	Dependent Variable: Lifestyles						
	B	SE	β	p-value	Tolerance	Durbin-Watson>	r ²
Model 1^{a,1}							
Family dynamics	0.887	0.134	0.275	<0.0001	0.995	1.982	9.5%
Field of study	-2.780	0.963	-0.120	<0.0001	0.995		
Model 2^{a,2}							
Social support	0.316	0.040	0.325	<0.0001	0.980	1.921	13.0%
Field of study	-2.865	0.952	-0.124	0.003	0.980		
Age	-0.499	0.177	-0.116	0.005	0.974		

Abbreviations. B; regression coefficients, SE: standard errors of regression coefficients, β : standardized regression coefficients. ^a Models were adjusted by age, sex, and field of study (dichotomous). ¹ Excluded variables (non-significant relationship with the dependent variable): age and sex. ² Excluded variables (non-significant relationship with the dependent variable): sex

forming lifestyles in university youth and to understand how differences in exposure to risk-generating factors (such as sedentary behavior or substance use) occur. It is also crucial to comprehend the different responses of individuals to an unfavorable environment; Diderichsen et al. [42] propose mechanisms that influence the variability of differential effects on health and, by extension, on lifestyles: differential power and resources of individuals, differential exposure, differential vulnerability, and differential consequences of illness or exposure. In other words, individuals, depending on their social background, may be differentially exposed to protective factors, opportunities, and other circumstances that influence healthy or risky choices, and they may also receive differential attention based on social background. Cockerham's theory [2] on the adoption and maintenance of a lifestyle posits that young people develop their behavior patterns through the interaction between their ability to make choices and the social and cultural context in which they find themselves. According to this theory, the decision-making process of young people is not an isolated event but is influenced by internal and external factors. While young people have some capacity to make decisions regarding their lifestyle, this ability is influenced by the social and cultural context in which they operate, which is shaped by behavioral models and social norms. Consequently, young people may adopt more or less healthy behaviors depending on their context [2, 41–44]. Therefore, for an adequate interpretation of the results, it is essential to consider all these elements together.

Our results show a positive and moderate correlation between family factors (family dynamics, social support) and health-related behaviors. Our findings are in line with previous studies that have demonstrated the importance of social support [45, 46] and family dynamics [14, 16] in promoting health and well-being among young people. These family factors can play a key role in adopting healthy lifestyles by providing a positive emotional and social environment that supports healthy behavior. On one hand, social support can offer motivation and assistance in making lifestyle changes [21, 22]; A systematic review conducted by Van Luchene [26] revealed that social support specific to physical activity can provide information, resources, and opportunities that facilitate participation in regular physical activities. This influence extends to other aspects of lifestyle, such as balanced nutrition, stress management, and prevention of risky behaviors and healthy diets [45–49]. Additionally, research with nursing students highlights the importance of social support in promoting healthy lifestyles as well as improving students' self-esteem [50]. On the other hand, family dynamics can influence young people's perceptions of the importance of health and the

adoption of healthy behaviors [11, 51]. Recent research, such as the study by Laghi et al. [17], has emphasized the significant influence of family functionality on binge eating and drinking behaviors. This finding highlights the importance of a cohesive and supportive family environment to mitigate the adoption of harmful habits among university students. Similarly, Silva et al. [16] support this association by finding a relationship between family dynamics and substance use in adolescents, underscoring the ongoing influence of the family environment on health and behavior during the transition to university life. Together, these findings support our results and highlight the importance of fostering support networks among university students, both academically and personally, and of interventions directed not only at the individual level but also at their families, to promote healthy lifestyles and prevent risky behaviors during this stage of significant personal change.

Our findings underscore the importance of social support and family functionality in the complex process of multiple factors influencing the adoption of lifestyles among university students. Key public health actions for young people include violence prevention, facilitating access to quality healthcare services, access to housing, promoting employment, reducing health inequalities, improving accessibility to health services, and addressing diseases, sexually transmitted infections, and injuries [13]; These public health measures should be implemented with a focus not only on reducing exposure to known risk factors but also on strengthening support and the capacity for response and resilience [44, 52]. In this regard, some proposals for future research could include early detection of families at risk, as well as training and capacity-building for professionals in the field of family interventions; in this context, primary healthcare can play a central role.

