

Original

# Social capital as a moderator of the relationship between violent community environment and psychological distress



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## ABSTRACT

**Objective:** To evaluate the modifying effect of social capital on the relationship between living in violent communities and the presence of psychological distress in adolescents and youth in Mexico.

**Method:** The analysis of the Social Cohesion Survey for the Prevention of Violence and Crime (ECOPRED, by its acronym in Spanish) was conducted. The analytic sample consisted of 39,639 participants aged 12 to 29 years. Community violence and social capital were measured at the census tract level using the average answers of a household's head sample. These environmental variables were independent of the experiences of the participants. Social capital variables included structural (social ties, recreational participation, collaborative participation, and social cohesion), and cognitive (trust in neighbors) dimensions. Multilevel structural equation models were used.

**Results:** Recreational participation, collaborative participation, and social cohesion modified the relationship between community environments and psychological distress. In females who lived in places with less recreational participation or less social cohesion, the higher the social disorder, the higher the psychological distress. A similar relationship between vandalism and psychological distress was identified, but only in males who lived in places with less collaborative participation, and in females with less social cohesion.

**Conclusions:** Our results suggest that dimensions of the structural social capital (organization and interest in the community and its members) were the ones that had the buffering effect of the exposure to disordered community environments on psychological distress.

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## Capital social como moderador de la relación entre el ambiente comunitario violento y el distrés psicológico

### RESUMEN

**Objetivo:** Evaluar el efecto modificador del capital social en la relación entre vivir en comunidades violentas y la presencia de distrés psicológico en adolescentes y jóvenes de México.

**Método:** Se realizó un análisis de la Encuesta de Cohesión Social para la Prevención de la Violencia y el Delito (ECOPRED). La muestra analítica la conformaron 39.639 participantes de 12 a 29 años. La violencia comunitaria y el capital social se midieron por zonas censales utilizando el promedio de respuestas de una muestra de jefes de hogar. Estas variables ambientales fueron independientes de las experiencias de los participantes. Las variables del capital social incluyeron dimensiones estructurales (vínculos sociales, participación recreativa, participación colaborativa y cohesión social) y cognitivas (confianza en vecinos). Se utilizaron modelos de ecuaciones estructurales multinivel.

**Resultados:** La participación recreativa, la participación colaborativa y la cohesión social modificaron la relación entre los ambientes comunitarios y el distrés psicológico. En las mujeres que se encontraban en lugares con menor participación recreativa o menor cohesión social, cuanto mayor era el desorden social, mayor era el distrés psicológico. Se identificó una relación similar entre vandalismo y distrés psicológico, pero solo en hombres que vivían en lugares con menor participación colaborativa y en mujeres con menor cohesión social.

**Conclusiones:** Nuestros resultados sugieren que las dimensiones de capital social estructural (organización e interés en la comunidad y sus miembros) tienen un efecto amortiguador de la exposición a ambientes comunitarios desordenados sobre el distrés psicológico.

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### Palabras clave:

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## Introduction

Social capital refers to the systems and relationships that favor social organization,<sup>1</sup> allowing the existence of trust, mutual obligations, respect, and cooperation in the communities.<sup>1,2</sup> According to the social hierarchy, two types of social capital have been identified:<sup>3,4</sup> 1) the vertical type comes from an unequal or hierarchical relationship (e.g., authorities), and 2) the horizontal type occurs when the individual is considered on equal terms with others (e.g., the family).<sup>3</sup> Also, social capital is divided into two components:<sup>3-5</sup> 1) the structural component refers to the social networks or connections in the neighborhoods and participation in associations or local community,<sup>5</sup> and 2) the cognitive component refers to reciprocity, feelings of trust and safety, and tolerance of diversity.<sup>3-5</sup>

There is no consensus on the conceptualization of social capital, which has made its measurement difficult.<sup>3</sup> It is not clear whether social capital is a resource or a product of society or only is an individual response. Its measurement is complex because there are no instruments to measure it directly.

However, the need to study social capital remains due to its close relationship with health in general<sup>6</sup> and mental health in particular.<sup>5,7</sup> Evidence suggests the positive effects of the cognitive component of social capital on mental health.<sup>8,9</sup> In Swedish people,<sup>4</sup> social capital and self-rated health were associated positively, and this relationship was stronger with the structural and horizontal dimensions compared to the cognitive and vertical dimensions of social capital. Therefore, social capital could be a buffer in communities where adversities are experienced.

