

Students at Risk: sociodemographic variables and university dropout

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ABSTRACT – Students at Risk: sociodemographic variables and university dropout. Nearly 30% of Portuguese university students drop out, posing a significant challenge with long-term consequences. This study aimed to identify socio-demographic, economic, and academic factors linked to higher dropout intentions, which is especially relevant in a post-pandemic era. It involved 1,404 respondents, mainly women under 25, selected through a convenience quota method. Higher dropout intentions were observed among men, displaced students, caregivers, and those studying Languages and Humanities. The findings offer insights into dropout complexity and provide recommendations for academic institutions to address this issue.

Keywords: Dropout Intentions. Higher Education. Sociodemographic Contexts.

RESUMO – Estudantes em Risco: variáveis sociodemográficas e abandono académico. Quase 30% dos estudantes universitários em Portugal abandonam os estudos, representando um desafio significativo com consequências a longo prazo. Este estudo teve como objetivo identificar fatores socioeconômicos, demográficos e académicos associados a uma maior intenção de desistência, algo especialmente relevante no contexto pós-pandemia. Foram envolvidos 1.404 participantes, principalmente mulheres com menos de 25 anos, selecionados por meio de um método de amostragem por conveniência. Observou-se uma maior intenção de abandono entre homens, estudantes deslocados, cuidadores e aqueles que estudam Línguas e Humanidades. Os resultados oferecem perspectivas sobre a complexidade do abandono e fornecem recomendações para que as instituições académicas enfrentem essa questão.

Palavras-chave: Intenção de Abandono Académico. Ensino Superior. Contextos Sociodemográficos.

Despite significant efforts to enhance Higher Education (HE) enrolment in Portugal, such as reducing fees, increasing the number of university institutions, providing scholarships, and improving student housing facilities, Portuguese students still face challenges, and their vulnerability to dropout is highlighted by recent data (European Commission, 2023a; Eurostat, 2023a; Eurostat, 2023b). In 2021/2022, after their first year of tertiary studies, 10,9% of students were no longer enrolled in the national higher education (European Commission, 2023b). Additionally, Portugal's current enrolment rate for tertiary studies stands at 30%, which is notably lower than the EU (European Union) average of 40.3%. Also, regarding Organisation for Economic Co-operation and Development (OECD) countries tertiary education completion rates, 39% of full-time students who enter a bachelor's programme graduate within the theoretical duration of the programme in comparison with the 30% of students in Portugal in the same context (OECD, 2022).

Finally, although Portugal has exceeded the 2030 Sustainable Development Goal for HE, with at least 44% of people aged 25-34 with tertiary attained (OECD, 2023a), it lags behind some other EU countries like Luxembourg and Ireland, which show percentages of 62.6% and 61.7%, respectively. Considering the OECD and partner countries with available data, the level of short-cycle tertiary attainment among the same age group is also one of the lowest (OECD, 2023a).

It's worth mentioning that the Portuguese educational system is regulated by the Basic Law of the Educational System, Law 46/ 86, of October 14th (Assembly of the Portuguese Republic, 1986) and is developed in three levels: primary, secondary and higher education. The higher education is composed by Bachelor's degree, 1st cycle degree programme; Master's degree, 2nd cycle degree programme and Doctorate, 3rd cycle degree programme and is organised in a binary system which includes university education (university institutes and other university teaching institutions, guided by a perspective promoting research promotion and the creation of knowledge) and polytechnic education (comprises polytechnic institutes and other polytechnic teaching institutions, guided by a perspective of applied research and development aimed at understanding and solving concrete problems). Higher education can be taught in public institutions (made up of institutions belonging to the state and the foundations) and private institutions (belonging to private entities and cooperatives) (DGES, 2024). Private higher education institutions have to obtain prior recognition from the Ministry with the authority for the Higher Education (DGES, 2024). Higher education in state context (public universities) is provided on a competitive basis, since that the admissions are sustained on a *numerus clausus* system for each study programme and on each student's application grade. In accordance with national regulations, private universities are autonomous in defining their own admission criteria. These include, for instance, minimum grades and core academic areas. The ministry also has the authority to approve the number of available study places, though it is the responsibility of the private

university to select the candidates (Williams, 2017; Fonseca et al., 2014).

Compared to other EU countries, Portuguese students face multiple challenges: financial difficulties are cited as one of the main reasons for interrupting studies, with 46% of students in Portugal reporting that they experience severe, very severe, or moderate financial difficulties (Hauschildt, 2021). From a social perspective, research suggests that graduates from disadvantaged socioeconomic backgrounds may face challenges in completing their studies on time, even after controlling for academic performance, educational behaviors, program characteristics, and institutional characteristics (Zarifa et al., 2018). For students with family low incomes, fees can cause or at least exacerbate financial difficulties which can lead to a higher risk of dropping out of higher education (Heineck et al., 2005; Hauschildt et al., 2024). Portugal is one of the Eurostudent countries where students spend more than 20 hours a typical week studying hard (Hauschildt, 2024). More than half (59%) of Portuguese students say they can only afford higher education if they have a job, compared to 50% of the EU average. Employment gains are important for students' total income (Hauschildt, 2021). This financial strain may impact their academic performance. Working students express difficulties in their studies because of their work responsibilities. Part-time studies are therefore one of the only options for students from low socioeconomic backgrounds. Working students, or students with family care obligations, tend to prefer part-time studies because they offer flexibility. On average, 17% of all students have this experience. Students who work more than 20 hours per week are notably affected (Hauschildt et al., 2024).