Regarding limitations, our study does not allow for establishing causal conclusions due to its cross-sectional descriptive design. Furthermore, because the study was conducted in a particular cultural setting (the Autonomous Community of Andalusia), definitive conclusions cannot be drawn for the general university population; additional research in other contexts would be advisable to strengthen the findings obtained. Additionally, a limitation worth noting is that the variables are based on self-reported instruments; this can be a concern when analyzing participants' characteristics or behaviors because sometimes study subjects may feel pressured to provide socially acceptable responses, which could influence the study results.

Despite the descriptive and cross-sectional nature of our study, we contribute to the existing literature by investigating the potentially protective effect of personal and family variables in a randomly selected,

representative sample of the student population in the Autonomous Community of Andalusia.

Conclusion

Social support and family dynamics may act as potential protective factors that positively influence the lifestyles of university students. We also found that health-related behaviors among both male and female students are similar at this stage of life. Health policies and programs aimed at promoting healthy lifestyles should consider interventions to strengthen the family structure in its role of supporting university students.

Author contributions

Study conception and design by HSD, PÁPM and RdPC. Material preparation, data collection and analysis were performed by HSD, PÁPM, BGS, SMC, HMAML and RdPC. The first draft of the manuscript was written by HSD, PÁPM and RdPC. All authors commented on previous versions of the manuscript and all authors read and approved the final manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by Research Ethics Committee of the Provincial Research Ethics Committee of Jaén (1192-N-21.CEI).

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Competing interests

The authors declare no competing interests.

