Financial education in medical training: an analysis with students on knowledge, interest and curricular gaps

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ARTIGO

FINANCIAL EDUCATION IN MEDICAL TRAINING: AN ANALYSIS WITH STUDENTS ON KNOWLEDGE, INTEREST AND CURRICULAR GAPS

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ABSTRACT: Introduction: Medical students face significant economic challenges during training. Lack of financial preparedness has been associated with increased stress, financial considerations influencing specialty choice, and reduced quality of life. **Objective:** To assess knowledge and analyze interest in financial education among medical students. **Methods:** This quantitative, cross-sectional study included 200 medical students who completed an online questionnaire addressing sociodemographic characteristics, financial education, and student indebtedness. **Results:** Most participants were female, single, enrolled in private institutions, and living with family members. Approximately 62% reported not receiving any form of financial aid, and 25.5% expected to graduate with debt, particularly amounts exceeding BRL 200,000. The majority had never received formal financial education and reported low confidence in managing their personal finances. Despite this, students showed strong agreement regarding the importance of incorporating content on budgeting, debt management, and financial planning into the medical curriculum. These perceptions were consistent across all academic years, indicating a sustained demand for financial education throughout undergraduate training. **Conclusion:** The findings demonstrate a clear consensus among medical students regarding the relevance of financial education in medical training, despite an evident gap between required competencies and existing curricular provision. Low self-confidence in personal financial management and limited access to educational opportunities in this area reinforce the need for structured inclusion of financial education within the medical curriculum. Furthermore, the economic heterogeneity observed among participants highlights the importance of educational policies that promote equity, better preparing future physicians to address financial and professional challenges in a more critical and integrated manner.

Keywords: medical education; financial management; financial literacy; financial education; medical students.

EDUCAÇÃO FINANCEIRA NA FORMAÇÃO MÉDICA: UMA ANÁLISE COM ESTUDANTES SOBRE CONHECIMENTO, INTERESSE E LACUNAS CURRICULARES

RESUMO: Introdução: Estudantes de Medicina enfrentam desafios econômicos relevantes ao longo da formação. A falta de preparo financeiro tem sido associada ao aumento do estresse, à influência de

fatores econômicos na escolha da especialidade e à redução da qualidade de vida. **Objetivo:** Avaliar o conhecimento e analisar o interesse em educação financeira entre estudantes de Medicina. **Métodos:** Estudo quantitativo, de delineamento transversal, realizado com 200 estudantes de Medicina por meio de questionário on-line, que coletou informações sociodemográficas, sobre educação financeira e endividamento estudantil. **Resultados:** A maioria dos participantes era do sexo feminino, solteira, matriculada em instituições privadas e residia com familiares. Aproximadamente 62% relataram não receber qualquer tipo de auxílio financeiro, e 25,5% esperavam concluir a graduação com dívidas, em grande parte, superiores a R$200.000,00. A maioria nunca havia recebido educação financeira formal e apresentou baixa autoconfiança na gestão das próprias finanças. Ainda assim, observou-se amplo consenso quanto à importância da inclusão de conteúdos sobre orçamento, endividamento e gestão financeira no currículo médico. Essas percepções mostraram-se consistentes entre os diferentes anos do curso, indicando demanda contínua por educação financeira ao longo da graduação. **Conclusão:** Os resultados evidenciam consenso entre os estudantes sobre a relevância da educação financeira na formação médica, apesar da lacuna entre as competências necessárias e a oferta curricular existente. A baixa autoconfiança e o acesso limitado a cursos na área reforçam a necessidade de inclusão estruturada desses conteúdos no currículo, bem como de políticas educacionais que promovam maior equidade na formação médica.

Palavras-chave: educação médica; gestão financeira; alfabetização financeira; educação financeira; estudantes de Medicina.

EDUCACIÓN FINANCIERA EN LA FORMACIÓN MÉDICA: UN ANÁLISIS CON ESTUDIANTES SOBRE CONOCIMIENTOS, INTERÉS Y VACÍOS CURRICULARES