Although Portugal has an average age of 20 years for students entering tertiary education for the first time (OECD, 2021) and that younger students dominate the age profile of EU students with 53% (Hauschildt et al., 2024), our country has a high proportion of students with care responsibilities compared to the EU average (Hauschildt et al., 2021). At least 20% of Portuguese students are parents, 60 % of student-parents have children with at least 6 years (Hauschildt, 2021). Consequently, these students spend more time on care arrangements, namely childcare. This context plays an important role in the need to face greater challenges in reconciling their care responsibilities with the demands of studying. Caring for (minor) children puts constraints on students' time, finances, and attention to academic activities.

Juggling academic endeavours with family or employment obligations can be challenging and has been determined as a significant determinant of persistence in HE (Casanova et al., 2018; Nieuwoudt; Pedler, 2021). Conflicting demands on time and energy may cause students to put family and work obligations ahead of their academic pursuits, impacting students' academic performance and potentially precipitating their decision to withdraw from university (Casanova et al., 2018). Data shows not only that students with children tend to pursue their studies with a low intensity (i.e., spending less than 20 hours a week on study-related activities) (Hauschildt et al., 2024) but also that

reconciling academic activities and family or work responsibilities may play an important role in university dropout (Casanova; Bernardo; Almeida, 2021; Hauschildt et al., 2024). With higher youth unemployment rates expected post-pandemic, financial difficulties are likely to increase, leading to a potential rise in academic dropout rates.

Also, studying far from family residence usually entails leaving familiar settings and support networks and can result in significant emotional and practical challenges, such as financial, environmental, and social difficulties (Nghiem et al., 2021). Moreover, homesickness may occur, particularly for first-year students, which, when at excessive levels, may harm students' overall well-being and academic performance (Thurber; Walton, 2012). Additionally, moving away from home to attend university requires forming new relationships and adjusting to new living arrangements, which may further challenge students (Roring II, 2008). It is therefore important to note that students face a wide set of stressors, such as living independently, adapting to a new social environment and academic pressures, which make them particularly vulnerable to mental health problems (Thompson et al., 2021).

The global HE reality today reveals a complex interplay of challenges, with student dropout emerging as a critical issue, enhanced by the COVID-19 pandemic and amplified by pre-existing inequalities (Farcnik; Muren; Franca, 2022). There are an estimated 235 million students in universities around the world, but there are wide disparities in university attendance, which represents only 40% of the college-age population, with significant differences between regions and countries (Öztürk; Dayıoğlu, 2023). The pandemic has had a disproportionate impact on the most vulnerable (Yeomans; Fuentes, 2022). Namely, recent studies also indicate that students who experienced academic and socioeconomic challenges during the COVID-19 pandemic were found to be at a higher risk of dropping out post-pandemic (Martínez-Líbano; Yeomans-Cabrera, 2023).

This scenario highlights the pressing need for reform and adaptation in HE to address both dropout rates and intrinsic inequalities in access and quality of education worldwide (Vidal et al., 2022). Therefore, gaining a better understanding of the factors that contribute to dropout rates in HE is crucial for the well-being of individual students and for reducing college dropout rates, as well as improving job skills for future generations (Bardach et al., 2020; Zanin; Garcia, 2024). It is also pertinent to consider that dropping out perpetuates financial dependency and delays progress through developmental stages of the life cycle, such as leaving a parent's house and starting a family (Eurostat, 2023a). Due to the economic constraints of the COVID-19 pandemic, that in Portuguese students negatively affected financially more than a third in Portugal (Hauschildt et al., 2024) this outcome is very likely to be heightened and have important psychological and social impacts on this generation and, consequently, on society as a whole (Eurofound, 2021).

The link between psychological resilience and academic dropout is significant, with research consistently showing that higher resilience is associated with lower dropout rates among university students. Resilience, defined as the ability to adapt to and overcome adversity, plays an important role in promoting academic persistence and success. The literature suggests that students with greater resilience are less likely to drop out of university. For example, research in Ecuador and Spain found that students who persisted in their studies during the COVID-19 pandemic had significantly higher levels of resilience than those who dropped out (López-Aguilar et al., 2023; Pertegal-Felices et al., 2022). In Spain, resilience and social adjustment were shown to explain almost 9% of the variance in dropout intentions, highlighting their critical role in retention (Herrera et al., 2024). Similarly, a German study found that resilient students had better academic outcomes, including lower dropout intentions and higher levels of satisfaction (Bittmann, 2021).

Considering the mentioned worrisome rates and the long-lasting and far-reaching consequences of HE dropout, the present study proposes to answer the following research question: "What are the differences in dropout intention among college students categorized by various economic, contextual and socio-demographic factors? This research includes the exploration of the impact on dropout of students' background characteristics (e.g., parental educational attainment, socio-economic background) and current financial difficulties, but also less explored socio-demographic determinants of academic dropout, such as professional and caring responsibilities.

