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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH SUICIDE RISK AMONG URBAN AND RURAL ADOLESCENTS IN AMBATO, ECUADOR

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Abstract.

Background: Adolescent suicide risk is a major public health concern requiring early identification strategies. However, evidence regarding sociodemographic factors associated with high suicide risk among Ecuadorian adolescents remains limited.

Objective: To determine the prevalence of high suicide risk and analyse0000 its association with sociodemographic factors among adolescents from urban and rural educational institutions in Ambato, Ecuador.

Methods: A cross-sectional analytical study was conducted among 1,248 adolescents aged 14–16 years. Suicide risk was assessed using the Plutchik Suicide Risk Scale, with scores ≥6 classified as high suicide risk. Sociodemographic variables included sex, age and school location. Descriptive analyses and multivariable logistic regression were performed.

Results: High suicide risk was identified in 377 adolescents (30.2%). Female participants showed a higher proportion of high suicide risk than males (32.6% vs. 27.0%). Sex was the only sociodemographic factor independently associated with high suicide risk, with males showing approximately 24% lower probability compared with females. Age and school location were not independently associated with the outcome.

Conclusion: A considerable proportion of adolescents presented high suicide risk, highlighting the importance of school-based screening and early prevention strategies using validated instruments in Ecuadorian educational settings.

Key words. Adolescent, suicide, mental health, risk factors, mass screening.

Introduction.

Suicide among adolescents represents a major global public health concern due to its impact on premature mortality, psychological suffering, families and communities. According to the World Health Organization, suicide remains one of the leading causes of death among young people worldwide, highlighting the need to strengthen prevention of death among young strategies focused on early identification and timely intervention (World Health Organization, 2023). Adolescence constitutes a particularly vulnerable developmental period characterized by substantial biological, emotional and social transformations, during which mental health problems, emotional dysregulation, academic pressures and interpersonal difficulties may increase vulnerability to suicide-related outcomes [1,2]. Suicide risk should be understood as a multidimensional construct that encompasses different psychological and behavioural indicators, including hopelessness, depressive symptoms, previous suicidal experiences, impulsivity and suicidal thoughts; however, these dimensions should not be considered equivalent to suicidal ideation alone [3]. Therefore, identifying adolescents with elevated suicide risk before the emergence of severe outcomes represents a critical component of public health prevention, particularly in environments where early screening and referral pathways can be implemented.

In Latin America, adolescent suicide risk is influenced by a complex interaction of individual, family, social and structural determinants. Factors such as socioeconomic inequality, exposure to violence, family difficulties, limited access to mental health services and insufficient prevention resources may contribute to increased vulnerability among adolescents [4,5]. Despite growing recognition of adolescent mental health as a public health priority, epidemiological evidence regarding suicide risk in Latin American countries remains heterogeneous, particularly among school populations evaluated through standardized instruments. In Ecuador, available evidence has mainly focused on descriptive reports and specific vulnerable populations, while information regarding the prevalence and sociodemographic distribution of suicide risk among adolescents in educational settings remains limited [6]. This gap is relevant because schools represent strategic environments for prevention, allowing the identification of vulnerable students and the development of context-specific interventions based on local evidence.

The identification of sociodemographic factors associated with suicide risk is essential for recognizing population groups that may require targeted preventive strategies. Gender differences have been consistently described in suicide-related research, with female adolescents frequently reporting higher levels of emotional distress, suicidal thoughts and non-fatal suicidal behaviours, whereas males tend to present greater lethality in suicide attempts [7,8]. Age also represents an important factor, as adolescence involves progressive changes in cognitive development, emotional regulation, social relationship and exposure to psychological stressors, which may influence suicide risk patterns throughout this period [2]. In addition, geographical context may contribute to differences in suicide risk through variations in access to healthcare service, educational opportunities, social support networks and environmental stressors. However, findings regarding urban-rural differences remain inconsistent across populations, suggesting the importance of examining territorial factors within specific social and cultural contexts rather than assuming universal patterns [9]. Consequently, analysing sociodemographic characteristics among adolescents may provide relevant evidence for designing prevention strategies adapted to local realities.