RESUMEN: Introducción: Los estudiantes de Medicina enfrentan importantes desafíos económicos durante su formación. La falta de preparación financiera se ha asociado con mayor estrés, con la influencia de factores económicos en la elección de la especialidad y con una disminución de la calidad de vida. **Objetivo:** Evaluar el conocimiento y analizar el interés en educación financiera entre estudiantes de Medicina. **Métodos:** Estudio cuantitativo de diseño transversal, realizado con 200 estudiantes de Medicina mediante un cuestionario en línea que recopiló información sociodemográfica, sobre educación financiera y endeudamiento estudiantil. **Resultados:** La mayoría de los participantes era de sexo femenino, soltera, matriculada en instituciones privadas y convivía con familiares. Aproximadamente el 62% informó no recibir apoyo financiero, y el 25,5% esperaba concluir la carrera con deudas, especialmente superiores a R$ 200.000,00. La mayoría nunca había recibido educación financiera formal y presentó baja autoconfianza en la gestión de sus finanzas personales. Aun así, se observó un amplio consenso sobre la importancia de incluir contenidos relacionados con presupuesto, endeudamiento y gestión financiera en el currículo médico. Estas percepciones fueron consistentes entre los distintos años del curso, lo que indica una demanda sostenida de educación financiera durante la formación de grado. **Conclusión:** Los resultados muestran consenso sobre la relevancia de la educación financiera en la formación médica, aunque persiste una brecha entre las competencias necesarias y la oferta curricular existente. La baja autoconfianza y el acceso limitado a cursos en esta área refuerzan la necesidad de una inclusión estructurada de estos contenidos y de políticas educativas orientadas a una formación más equitativa.

Palabras clave: educación médica; gestión financiera; alfabetización financiera; educación financiera; estudiantes de Medicina.

INTRODUCTION

Financial education and financial literacy are complementary but distinct concepts (Ceron et al., 2024). While financial education refers to the process of improving understanding of financial products and concepts through information, instruction, and objective guidance (OECD, 2005), financial

literacy encompasses two key dimensions: knowledge of personal finance and its practical application in everyday decision making (Huston, 2010). In an increasingly dynamic socioeconomic context, developing these competencies is essential to promoting financial autonomy, reducing economic vulnerability, and strengthening individual and collective well-being.

Financial literacy is particularly important for medical students and newly graduated physicians, as it supports informed decision-making and positively influences their quality of life and career development (Igu; Zakaria; Bar-Or, 2022). High levels of debt and insufficient financial knowledge increase stress, impair work–life balance, contribute to burnout, and influence career choices, leading many students to opt for higher-paying specialties to alleviate their financial burden (Pisaniello et al., 2019; Garrett et al., 2022; Igu; Zakaria; Bar-Or, 2022).

These findings highlight the need for curricular changes to improve financial literacy and, consequently, the mental health of newly graduated physicians (Poon et al., 2022; Millen; Stacey, 2022; Igu; Zakaria; Bar-Or, 2022). Implementation has been proposed through a standardized personal finance curriculum that addresses debt management, investments, financial planning, and budgeting to adequately prepare physicians-in-training (Igu; Zakaria; Bar-Or, 2022). Including financial education in medical training increases self-confidence and practical knowledge and is necessary to address the financial challenges inherent in a medical career (Glaspy, 2005; Poon et al., 2022). Accordingly, the comprehensive integration of economics and finance courses into health-related curricula has been recommended to promote adequate financial management competency (Millen; Stacey, 2022).

Given the evidence regarding the influence of financial literacy on mental health, life decisions, and the professional trajectories of medical students and newly graduated physicians, it is important to investigate this phenomenon in the Brazilian context. The absence of financial education–focused courses in higher education institutions (HEI) in the health field may contribute to economic vulnerability and, at times, influence the choice of medical specialty, often driven by financial concerns rather than vocational interests (Royce; Davenport; Dahle, 2019). Therefore, understanding how medical students perceive their relationships with money, student debt, and financial training is essential to inform educational strategies that are better aligned with their needs. Thus, the objective of this study is to assess medical students' knowledge and interest in financial education.

METHODOLOGY

This observational study used a quantitative approach and a cross-sectional design and was conducted in Brazil. An online questionnaire, developed by the authors themselves, was administered via Google Forms (Appendix 1) to 200 undergraduate medical students. The instrument initially employed a five-point Likert scale. For data presentation in tables, as well as for analysis and discussion, the extreme categories of agreement and disagreement were combined, reducing the number of response categories and improving robustness. Accordingly, statistical analyses and significance testing were conducted based on three response categories: agree, neutral, and disagree. Considering the analysis of qualitative variables, the sample size calculation was based on the chi-square distribution, assuming a contingency table with four degrees of freedom and a significance level of 0.05, yielding a sample size of 200.

The questionnaire included sociodemographic variables collected through multiple-choice questions and open-ended responses, as well as items on financial education, financial management, and student debt, measured using a Likert scale. Descriptive analyses were performed to characterize students' sociodemographic, academic, and economic profiles. Categorical variables were expressed as absolute

numbers and percentages, and comparisons between observed proportions across categories were conducted using the chi-square goodness-of-fit test to assess the expected versus observed distributions within each variable.