The Tinto model regarding academic dropout (Tinto, 2010) offers a holistic perspective, linking psychological, sociological and institutional factors to provide a comprehensive understanding of dropout phenomena. It highlights the critical role of student engagement in both the academic and social dimensions of academic life, and how these interactions might contribute to retention. In addition, the model serves as a valuable framework for institutions to design effective retention strategies, including mentoring programmes, learning communities, and improved student support services. More specifically, Tinto's model for explaining the dropout process depicts it as a dynamic, longitudinal interaction between academic and social systems, influenced by changes in individual performance over time. Students begin their academic trajectories with diverse characteristics, prior experiences and family backgrounds that play both direct and indirect roles in shaping their academic success.

The relationship between students' background characteristics, such as parental educational attainment and socio-economic background, and their likelihood of dropping out is closely related to Tinto's model of academic and social integration. Students from lower socio-economic backgrounds are significantly more likely to dropout of higher education. This is attributed to limited access to resources and support systems (Müller; Klein, 2023). Lower parental education levels are correlated with higher dropout rates, as these students often lack

the necessary academic and social support (Miwa; Shimosegawa, 2015). Research in Italy also shows that the cultural and financial conditions of households significantly influence both enrolment and dropout rates, highlighting the role of parental background (Aina, 2013). Satisfaction with institutional support structures also seems to play a crucial role in mitigating dropout intentions, suggesting that strengthening these supports could help retain at-risk students (Hadjar et al., 2022). While the Tinto model emphasises integration, it is important to consider that dropout rates are also influenced by broader socio-economic factors and institutional contexts, suggesting the need for comprehensive policy interventions to address these inequalities.

Work and caregiving responsibilities play an important role in student withdrawal by creating challenges that disrupt the balance between personal and academic commitments. These responsibilities demand considerable time, energy and focus, leaving students with limited opportunities to engage in academic work, attend classes or participate in campus activities - key elements of academic integration. The combined impact of work and caring responsibilities has a significant impact on dropout rates. Research shows that students with caring responsibilities often struggle to maintain their academic engagement and well-being, which increases their risk of dropping out. In a recent study about 80% of student report that caring responsibilities have a negative impact on their academic performance, and almost half have considered dropping out as a result (James et al., 2024). While employment can provide essential financial support, it can also affect academic performance and increase the risk of dropping out. Studies show that students who work more than 20 hours per week often experience increased stress, leading to poorer academic outcomes and higher dropout rates (Sánchez et al., 2018). However, in some contexts, the number of hours worked does not significantly affect withdrawal intentions, suggesting that other factors may be more influential (Toyon, 2023). On the other hand, some argue that work experience can build valuable skills and resilience, with long-term benefits for students' future careers. For instance, one study found a strong positive correlation between time management skills and academic performance among working students, suggesting that improving these skills can significantly improve academic outcomes (Mariano et al., 2022). This perspective highlights that the relationship between work and academic success is complex and contextual, rather than universally negative.

Moreover, while much of the research on COVID-19 in HE focuses on HE in general and mainly on public universities, exploring students' realities (similarities and differences) in public and private universities deserves special consideration. Considering the pandemic's economic challenges and the discrepancies in tuition fees between institutions, such a topic might be of particular interest. Finally, this study will focus on dropout differences throughout the entire academic course and not only in the first year, a pattern found in the literature (Casanova et al., 2018; OECD, 2017; Tinto, 2010).

These insights will not only contribute to outlining strategies to resolve and prevent the challenges faced by at-risk students but also inform how to address the national shortfall for available solutions to meet the needs of at-risk dropout students adequately and cost-efficiently. This is especially important nowadays since pre-existing financial and education disparities, as well as inequality of opportunities for success in HE, may be heightened due to the recent COVID-19 pandemic, emphasizing the need to establish an inclusive HE environment that fosters equity and diversity in the post-COVID-19 era. This research is innovative not only because it focuses on a possible particularly vulnerable period of dropout (the post-pandemic period), but also because it includes a broader risk and protection framework for dropout (Masten et al., 2021) that goes beyond the existing literature.

Method

Participants' characteristics

Those eligible to participate in the study were: students currently attending a Portuguese HE institution (public or private) from the first to last year of studies required for certified practice (up to 7 years), living in Portugal, and Portuguese-speaking. ERASMUS students were excluded. From an initial matrix of Region NUTS II (Nomenclature of Territorial Units for Statistical), the respondents were selected through a convenience quota method, based on a matrix that crosses Sex and Age variables (based on Census 2021 information) (Instituto Nacional de Estatística, 2022).

Sociodemographic and family background

Our sample included 1404 university students (1004 online interviews; 400 telephone interviews), of whom 54.4% were female, 45.4% were male and 0.1% were identified as non-binary. The majority of the students were under 25 years old (75%; $M = 22.83$, $SD = 3.73$, age range: 18-45). With regard to marital status, 83.5% of respondents were single, while 12.3% were living in conjugality, married or not. About 40% of the students combine studies and work (37.9%), working an average of 24.9 hours per week (<10h: 19.7%; 10 h–20 h: 26.9%; +20 h–35 h: 24.6%; 35 h or more: 28.8%).

