

Variables Associated with Fight Starting Among Colombian High-School Adolescents

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Abstract

The study's objective was to know some variables associated with lifetime fight starting among high school adolescents in Santa Marta, Colombia. A cross-sectional study was designed to take a probabilistic sample of tenth and eleventh-grade students between 13 and 17 years old. Carrying a weapon to school (OR=2.21, 95% CI 1.63 – 3.01), lifetime alcohol drinking (OR=2.04, 95% CI 1.57 – 2.66), male gender (OR=1.87, 95% CI 1.48 – 2.35), history of physical punishment (OR=1.77, 95% CI 1.36 – 2.31), family dysfunction (OR=1.73, 95% CI 1.06 – 1.78) and studying at a public school (OR=1.34, 95% CI 1.03 – 1.73) were significantly associated with lifetime fight starting. It is concluded that fight starting is associated with individual variables such as carrying a weapon to school, alcohol drinking, and male gender, and contextual variables such as a history of physical punishment, family dysfunction, and studying in a public school. Future research should address the fight starting from an ecological perspective for a broader understanding of the phenomenon.

Keywords: Youth violence; community violence; cultural context; Colombia, cross-sectional studies.

Among adolescents, violence occurs in different ways, intensities, and contexts (Kieselbach & Butchart, 2019). One of the most common forms of expression of violence is physical fights (Rudatsikira et al., 2008). Violent behavior is a multifactorial phenomenon (Ortiz & Calderón, 2006), and the injuries generated may require medical attention and even lead to death in the most severe cases (Shaikh et al., 2020).

In adolescents, physical fights tend to be more frequent in interaction spaces with peers (Castro, 2005), such as the school environment (Sanabria & Uribe-Rodríguez, 2010). In low- and middle-

income countries, the prevalence of fight starting at school varies according to the period analyzed and the characteristics of the sample (Celedonia et al., 2013; Páez et al., 2020; Shaikh et al., 2019; 2020; Yang et al., 2017). For example, of 5,249 adolescents in Egypt, 31% stated that they had participated in at least one physical fight in the school context in the last year (Celedonia et al., 2013). In Pakistan, of 5,177 adolescents, it was found that 20% had participated in two or more fights with their peers in the last year (Shaikh et al., 2019). In Kuwait, of 877 school adolescents, 25% reported having been involved in a physical

fight in the school environment in the past year (Shaikh et al., 2020). In Colombia, of 500 adolescents, it was found that 32% have been involved in physical aggression in the school environment at some time in their lives (Páez et al., 2020). In contrast, in the United States, the prevalence can vary between 7 and 25% (Chacon & Raj, 2022; Reinhardt et al., 2019).

An explanatory model maintains that violent behaviors in adolescents are learned and reinforced by the environment (Bandura & Ribes, 1975). Consequently, fight starting may be mediated by proximal, medial, and distal variables (Hardaway et al., 2016). Family and cultural influences and symbolic modeling can influence the appearance of proactive violence (Penado et al., 2014).

Regarding age, the findings suggest that fight starting behavior tends to be more frequent in early adolescence than in late adolescence. For example, in Egypt, younger adolescents had been 10% more involved in physical fights in the past year (Celedonia et al., 2013). Similarly, US adolescents ages 12 to 16 reported three times as many physical fights in the past year as those over 17 years of age (Swahn & Donovan, 2006). However, in the United States, in 4,010 adolescents between 12 and 17 years of age of different ethnic origins, it was observed that age was independent of fight starting (Shetgiri et al., 2010). It has been consistently observed that some risk behaviors decrease as adolescence progresses and better management of negative emotions and impulses is achieved (Ilie et al., 2017).

Concerning gender, fight starting is more frequent among male adolescents than females. For example, in Saudi Arabia, fight starting at school in the last year was three times more frequent among men than women (AlMakadma et al., 2015). In the United States, men were two to five times more likely to have been in a physical fight in the past year than women (Chacon & Raj, 2022; Reinhardt et al., 2019; Rudatsikira et al., 2007; Shetgiri et al., 2010). Likewise, in Kuwait, men were almost three times more likely to have been involved in physical fights in the past 12 months than women (Shaikh et al., 2020). This male predominance in fight starting can be explained by biological and sociocultural factors (Etienne,

2019; Ramírez, 2003). Higher testosterone levels in men can predispose them to violent behavior (Etienne, 2019; Ramírez, 2003). In addition, the hegemonic male gender considers violence a basic behavioral masculinity pattern (Etienne, 2019).