To compare the academic years (1st–2nd, 3rd–4th, and 5th–6th) with respect to variables related to prior experiences, knowledge, and attitudes toward financial education, the chi-square test of independence was used. When necessary, a Monte Carlo permutation correction was applied to distributions with expected frequencies below five.

In addition to categorical analyses, the total score for each participant was calculated by summing individual responses across the financial education–related items. Given that the instrument comprised 14 questions, the possible score range was 14 (lower financial education knowledge) to 70 (higher financial education knowledge). To compare total scores across the three academic-year groups, the statistical assumptions of normality (Shapiro–Wilk test) and homoscedasticity (Bartlett's test) were initially assessed. As these assumptions were not met, the nonparametric Kruskal–Wallis test was used. The distributions of total scores by group are presented as boxplots, showing quartiles, median, interquartile range, and outliers. A significance level of 5% ($p<0.05$) was adopted for all analyses. Statistical analyses were performed using R software, and Microsoft Excel® was used for data organization and storage.

The study was approved by the Research Ethics Committee (REC) of Faculdades Pequeno Príncipe (FPP) in early February 2025 (approval number 7,367,812). In the same month, the questionnaire was administered using chain-referral (snowball) sampling (Vinuto, 2014). The questionnaire was disseminated digitally, starting with the researcher's contacts and through social media platforms, WhatsApp, and Instagram, which served as vectors for the sample expansion. This process enabled the progressive recruitment of medical students by sharing the survey link among peers across different institutions and geographic regions.

RESULTS

Sociodemographic and Economic Characterization of the Sample

The sample comprised 200 medical students, with a significantly higher proportion of women (77.0%) ($p<0.0001$). Regarding marital status, most participants were single (86.0%), followed by married (7.5%), those in a stable union (6.0%), and divorced (0.5%) ($p<0.0001$). The mean age of the participants was 24 ± 5 years old.

With respect to the academic year in which participants were enrolled in the medical program at the time of data collection, 43% of students were in their 3rd–4th years, 35% in their 5th–6th years, and 22% in the first two years of the program ($p=0.0012$). Concerning HEI type, 96.5% of the students were enrolled in private institutions, whereas 3.5% attended public institutions ($p<0.0001$). In terms of tuition support, 62.4% reported not having received, or never having received, any financial aid. Among those who received financial support, beneficiaries of the *Programa Universidade para Todos* (PROUNI) accounted for the most significant proportion (20.1%), followed by those who used the *Fundo de Financiamento Estudantil* (FIES) (9.0%), personal loans (5.5%), and other forms of financing (3.0%). This distribution differed significantly among the evaluated categories ($p<0.0001$).

Regarding living arrangements, most students reported living with family members (66.9%) ($p<0.0001$). Among participants, the majority (78.3%) lived with at least one other person ($p=0.0034$).

Concerning monthly family income, a higher proportion of participants whose families reported incomes above BRL 10,000.00 (56.6%) than those reporting incomes below this threshold (43.4%) ($p<0.0001$).

Finally, regarding the estimated amount of student debt at the end of the medical program, most participants (74.5%) reported that they would not incur debt. Among those who anticipated debt, 15.5% estimated amounts exceeding BRL 200,000.00, 4.0% anticipated debts between BRL 100,000.00 and BRL 200,000.00, 3.5% anticipated debts between BRL 50,000.00 and BRL 100,000.00, and 2.5% below BRL 50,000.00. Statistically significant differences were observed among the debt categories ($p<0.0001$). Table 1 presents the distribution of participants by sociodemographic, academic, and economic characteristics.

Table 1. Sociodemographic, academic, and economic characteristics of medical students (n=200).

Sample	Category	n	%	p-value
Gender	Femmale	154	77.0	<0.0001
	Male	46	23.0	
Age		24 ± 5		-
Marital status	Married	15	7.5	<0.0001
	Divorced	1	0.5	
	Single	172	86.0	
	Stable union	12	6.0	
Current year of the program	1st - 2nd	44	22.0	0.0012
	3rd - 4th	86	43.0	
	5th - 6th	70	35.0	
HEI	Private	193	96.5	<0.0001
	Public	7	3.5	
Do you currently have or have you previously received financial assistance to pay for medical school?	Loan	11	5.5	<0.0001
	FIES	18	9.0	
	Private financing	6	3.0	
	No financial assistance	124	62.4	
	PROUNI	40	20.1	
	NA*	1	-	
Current living arrangements	With partner	4	2.0	<0.0001
	With spouse	3	1.5	
	With family member(s)	133	66.9	
	With roommate(s)	15	7.5	
	Alone	44	22.1**	
	NA*	1**	-	