Exposure to community violence has been related to mental health disorders.<sup>10,11</sup> Individuals who are victims of or witnesses of violent acts are more likely to experience detriment in their mental health.<sup>12-14</sup> People living in violent environments could experience sustained arousal, placing them in hypersensitivity or aggressive states, which promote psychological distress.<sup>15</sup>

Little is known about factors that might act as buffers in the relationship between living in violent communities and psychological distress. Only one study<sup>16</sup> with youth identified that those who grew up in more violent communities had greater symptoms of depression and anxiety, but only in men with higher and in women with lower family conflicts. It is suggested that people living in communities with higher social capital probably experience fewer mental health disorders despite being exposed to a violent community.<sup>17</sup> However, it is possible that some dimensions can act in the opposite way. Social connections or attachment to the neighborhood have been related to greater mental health disorders.<sup>18,19</sup> Social capital could produce a perception of responsibility to support other community members, increasing the mental health burden.<sup>18</sup>

Previously,<sup>20</sup> a positive relationship between living in a violent community and psychological distress was identified in Mexican youth. However, testing the role of social capital as a buffer was not conducted. Therefore, the objective of this study was to evaluate the modifying effect of social capital on the relationship between exposure to a violent community and the presence of psychological distress in Mexican youth.

## Method

### Study design

A secondary analysis of the Social Cohesion Survey for the Prevention of Violence and Crime (ECOPRED, for its acronym in Spanish)<sup>21</sup> was conducted. ECOPRED is a survey conducted once between October 6th and December 9th, 2014, and collected infor-

mation about youth 12 and 29 years old who lived in 47 Mexican cities. There was a non-response rate of 13.12%.<sup>22</sup>

For this analysis, all adolescents and youth who participated in the survey were considered ( $n=40,366$ ). Participants who did not complete the questionnaire related to psychological distress ( $n=181$ ) and those whose parents interfered during the interview ( $n=546$ ) were excluded. Most who had incomplete information were males, aged 12 and 15 years old, students who had never changed their neighborhood, were from the north, and had one or two economic hardships (see [Supplementary Table A.1](#)). Among participants who had significant parental intervention were more frequent females and those without economic difficulties. After the questionnaire was completed, interviewers should select the level of intervention during the interview of the participant's guardian. There were eight options for parental intervention, and two were considered significant: "Guardian was present and intervened directly during the interview" and "Guardian influenced the youth's responses through intimidation". The analytical sample consisted of 39,639 participants. The ECOPRED included a second sample of the household heads, who provided information about community violence and social capital.

The ethics of the analysis reported herein were granted by the Ethics Committee of the Division of Biological and Health Sciences of the Metropolitan Autonomous University Xochimilco.

### Outcome

To measure psychological distress, participants' responses to an inventory of eight situations about feelings in the last year were included (being restless or anxious; having difficulty concentrating or staying focused on what you are doing; having tense or sore muscles because of stress; having trouble sleeping or staying asleep; sweating more intensely than normal in any part of the body; calm down by hitting objects, being very sick; and feeling very sad, depressed, or lonely), with two answer options (yes or no). This inventory was created *ex profeso* for the ECOPRED. Its items are conceptually similar to those considered in inventories routinely used to evaluate psychological distress.<sup>23,24</sup> An exploratory factor analysis (principal component factor method) with oblique rotation was performed. Except for one item ("calm down by hitting objects", factor loading < 0.40), all questions were grouped into a single factor. A new variable was constructed from the sum of the affirmative responses to each of the 7 questions that clustered in the single factor. The internal reliability of the scale was moderate (Cronbach's alpha = 0.63). In the generalized structural equations models (GSEM, see below), a latent variable with these items was created.

### Exposure: community violence

Contextual variables of community violence were created with answers from household heads who completed ( $n=80,802$ ) a scale about acts of incivilities and crimes.<sup>25</sup> Three exposure variables were constructed: social disorder (e.g., making noise, drinking alcohol on the street), vandalism (e.g., graffiti walls or scratching cars), and criminality (e.g., assaulting or robbing people on the street). The questions to assess these variables were adapted from studies conducted in the US.<sup>26,27</sup> Details about the construction of these variables are explained elsewhere.<sup>20</sup>

### Modifying variable: social capital

Answers from household heads who completed the section about social capital ( $n=73,360$ ) were considered to create five contextual variables of social capital: social ties, recreational participation, collaborative participation, social cohesion, and trust in

neighbors. All variables were related to horizontal social capital; most of them belonged to the structural component, and only the last one corresponded to the cognitive component.<sup>5</sup> Items to measure social capital were adapted from studies conducted in the US.<sup>28,29</sup> The creation of these variables was conducted by the social capital theory and the results of exploratory factorial analysis (see [Supplementary Tables A.2 to A.5](#)).