Reliable identification of adolescents at elevated suicide risk requires the use of validated screening instruments capable of assessing multiple dimensions associated with vulnerability. The

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Plutchik Suicide Risk Scale is a widely dimensions associated with vulnerability. The Plutchik Suicide Risk Scale is a widely used screening instrument composed of 15 dichotomous items designed to evaluate suicide risk through indicators related to hopelessness, depressive symptoms, impulsivity, family history, previous suicidal experiences and other relevant psychological factors [10]. Previous validation studies have supported its usefulness for identifying individuals with increased suicide risk, commonly using a cutoff score of ≥6 to classify individuals requiring further assessment or preventive attention [11,12]. Given the limited evidence regarding adolescent suicide risk patterns in Ecuadorian educational settings, this study aimed to determine the prevalence of high suicide risk and analyze its association with sociodemographic factors among adolescent aged 14-16 years from urban and rural schools in Ambato, Ecuador, using the Plutchik Suicide Risk Scale.

Methods.

Study Design:

An observational, analytical, cross-sectional study with a quantitative approach was conducted. The design allowed the estimation of the prevalence of high suicide risk and the analysis of its association with sociodemographic variables among school adolescents in the canton of Ambato. The cross-sectional nature of the study enabled the simultaneous evaluation of exposure and outcome variables at a specific point in time. The analytical approach included bivariate association tests and multivariable modelling using logistic regression. This design was considered appropriate for identifying associated factors in school populations. The research was conducted following methodological guidelines for observational studies. No experimental interventions or modifications were made to the participants' environment. The unit of analysis consisted of each evaluated student.

Population and Sample:

The study population consisted of students aged 14 to 16 years enrolled in urban and rural educational institutions in the canton of Ambato, Tungurahua Province, Ecuador. The final sample included 1,248 adolescents, according to the validated records in the institutional database. Participants were selected through non-probabilistic convenience sampling, considering institutional availability and the corresponding authorization. Students enrolled during the current academic period who had informed consent from their legal guardians and voluntary assent were included. Records with incomplete or inconsistent responses in the instrument were excluded; however, after database cleaning, no cases with missing data in the main variable were identified. The distribution included students from institutions located in both urban and rural sectors. The representativeness of the sample was limited to the evaluated school population.

Study Variables:

The dependent variable was high risk of suicidal ideation, operationally defined as a score equal to or greater than six on the Plutchik Suicide Risk Scale. This variable was dichotomized into high risk (≥6) and low risk (<6) according to the cutoff point established in the Spanish validation of the instrument.

- The independent variables included:
- Gender (male/female)
- Age (14, 15, and 16 years)
- Place of residence (urban/rural)

Gender and age were self-reported by students at the time of the instrument administration. Place of residence was determined according to the geographical location of the educational institution. All variables were previously coded for statistical analysis. No additional clinical variables were incorporated into the multivariable model. The operational definitions allowed the development of adjusted inferential analyses.

Instrument:

The Plutchik Suicide Risk Scale was used as the measurement instrument. This scale consists of 15 dichotomous items with "yes" or "no" response options. Each affirmative response was assigned one point, and each negative response zero points, resulting in a total score ranging from 0 to 15. The cutoff point for high suicide risk was established at ≥6, according to validation studies conducted in Spanish-speaking populations. The scale assesses several dimensions related to suicidal risk, including:

- Hopelessness
- Depression
- family history
- impulsivity
- previous suicide-related behaviours

The instrument was self-administered in the school setting under the supervision of trained personnel. Internal consistency of the instrument was verified within the database prior to analysis, confirming coherence between the sum of individual items and the recorded total score [13].

Procedure:

Data collection was carried out during the corresponding academic period, within school hours and in coordination with institutional authorities. Prior to data collection, the necessary administrative and ethical approvals were obtained. Students received standardized instructions on how to complete the questionnaire, emphasizing the confidentiality and voluntary nature of participation. The application was conducted in classrooms supervised by personnel trained in emotional support. After completion of the questionnaires, the data were entered and verified in an electronic database for statistical analysis. Quality control procedures included cross-checking the sum of items with the reported total score, confirming consistency across all records. Cases that reached the established cutoff point were considered for institutional referral according to internal protocols. No data losses were recorded during the data entry process.

Statistical Analysis:

Statistical analysis was performed using specialized software for social sciences. Initially, a descriptive analysis was conducted using absolute and relative frequencies for categorical variables [14]. The prevalence of high suicide risk was estimated as a proportion relative to the total sample. To evaluate bivariate associations between the outcome and independent variables, the chi-square test was used, establishing a significance level of $p < 0.05$ [15]. A binary logistic regression model was

constructed to identify factors independently associated with high suicide risk. Odds ratios (OR) with 95% confidence intervals were estimated. Model fit was verified using standard statistical criteria. All analyses were conducted considering a 95% confidence level.