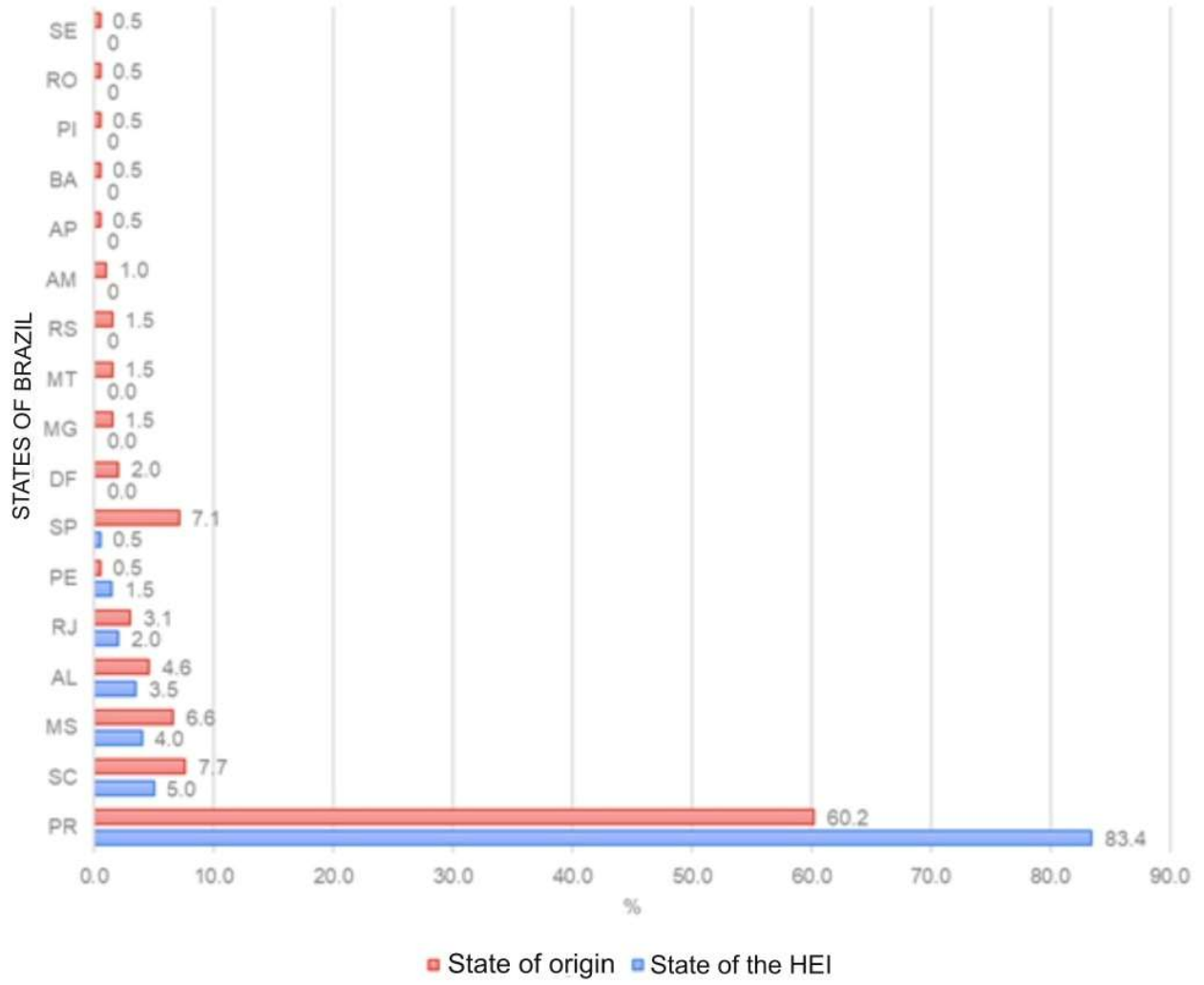
Sample	Category	n	%	p-value
How many people, including yourself, currently live in your household?	1	43	21.7**	<0.0001
	2	42	21.2	
	3	41	20.7	
	4	53	26.8	
	5 or more	19	9.6	
	NA*	2**	-	
Family income	Up to BRL 3,000	25	12.6	<0.0001
	BRL 3,000 to BRL 5,000	24	12.1	
	BRL 5,000 to BRL 10,000	37	18.7	
	BRL 10.000,00 a BRL 30.000,00	70	35.4	
	BRL 10,000 to BRL 30,000	42	21.2	
	NA*	2	-	
What is the estimated amount of your student debt at the end of the program?	Less than BRL 50,000	5	2.5	<0.0001
	Between BRL 50,000 and BRL 100,000	7	3.5	
	Between BRL 100,000 and BRL 200,000	8	4.0	
	More than BRL 200,000	31	15.5	
	I will not have student debt	149	74.5	

Caption: *NA= Not applicable; **Differences in the percentages of students living alone or in single-person households may result from incomplete or inconsistent responses.
Source: Wolpe; Pires; Bellani, 2026.