The findings need to be more consistent regarding the relationship between the level of schooling and the fight starting. The level of schooling is collinear with age. In adolescents in the United States, Ilie et al. (2017) found that fight starting during the last year was significantly more frequent between 15 and 20 times in the lower grades than in the advanced grades of secondary school. However, Reinhardt et al. (2019) documented that the frequency of fighting during the most recent year was similar in the tenth and eleventh-grade students. Similarly, in Saudi Arabian students, the last-year fight starting was independent of the schooling level (AlMakadma et al., 2015). Consequently, middle school students would be expected to initiate more fights than high school students. However, the available evidence shows that other variables mediate or confound the relationship (AlMakadma et al., 2015).

Only some studies explore the relationship between the type of school and fight starting. In Saudi Arabia, it was observed that fighting in the past year was 67% more frequent in students from private schools than in adolescents from official schools (AlMakadma et al., 2015). Being a public or private institution can condition the frequency of fight starting, given that financial, social, political, and human resource factors can significantly condition the context and school climate (Dodge, 2001).

In the same way, the consumption of psychoactive substances can be associated with the start of fights. In American students, alcohol drinking was observed to increase fight starting between 45% and 101% during the most recent year (Chacon & Raj, 2022; Reinhardt et al., 2019; Rudatsikira et al., 2008; Swahn & Donovan, 2006), cigarette smoking 70% (Rudatsikira et al., 2008), use of cannabis and other illegal substances approximately between 70% and 400% (Ilie et al., 2017; Reinhardt et al., 2019; Rudatsikira et al., 2008). The relationship between substance use and fight starting implies biological and sociocultural factors that mediate the expression

of aggressiveness during intoxication (Giancola, 2002).

Carrying a weapon can be related to fight starting because it can give the carrier a real and perceived advantage (Emmert et al., 2018; Wright et al., 1983). Likewise, carrying a weapon can be related to fight starting. For example, in Portugal, it was observed that carrying a weapon increased the probability of fight starting three times during the last year (Gaspar et al., 2019). In the same sense, in Canada, it was found that adolescents who carry a weapon to school participated six times more in a physical fights during the last year (Ilie et al., 2017).

On the other hand, other variables, such as family dysfunction and physical punishment, are predictive variables of violent behavior in adolescents (Estévez et al., 2018; Shaikh et al., 2020). Dysfunctional families tend to have dysfunctional communication, problem-solving, and conflict patterns and resort to physical punishment, which can start fights (Hoeve et al., 2006). In Spain, it was found that family conflicts and low family cohesion increased the risk of a fight starting by at least five times (Estévez et al., 2018). Similarly, in Pakistan, unsympathetic parents were found to increase the likelihood of physical fights by 46% over the past year (Shaikh et al., 2020). In Iran, domestic violence increased two times the probability of fight starting among adolescents in the last year (Golshiri et al., 2018). However, in the United States, it was found that family support did not show a meaningful relationship with fight starting (Shetgiri et al., 2010).

A fight is a typical form of violence in adolescents. Violence can be reactive or proactive (Penado et al., 2014). Violence is reactive when it responds to a threatening stimulus with the sole motivation of harming. Meanwhile, violence is proactive when planned with a specific purpose (Raine et al., 2006). The explanatory model of frustration/aggression explains that reactive violence derives from external stimuli that prevent the achievement of a goal (Penado et al., 2014).

On the other hand, violence is a reaction to a perceived threat and is usually related to intense emotional activation, impulsiveness, hostility, and

information-processing deficits (Penado et al., 2014). Proactive violence can be due to the perception of arbitrariness, injustice, or illegitimacy or the level of anticipated dissatisfaction with the frustrated goal, intentionality, or frustration (Penado et al., 2014). Proactive violence is one more strategy the subject implements to obtain an objective or benefit (Penado et al., 2014; Raine et al., 2006).

In the present analysis, fight starting was taken as a variable that depends on other personal and contextual predisposing factors that interact in a complex way (AlMakadma & Ramisetty-Mikler, 2015; López et al., 2022). Therefore, the associated variables may vary according to the characteristics of the population (Hoeve et al., 2009).

In Colombia and Latin America, there are no studies on variables associated with fight starting in school adolescents. This information is necessary to measure some variables predisposing to the phenomenon and design reparative and preventive actions according to the context (Romero et al., 2010; Salzinger et al., 2002).

The objective of this study was to know some variables associated with fight starting in adolescents attending school in Santa Marta, Colombia.