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References

- Mollborn S, Lawrence EM, Saint Onge JMJJH, Behavior S. Contributions and challenges in health lifestyles research. 2021;62:388–403.
- Cockerham WC. Health lifestyle theory and the convergence of agency and structure. *J Health Soc Behav.* 2005;46:51–67.
- Cockerham WC, Wolfe D, Bauldry J. *SJRoA.* Health lifestyles in late middle age. 2020; 42:34–46.
- Aceijas C, Waldhäusl S, Lambert N, Cassar S, Bello-Corrasa R. Determinants of health-related lifestyles among university students. *Perspect Public Health.* 2017;137:227–36.
- Ariza C, García-Continente X, Villalbí JR, Sánchez-Martínez F, Pérez A, Nebot M. Consumo De Tabaco De Los adolescentes en Barcelona Y tendencias a lo largo de 20 años. *Gac Sanit.* 2014;28:25–33.
- Sawyer SM, Afifi RA, Bearinger LH, Blakemore S-J, Dick B, Ezeh AC, et al. Adolescence: a foundation for future health. *Lancet.* 2012;379:1630–40.
- Bronfenbrenner U. *The ecology of human development: experiments by nature and design.* Harvard University Press; 1979.
- Ho Y-CL, Mahirah D, Ho CZ-H, Thumboo J. The role of the family in health promotion: a scoping review of models and mechanisms. *Health Promot Int.* 2022;37(6):daac119.
- Weiss-Laxer NS, Crandall A, Hughes ME, Riley AWJFPH. Families as a cornerstone in 21st century public health: recommendations for research, education, policy, and practice. 2020; 8:503.
- Umberson D, Karas Montez J. Social relationships and health: a flashpoint for health policy. *J Health Soc Behav.* 2010;51:S54–66.
- Henao AMG. Recuperación crítica De Los conceptos de familia, dinámica familiar y sus características. *Revista Virtual Universidad católica del norte.* 2012;35:326–45.
- Satir V. *Nuevas relaciones Humanas en El núcleo familiar.* Editorial Pax México; 2005.
- Patton GC, Sawyer SM, Santelli JS, Ross DA, Afifi R, Allen NB, et al. Our future: a Lancet commission on adolescent health and wellbeing. *Lancet.* 2016;387:2423–78.
- Hummel A, Shelton KH, Heron J, Moore L, van den Bree MB. A systematic review of the relationships between family functioning, pubertal timing and adolescent substance use. *Addiction.* 2013;108(3):487–96.
- Hernández-Castillo L, Cargill-Foster NR, Gutiérrez-Hernández G. Funcionalidad familiar y conducta de riesgo en estudiantes de nivel medio superior Jonuta, Tabasco 2011. *Salud en Tabasco.* 2012;18(1):14–24.
- Silva DMRd, Costa DT, Rocha GSA, Monteiro EMLM, Gomes BMR, Souza, CFQd et al. Association between family dynamics and use of alcohol, tobacco, and other drugs by adolescents. *Rev Bras Enferm* 2021;74.
- Laghi F, Bianchi D, Pompili S, Lonigro A, Baiocco R. Binge eating and binge drinking behaviors: the role of family functioning. *Psychol Health Med.* 2021;26:408–20.
- Fernández-Villa T, Molina AJ, Amezcua-Prieto C, Mateos R, Cancela JM, Delgado-Rodríguez M, et al. Consumo De Drogas Ilegales, apoyo familiar y factores relacionados en estudiantes universitarios. Un Estudio transversal basado en datos del proyecto uniHcos. *Gac Sanit.* 2019;33(2):141–7.
- Romero-Rodríguez E, Amezcua-Prieto C, Morales-Suárez-Varela M, Pérez CA, Mateos-Campos R, Marcos-Delgado A, et al. Alcohol use and family-related factors among Spanish university students: the unHicos project. *BMC Public Health.* 2022;22:1573.
- Sarason IG, Levine HM, Basham RB, Sarason BR. Assessing social support: the social support questionnaire. *J Pers Soc Psychol.* 1983;44(1):127.
- Uchino BN, Bowen K, Carlisle M, Birmingham W. Psychological pathways linking social support to health outcomes: a visit with the ghosts of research past, present, and future. *Soc Sci Med.* 2012;74(7):949–57.
- Gottlieb BH, Bergen AE. Social support concepts and measures. *J Psychosom Res.* 2010;69:511–20.
- Cantero MdCT, López-Roig S, López MCN, Pastor MÁ, Aragón MM. Apoyo social e instrumentos de evaluación: revisión y clasificación. *Anuario De psicología/The UB J Psychol.* 2004;35:23–46.
- Castro R, Campero L, Hernández B. La investigación sobre apoyo social en salud: situación actual y nuevos desafíos. *Rev Saude Publica.* 1997;31:425–35.
- Feldman L, Goncalves L, Chacon-Puignau G, Zaragoza J, Bagés N, De Pablo J. Relaciones entre estrés académico, apoyo social, salud mental y rendimiento académico en estudiantes universitarios venezolanos. *Universitas Physiol.* 2008;7:739–52.
- Van Luchene P, Delens C. The influence of social support specific to physical activity on physical activity among college and university students: a systematic review. *J Phys Act Health.* 2021;18:737–47.
- Wang X, Yang X, Juzaily bin Mohd Nasiruddin N, Wei S, Dong D, bin Samsudin S. Social Support and Physical Activity in College and University students: a Meta-analysis. *Health Educ Behav.* 2024; 51:10901981231216735.
- Cao J, Wang K, Shi Y, Pan Y, Lyu M, Ji Y. The associations between social support change and physical activity trajectory from late adolescence to young adulthood. *BMC Public Health.* 2023;23:1496.
- Tinajero C, Cadaveira F, Rodríguez MS, Páramo MF. Perceived social support from significant others among binge drinking and polyconsuming Spanish university students. *Int J Environ Res Public Health.* 2019;16:4506.
- Klaiber P, Whillans AV, Chen FS. Long-term health implications of students' friendship formation during the transition to university. *Appl Psychology: Health Well-Being.* 2018;10(2):290–308.
- Xian X, Zhang Y, Bai A, Zhai X, Hu H, Zhang J, et al. Association between family support, stress, and sleep quality among college students during the COVID-19 online learning period. *Int J Environ Res Public Health.* 2022;20:248.
- Badia X, Alonso J, Salamero M. *La Medida De La Salud: guía de escalas de medida en español.* Edimac Barcelona; 2007.
- Saameño JAB, Sánchez AD, del Castillo JdDL, Claret PL. Validez y fiabilidad del cuestionario de función familiar Apgar-familiar. *Atención primaria:*