A statistically significant age difference was observed, with students in the early years of medical school presenting a lower mean age (22 ± 4 years) than those in the intermediate (25 ± 5 years) and final years (25 ± 3 years).

Figure 1 illustrates the percentage distribution of participating medical students according to their state of origin (red bars) and the state in which the HEI is located (blue bars). Most students originated from Paraná (60.2%), followed by Santa Catarina (7.7%) and São Paulo (7.1%). Other states, including Mato Grosso, Minas Gerais, Rio Grande do Sul, Amazonas, and others, had proportions below 2.0%. Regarding the location of HEI, Paraná predominated (83.4%), followed by Santa Catarina (5.0%), Mato Grosso do Sul (6.6%), and Alagoas (3.5%), with other states accounting for less than 2.0% of the total.

Figure 1. Percentage distribution of medical students according to state of origin and state of HEIs.



Source: Wolpe; Pires; Bellani, 2026.

Knowledge and Interest in Financial Education According to the Academic Year

Regarding prior exposure to financial education courses, most students across all academic years reported never having participated in any training in this area (90.91% in the early years, 82.56% in the intermediate years, and 78.57% in the final years), with a trend toward increased participation in extracurricular courses and previous undergraduate degrees as students progressed through medical school (p=0.0516). When asked about the most appropriate time to include a financial education course in the medical curriculum, most students preferred the 3rd, 4th, or 6th years (p=0.0056), suggesting greater receptivity to the topic during the intermediate and final years of the course. Additionally, the majority of participants considered financial education to be a mandatory component of the medical curriculum, with agreement reported by 63.6% of students in the early years, 72.9% in the intermediate years, and 84.3% in the final years (p=0.0397).

The perception that financial education may reduce stress related to personal finances was similar across all groups of medical students (p=0.1354), with the vast majority (95.3% to 100%) agreeing with this statement. Likewise, the view that financial training is as necessary as clinical training was widely held across academic years, with agreement rates ranging from 51.4% to 53.5% (p=0.5827).

When self-confidence in managing personal finances was assessed, between 34.3% and 52.3% of students across all academic years reported disagreement with their ability to manage their

finances effectively (p=0.3639), indicating substantial insecurity regarding this topic. Additionally, a large proportion of students at all stages of medical training reported being motivated to pursue financial education, with agreement rates ranging from 48.8% to 62.9%. No statistically significant differences were observed between the groups (p=0.2173).

In response to the statement that a lack of financial education may negatively influence career choices, agreement rates ranged from 73.7% to 91.4% across groups, with a statistically significant difference (p=0.0026). The perception that insufficient financial preparation may affect the quality of patient care was endorsed by 56.5% to 62.8% of students across all academic years, and there was a statistically significant difference between groups (p=0.0033).

Regarding the influence of student debt on the choice of medical specialty, the analyses were restricted to participants who reported having or anticipating student debt. No statistically significant differences were observed among the groups (p=0.4713). However, an approximately balanced distribution of perceptions was noted: 33.3% of students in the early and intermediate years and 54.2% of those in the final years disagreed that debt influences specialty choice, whereas 33.3% of students in the early and final years and 47.7% of those in the intermediate years agreed that debt plays a role in this decision.

With respect to the relevance of a course focused on debt management, the majority of students across all academic years agreed on its importance, with agreement rates ranging from 83.7% to 90% (p=0.1478). Similarly, more than 90.9% of students across all years agreed on the importance of a course focused on personal budgeting and financial planning (p=0.3302). Likewise, agreement regarding the usefulness of a discipline, course, or elective addressing entrepreneurship for career development ranged from 84.1% to 88.6% across groups (p=0.2868).