The social ties variable was created with the question's responses: "How often do you meet acquaintances from your neighborhood in...?", considering different places (e.g. the streets or the store), with four response options: never, infrequently, frequently, and very frequently (values from 0 to 3).<sup>25</sup>

The recreational and collaborative participation variables were generated with the answers to the question: "How often do you meet in your neighborhood to...?" Six meeting objectives were included with four response options (never, infrequently, frequently, and very frequently, values from 0 to 3).<sup>25</sup> Three items were included for recreational participation (e.g., religious events, organizing parties) and three for the collaborative participation (e.g., organizing neighborhood security).

The social cohesion variable was created based on the answers to the question: "Tell me how often the following situations occur between you, the members of your household, and your neighbors". Four situations were inquired (e.g. they physically identify themselves), with four response options: never, infrequent, frequent, and very frequent (values from 0 to 3).<sup>25</sup>

The trust in neighbors variable was created with the answers to the item "Tell me if the following situations occur or not between you, the members of your household, and your neighbors". Five situations were included (e.g., When your family or neighbors go on a trip, do you leave your house keys?), with two response options (yes or no, values 1 and 0).<sup>25</sup>

The variables were obtained with the sum for each answer. Medians were estimated by census tract and were assigned to the participants. The variables were dichotomized based on the median (4 for social ties, 1.5 for recreational participation, 1 for collaborative participation, 5.5 for social cohesion, and 4 for trust in neighbors).

#### Covariates

The occupation, moving from the neighborhood, economic hardships, region, and parental intervention were considered covariates, and were formed with participants' answers. In [Supplementary Tables A.6 to A.8](#), the justification for considering these covariates is reported. For occupation, four groups were considered: study, work, study, and work, neither study nor work. Residential mobility included the following categories: always lived in the neighborhood, moved more than ten years ago, moved between 5 to 10 years, or moved less than five years. The economic hardships variable was built from the answers to seven items (e.g., "Do you have enough money to have fun or enjoy together?" or "Can you afford the medicines and medical care that you require?"), with two answer options (true or false).<sup>25</sup> Affirmative answers were added, and three categories were formed: none, one or two, and three to seven hardships. Four regions were defined (north, west, center, and south). The intervention level of guardians during the interview was registered by the interviewers, and an ordinal variable was generated with values from zero to five (higher value means higher intervention).

#### Statistical analysis

Analysis was run with Stata version 18 (College Station, TX: StataCorp LP.). Considering the survey design, weighted relative

frequencies were estimated to determine each variable's distribution. Sampling procedures, calculation of the sample size, and estimations of sampling weights can be found elsewhere.<sup>21</sup>

To assess the moderating effect of social capital, multilevel structural equation models were used. The first level corresponded to individuals, whereas the second one was the census tracts. A measurement model was built to obtain the latent variable of psychological distress from the observed variables (symptoms). In the structural model, the relationship between exposure to violent community environments and psychological distress was evaluated. All structural equation models were adjusted for occupation, moving to the neighborhood, economic hardships, region, and parental intervention.

Models were made by groups comparing those with a low level against the high level of social capital (e.g., youth who lived in communities with a high level of social ties were compared to those who resided in places with a low level of social ties). In the model, only the estimates of the regression coefficients of the variables were allowed to vary, except when there were no differences between the levels of social capital. Models were estimated by sex for social disorder, vandalism, and criminality, and by age for criminality in females. Two groups were considered for age: adolescents (12 to 18 years) and youth (19 to 29 years). This stratification by age and sex groups was carried out because in a previous work,<sup>20</sup> these variables modified the relationship between community violence and psychological distress.