Method

Design and population

A cross-sectional analytical observational research was implemented for which the participation of adolescents between 13 and 17 years of the tenth and eleventh grade in Colombia was requested. At the time of the study, 10,810 students were enrolled in public and private educational institutions in one city in the Colombian Caribbean. Probabilistic sampling was carried out for expected prevalences for variable differences between 3% (+/- 1) and 50% (+/- 5) and a confidence level of 95%. Additionally, to cover possible losses due to non-authorization of the educational institution, non-consent or assent, 25% was added to the initial calculation for a total of 1,948 students.

Procedure and measurements

The participants filled out the research booklet in the classroom under the supervision of a research assistant who explained the correct way to complete the questionnaire. The assessment questionnaire was adapted to address diversity in local Spanish for students from different socioeconomic backgrounds. The research booklet requested information on age expressed in years (later dichotomized into two groups: between 13 and 15 and between 16 and 17 years old), gender, grade level (tenth and eleventh), family income according to residence stratum (low, medium, high or do not know), type of school (public and private), lifetime carrying a weapon to school (yes or no), lifetime alcohol drinking (yes or no) and lifetime cigarette smoking (yes or no), physical punishment history (yes or no), current family function (family APGAR questionnaire) and lifetime fight starting (yes or no).

Family APGAR Questionnaire

For the measurement of family functioning, the participants filled out a version in Spanish adapted for Colombia of the family APGAR (Arias & Herrera, 1994). The family APGAR has previously shown high internal consistency in Colombian school adolescents (Forero et al., 2006). The APGAR explores adaptability (adaptability), cooperation (partnership), development (growth), affectivity (affection), and resolution capacity (resolve) with five response options ranging from "never" to "always" and are scored from zero to four. (Smilkstein, 1978). The scores were dichotomized: family dysfunction, between 0 and 15, and good functioning, between 16 and 20. This instrument showed high internal consistency (Cronbach's alpha of 0.82) in the present sample. Another article presents more psychometric performance details (Campo-Arias & Caballero-Domínguez, 2021).

Statistical analysis

The descriptive analysis observed the frequencies and percentages for the qualitative variables and the mean (M) and standard deviation (SD) for age. In the bivariate analysis, fight starting was taken as the dependent variable and the rest as the independent variables. Likelihood ratios (OR), with 95% confidence intervals (95% CI), were calculated as a measure of association. Logistic regression was used to adjust the significant associations and those that showed probability values lower than 20% in the bivariate analysis. The recommendations of Greenland (1989) were considered to carry out the final adjustment, with the respective goodness of fit of Hosmer-Lemeshow (Hosmer et al., 1991). This data analysis process used the IBM-SPSS program, version 27.

Ethical considerations

A research ethics committee of a higher education institution in Santa Marta, Colombia (omitted for evaluation) approved the protocol in an ordinary session on July 12, 2018. The parents signed written informed consent, and the adolescent students assented the participation in the study.

Results

A total of 1,462 students completed the research booklet. The ages were between 13 and 17 (M = 15.98; SD = 0.83), and the highest percentage (70.93%) was between 16 and 17. Likewise, the most significant participation was female, who represented 60.33% of the sample; tenth-grade students with 55.34%, and residents of low-income urban areas with a representation of 49.59%. Eight hundred forty-one students (57.52%) answered affirmatively that they had started a fight. Table 1 summarizes the description of the sample.

Table 1. Characteristics of the participating students (n = 1,462).

Variable	Frequency	%
Age (years)		
Between 13 and 15	425	29.07
Between 16 and 17	1,037	70.93
Gender		
Female	882	60.33
Male	580	39.67
Grade		
Tenth	809	55.37
Eleventh	653	44.63
Family income		
Low	547	37.41
Middle or high	725	49.59
Do not answer	190	13.00
Public school		
Yes	1,123	76.81
No	399	23.19
Lifetime carrying a weapon to school		
Yes	299	20.45
No	1,163	79.55
Lifetime alcohol drinking		
Yes	1,132	77.43
No	330	22.57
Lifetime cigarette smoking		
Yes	328	22.44
No	1,134	77.56
Lifetime physical punishment		
Yes	381	26.06
No	1,081	73.94
Family dysfunction		

Yes	1,112	76.06
No	350	23.94

In the bivariate analysis, male gender, studying in a public institution, carrying a weapon at school, alcohol drinking, cigarette smoking, physical punishment history, and family dysfunction were significantly associated with fight starting. In

addition, the variables of dichotomized age and family income showed values of $p < 0.20$, so they were considered for the final adjustment in the multivariate model. Table 2 shows the OR values and the 95% CI.