Concerning the relevance of a course on the management of medical offices, clinics, and hospitals, most students agreed with the proposal (86.4% to 95.7%), with no statistically significant differences across academic years (p=0.0852). The perceived importance of addressing topics such as investments and retirement planning was high across all analyzed groups, with strong agreement among students regarding the relevance of these competencies and no statistically significant differences between groups (p=0.1810 and p=1.000, respectively). Table 2 presents the distribution of responses from medical students across different academic years (1st–2nd, 3rd–4th, and 5th–6th) regarding their knowledge of and interest in financial education.

Table 2. Distribution of medical students' knowledge and interest in financial education according to academic year (n=200).

Sample	Category	1st - 2nd		3rd - 4th		5th - 6th		p-value
		n	%	n	%	n	%	
Have you had access to any training or courses on financial education?	Extracurricular course	1	2.27	6	6.98	9	12.86	0,0516
	Medical degree program	3	6.82	4	4.65	6	8.57	
	No prior training	40	90.91	71	82.56	55	78.57	
	Previous undergraduate degree	0	0.00	5	5.81	0	0.00	

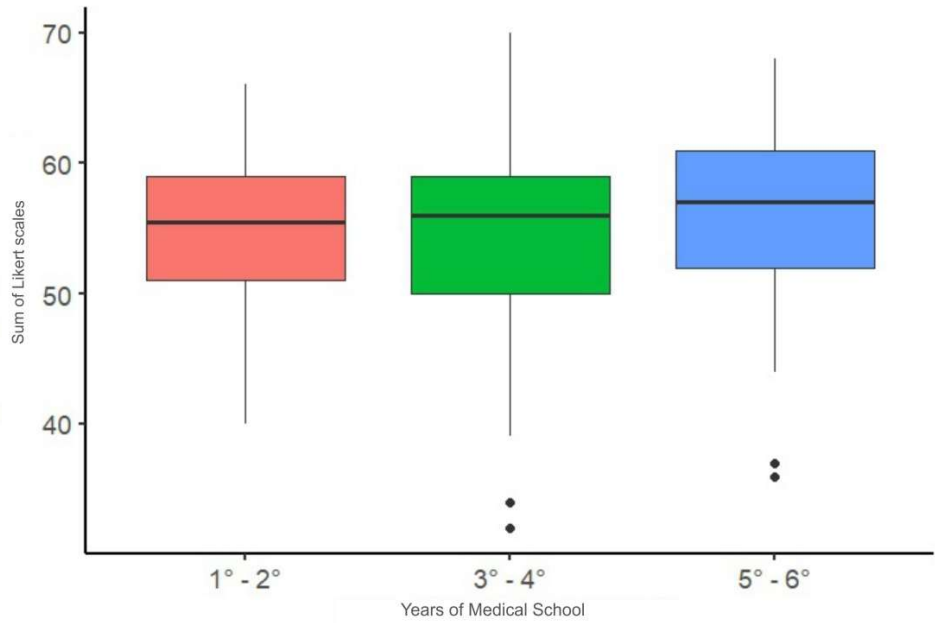
Sample	Category	1st - 2nd		3rd - 4th		5th - 6th		p-value
		n	%	n	%	n	%	
If your medical school curriculum included a financial education course, in which year of the program would you consider it most appropriate to take this course?	1st	6	13.94	17	20.00	7	10.29	0,0056
	2nd	5	11.63	10	11.76	3	4.42	
	3rd	11	25.58	6	07.06	7	10.29	
	4th	10	23.26	28	32.94	17	25.00	
	5th	1	2.33	6	07.06	13	19.12	
	6th	10	23.26	18	21.18	21	30.88	
I believe that financial education should be a mandatory component of medical curricula	Disagree	7	15.9	9	10.6	4	5.7	0,0397*
	Indifferent	9	20.5	14	16.5	7	10.0	
	Agree	28	63.6	62	72.9	59	84.3	
Financial education can help reduce stress related to personal finances during and after medical training	Disagree	0	0.0	0	0.0	0	0.0	0,1354*
	Indifferent	2	4.5	4	4.7	0	0.0	
	Agree	42	95.5	81	95.3	70	100.0	
I consider training in financial skills to be as important as training in clinical skills	Disagree	9	20.9	26	30.6	14	20.0	0,5827
	Indifferent	11	25.6	14	16.5	20	28.6	
	Agree	23	53.5	45	52.9	36	51.4	
I feel confident in my ability to manage my personal finances	Disagree	23	52.3	40	46.5	24	34.3	0,3639
	Indifferent	12	27.3	23	26.7	24	34.3	
	Agree	9	20.5	23	26.7	22	31.4	
I feel motivated to seek financial education independently, beyond the formal medical curriculum	Disagree	12	27.9	25	29.4	9	12.9	0,2173*
	Indifferent	10	23.3	11	12.9	17	24.3	
	Agree	21	48.8	49	57.6	44	62.9	
The lack of financial education may negatively affect my career choices	Disagree	1	2.6	5	6.4	4	6.9	0,0026*
	Indifferent	9	23.7	10	12.8	1	1.7	
	Agree	28	73.7	63	80.8	53	91.4	
Insufficient financial preparation may negatively affect the quality of care provided to patients	Disagree	8	18.6	28	32.9	14	20.3	0,0033*
	Indifferent	8	18.6	9	10.6	15	21.7	
	Agree	27	62.8	48	56.5	40	58.0	
The amount of my debt has influenced/will influence my choice of medical specialty (only respondents with current	Disagree	4	33.3	5	33.3	13	54.2	0,4713*
	Indifferent	4	33.3	3	20.0	3	12.5	