## Results

The mean age of the participants was 18.7 years (standard deviation: 4.7), and just over half were adolescents. The proportion of males was slightly higher compared to females (51.4% vs. 48.6%). Around half of the participants were studying, and a similar proportion did not report having economic hardships. About 40% had always lived in the same neighborhood, while about a fifth had changed neighborhood ten or more years ago ([Table 1](#)). The highest proportion lived in the northern region. More than half of the interviews were conducted without the presence of guardians.

#### Moderating effect

##### 1) Social disorder

Social disorder was positively related to psychological distress ([Table 2](#)). Recreational participation and social cohesion modified the association of social disorder and psychological distress because this relationship was only observed among females who lived in communities with low recreational participation and low social cohesion ([Fig. 1 A and B](#)). All models related to social disorder can be found in the [Supplementary Figures A.1 and A.2](#).

##### 2) Vandalism

The relationship between vandalism and psychological distress ([Table 3](#)) was modified by collaborative participation in males and by social cohesion in females. Exposure to vandalism increased the symptoms of distress, but only in males who belonged to neighborhoods with less collaborative participation ([Fig. 1 C](#)), and in females who lived in communities with less social cohesion ([Fig. 1 D](#)). In females who lived in places with higher social cohesion, the relationship between vandalism and psychological distress was inverse, i.e., the higher vandalism, the lesser psychological distress. All models related to vandalism can be found in the [Supplementary Figures A.3 and A.4](#).

**Table 1**  
Sociodemographic characteristics of Mexican adolescents and youth aged 12 and 29 years (n = 39,639).

	%
<i>Sex</i>	
Males	51.4
Females	48.6
<i>Age, years</i>	
12-15	28.7
16-18	22.5
19-23	29.9
24-29	18.9
<i>Occupation</i>	
Study	51.1
Work	27.7
Study and work	10.4
Neither study nor work	10.7
<i>Moving from the neighbourhood</i>	
Never	43.7
More than 10 years ago	19.4
Between 5 to 10 years	19.1
Less than 5 years	17.7
<i>Economic hardships</i>	
None	51.1
One or two	28.4
Three to seven	20.5
<i>Region</i>	
North	36.9
West	26.7
Center	24.4
South	12.0
<i>Parental intervention</i>	
Was not present	62.3
Was present in another room	19.5
Was present without paying visual attention	10.5
Was present and only paying visual attention	6.5
Was present and sought to know the instrument	1.2

(Sample size), %, weighted estimates

### 3) Criminality

Among adolescents and youth of both sexes, the relationship between criminality and psychological distress was negative, i.e., the higher criminality, the lesser psychological distress; however, the relationship was significant only in youth females. None of the social capital variables modified this relationship (Table 4). All models related to criminality can be found in the Supplementary Figures A.5 to A.7.

**Table 2**  
Effects identified in the relationship between social disorder and psychological distress, by sex.

Sex	Main effect <sup>a</sup>	Social capital dimension	Moderating effect <sup>b</sup>
Males	Yes+	Social ties	No
	Yes+	Recreational participation	No
	Yes+	Collaborative participation	No
	Yes+	Social cohesion (SC)	No
	Yes+	Trust in neighbours	No
Females	Yes+	Social ties	No
	Yes+	Recreational participation (RP)	↓RP ↑RP
	Yes+	Collaborative participation	No
	Yes+	Social cohesion (SC)	↓SC ↑SC
	Yes+	Trust in neighbours	No

<sup>a</sup> Main effect indicates that was significant the regression coefficient of the association of social disorder and psychological distress.

<sup>b</sup> Moderating effect indicates that was significant the regression coefficient of the interaction of social disorder and social capital dimension to predict psychological distress.

+: positive effect (p < 0.050)

Arrows indicate the level of the social capital variables; for example, ↓SC corresponds to the group with a low level of social cohesion, and ↑SC corresponds to the group with a high level of social cohesion.

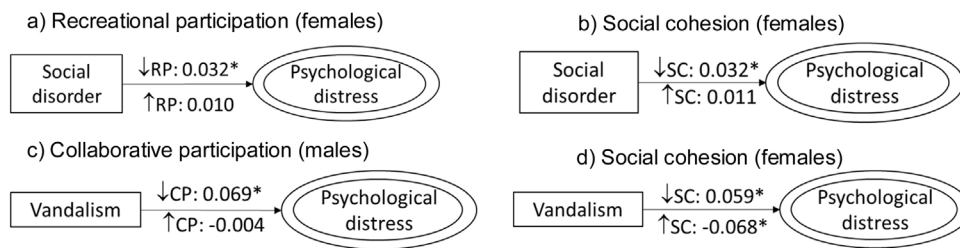
Models were adjusted for the sex, age, occupation, moving from the neighborhood, region, and parental intervention by an adult during the interview.