Ethical Considerations:

The study was conducted in accordance with international ethical principles for research involving human subjects. Approval was obtained from the corresponding institutional ethics committee prior to data collection. Legal guardians signed informed consent, and adolescents provided voluntary assent [16]. Confidentiality was ensured through anonymous coding of questionnaires and secure storage of the database. The results were used exclusively for academic and scientific purposes [17]. In cases identified as high risk, referral protocols were activated through the Student Counseling Department and specialized services according to current regulations. No direct clinical interventions were performed within the framework of the study. The rights, dignity, and well-being of all participants were respected.

Results.

Characteristics of the study population:

A total of 1,248 adolescents aged 14-16 years were included in the study. The sample comprised 714 females (57.2%) and 534 males (42.8%). Regarding age distribution, 40.1% of participants were 15 years old, followed by 14n year old adolescents (32.1%) and 16-year-old adolescents (27.8%). More than half of the participants attended rural educational institutions (58.0%), while 42.0% were enrolled in urban schools (Table 1).

Prevalence of high suicide risk:

According to the Plutchik Suicide Risk Scale, 377 adolescents (30.2%) presented high suicide risk, defined as a score ≥6, whereas 871 participants (69.8%) remained below thee established cutoff. The proportion of high suicide risk was higher among females (32.6%) than males (27.0%). Differences were also explored according to age and school location, however, these variables were further assessed through multivariable analysis (Table 2).

Table 1. *Sociodemographic Characteristics of the Adolescents included in the study (n = 1,248).*

Variable	Category	n	%
Gender	Male	534	42.8
	Female	714	57.2
Age (years)	14	400	32.1
	15	501	40.1
	16	347	27.8
Territorial origin	Urban	524	42.0
	Rural	724	58.0

Table 2. *Distribution of High Suicide Risk according to sociodemographic characteristics.*

Variable	Category	High Risk (n)	Total (N)	%
Global	—	377	1,248	30.2
Gender	Female	233	714	32.6
	Male	144	534	27.0
Age (years)	14	120	400	30.0
	15	148	501	29.5
	16	109	347	31.4
Territorial origin	Urban	160	524	30.5
	Rural	217	724	30.0

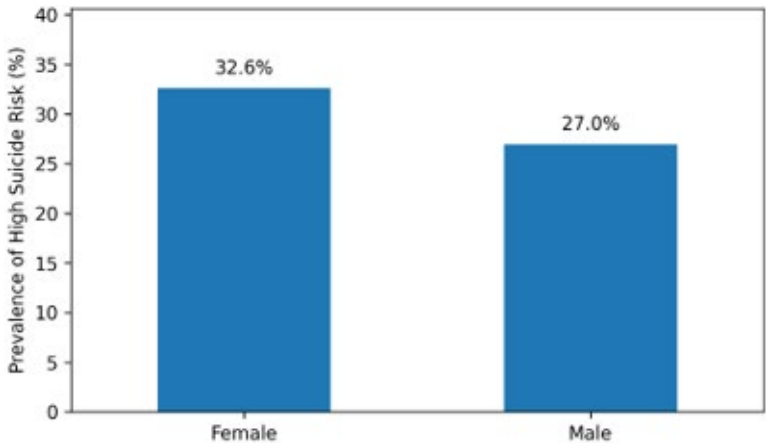


Figure 1. *Prevalence of High Suicide Risk by Gender (Plutchik ≥6).*

Factors associated with high suicide risk:

Multivariable analysis was conducted to identify sociodemographic characteristics independently associated with high suicide risk. Gender was the only factor that remained significantly associated with the outcome after adjustment. Male adolescents showed a lower probability of presenting high suicide risk compared with females, with approximately 24% lower odds. Age and school location were not independently associated with high suicidal risk.

Distribution of Plutchik Suicide Risk Scale scores:

The distribution of Plutchik Suicide Risk Scale scores demonstrated variability in suicide risk indicators among participants. Although most adolescents presented scores below the established cutoff, a considerable proportion reached values compatible with high suicide risk, highlighting the relevance of systematic screening within educational settings.

Discussion.