Sample	Category	1st - 2nd		3rd - 4th		5th - 6th		p-value
		n	%	n	%	n	%	
or anticipated debt answered this question)	Agree	4	33.3	7	47.7	8	33.3	
I consider that a discipline/course/elective focused on Debt Management would be relevant to my professional development	Disagree	0	0.0	6	7.0	3	4.3	0,1478*
	Indifferent	6	13.6	8	9.3	4	5.7	
	Agree	38	86.4	72	83.7	63	90.0	
I believe that a discipline/course/elective on Personal Budget Planning would be beneficial to me	Disagree	0	0.0	1	1.2	1	1.4	0,3302*
	Indifferent	4	9.1	4	4.7	2	2.9	
	Agree	40	90.9	80	94.1	67	95.7	
A discipline/course/elective addressing entrepreneurship would be helpful in my career	Disagree	0	0.0	3	3.5	4	5.7	0,2868*
	Indifferent	7	15.9	7	8.2	4	5.7	
	Agree	37	84.1	75	88.2	62	88.6	
I consider a discipline/course/elective on the Administration of Medical Offices, Clinics, and/or Hospitals relevant to my professional development	Disagree	0	0.0	4	4.7	1	1.4	0,0852*
	Indifferent	6	13.6	4	4.7	2	2.9	
	Agree	38	86.4	78	90.7	67	95.7	
I consider it important to have a discipline/course/elective addressing investments for my professional life	Disagree	0	0.0	1	1.2	0	0.0	0,1810*
	Indifferent	4	9.3	3	3.5	1	1.4	
	Agree	39	90.7	82	95.3	69	98.6	
I believe that a discipline/course/elective on Retirement Planning would be helpful for my future	Disagree	1	2.3	1	1.2	1	1.4	1,000*
	Indifferent	3	7.0	5	5.8	4	5.7	
	Agree	39	90.7	80	93.0	65	92.9	

Caption: *Values obtained using the Monte Carlo permutation correction.
Source: Wolpe; Pires; Bellani, 2026.

The sum of responses across Likert-scale items was compared among early (1st and 2nd), intermediate (3rd and 4th), and final (5th and 6th) years of medical training, with no statistically significant differences observed between groups (p=0.3312) (Figure 2).

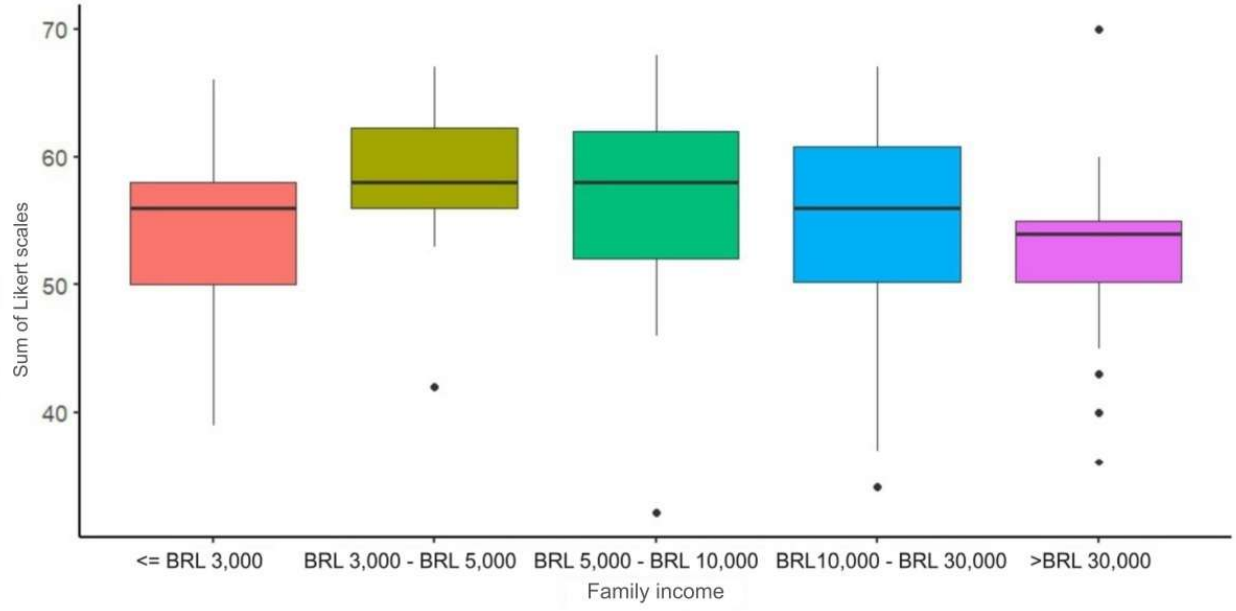
Figure 2. Distribution of summed Likert-scale scores related to financial education according to academic year.