Academic context

Most of the students stated they were attending a public institution (79.8%), while 20.2% attended a private institution. Most of the respondents stated that they were attending their first-choice course (82.1%). Concerning the area of knowledge, the distribution was as follows: Science and Technology: 49.1%; Social and Economic Sciences: 29.9%; Languages and Humanities: 12.3%; Arts: 8.7%. Also, 65.3% of students were pursuing bachelor's degrees and 34.7% in master's degrees. Regarding the academic year, our sample comprised students from the 1st to the 5th year. Regarding bachelor's degrees 23.7% of the students were in the first year, 29.8% in the second year and 26.3% in the third year. Concerning master's degrees, 9.9% of the students were in the fourth year, and 10.3% in the fifth year. About half of the respondents lived outside their family

residences (50.6%). Displaced students mainly lived in houses shared with other people (57%), university residences (16%), with other family members (14.6%), and alone (10.7%).

Economic context

Families continue to be the primary source of income for students (65.5%). Almost 40% of the sample reports that family income per month was about 1000 euros or less (35.5%). Portugal is among the EU countries with a national minimum wage equal to or below €1 000 per month and if we consider the provisional OECD figures for 2022, Portugal appears to have a tax burden above the average for these countries. According to the OECD (2023b), Portugal had a tax burden of 36.4 per cent in 2022, while the OECD average was 34 per cent.

Regarding monthly education expenses (e.g., tuition, working materials, transportation, accommodation, food), students reported an average value of 538 euros ($SD = 551$). Also, 37.8% of our sample reported having additional personal income from a professional occupation. Moreover, about 20% of students reported receiving some kind of economic support from the government, such as school sponsorships.

Students in the public sector spent less than those in the private sector (public sector: $M = 509$, $SD = 538$ euros; private sector: $M = 656$, $SD = 586$ euros). Almost 20% of our respondents reported having caregiving responsibilities (17.4%) (e.g., elder/ill/childcare), mostly with children (42.6%), but also with parents or other relatives. With regards to post-pandemic family income, 43.5% of the sample agreed with the statement that their personal or family income had become worse or much worse. Additionally, nearly 21% of the students reported struggling to cover everyday expenses, and that they could not afford the cost of course materials and tuition fees. Nearly a quarter of students (24.1%) reported moderate difficulties with the same issues.

Instruments

Regarding the socio-demographic questionnaire, the variables assessed were gender, age, marital status, displaced student, and household. Background variables included academic degree of the mother and father and the current professional status of the mother and father. Academic variables included education system (public/private), area of knowledge (Science and Technology, Social and Economic Sciences, Languages and Humanities, Arts), if the current academic course was the first choice, study cycle (bachelor, master) and academic year. Economic variables included monthly expenses with study, type of included expenses, source of funding, being or not a working-student, type of working situation, average weekly working hours, number of dependents, type of family link with those dependants, perception of changes in the personal and family income in the last two years.

We also used the Dropout Intention subscale of the Screening instrument for students at-risk of dropping out from HE (Casanova; Ber-

nardo; Almeida, 2021), comprising 4 items (e.g., “I am thinking of leaving HE.”). Each item was answered on a 5-point Likert scale, ranging from 1 (never) to 5 (always). In the current study, Cronbach's alpha was .87 for the Dropout Intention subscale.

Procedure

The inventory was anonymous and applied individually. Authorization to conduct the investigation was requested initially from the Ethics Committee of the University. Before responding to the inventories, all participants were required to provide informed consent to participate in the study and to use their data exclusively for research purposes. They were informed of the data's confidentiality and the option to withdraw at any moment during the study prior to their participation.

Data collection took place between November 25, 2022, and February 6, 2023, via online and telephone. The telephone data collection was carried out using the CATI system (Computer Assisted Telephone Interviewing), by 27 interviewers with experience in telephone surveys, recruited, trained and supervised during the collection by GfK Metris. In each region, the interviews were distributed among several interviewers, to avoid a significant portion of the interviews being done by only one or two interviewers. The refusal rate was 10.7%. As for the online data collection, this was done through an online survey directly accessed by the interviewees, who had previously been informed of this project through an email with information about it and the link to access the survey, through the CAWI system (Computer Assisted Web Interviewing). The abandonment rate was 6.8%.

After the data collection (both online and by telephone) the questionnaires were reviewed, and possible errors or missing information were detected. On a case-by-case basis, an evaluation was made of the procedures to be adopted, which could range from a new contact with the respondent (to obtain the missing information) to the elimination of the interview (for example, if an abnormal non-response rate is verified in comparison to the total number of questions).

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (IBM corp., 2021) and the PROCESS macro (Hayes, 2022).

Descriptive statistics (Mean, standard deviation, frequencies) were used to characterize the sample regarding socio-demographic, economic and academic variables.

Analysis of Variance (ANOVA) and post-hoc tests for variables were conducted to explore the impact on dropout intention of gender (male, female), displacement, education system (public, private), study cycle (bachelor, master), area of knowledge (Science and Technology, Social and Economic Sciences, Languages and Humanities, Arts), being a working-student, and holding caregiving responsibilities. Non-parametric tests were also conducted, and since the results were consistent

with those from the parametric tests, only the parametric test results are reported (Fife-Schaw, 2006).