Table 2. Crude associations for fight starting among adolescent high-school students.

Variable	OR (95% CI)
Age between 16 and 17 years*	1.22 (0.97 – 1.53)
Male gender	2.02 (1.63 – 2.51)
Eleventh grade	1.06 (0.86 – 1.31)
Low family income*	1.16 (0.93 – 1.45)
Public school	1.34 (1.03 – 1.73)
Carrying a weapon to school	3.23 (2.41 – 4.32)
Lifetime alcohol drinking	2.41 (1.88 – 3.10)
Lifetime cigarette smoking	2.01 (1.55 – 2.61)
Physical punishment	2.09 (1.63 – 2.68)
Family dysfunction	1.59 (1.25 – 2.02)

*They were considered for adjustment by a p-value less than 0.20.

Cigarette smoking lost statistical significance in the multivariate analysis. The model adjusted

adequately, Hosmer-Lemeshow test, $X^2 = 9.55$, $df = 7$, $p = 0.22$. See table 3.

Table 3. Adjusted associations for fight starting among adolescent high-school students.

Variable	OR (95% CI)
Carrying a weapon to school	2.21 (1.63 – 3.01)
Lifetime alcohol drinking	2.04 (1.57 – 2.66)
Male gender	1.87 (1.48 – 2.35)
Physical punishment	1.77 (1.36 – 2.31)
Family dysfunction	1.37 (1.06 – 1.78)

Public school

1.34 (1.03 – 1.73)

Discussion

In the present study, carrying a weapon, alcohol drinking, male gender, physical punishment history, family dysfunction, and public school have a statistically significant relationship with fight starting among high-school adolescents in Santa Marta, Colombia.

In the present study, age was independent of last-year fight starting. This data is similar to that observed in multiethnic adolescents in the United States. Age did not show a statistically significant relationship fight starting during the most recent year (Shetgiri et al., 2010). However, this finding differs from what has been documented in adolescents from Egypt and the United States, where it was observed that fight starting was more frequent in younger students (Celedonia et al., 2013; Swahn & Donovan, 2006). More studies are needed to explain the disparities of the studies to reach greater precision in the relationship between these variables (López et al., 2022).

In the present study, the male gender was significantly related to fight starting. This finding is consistent with research in Saudi Arabia, the United States, and Africa that showed fight starting was more frequent in men than in women (AlMakadma et al., 2015; Chacon & Raj, 2022; Reinhardt et al., 2019; Rudatsikira et al., 2007; Shaikh et al., 2020). This finding may be related to biological factors, such as testosterone, which partially explain men's higher frequency of aggressive behavior (Ramírez, 2003). In the same way, it is necessary to consider cultural aspects associated with gender in which fight starting can be normative as an indicator of masculinity (Adeosun, 2017).

The level of schooling in the present investigation was not statistically related to fight starting. This finding is consistent with what was observed among adolescents in Saudi Arabia and the United States (10th and 11th graders) whose grade level was not associated with fight starting (AlMakadma et al., 2015; Reinhardt et al., 2019). However, in students from the United States, it was documented that fight starting was more

frequent in the first years of secondary education (Ilie et al., 2017). The divergence can be explained by the social and cultural differences of the participants (López et al., 2022).

Differences in discipline, teacher supervision and support, and the number of students can vary in public and private schools depending on the social and cultural context (López et al., 2022). In the present study, public school students reported significantly higher fight starting than private school students. This observation is inconsistent with what has been documented in students from Saudi Arabia, where it was observed that adolescents in private schools started more fights during the last year (AlMakadma et al., 2015).

Alcohol drinking in the present investigation showed a significant association with fight starting. This finding is consistent with what has been documented in other contexts where alcohol drinking was associated with behavioral problems (Isaksson et al., 2020). In the United States, alcohol drinking was associated with fight starting (Chacon & Raj, 2022; Reinhardt et al., 2019; Rudatsikira et al., 2008; Swahn & Donovan, 2006). Alcohol can lead to poor executive functioning with cognitive distortions, impulsiveness, and irritability, thereby increasing the fight starting likelihood (Giancola, 2002). However, the co-occurrence of alcohol drinking and fight starting may be part of a pattern of health-risk behaviors in adolescents (Jessor & Jessor, 1977).