- Publicación oficial de la Sociedad Española de Familia y Comunitaria. 1996;18:289–96.
34. de la Revilla Ahumada L, Muñoz EB, de Dios Luna J, Delgado A, Quel MÁP, Fleitas L. Validación de una escala de apoyo social funcional para su uso en la consulta del médico de familia. *Atención primaria: Publicación oficial de la Sociedad Española de Familia y Comunitaria*. 1991;8:688–92.
 35. Brown N, Muhlenkamp A, Fox L, Osborn M. The relationship among health beliefs, health values, and health promotion activity. *West J Nurs Res*. 1983;5:155–63.
 36. da-Silva-Domingues H, Frías-Osuna A, del Carmen Vega-Martínez M, Palomino-Moral PÁ, del-Pino-Casado R. Adaptación Y validación Del Cuestionario Estilo De Vida Personal en población joven española. *Apuntes Universitarios*. 2022;12:404–18.
 37. Marques A, Loureiro N, Avelar-Rosa B, Naia A, de Matos MG. Adolescents' healthy lifestyle. *J Pediatr*. 2020;96:217–24.
 38. Salazar KLC. Estilo De vida saludable en estudiantes del área de la salud: Revisión sistemática. *anuario2020*. 2020;1:127–38.
 39. Lara MLE, López JV. Una revisión De Los estilos de vida de estudiantes universitarios. *Revista Torreón Universitario*. 2017;6:14–22.
 40. World Health Organization. Salud del adolescente y el joven adulto 2022. Accessed 10. Aug 2024. <https://www.who.int/es/news-room/fact-sheets/detail/adolescents-health-risks-and-solutions>
 41. Dahlgren G, Whitehead M. The Dahlgren-Whitehead model of health determinants: 30 years on and still chasing rainbows. *Public Health*. 2021;199:20–4.
 42. Diderichsen F, Evans T, Whitehead M. The social basis of disparities in health. *Challenging Inequities Health: Ethics Action*. 2001;1:12–23.
 43. Braveman P, Gottlieb L. The social determinants of health: it's time to consider the causes of the causes. *Public Health Rep*. 2014;129:19–31.
 44. Diderichsen F, Hallqvist J, Whitehead M. Differential vulnerability and susceptibility: how to make use of recent development in our understanding of mediation and interaction to tackle health inequalities. *Int J Epidemiol*. 2019;48:268–74.
 45. Beets MW, Cardinal BJ, Alderman BL. Parental social support and the physical activity-related behaviors of youth: a review. *Health Educ Behav*. 2010;37:621–44.
 46. Mendonça G, Cheng LA, Mélo EN, de Farias Junior JC. Physical activity and social support in adolescents: a systematic review. *Health Educ Res*. 2014;29:822–39.
 47. Draper C, Grobler L, Micklesfield L, Norris S. Impact of social norms and social support on diet, physical activity and sedentary behaviour of adolescents: a scoping review. *Child Care Health Dev*. 2015;41:654–67.
 48. Rosenrauch S, Ball K, Lamb KE. Associations between perceived friends' support of healthy eating and meal skipping in adolescence. *Public Health Nutr*. 2017;20:3266–74.
 49. Haidar A, Ranjit N, Saxton D, Hoelscher DM. Perceived parental and peer social support is associated with healthier diets in adolescents. *J Nutr Educ Behav*. 2019;51:23–31.
 50. Sánchez MEG, Tejada HSR, Giove MEA, Vargas DC. Estilo De vida, autoestima y apoyo social en estudiantes de enfermería. *Ucv-Scientia*. 2010;2:73–81.
 51. Sinche E, Suárez M. Introducción Al Estudio De La dinámica familiar. *RAMPA*. 2006;1:43.
 52. Mittelmark MB, Bauer GF, Vaandrager L, Pelikan JM, Sagy S, Eriksson M et al. *The handbook of salutogenesis*. 2022.

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