Pearson correlation coefficient was used to assess the relation of dropout intention with the economic adaptation difficulties, and with the perception of changes in the personal and family income in the last two years.

This study also examined the moderating role of gender (male, female) in interactions with various independent variables, including displacement status, education system (public vs. private), study cycle (bachelor's vs. master's), area of knowledge (Science and Technology, Social and Economic Sciences, Languages and Humanities, Arts), working-student status, and caregiving responsibilities. In order to achieve this, simple moderation analyses (Model 1; Hayes, 2022) were estimated. Significant interactions were set at $p < 0.05$.

Results

There were statistically significant main effects for gender [$F(1, 1400) = 15.40, p < .001$], displacement [$F(1, 1402) = 18.83, p < .001$], study cycle [$F(1, 1402) = 18.47, p < .001$], caregiving responsibilities [$F(1, 1402) = 64.06, p < .001$], area of knowledge [$F(3, 1400) = 4.25, p = .005$] and national region [$F(6, 1397) = 2.91, p = .008$]. Male ($M = 2.32, SD = 1.10$), displaced ($M = 2.32, SD = 1.07$), bachelor students ($M = 2.29, SD = 1.08$) and those with caregiving responsibilities ($M = 2.68, SD = 1.06$) reported higher dropout intentions. Students in the area of Languages and Humanities reported higher intentions of dropout ($M = 2.45, SD = 1.09$) when compared to students from Science and Technology ($M = 2.13, SD = 1.06$). There were no differences regarding education system [$F(1, 1402) = 1.11, p = .292$] and being a working-student [$F(1, 1402) = 2.40, p = .122$]. (Table 1).

Table 1 – One-Way Analyses of Variance in Dropout Intention

Variables	df	Error	Mean Square	<i>F</i>	<i>p</i>	η^2
Gender	1	1400	17.06	15.40	<.001	.01
Displacement	1	1402	20.84	18.83	<.001	.01
Study cycle	1	1402	20.45	18.47	<.001	.01
Area of knowledge	3	1400	4.73	4.25	.005	.01
National region	6	1397	3.24	2.91	.008	.01
Education system	1	1402	1.24	1.11	.292	.00
Being a working-student	1	1402	2.69	2.40	.122	.00
Caregiving responsibilities	1	1402	68.72	64.06	<.001	.044

Source: Authors.

The dropout intention had significant positive correlations both with the economic adaptation difficulties ($r = .241, p < .01$), and with the perception of a decrease in the personal and family income in the last two years ($r = .154, p < .01$).

The moderating role of gender was evaluated through interaction tests. Results indicated that the interaction between gender and the education system (public vs. private) was not statistically significant ($b = -.11, SE = .11, t = -.92, p = .358$). Similarly, the interaction between gender and the area of knowledge did not significantly predict dropout intention ($b = .08, SE = .06, t = 1.31, p = .190$). For caregiving responsibilities, no significant interaction with gender was observed ($b = .11, SE = .15, t = .74, p = .462$). The interaction between gender and displacement status ($b = .15, SE = .11, t = 1.38, p = .168$) and gender and working-student status were also nonsignificant ($b = -.20, SE = .12, t = -1.75, p = .081$).

Discussion

This study aimed to identify the differences in dropout intention among HE students categorized by various socio-demographic, economic and academic variables, in a post-pandemic era. Study results showed that males, bachelor's degree, displaced, students who are also caregivers and students who are studying in Language and Humanities degrees have greater intentions to drop out.

When comparing students according to whether or not they intended to leave HE, studies show that male students show higher intentions of dropping out (Casanova et al., 2018; Nedregård; Abrahamson, 2018; Cocoradă et al., 2021; Falla; Vargas-Canãs, 2024). Also, some researchers have demonstrated that female students show greater intention to continue their studies in bachelor's programs (Fernández-Mellizo; Constante-Amores, 2020). In line with this, previous studies have reported that male students may be less motivated to complete their studies due to some perceived barriers (Mastekaasa; Smeby, 2008). More specifically, male students exhibit higher levels of boredom with courses, desire for fun, anxiety related to learning difficulties, and negative attitudes towards school than their female counterparts.

In contrast, female students exhibit higher confidence in their personal capabilities and are more engaged in learning activities (Mastekaasa; Smeby, 2008). In fact, once in HE, men have significantly higher dropout rates than women (Heublein; Schmelzer, 2018; Marczuk; Strauss, 2023). This is true for almost all broad fields of study: law/economics/social sciences (men 29%, women 20%), mathematics/natural sciences (men 43%, women 39%), and engineering (men 36%, women 29%) (Heublein; Schmelzer, 2018). Furthermore, recent research has highlighted significant findings concerning gender issues regarding mental health that need to be addressed to improve the retention rates of male students in higher education (Sagar-Ouriaghil et al., 2023). Further research indicates that poor mental health is significantly associated with increased dropout rates among students in

higher education. Specifically, it was found that males in higher education were more likely to drop out due to mental health issues (Hjorth et al., 2016). Vossensteyn et al. (2015) showed that gender plays a significant role in shaping attrition rates, with male students often experiencing higher rates of dropout than their female counterparts. The study highlights that male students are disproportionately affected by academic disengagement, which is often associated with lower levels of academic training and motivation. Also regarding to male students higher dropout rates, some researchers attribute this reality to academic disengagement, financial pressures and lack of institutional connection; conversely, female students are less likely to drop out overall however, they are more vulnerable to the cumulative effects of mental health problems, gendered expectations around academic performance and caring responsibilities (Buchmann; DiPrete, 2006; Whitcomb; Singh, 2021). These observations underscore the establishment of comprehensive mental health support systems that are attuned to gender-specific requirements.