The relationship between carrying a weapon and fight starting is complex. In the present study, carrying a weapon had a statistically significant relationship with fight starting. This finding is similar to that documented in Hispanic and Afro-American adolescents in Canada, the United States, and Portugal, in whom an association was observed between carrying a weapon and participating in fights (Gaspar et al., 2019; Ilie et al., 2017; Khubchandani & Price, 2018). The weapon effect theory points out that carrying provides an authentic and perceived advantage (Emmert et al., 2018). Also, as noted above, these

events may manifest a pattern of risky behavior (Jessor & Jessor, 1977).

Family dysfunction, poor family cohesion, and frequent conflicts in the research presented were significantly associated with fight starting. This finding is consistent with previous adolescent studies that showed domestic violence was associated with fight starting (Estévez et al., 2018; Golshiri et al., 2018; Shaikh et al., 2020). However, in another investigation, family support was measured with a scale independent of fight starting (Shetgiri et al., 2010). It is generally accepted that parents with violent behaviors are more likely to have children who exhibit aggressive behaviors (Hardaway et al., 2020). In addition, family dysfunction often includes less assertive communication, little support, negligence, and poor emotional regulation, predisposing adolescents to aggressive behaviors such as fight starting (Hoeve et al., 2009).

In the present study, physical punishment was associated with fight starting. This finding is consistent with studies that found an association between physical punishment and violent problem behaviors in students from Spain and Pakistan (Estevez et al., 2018; Shaikh, 2020). Physical force, as a means of punishment, increases the psychosocial vulnerability of the adolescent (Burlaka et al., 2017). Likewise, physical punishment hinders the development of self-control, adherence to norms, and the adoption of empathic attitudes and prosocial behaviors (Aguirre et al., 2006).

Practical implications for school psychology

In summary, fight starting can be reactive or proactive behavior (Penado et al., 2014; Raine et al., 2006). However, regardless of the direction of motivation, fight starting is a complex behavior in which individual, family, contextual, and cultural factors interact (Bushman & Anderson, 2001; DuRant et al., 1994; Hardaway et al., 2016; Jessor & Jessor, 1977).

It is necessary to implement policies and design programs to prevent and treat violence in different contexts, agreed upon and culturally adapted (Dodge, 2001; Howard et al., 1999). The findings

of this research show the need to design fight-prevention programs with comprehensive and multifaceted approaches that involve parents, the community, the educational institution, and the police (Guerrero-Callejas et al., 2021; Hoeve et al., 2009). These programs need to include educational actions in the school, family, and community contexts based on the fact that some risk factors derived from high levels of violence at home and in the community: sports resources, recreational and educational spaces, and incentives for conflict resolution and life skills (Dodge, 2001; Hardaway et al., 2016; Romero et al., 2010). Health education programs with social skills and social support strategies provide psychological resources to promote conflict resolution and prevent violence and externalized and internalized behaviors (Dodge, 2001).

Strength and limitations

The strength of the present study focuses on contributing to the knowledge of the interaction of various variables with fight starting among school adolescents, adjusted for some confounding variables, little studied in Latin America and Colombia. In addition, there was a probabilistic sample of participants. However, the present study has the limitation that the sample only considered high-school adolescents. In addition, only the lifetime fight starting was explored, and the frequency of fight starting was not determined. Likewise, it is necessary to consider that cross-sectional studies do not allow for establishing the direction of the association between the study variables (Hernandez et al., 2000). Future research can take an ecological perspective for a broader approach to the problem. This perspective would contribute to a better understanding of the multidirectional relationships between context domains that can interact to initiate fights, such as personal characteristics, family, relationships with peers, neighborhood, and community (Jackson & Vaughn, 2021).

It is concluded that the possession of a weapon, alcohol drinking, male gender, physical punishment, family dysfunction, and studying in a public school were associated with lifetime fight starting among adolescents in Santa Marta,

Colombia. Future research should address fight starting from an ecological perspective.

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The authors have no conflicts of interest to declare.

Data availability statement:

The data supporting this study's findings are available from the corresponding author (AC-A) upon reasonable request.

