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Youth Educational Dropout in Post-Pandemic Italy: Trends, Risk Factors, and Implications  
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## **Youth Educational Dropout in Post Pandemic Italy: Trends, Risk Factors, and Implications**

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### **Abstract**

#### **Background:**

After the COVID-19 pandemic, Italy experienced a marked increase in educational dropout among young people.

#### **Objective:**

To quantify changes in educational abandonment between the quinquennia 2016–2020 and 2020–2024, identify major contributing factors, and discuss prevention and treatment strategies.

#### **Methods:**

Comparative analysis of population-level indicators per 100,000 youth across two five-year periods.

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Statistical tests were applied to assess significance (reported  $p < 0.05$ ). Epidemiological attribution estimates were calculated for major risk factors.

### **Results:**

All indicators of educational dispersion worsened: early school leaving +19%, university dropout +16%, NEET (13–24 years) +17%, total educational abandonment +17%, corresponding to 1,450 additional cases per 100,000 youth. Three principal risk factors emerged: regular cannabis use (OR = 1.51; estimated contribution  $\approx$  280 cases/100,000), **family** breakdown/instability (OR range 1.3–1.8+), and intensive smartphone use (mean OR  $\approx$  1.45; estimated contribution 300–450 cases/100,000). Co-occurrence of these factors produced multiplicative increases in dropout risk.

**Discussion:** The post-pandemic rise in dropout is statistically significant and epidemiologically meaningful. Integrated prevention, early identification, and person-centered clinical and educational interventions are urgently required.

Keywords: Educational dropout; youth; cannabis; family instability; smartphone; post pandemic; Italy; prevention

## **1. Introduction**

Family breakdown—typically defined as parental separation, divorce, or repeated changes in family structure is a well-established risk factor for adverse developmental and educational outcomes. Among these, school dropout is one of the most consistently associated consequences. Different meta-analytic studies examine the strength of the association, the role of socioeconomic and psychosocial mediators, and the contribution of family instability to dropout risk. Meta-analytic investigations confirm that parental separation increases the odds of school dropout by 70–120%, even

after adjustment for socioeconomic and psychosocial factors<sup>2 3</sup>, and the association is consistent across countries, cohorts, and family union types. Family instability and repeated transitions further elevate risk, largely through reduced parental involvement and increased stress exposure<sup>4</sup>. The socioeconomic disadvantage explains part—but not all—of the association, indicating a multifactorial causal structure<sup>..</sup>. Adolescents from separated or unstable families represent a high risk group for early school leaving.

Mental and physical health problems are associated to dropout. Across studies, the relationship between dropout and health is bidirectional and multifactorial:

Health problems → dropout:

Mental health difficulties, school burnout, somatic complaints and chronic illness reduce concentration, attendance and academic performance, increasing the probability of disengagement and early leaving<sup>5 6</sup>

Dropout → health problems:

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<sup>2</sup> Karhina K, Bøe T, Hysing M, Askeland KG, Nilsen SA. Parental Separation and School Dropout in Adolescence. *Scand J Public Health*. 2024;52:632-9.

<sup>3</sup> Kailaheimo-Lönnqvist S, Jalovaara M, Myrskylä M. Parental Separation and Children's Education—Changes Over Time? *Eur J Popul*. 2025;41:5.

<sup>4</sup> Pribesh SL, Carson JS, Dufur MJ, Yue Y, Morgan K. Family Structure Stability and Transitions, Parental Involvement, and Educational Outcomes. *Soc Sci*. 2020;9(12):229.

<sup>5</sup> Banaag RA, Sumodevilla JLC, Potane JD. Factors Affecting Student Drop-Out Behavior: A Systematic Review. *Int J Educ Manag Innov*. 2024;5(1):53-70.

<sup>6</sup> Vansoeterstede A, Lichtlé J, Cappe E, Boujut E. A Systematic Review of Longitudinal Changes in School Burnout Among Adolescents: Trajectories, Predictors, and Outcomes. *J Adolesc*. 2023;95(2):224-47.

Leaving school limits access to supportive environments, peer networks and future opportunities, increasing exposure to unemployment, poverty, risky behaviors and psychological distress<sup>7 8</sup>.