This study identified a substantial proportion of adolescents with high suicide risk assessed using the Plutchik Suicide Risk Scale, with 30.2% of participants reaching the established cutoff score. Among the sociodemographic characteristics evaluated, sex was the only factor independently associated with high suicide risk, with female adolescents presenting a higher proportion of elevated risk compared with males. Conversely, age and school location were not independently associated with the outcome. These findings contribute to the limited epidemiological evidence regarding adolescent suicide risk in Ecuadorian educational settings and highlight the importance of early identification strategies within school environments.

The prevalence of high suicide risk observed in this study reflects the presence of a considerable subgroup of adolescents experiencing psychological vulnerability. Previous research has demonstrated that suicide-related outcomes during adolescence are influenced by multiple interacting factors, including emotional distress, depressive symptoms, family characteristics, social difficulties and environmental stressors [1,2]. However, comparisons between prevalence estimates should be interpreted cautiously because reported frequencies vary according to the populations. The use of the Plutchik Suicidal Risk Scale in the present study allowed the identification of adolescents with elevated risk indicators rather than the diagnosis of suicidal behaviour or clinical conditions.

The association between sex and high suicide risk observed in this study in consistent with previous evidence showing that female adolescents frequently report higher levels of emotional distress, depressive symptoms and suicide-related indicators compared with males [7,8]. Several explanations have been proposed for these differences, including variations in emotional expression, coping strategies and the prevalence of internalizing disorders among adolescents. Nevertheless, gender patterns in suicide-related outcomes are complex, as males often present higher lethality in suicide-related outcomes are complex, as males often present higher lethality in suicide attempts and completed suicide, despite lower reported levels of some psychological indicators [1]. Therefore, the higher prevalence of high suicide risk among females in this sample should be interpreted as a difference in detected vulnerability rather than as a direct indicator of suicide mortality.

Although age is frequently identified as an important factor in adolescent suicide-related outcomes, no significant association was observed between age groups in the present study. These findings may be explained by the relatively restricted age range of participants (14-16 years), which represents a specific developmental stage within adolescence. Previous studies have suggested that suicide risk may vary throughout adolescence due to changes in cognitive development, emotional regulation, social relationship and exposure to psychological stressors [2]. However, differences may become more evident when comparing broader developmental periods, including early, middle and late adolescence.

The absence of an independent association between school location and high suicide risk suggests that geographical context alone may not explain differences in adolescent vulnerability. Previous studies have highlighted that rural adolescents may experience barriers related to mental health service availability, healthcare access and social isolation, whereas urban adolescents may face other stressors associated with academic demands, social pressure and environmental challenges [9]. These competing influences may contribute to heterogeneous findings across populations and reinforce the importance of analysing contextual factors within specific communities rather than assuming universal urban-rural patterns.

From a public health perspective, the findings support the relevance of school-based strategies for the identification of adolescents with elevated suicide risk. Educational institutions represent strategic settings for implementing screening programs, referral pathways and preventive interventions, particularly in contexts where access to specialised mental health services may be limited. However, screening should be integrated into comprehensive prevention frameworks that include psychological support, family involvement and appropriate follow-up mechanisms rather than functioning as an isolated detection procedure [18].

This study has several strengths, including the evaluation of a relatively large adolescent sample, the inclusion of both urban and rural educational settings and the use of a validated suicide risk screening instrument. Nevertheless, some limitations should be considered. The cross-sectional design prevents establishing temporal or causal relationships between sociodemographic characteristics and high suicide risk. Additionally, suicide risk was assessed through a self-report screening scale and should not be interpreted as a clinical diagnosis. Finally, although the inclusion of urban and rural schools improves contextual diversity, the sample was obtained from a single Ecuadorian city, which may limit the generalisability of the findings.

Conclusion.

This study identified a high proportion of adolescents with elevated suicide risk according to the Plutchik Suicide Risk Scale in educational institutions in Ambato, Ecuador. Female gender was the only sociodemographic characteristic independently associated with the outcome after adjustment. These findings highlight the importance of systematic identification of adolescents with increased vulnerability within school settings.

Early detection strategies, supported by validated screening instruments and appropriate referral pathways, may contribute to strengthening suicide prevention efforts among adolescents. Future studies should incorporate longitudinal designs and additional psychosocial variables to better understand the factors influencing suicide risk trajectories in Ecuadorian youth.

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