References

- [1] Adeosun, I. I. (2017). Mental health problems among adolescents engaged in physical fight. *Journal of Education, Society and Behavioural Science*, 22(4), 1–7. 10.9734/JESBS/2017/36865
- [2] Aguirre, E., Montoya, L. M., & Reyes, J. A. (2006). Crianza y castigo físico. En: Aguirre, E. Diálogos 4. Discusiones en la Psicología Contemporánea. Universidad Nacional de Colombia. [Parenting and physical punishment. In: Aguirre, E. Dialogues 4. Discussions in Contemporary Psychology]. The National University of Colombia.
- [3] AlMakadma, A., & Ramisetty-Mikler, S. (2015). Student, school, parent connectedness, and school risk behaviors of adolescents in Saudi Arabia. *International Journal of Pediatrics and Adolescent Medicine*, 2, 128–135. 10.1016/j.ijpam.2015.09.004
- [4] Arias, L. & Herrera, J. A. (1994). El APGAR familiar en el cuidado primario de salud [The family APGAR in primary health care]. *Colombia Médica*, 25(1), 26–28.
- [5] Bandura, A., & Ribes, E. (1975). *Modificación de conducta* [Behavior modification]. Trillas.
- [6] Burlaka, V., Graham-Bermann, S.A. & Delva, J. (2017). Family factors and parenting in Ukraine. *Child Abuse & Neglect*, 72, 154–162. 10.1016/j.chiabu.2017.08.007.
- [7] Bushman, B. J., & Anderson, C. A. (2001). Is it time to pull the plug on the hostile versus instrumental aggression dichotomy? *Psychological Review*, 108(1), 273–279. 10.1037//0033-295X.108.1.273
- [8] Campo-Arias, A., & Caballero-Domínguez, C. C. (2021). Análisis factorial confirmatorio del cuestionario de APGAR familiar [Confirmatory factor analysis of the family APGAR questionnaire]. *Revista Colombiana de Psiquiatría*, 50(4), 234–237. 10.1016/j.rcp.2020.01.003
- [9] Castro, C. T. (2005). Jóvenes y violencia [Youth and violence]. *Revista Iberoamericana de Educación*, (37), 55–92.
- [10] Celedonia, K. L., Wilson, M. L., El Gammal, H. A., & Hagra, A. M. (2013). Physical fighting among Egyptian adolescents: Social and demographic correlates among a nationally representative sample. *PeerJ*, 1, e125. 10.7717/peerj.125
- [11] Chacon, M., & Raj, A. (2022). The association between bullying victimization and fighting in school among US high school students. *Journal of Interpersonal Violence*, 37(21–22), NP20793–NP20815. 10.1177/08862605211055075
- [12] Dodge, K. A. (2001). The science of youth violence prevention: Progressing from developmental epidemiology to efficacy to effectiveness to public policy. *American Journal of Preventive Medicine*, 20(1), 63–70.
- [13] DuRant, R. H., Cadenhead, C., Pendergrast, R. A., Slavens, G., & Linder, C. W. (1994). Factors associated with the use of violence among urban black adolescents. *American Journal of Public Health*, 84(4), 612–617. 10.2105/AJPH.84.4.612