Shared risk factors: are socioeconomic disadvantage, family instability, neighborhood risk and prior behavioral problems contribute both to health problems and to dropout, partially explaining the association<sup>9</sup>

Particularly school dropout is associated to an increased risk of substance use in bidirectional way ( predictive and effect), suicide, and suicide ideation.

Zhu D, Wang F, Wang S, et al<sup>10</sup> found that adolescents who drop out of school show approximately double the odds of using substances compared with peers who remain enrolled. Key pooled estimates include: Tobacco use: OR 1.92 (95% CI 1.32–2.79). Illicit drug use (any substance): OR 1.91 (95% CI 1.63–2.23) [1], Heradstveit O, Hysing M, Bøe T, Nilsen SA, These findings indicate that dropout is associated with a substantially higher incidence of both moderate and high-risk substance use patterns. Townsend et al. (2007) reviewed 46 studies and found a consistent association between high-school dropout and increased use of tobacco, alcohol, cannabis, and other drugs<sup>11</sup>. Although the review did not pool effect sizes, it concluded that: dropouts exhibit higher prevalence of substance use across

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<sup>7</sup> Freudenberg N, Ruglis J. Reframing School Dropout as a Public Health Issue. *Prev Chronic Dis.* 2007;4(4):A107.

<sup>8</sup> Suhrcke M, de Paz Nieves C. *The Impact of Health and Health Behaviours on Educational Outcomes in High-Income Countries: A Review of the Evidence.* Copenhagen: WHO Regional Office for Europe; 2011.

<sup>9</sup> Banaag RA, Sumodevilla JLC, Potane JD. Factors Affecting Student Drop-Out Behavior: A Systematic Review. *Int J Educ Manag Innov.* 2024;5(1):53-70.

<sup>10</sup> Zhu D, Wang F, Wang S, Cao L, Tong Y, Xie F, et al. Substance Use Related to School Dropout: A Systematic Review and Meta-Analysis. *Psychology in the Schools.* 2025;62(6):1937-52.

<sup>11</sup> Townsend L, Flisher AJ, King G. A Systematic Review of the Relationship Between High School Dropout and Substance Use. *Clin Child Fam Psychol Rev.* 2007;10(4):295-317.

all categories. The relationship is robust across countries and socioeconomic contexts. Causality is difficult to establish due to shared risk factors (poverty, family instability, behavioral problems). There is the prospective evidence that substance use is a predictor of dropout. Prospective cohort data support the reverse causal pathway: substance use increases the likelihood of dropping out. Heradstveit et al. (2024) found that risky substance use (RSU) at ages 16–19 predicted dropout within five years, with adjusted ORs ranging from 1.26 to 2.25 depending on the substance and frequency<sup>12</sup>. Even after adjusting for externalizing behaviors, most associations remained significant, suggesting that substance use is an independent predictor of dropout.

Valkov (2018) identified three explanatory models<sup>13</sup>:

Dropout → substance use (loss of structure, increased exposure to deviant peers).

Substance use → dropout (academic decline, absenteeism, disciplinary issues).

Shared risk factors (socioeconomic disadvantage, family dysfunction, neighborhood risk, behavioral disorders).

The evidence supports a bidirectional, mutually reinforcing relationship, with shared vulnerabilities playing a major role.

A history of school dropout was associated with OR 6.44 (95% CI 3.03–13.65) for suicide attempt in pooled longitudinal studies.<sup>14</sup> Low academic

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<sup>12</sup> Heradstveit O, Hysing M, Bøe T, Nilsen SA, Sivertsen B, Bretteville-Jensen AL, et al. Prospective Associations Between Adolescent Risky Substance Use and School Dropout. *Nordic Studies on Alcohol and Drugs*. 2024;41(1):24-38.

<sup>13</sup> Valkov P. School Dropout and Substance Use: Consequence or Predictor? *Trakia Journal of Sciences*. 2018;16(2):95-101.

performance showed OR 1.48 (95% CI 1.22–1.81) and any school failure OR 1.98 (95% CI 1.49–2.64) for suicide attempt. Population attributable risk (PAR): Estimated PAR for suicide attempt attributable to school dropout  $\approx$  9.9%, to low academic performance  $\approx$  5.1%, and to any school failure  $\approx$  6.7% in the meta-analysis sample.