## Discussion

In Mexican youth, social disorder was associated with greater psychological distress, but only in Mexican females who lived in communities with less recreational participation or less social cohesion. Vandalism was related to psychological distress but only in males who were in communities with less collaborative participation and in females of communities with less social cohesion. These findings are consistent with related evidence<sup>4,30</sup> and suggest that the structural components of the social capital (social cohesion, recreative, and collaborative participation) could buffer the effect of certain types of community violence (social disorder) on psychological distress. Our results mirror the positive associations of social capital with mental health that have been reported.<sup>19,31</sup> In addition, in Afro-American adolescents, the structural social capital buffered the effect of interpersonal violence on depression symptoms.<sup>30</sup>

The nature of the types of community violence and capital social dimensions could explain differences in the associations observed. Recreational participation had a modifying effect between social disorder and psychological distress because those who are in places with less recreational participation probably could have more discomfort derived from the activities carried out by the neighbors. Regarding vandalism, collaborative participation could benefit because it seeks to address this problem.<sup>5</sup> Males may get more benefits because (compared to females) they spend more time in the streets and are more exposed to community violence.<sup>32</sup> In the case of females, they tend to perceive the streets as unsafe,<sup>33</sup> and those who are in places with more vandalism could benefit when there is greater social cohesion because this favors communication of their discomfort.<sup>5</sup>

Regarding criminality, in general, it was not possible to establish a relationship with psychological distress, except in female youth, where the relationship was in the opposite direction to what was expected, i.e., females who were in places with greater community violence had less psychological distress. A detailed explanation of these results was elaborated elsewhere.<sup>20</sup> In addition, there was no modification effect of the capital social on the relationship between criminality and psychological distress. These findings could be the result of individual factors rather than social factors. People tend to make changes in their daily activities (e.g. avoid going outside the home during the night or wearing jewelry) to reduce the probability of being victims of violence and increase their sense of safety.<sup>34</sup> Also, people could have a process of adaptation that occurs in those who perceive themselves as vulnerable or suffered victimization,<sup>35</sup> which translates into an attenuated physiologic response to violence.<sup>36</sup>



**Figure 1.** Modifying effects of social capital variables identified on the relationship between community violence environment and psychological distress. Arrows mean the level of each social capital variable: low (↓) or high (↑). The figures correspond to regression coefficients of psychological distress to community violence variables. \*p < 0.05. CP: collaborative participation; RP: recreational participation; SC: social cohesion.

**Table 3**  
Effects identified in the relationship between vandalism and psychological distress, by sex.

Sex	Main effect <sup>a</sup>	Moderating effect <sup>b</sup>	
Males	No	Social ties	No
	Yes+ <sup>c</sup>	Recreational participation	No
	Yes+	Collaborative participation (CP)	↓CP ↑CP
	Yes+ <sup>c</sup>	Social cohesion	No
	Yes+	Trust in neighbours	No
Females	No	Social ties	No
	No	Recreational participation	No
	No	Collaborative participation	No
	Yes+	Social cohesion (SC)	↓SC+ ↑SC-
	No	Trust in neighbours	No

<sup>a</sup> Main effect indicates that was significant the regression coefficient of the association of vandalism and psychological distress.  
<sup>b</sup> Moderating effect indicates that was significant the regression coefficient of the interaction of vandalism and social capital dimension to predict psychological distress.  
<sup>c</sup> Marginal effect (p = 0.51).

+: positive effect; -: negative effect (p < 0.050).  
 Arrows indicate the level of the social capital variables; for example, ↓SC corresponds to the group with a low level of social cohesion, and ↑SC corresponds to the group with a high level of social cohesion.  
 Models were adjusted for age, occupation, moving from the neighborhood, region, and parental intervention by an adult during the interview.