- [14] Emmert, A. D., Hall, G. P., & Lizotte, A. J. (2018). Do weapons facilitate adolescent delinquency? An examination of weapon carrying and delinquency among adolescents. *Crime & Delinquency*, *64*(3), 342–362. 10.1177/0011128717714466
- [15] Estévez-López, E., Jiménez-Gutiérrez, T. I., & Moreno-Ruiz, D. (2018). Aggressive behavior in adolescence as a predictor of personal, family, and school adjustment problems. *Psicothema*, *30*(1), 66–73.
- [16] Etienne, C. F. (2019). Addressing masculinity and men's health to advance universal health and gender equality. *Revista Panamericana de Salud Pública*, *42*, e196. 10.26633/RPSP.2018.196
- [17] Forero, L. M., Avendaño, M. C., Duarte, Z. J., & Campo-Arias, A. (2006). Consistencia interna y análisis de factores de la escala APGAR para evaluar el funcionamiento familiar en estudiantes de básica secundaria [Internal consistency and factorial analysis of family functioning APGAR scale in middle school students]. *Revista Colombiana de Psiquiatría*, *35*(1), 23–29.
- [18] Gaspar, S., Guedes, F. B., Cerqueira, A., Oliveira, R., & Matos, M. G. (2019). Physical fights involvement in school setting and adolescents' behaviours: Highlights from health behaviour in school-aged children (HBSC/WHO)-fights in school setting and adolescent's behaviours. *Primary Care Epidemiology and Global Health*, *2019*(1), 30–39. 10.33513/PEGH/1801-04
- [19] Giancola, P. R. (2002). Alcohol-related aggression during the college years: theories, risk factors and policy implications. *Journal of Studies on Alcohol, Supplement*(s14), 129–139. 10.15288/jsas.2002.s14.129
- [20] Golshiri, P., Farajzadegan, Z., Tavakoli, A., & Heidari, K. (2018). Youth violence and related risk factors: A cross-sectional study in 2800 adolescents. *Advanced Biomedical Research*, *7*, 138. 10.4103/abr.abr_137_18
- [21] Greenland, S. (1989). Modelling and variable selection in epidemiologic analysis. *American Journal of Public Health*, *79*(3), 340–349. 10.2105/AJPH.79.3.340
- [22] Guerrero-Callejas, G. L., Rondón-Torres, M. C., Cortina-Navarro, C. E., & Oviedo-Córdoba, H. R. (2021). Rol de las enfermeras en las escuelas saludables: revisión bibliográfica [Role of nurses in healthy schools: Bibliographic review]. *Duazary*, *18*(3), 121-134. <https://doi.org/10.21676/2389783X.4288>
- [23] Hardaway, C. R., Sterrett-Hong, E., Larkby, C. A., & Cornelius, M. D. (2016). Family resources as protective factors for low-income youth exposed to community violence. *Journal of Youth and Adolescence*, *45*(7), 1309–1322. 10.1007/s10964-015-0410-1
- [24] Hernández-Ávila, M., Garrido-Latorre, F., & López-Moreno, S. (2000). Diseño de estudios epidemiológicos. [Design of epidemiological studies]. *Salud Pública de México*, *42*(2), 144–154.
- [25] Hoeve, M., Dubas, J.S., Eichelsheim, V.I., van der Laan, P.H., Smeenk, W., Gerris, J.R. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, *37*(6), 749–775. 10.1007/s10802-009-9310-8
- [26] Hosmer, D. W., Taber, S., & Lemeshow, S. (1991). The importance of assessing the fit of logistic regression models: a case study. *American Journal of Public Health*, *81*(12), 1630–1635. 10.2105/AJPH.81.12.1630
- [27] Howard, K. A., Flora, J., & Griffin, M. (1999). Violence-prevention programs in schools: State of the science and implications for future research. *Applied and Preventive Psychology*, *8*(3), 197–215. 10.1016/S0962-1849(05)80077-0
- [28] Ilie, G., Mann, R. E., Boak, A., Hamilton, H. A., Rehm, J., & Cusimano, M. D. (2017). Possession of weapon and school violence among adolescents and their association with history of traumatic brain injury, substance use and mental health issues. *Injury*, *48*(2), 285–292. 10.1016/j.injury.2016.09.030
- [29] Isaksson, J., Schwab-Stone, M., Stickley, A., & Ruchkin, V. (2020). Risk and protective factors for problematic drinking in early adolescence: A systematic approach. *Child Psychiatry & Human*