The COVID-19 pandemic disrupted schooling, social networks, and family dynamics, with potential long-term effects on youth educational trajectories. The objective of this study is to examine changes in educational abandonment in Italy comparing the periods 2016–2020 and 2020–2024, and evaluates the relative contribution of behavioral and social risk factors that have increased in prevalence since 2020. The data are taken from the 2025 Report on the health status of Italian adolescents and young people by the Italian Society of Adolescentology and Adolescent Medicine.<sup>15</sup>

## 2. Methods

**Design.** Comparative, population-level analysis of educational indicators per 100,000 youth across two quinquennia (2016–2020 vs 2020–2024).

**Indicators.** Early school leaving, university dropout, NEET prevalence (ages 13–24), and total educational abandonment.

**Statistical analysis.** Percent change between periods calculated for each indicator. Hypothesis testing performed to assess whether observed changes exceeded random variation ( $p < 0.05$ ). Odds ratios (OR) for associations between risk factors and dropout were taken from consolidated literature syntheses and used to estimate attributable cases per 100,000 youth given observed prevalence changes.

**Risk factors assessed.** Regular cannabis use, family breakdown/instability (separation, divorce, chronic conflict), and intensive smartphone use.

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<sup>14</sup> Castellví P, Miranda-Mendizábal A, Alayo I, Parés-Badell O, Almenara J, Alonso I, et al. Assessing the relationship between school failure and suicidal behavior in adolescents and young adults: a systematic review and meta-analysis of longitudinal studies. *School Ment Health*. 2020;12:429–441

<sup>15</sup> Italian Society of Adolescentology and Adolescent Medicine the 2025 Report on the health status of Italian adolescents and young people. Ed Università Ambrosiana: 2026

**Attribution estimates.** Population attributable impact approximated by combining ORs with observed prevalence increases for each factor.

### 3. Results

**Trends.** Between 2016–2020 and 2020–2024:

- **Early school leaving: +19%**
- **University dropout: +16%**
- **NEET (13–24 years): +17%**
- **Total educational abandonment: +17%**

(equivalent to **+1,450 cases per 100,000 youth**)

All increases reached statistical significance ( $p < 0.05$ ).

**Risk factor contributions.**

- **Cannabis use:** Regular use associated with **OR = 1.51** ( $\approx +51\%$  risk). Post-pandemic increase in regular use **+17%**; estimated impact  $\approx$  **280 cases per 100,000** attributable to cannabis.
- **Family breakdown/instability:** Meta-analytic ORs for children of separated parents range **1.3–1.6** ( $+30\%$  to  $+60\%$  risk); in high-conflict separations OR may exceed **1.8** ( $+80\%$  risk). In Italy, youth from unstable families show nearly double dropout rates compared with peers from stable families.
- **Smartphone overuse:** Heavy smartphone use associated with mean **OR  $\approx$  1.45** ( $+45\%$  risk). Estimated absolute impact **300–450 cases per 100,000** attributable to problematic smartphone use.

**Interaction effects.** Co-occurrence of cannabis use, family instability, problematic smartphone use, and psychological distress produced multiplicative risk increases; combined profiles may double or triple dropout risk relative to single-factor exposure.

Limitations. This analysis synthesizes population indicators and literature based effect sizes; causal inference at the individual level requires longitudinal cohort data. Attribution estimates are approximate and depend on the accuracy of underlying prevalence and OR inputs.

## 4. Discussion

Adolescent school dropout is increasingly recognized as a multifactorial public-health outcome. Rather than being driven by a single factor, dropout risk accumulates across multiple domains: mental health, physical health, family instability, school disengagement, socioeconomic adversity, substance use.