**Table 4**  
Effects identified in the relationship between criminality and psychological distress, by age and sex.

Sex	Age group	Main effect <sup>a</sup>	Moderating effect <sup>b</sup>	
Males	Adolescents and youth	No	Social ties	No
		No	Recreational participation	No
		No	Collaborative participation	No
		No	Social cohesion	No
		No	Trust in neighbours	No
Females	Adolescents	No	Social ties	No
		No	Recreational participation	No
		No	Collaborative participation	No
		No	Social cohesion	No
		No	Trust in neighbours	No
	Youth	Yes-	Social ties	No
		Yes-	Recreational participation	No
		Yes-	Collaborative participation	No
		Yes-	Social cohesion	No
		Yes-	Trust in neighbours	No

<sup>a</sup> Main effect indicates that was significant the regression coefficient of the association of criminality and psychological distress.  
<sup>b</sup> Moderating effect indicates that was significant the regression coefficient of the interaction of criminality and social capital dimension to predict psychological distress.  
 -: negative effect (p < 0.050).

Models were adjusted for the occupation, moving from the neighborhood, region, and parental intervention by an adult during the interview.

To our knowledge, this is the first study that seeks to identify the relationship between community violence and psychological distress, considering social capital as a possible buffer in this association. A strength of our study is that different dimensions of social capital were included, allowing us to identify their potential modifying effect separately. Likewise, different types of community violence were considered, thus providing a broader picture of exposure to violent community environments. The sample size allowed multilevel analysis to be carried out, considering that the participants shared certain characteristics according to the place where they lived.

Our study has the following limitations: 1) it is not possible to establish causal relationships due to the cross-sectional design of the study; 2) the questionnaire to measure psychological distress has not been validated; 3) there is no way to recognize among the participants who could participate in acts of violence in whom a different relationship could be identified between the variables studied.

In conclusion, the structural components of the social capital (recreational participation, collaborative participation, and social cohesion) could buffer the relationship between exposure to community violence and psychological distress. This component

reflects the interest of the member's community in the collective well-being, which is materialized in organization and incidence activities.

Our study contributes to the knowledge of the effects that social environment could have on the health of adolescents and youth. According to our results, some dimensions of social capital could be useful to minimize the effects of some forms of community violence on mental health among adolescents and youth. This finding could be especially meaningful in places where it is challenging to minimize acts of social disorder or vandalism. These results can inform policy and programs aimed at reducing social disorder and vandalism and promoting social capital within the communities. Developing programs that encourage collaborative and recreational participation, as well as favor social cohesion, could have positive effects on the population's mental health. It is possible that interventions can be generated at the community level and comparative studies can be carried out between intervened and non-intervened places. In addition, studies could be carried out in communities that have sought to develop social capital compared to those that have not addressed this situation. Also, it is necessary to continue with the study of the effect of the environment on the population using other instruments and with other types of study designs to complement the findings obtained.

#### Availability of databases and material for replication

The databases of ECOPRED are public and can be found in: <https://www.inegi.org.mx/programas/ecopred/2014/>. The do files with commands used can be requested to the corresponding author.

#### What is known about the topic?

Some evidence shows that living in places where there is community violence is associated with negative mental health outcomes. Only one study documented a buffering effect of family conflict on the relationship between community violence and symptoms of distress and anxiety.

#### What does this study add to the literature?

Structural dimensions of social capital (cohesion and participation) may act as buffers in the relationship between living in violent community environments and symptoms of psychological distress.

#### What are the implications of the results?

Promoting the development of social capital could contribute to reducing the negative impact of living in a violent community on mental health. This is especially meaningful in places where has been hard to dealing with social disorder and vandalism.

#### Editor in charge

M. Errea.

#### Transparency declaration

The corresponding author on behalf of the other authors guarantee the accuracy, transparency and honesty of the data and information contained in the study, that no relevant information

has been omitted and that all discrepancies between authors have been adequately resolved and described.

#### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.gaceta.2024.102408](https://doi.org/10.1016/j.gaceta.2024.102408).

#### Authorship contributions

M.A. Pérez-Sastré: I certify that I have participated in the literature reviewing, conducted data analysis, prepared the first draft of the manuscript, and final reviewed it. C. García-Peña: I certify that I have participated in the interpretation of the results, critically reviewed the manuscript for important intellectual content, and final reviewed the article. L. Ramos-Lira: I certify that I have participated in the interpretation of the results, critically reviewed the manuscript for important intellectual content, and final reviewed the article. L. Ortiz-Hernández: I certify that I have participated in the conception of the research question, literature review, data analysis, critically reviewed the manuscript for important intellectual content, and final approval.

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#### Conflicts of interest

None.

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