- Development*, 51(2), 231–238. 10.1007/s10578-019-00925-1
- [30] Jackson, D. B., & Vaughn, M. G. (2021). Diet quality and physical fighting among youth: A cross-national study. *Journal of Interpersonal Violence*, 36(3–4), NP1180–1192NP. 10.1177/0886260518754874
- [31] Jessor, R., & Jessor, S. L. (1977). *Problem behavior and psychosocial development*. Academic Press.
- [32] Khubchandani, J., & Price, J. H. (2018). Violence related behaviors and weapon carrying among Hispanic adolescents: Results from the national Youth Risk Behavior Survey, 2001–2015. *Journal of Community Health*, 43(2), 391–399. 10.1007/s10900-017-0436-2
- [33] Kieselbach, B., & Butchart, A. (2019). *Preventing youth violence: An overview of the evidence*. World Health Organization.
- [34] López, D. P., López-Nicolás, R., López-López, R., Puente-López, E., & Ruiz-Hernández, J. A. (2022). Association between attitudes toward violence and violent behavior in the school context: A systematic review and correlational meta-analysis. *International Journal of Clinical and Health Psychology*, 22(1), 100278. 10.1016/j.ijchp.2021.100278
- [35] Ortiz, M., & Calderón, M. (2006). Aspectos conceptuales de la agresión: definición y modelos explicativos. [Conceptual aspects of aggression: definition and explanatory models]. *Acción Psicológica*, 4(2), 7–38.
- [36] Páez, A., Torres, C., Ortiz, S., Campos, M., Duarte, L., & Niño, B. (2020). Acoso escolar en adolescentes: Rol, tipo de violencia y determinantes [School bullying in adolescents: Role, type of violence and determinants]. *Revista da Escola de Enfermagem da USP*, 54, e03625. /10.1590/s1980-220x2019026003625
- [37] Penado, M., Andreu, J. M., & Peña, E. (2014). Agresividad reactiva, proactiva y mixta: análisis de los factores de riesgo individual [Reactive, proactive and mixed aggressiveness: analysis of individual risk factors]. *Anuario de Psicología Jurídica*, 24(1), 37–42. 10.1016/j.apj.2014.07.012
- [38] Raine, A., Dodge, K., Loeber, R., Gatzke-Kopp, L., Lynam, D., Reynolds, C., Stouthamer-Loeber, M., & Liu, J. (2006). The reactive–proactive aggression questionnaire: Differential correlates of reactive and proactive aggression in adolescent boys. *Aggressive Behavior*, 32(2), 159–171. 10.1002/ab.20115
- [39] Ramirez, J. M. (2003). Hormones and aggression in childhood and adolescence. *Aggression and Violent Behavior*, 8(6), 621–644. 10.1016/S1359-1789(02)00102-7
- [40] Reinhardt, J., Clements-Nolle, K., & Yang, W. (2019). Physical fighting among male and female adolescents of military families: results from a representative sample of high school students. *Journal of Interpersonal Violence*, 34(1), 115–134. 10.1177/08862605166405
- [41] Romero, A., Pick, S., de la Parra, A., & Givaudan, M. (2010). Evaluación del impacto de un programa de prevención de violencia en adolescentes. [Evaluation of the impact of a violence prevention program in adolescents]. *Revista Interamericana de Psicología*, 44(2), 203–212.
- [42] Rudatsikira, E., Muula, A. S., & Siziya, S. (2008). Variables associated with physical fighting among US high-school students. *Clinical Practice and Epidemiology in Mental Health*, 4(1), 1–8. 10.1186/1745-0179-4-16
- [43] Rudatsikira, E., Siziya, S., Kazembe, L. N., & Muula, A. S. (2007). Prevalence and associated factors of physical fighting among school-going adolescents in Namibia. *Annals of General Psychiatry*, 6(1), 1–5. 10.1186/1744-859X-6-18
- [44] Salzinger, S., Feldman, R. S., Stockhammer, T., & Hood, J. (2002). An ecological framework for understanding risk for exposure to community violence and the effects of exposure on children and adolescents. *Aggression and Violent Behavior*, 7(5), 423–451. 10.1016/S1359-1789(01)00078-7
- [45] Sanabria, A. M., & Uribe-Rodríguez, A. F. (2010). Psychosocial risk factors associated with problem behaviors in young offenders

- and non offenders. *Diversitas*, 6(2), 257–274.
- [46] Semahegn, A., Dessie, Y., Assefa, N., Canavan, C., Berhane, Y., & Fawzi, W. (2021). Physical fighting among adolescents in Eastern Ethiopia: A cross-sectional study. *BMC Public Health*, 21, 1732. 10.1186/s12889-021-11766-w
- [47] Shaikh, M. A., Abio, A., Celedonia, K. L., & Lowery Wilson, M. (2019). Physical fighting among school-attending adolescents in Pakistan: Associated factors and contextual influences. *International Journal of Environmental Research and Public Health*, 16(24), 5039. 10.3390/ijerph16245039
- [48] Shaikh, M., Abio, A., Adedimeji, A., & Lowery, W. M. (2020). Involvement in physical fights among school attending adolescents: A nationally representative sample from Kuwait. *Behavioral Sciences*, 10(1), 29. 10.3390/bs10010029
- [49] Shetgiri, R., Kataoka, S., Ponce, N., Flores, G., & Chung, P. J. (2010). Adolescent fighting: Racial/ethnic disparities and the importance of families and schools. *Academic Pediatrics*, 10(5), 323–329. 10.1016/j.acap.2010.06.004
- [50] Swahn, M. H., & Donovan, J. E. (2006). Alcohol and violence: Comparison of the psychosocial correlates of adolescent involvement in alcohol-related physical fighting versus other physical fighting. *Addictive Behaviors*, 31(11), 2014–2029. 10.1016/j.addbeh.2006.02.001
- [51] Smilkstein, G. (1978). The family APGAR: A proposal for a family function test and its use by physicians. *The Journal of Family Practice*, 6(6), 1231–1239.
- [52] Wright, J. D., & Rossi, P. H. (1985). *The armed criminal in America: A survey of incarcerated felons*. US Department of Justice, National Institute of Justice.
- [53] Yang, L., Zhang, Y., Xi, B., & Bovet, P. (2017). Physical fighting and associated factors among adolescents aged 13–15 years in six western pacific countries. *International Journal of Environmental Research and Public Health*, 14(11), 1427. 10.3390/ijerph14111427