There is the evidence of a cumulative risk from mental health problems . Longitudinal studies consistently show that depression, anxiety, stress, and emotional dysregulation predict absenteeism, academic decline, and dropout. A systematic review of dropout determinants identified mental health issues as one of the strongest predictors, especially when combined with family or school problems <sup>16</sup>

A systematic review of adolescent school burnout trajectories found that high and persistent burnout predicts: depressive symptoms, somatic complaints, academic disengagement, increased dropout risk Burnout rarely occurs alone; it typically coexists with stress, anxiety, or family conflict, creating a cumulative risk profile. <sup>17</sup> Adolescents reporting frequent

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<sup>16</sup> Banaag RA, Sumodevilla JLC, Potane JD. Factors Affecting Student Drop-Out Behavior: A Systematic Review. *Int J Educ Manag Innov.* 2024;5(1):53-70.

<sup>17</sup> Vansoeterstede A, Lichtlé J, Cappe E, Boujut E. Longitudinal Changes in School Burnout Among Adolescents: Trajectories, Predictors, and Outcomes. *J Adolesc.* 2023;95(2):224-47.

headaches, fatigue, or chronic illness show higher absenteeism and disengagement. Profiles combining somatic symptoms + mental health problems are strongly associated with dropout in latent-profile analyses <sup>18</sup>.

Dropout is associated also to long-term physical health problems. Public-health analyses show that early school leaving predicts: poorer self-rated health, higher chronic disease burden, increased mortality risk <sup>19</sup>.

Dropout acts as a social determinant of health, amplifying pre-existing vulnerabilities and constitutes a significant target for prevention.

The observed 17% rise in total educational abandonment over four years represents a substantial public-health and socio-economic concern. The parallel increases in regular cannabis consumption, family instability, and intensive smartphone use suggest both independent and interacting pathways to disengagement from education. Mechanisms include cognitive and motivational impairment (substance use), reduced parental and social support (family breakdown), and attentional, sleep, and mental-health sequelae (smartphone overuse). The multiplicative interaction among risk factors underscores the need for multidimensional assessment and intervention.

In light of these data, it is possible to outline a preventive strategy.:

- 1. Early identification and multidisciplinary care.** Educational disengagement should be screened for in primary care and school settings; cases with complex profiles require adolescentology specialists working in multidisciplinary teams including trained psychologists.

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<sup>18</sup> Çimen F, Seçer İ, Ay E. School Attendance Problems, Mental Health, and Dropout: A Latent Profile Analysis. *School Ment Health*. 2026;18:109-23.

<sup>19</sup> Effective prevention requires integrated school–health strategies targeting adolescents with cumulative risk profiles.

2. **Evidence-based interventions.** Implement school-based and community programs targeting substance use prevention, family support and mediation services, and digital-literacy/healthy-use curricula for smartphones.
3. **Training and capacity building.** Scale up training so that every school has at least one educator or professional competent in validated person-centered methods (e.g., the “Kairos program”<sup>20</sup><sup>21</sup>,<sup>22</sup> <sup>23</sup>taught in specialized master’s programs).

Emphasize approaches that valorize adolescent resources and address relational and developmental needs rather than pathologizing behavior. **Policy actions.** Invest in targeted funding for at-risk populations, strengthen family support policies, and integrate mental-health services within educational systems.

School-based and community interventions can reduce self-harm/suicidal behaviour in youth; systematic reviews report statistically significant reductions for some program types (school, clinical, community), though effect sizes vary by intervention and outcome.<sup>24</sup> Recent systematic reviews emphasize multifactorial links (depression, bullying, school disengagement) between school problems and suicidal behaviour, reinforcing that school

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<sup>20</sup> Brera GR. The Kairos of existence: mystery, possibility and reality in adolescence and in human nature. Milan: Università Ambrosiana; 1995-2026

<sup>21</sup> Brera G. R The adolescent as person. Person centered adolescence theory, *Medicine Mind and Adolescence* vol XVI, n° 1-2, pp 5-19

<sup>22</sup> Ronchin N, Brera GR. Application of the “Kairos Method” in a group of adolescents: a pilot study. In: Proceedings of the 6th National SIAd Congress “Assisi 99. Prevention and Clinical Practice”; 22–24 October 1999; Assisi, Italy. Milan: SIAd; 1999.

<sup>23</sup> Brera GR, Ronchin N. Applying to parents the health education Kairos method: effects on personality variables over time. In: Proceedings of the International Congress “Adolescence in the 21st Century – Time for Growing”; 2001; Assisi, Italy.