The transition from high school to university can be a difficult and stressful time for students, who need to adjust to a new academic environment, make new social connections and develop a sense of autonomy. For students who are moving away from their hometown and family for the first time, this transition can be even more challenging (Jaud et al., 2023). These students often face unfamiliar academic systems and teaching styles. They may also face cultural barriers and struggle to make new friends and social connections. These challenges can be overwhelming and be related to loneliness and intention to drop out (Ferreira et al., 2018). According to The State of Higher Education 2022 Report (Gallup, 2022) in 2020 42% of students attending a bachelor's degree stated that emotional distress was a reason they considered dropping out courses, compared to 76% in 2021. Although a mental health crisis was already challenging to HE students before the pandemic, feelings of isolation and academic difficulties caused by the pandemic may have worsened mental health internationally.

Previous research has also mentioned the relevance of being displaced, highlighting the challenges these students face in exercising greater autonomy and responsibility in their daily lives. Such studies have also pointed to the importance of students establishing a satisfactory social support network during their first year at university (Casanova et al., 2021; Newlon; Lovell, 2017). The impact of psychosocial variables, such as being displaced, seems to be higher among students in the social sciences and humanities and lower among students in other scientific areas (Casanova; Bernardo; Almeida, 2021).

Students in the area of Languages and Humanities reported higher intentions of dropout. Fields of study within Languages and Humanities may have different demands and outcomes compared to other disciplines. According to the National Data for Higher Education Courses of 2022, Languages, Literatures, and Cultures courses have higher unemployment rates (10%) than health specialties (with 0% of graduates registered with the Employment and Vocational Training

Centres). Students in these fields might face challenges such as limited career prospects, perceived lack of practical skills, or difficulty securing employment post-graduation, which could influence their decision to drop out. However, previous studies suggest that late academic dropout is more frequent in high-failure rate courses, which is typically associated with shorter and less satisfactory educational trajectories. The study by Salazar-Fernandez et al. (2021) demonstrates that the field of Arts and Humanities (which includes Languages and Humanities) was grouped with fields exhibiting more satisfactory trajectories, featuring a higher frequency of late graduation (59.22%) than late dropout, in contrast to areas like Science and Engineering (Salazar-Fernandez et al., 2021).

Other studies indicated that mathematics and law courses showed higher dropout intentions (Scheunemann et al., 2021) and significant dropout rates in computer science courses (Höhne; Zander, 2019). Behr et al. (2020) found that performance was worse in mathematics, computing, education, and languages, and similar results were reported by Ibáñez-Cubillas et al. (2023), with arts and humanities (27.5%), engineering and architecture (25%) and natural sciences (21.7%) being the courses with a higher dropout rate than those belonging to the social and legal sciences (20.3%) and health sciences (16.6%).

Research on the relationship between gender, field of study, and dropout rates in higher education consistently show that women are underrepresented in certain academic fields, particularly STEM (Bian et al., 2017; Cheryan et al., 2009; Cheryan et al., 2024; González-Pérez et al., 2022). It is showed that gender differences in vocational interests are partly explained by early socialisation processes, with boys being encouraged to engage in activities related to science and technology, while girls are often steered towards social and artistic fields (Su; Rounds; Armstrong, 2009). These early gender experiences have long-term effects on academic choices. According to Correll (2001), gendered self-concept is a significant predictor of field of study. Individuals' beliefs about their own abilities in certain domains (e.g. mathematics or language) are influenced by gender stereotypes about intellectual man and woman competences; the author explain that women are less likely to enter male-dominated fields like STEM issues due to social and cultural perceptions about gender roles in STEM. As a result, women who do enter these fields may face higher levels of academic pressure and which can contribute to a higher likelihood of dropping out. In fact, Bonfert and Wadhwa (2024) in research for the World Bank Group indicate that women enrolled in STEM courses are more likely to lead to higher dropout rates compared to their male counterparts. In contrast, fields traditionally dominated by women, such as nursing or education, tend to have a more supportive and welcoming environment, which may contribute to higher retention rates for women in these disciplines (Cheryan et al., 2009; Meyer; Strauß, 2019). For instance, González-Pérez et al. (2022) found that female students are more likely to drop out of engineering programs compared to male students, with dropout rates in these fields being nearly 20% higher for women.

The COVID-19 pandemic also might have increased the perceived difficulties of these students. A recent study reported that students in humanities courses faced several challenges during online education, including disorganization, low motivation, insufficient digital skills and underperforming computers (Matei; Linca, 2023). Future research could be relevant to achieving greater understanding and clarification of the areas of study and course characteristics that could influence students' intention to drop out.

Students with caregiving responsibilities reported higher drop-out intentions. Balancing caregiving responsibilities with academic demands can be incredibly challenging. Students who have to care for family members, children, or dependents may struggle to juggle these responsibilities alongside their studies, leading to higher stress levels and a greater likelihood of considering dropping out. Data from the Lumina-Gallup State of the Student Experience survey of 2020 states that nearly 30% of currently enrolled college students were parents of minor children or caregivers to adults. Such students face caregiving responsibilities which might impact course completion (Gallup, 2020). Also, students with caring responsibilities for children or adults are more likely to work full or part-time than those without such responsibilities. The same report has demonstrated that college students who provided care to children or adults have considered, more frequently, dropping out, compared to those who were not parents or caregivers. When asked about specific reasons for such intention, students reported caregiving, cost of attendance, or obtaining a job (Gallup, 2020). Another study by Venegas-Muggli (2020) revealed that students with dependents are at a significantly higher risk of dropping out of HE. Furthermore, family responsibilities were found to be predictors of drop-out intention (Gairín et al., 2014).

The current study has found a significant relation, although of weak magnitude, of dropout intention with both economic difficulties, and with an income decrease due to the Covid-19 pandemic. This is in line with the literature, since early studies in this field. It has been shown that ability to pay had a direct effect on college persistence, while moderating the effect of educational aspirations (Cabrera et al., 1990), and that receiving some form of financial aid also decreased the probability of dropping out from higher education (Cabrera et al., 1992). Students from families with higher incomes (Braunstein; Mcgrath; Pescatrice, 2000) and those who perceive sufficient financial support (Moneva; Jakosalem; Malbas, 2020) are also more likely to persist. Even in societies in which the university registration fees are very low, students coming from lower socioeconomic background are more vulnerable to dropout along the whole academic path (Ortiz; Dehon, 2013), meaning that in Portugal the issue is even more compelling. European students reported a (very) negative impact of the pandemic on the financing of their studies (Hauschildt et al., 2024), and Portuguese students showed the highest levels amongst CE countries (36%). Disparities in college completion rates between low-income and high-in-

come students continue to exist (Castleman; Meyer, 2019). These disparities are largely due to college affordability challenges and unequal access to information about financial aid and other campus resources and support services. Although significant policy efforts have been made to address these inequities, such as expanded financial aid opportunities and improved college guidance, many students who could benefit from these initiatives do not take full advantage of them. Financial constraints might also play a direct role in determining how students develop relationships in campus. Previous research has shown that more than half of low-income student's report being unable to participate in social activities due to financial constraints, often feeling pressured to spend money they don't have to participate in social activities (McClure et al., 2017).

Increased funding to support higher education could be an important issue to address. Governments and institutions also have the opportunity to invest in targeted support programmes and expand counselling resources to help students manage college costs and improve their chances of academic success. At both institutional and faculty level, higher education institutions could implement information campaigns and interventions aimed at reducing the cognitive burden of financial stress and increasing students' sense of belonging on campus. In addition, improved and targeted communication about available support services might have a positive impact on student well-being and learning (Castleman; Meyer, 2019).

The finding that there were no significant differences on dropout intention between working students and non-working students is not consistent with most literature, which show a higher dropout rate in working students (Carreira; Lopes, 2020; Scott; Kennedy, 2005; Venegas-Muggli, 2020). Working students have higher time constraints, they must handle potential work-study conflicts, and current educational policies, in general, are not designed for them. While some studies stress the importance of the working hours, with a higher dropout risk only associated with 20 or more weekly working hours (Hovdhaugen, 2015; Roksa, 2011), in the current study more than half of the working students work more than 20 hours per week, and there were no significant differences based on working hours. One justification could be the higher proportion of working students in the master compared with bachelor's degree, as vocational maturity and commitment are predominantly higher in the former. Moreover, the fact that they can acquire several soft skills in their jobs, such as communication and time management skills (Carreira; Lopes, 2020) may help enhance their academic commitment and persistence. Finally, Wu; McMillan (2023) reported that job loss has an adverse effect on college persistence for 18- to 24-year-old US working students, showing that when the income is a need, losing more than keeping a job may have the most impact on dropout. Considering the low mean income of families in the current sample, and the identified positive relation between economic difficulties and dropout intention, this may also help explain our finding.

There were also no significant differences on dropout intention between students of public and private institutions. To our knowledge, there is not much literature focusing on this variable, but the studies have found higher dropout in the private educational system (Navarro-Roldan et al., 2023; Sarcletti; Muller, 2011; Behr et al., 2020). This may be due to the higher expenses associated with studying in a private institution. However, in our sample, the monthly expenses of both types of students are very similar, which would not be expected, as private institution students pay a much higher monthly tuition. We found that the proportion of displaced students is significantly higher in public system students, which explains a relevant expense that may put both groups of students in a more similar situation.

Overall, the economic effort mentioned by the students seems to be in line with family income values of less than 1000 euros, while university expenses are on average greater than 500 euros. On the other hand, about half of the sample consists of displaced students who live in shared houses with other people, which could represent an increased economic effort. Government economic support was offered for less than a quarter of the sample, and a lower percentage of students live in university residences. Some indicators of risk were also pointed out, not only about sociodemographic factors but also aspects related to the area of knowledge and family caring responsibilities. Preventing student dropout and enhancing both the college experience and academic success demand a comprehensive, multifaceted strategy. This approach must include institutions and policies that address the key factors that influence students' 'everyday' academic engagement and overall well-being. Our study builds upon and extends past research and informs how to address the national shortfall for available solutions to meet the needs of at-risk of dropout students adequately and cost-efficiently.