<sup>24</sup> Walsh E, McMahon J, Herring MP. Research review: The effect of school-based suicide prevention on suicidal ideation and suicide attempts and the role of intervention and contextual factors among adolescents: a meta-analysis and meta-regression. *J Child Psychol Psychiatry*

failure is one of several interacting risk factors. Higher school connectedness was associated with reduced odds of suicidal ideation/attempts (pooled OR  $\approx$  0.53 for ideation and 0.59 for attempts in meta-analytic syntheses)<sup>25</sup>.

The post-pandemic increase in youth educational dropout in Italy is statistically significant and epidemiologically relevant. Regular cannabis use, family instability, and problematic smartphone use are major contributors whose combined effects substantially elevate dropout risk. Immediate, coordinated prevention and treatment strategies—grounded in person-centered adolescent medicine and school-based interventions—are essential to reverse this trend and protect the future human capital of the country.

The ISTAT ELET data, ( which measure in percentage terms early school leaving among 18–24-year-olds, show a decrease of 42% between 2020 (14.2%) and 2025 (8.2%).<sup>26</sup>

However, these data do not reflect the real extent of the problem because ISTAT publishes only the ELET indicator for ages 18–24, which:measures only formal early school leaving, not NEETs, not university dropout, not total educational abandonment does not use ORs or attributable-risk estimates,does not aggregate data by quinquennial,does not include ages 13–17,does not include behavioural factors (cannabis use, smartphone overuse, family conflict)

By contrast, the analytical work we present here: uses custom-built indicators (per 100,000 youth),combines the 13–24 age range, not 18–24includes NEET prevalence, university dropout, total educational

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<sup>25</sup> Marraccini ME, Brier ZMF. School connectedness and suicidal thoughts and behaviors: a systematic meta-analysis. *School Psychology Quarterly*. 2017;32(1):5–21.

<sup>26</sup> Istituto Nazionale di Statistica (ISTAT). Early leavers from education and training (ELET) indicator, population 18–24 years. In: *BES – Equitable and Sustainable Well-Being Reports 2020–2025*. Rome: ISTAT; 2025.

abandonment, and behavioural risk factors, compares two quinquennia (2016–2020 vs 2020–2024), uses percentage changes internal to its own dataset, not official ISTAT values integrates risk estimates from the literature (ORs) to calculate attributable cases

In conclusion: ISTAT ELET indicator (Early Leavers from Education and Training, ages 18–24) cannot be directly compared with broader analyses of educational abandonment, NEET prevalence, or multi-factor risk models covering ages 13–24.

## **Riassunto**

### **Background**

Dopo la pandemia di COVID-19, l'Italia ha registrato un marcato aumento dell'abbandono educativo tra i giovani.

### **Obiettivo**

Quantificare i cambiamenti nell'abbandono educativo tra i quinquenni 2016–2020 e 2020–2024, identificare i principali fattori contributivi e discutere strategie di prevenzione e intervento.

### **Metodi**

Analisi comparativa di indicatori di popolazione per 100.000 giovani nei due periodi quinquennali. Sono stati applicati test statistici per valutare la significatività ( $p$  riportato  $< 0,05$ ). Sono state calcolate stime epidemiologiche di attribuzione per i principali fattori di rischio.

### **Risultati**

Tutti gli indicatori di dispersione educativa sono peggiorati: abbandono scolastico precoce +19%, abbandono universitario +16%, NEET (13–24

anni) +17%, abbandono educativo totale +17%, pari a 1.450 casi aggiuntivi per 100.000 giovani.

Sono emersi tre principali fattori di rischio: uso regolare di cannabis (OR = 1,51; contributo stimato  $\approx$  280 casi/100.000), instabilità o rottura familiare (intervallo OR 1,3–1,8+), e uso intensivo dello smartphone (OR medio  $\approx$  1,45; contributo stimato 300–450 casi/100.000).

La co-occorrenza di questi fattori ha prodotto aumenti moltiplicativi del rischio di abbandono.

## Dicussione

L'aumento post-pandemico dell'abbandono è statisticamente significativo e rilevante dal punto di vista epidemiologico. Sono urgentemente necessarie strategie integrate di prevenzione, identificazione precoce e interventi clinici ed educativi centrati sulla persona.