The moderation findings suggest that, in the context of this study, gender does not significantly moderate the relationship between dropout intention and variables such as the education system, study cycle, area of knowledge, working-student status, caregiving responsibilities, and displacement status. These results indicate that the factors influencing dropout intentions may operate similarly across genders in these domains. However, the marginal effect observed for working-student status hints at potential differences in how work-life balance challenges impact male and female students, warranting further investigation into this relationship. Although the interaction between gender and caregiving responsibilities was not statistically significant, caregiving remains a critical area for future exploration. The compounded effects of caregiving responsibilities and gender may manifest in ways that are not directly measurable through this study's approach. For instance, qualitative studies could shed light on how caregiving intensity, access to support systems, or societal expectations differentially affect male and female students' academic persistence.

Furthermore, the absence of significant direct interactions does not preclude the existence of other mediating or moderating factors

that influence dropout intention. Variables such as socioeconomic status, institutional policies, availability of flexible study options, and the extent of caregiving responsibilities may play a crucial role. Future research should employ more comprehensive models that integrate these factors to better understand the nuanced interplay between gender and dropout intentions. By exploring these dimensions, this study not only highlights areas requiring further inquiry but also contributes to the broader understanding of dropout behaviour, particularly in relation to gender and caregiving responsibilities, an area of growing importance in higher education research.

Study Limitations

Considering the findings presented above, the following limitations of this study should be addressed: First, time and budget constraints precluded the operationalization of the stratified random sampling method initially planned. Despite the multisite sampling process adopted, the convenience quota method used in data collection prevented the representativeness of all students, potentially limiting the external validity of the results. Secondly, specific comparisons should be interpreted cautiously given the limited number of students in specific subgroups (i.e., Madeira, Azores, Algarve). Thirdly, while the two data collection modalities (by phone and online) used may have broadened the access to the research for students with low technology accessibility, the dual methodological approach may have generated different data profiles. More specifically, the interaction with the interviewer vs. the participant's use of the digital format to answer on their own might have had influence, with an impact on the sincerity of the responses. Fourthly, though this percentage was considered low, some students refused to participate in the study. Future studies should list/ask for reasons for refusal to better understand the phenomena. Also, while our study collects objective and subjective measures of economic strain, future studies should map the contribution of economic factors (e.g., family financial strain) in greater depth. Lastly, this study used dropout intentions as a proxy for university dropout; but we did not investigate actual dropout behaviour. Despite the above limitations, this research is innovative not only because it focuses on a particularly vulnerable timing for dropout (post-pandemic era, heightened armed conflicts, energy crisis/socio-economic crisis) but also because it entails a broader risk and protection framework of dropout that goes beyond existing literature and using a large and diverse sample that mirrors main socio-demographic and academic characteristics of Portuguese HE population.

Recommendations

Taking the study results into account, it's important to propose some recommendations to prevent and address HE dropout.

1) Given that higher dropout rates were observed among male students, displaced students, language and humanities students, this could mean that certain groups of students are at particular risk and

should therefore receive careful and differentiated attention in the future.

2) Since the dropout rate is higher in the first cycle of academic education, mentoring programs could be particularly useful in supporting all students in any year, but eventually throughout all the academic pathways. Mentoring programs, in cooperation with universities, could implement measures to ensure a balance between the challenges faced by students with caring responsibilities and the need to achieve learning goals, while at the same time providing the opportunity to enjoy the academic experience and context.

3) In order to reduce difficulties in academic adjustment, internship and exchange programs could also be developed in academic HE institutions, where students could have practical experiences and observation periods, thus improving the link between theory and practice in their professional field.

4) In order to facilitate the transition to HE, it is considered important to focus on a better articulation between HE institutions and secondary education. More specifically, career guidance should be strengthened in the last years of secondary education and the strategies mentioned above should be introduced to strengthen students' autonomy and self-regulation competencies.

5) Also, a variety of learning alternatives, including evening and online sessions, can help students with caregiving responsibilities achieve a better balance between their personal and academic obligations, which could lower the risk of dropping out. Finally, frequent evaluation of current interventions and support services, together with student satisfaction surveys, can inform improvements and modifications aimed at better meeting students' changing needs. In conclusion, targeting support to at-risk student populations fosters a more inclusive and supportive HE environment that promotes student retention and success.

6) Providing access to mental health resources helps students enjoy the academic experience and context. Mental health support centers at universities that can offer low or free-cost therapy sessions, advising services, and support groups may play an important role in the students' wellbeing. At the same time, it could be important to offer online mental health resources, workshops, and seminars about how to manage anxiety, stress, and other mental health issues.

7) A supportive and inclusive environment for students creates a sense of community belonging. By promoting connection, collaboration, and mutual respect among the campus, universities can shape a culture that values diversity and gives social and psychological power to individuals. These initiatives may be relevant for students in general, and for displaced students in particular. Offering students the chance to participate in community-building activities, dialogues, and peer support networks can improve their overall college experience and contribute to their personal and academic growth¹.

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