Source: Wolpe; Pires; Bellani, 2026.

Despite no differences by academic year, family income significantly influenced the summed scores (p=0.0006). Students from families earning below BRL 3,000.00 or above BRL 30,000.00 showed lower overall scores regarding the perception of the importance of financial education (Figure 3).

Figure 3. Distribution of summed Likert-scale scores related to financial education by family income.



Source: Wolpe; Pires; Bellani, 2026.

DISCUSSION

The discussion was structured into two main sections. The first addresses the participants' socioeconomic profile, including demographic variables, and emphasizes how these factors may be associated with access to financial education. The second dimension explored students' levels of knowledge and interest in financial education, highlighting training gaps and the demand for its inclusion in the medical curriculum throughout undergraduate education.

Socioeconomic Profile of Participants

The sample was predominantly women (77.0%), consistent with the feminization observed in health-related programs and undergraduate medical education in Brazil in recent years (Brazil, 2022). The predominance of single students (86.0%) may be related to the typical age range of undergraduate programs, characterized by a mean age of 24 ± 5.

A substantial proportion of participants were enrolled in the intermediate years of medical school, particularly the 3rd and 4th years (43%), indicating meaningful variation in the respondent profiles across training stages. Most students (96.5%) were enrolled in private higher education institutions (HEIs), reflecting the structure of Brazilian higher education, where the majority of HEIs belong to the private sector (88%; 2,283 institutions) and a smaller proportion are public (12%; 312 institutions) (Brazil, 2022).

The findings revealed socioeconomic inequality among medical students, with 62.4% tthat reported not receiving, or never receiving, any financial assistance during their undergraduate training. This reality highlights persistent barriers to access and retention in higher education (Borges; Sambugari, 2019; Abreu; Ximenes, 2021). Dependence on government programs, such as the *Programa Universidade para Todos* (PROUNI) (20.1%) and *Fundo de Financiamento Estudantil* (FIES) (9.0%), highlights the central role of public policies in mitigating educational inequalities. However, the limited coverage of these mechanisms, combined with the need to resort to private loans (5.5%) and other sources of funding (3.0%), suggests gaps that affect equity in higher education. These findings align with studies emphasizing the importance of broad and sustainable student financing policies to ensure the right to higher education and combat social exclusion (World Bank, 2017; OECD, 2019).

The results also revealed marked heterogeneity in students' socioeconomic and housing conditions, with important implications for understanding inequalities in access to and retention in HEI. Most participants lived with family members (66.9%), a common cost-containment strategy, while only 22.1% lived alone and 7.5% shared their housing with peers. The lower prevalence of students living with partners, spouses, or children (4%) suggests that direct family responsibilities are less frequent in this group, likely related to their age profile and prioritization of academic demands. Considerable diversity was also observed in household size, with a predominance of students living with four (26.8%) or three (20.7%) people, reflecting larger family arrangements that may influence both study environment and privacy.

Regarding income, more than half of the participants reported a monthly family income above BRL 10,000.00, suggesting an overrepresentation of students from economically advantaged backgrounds (56.6%). However, a substantial proportion (24.7%) reported being low-income (earning up to BRL 5,000.00). Despite this income variation, no evidence was found that students with higher socioeconomic status demonstrated greater financial knowledge or more consolidated financial practices,

reinforcing the need for educational policies that develop financial competencies across all socioeconomic profiles. Statistically significant differences were observed across housing categories ($p<0.0001$), household size ($p=0.0034$), and income brackets ($p<0.0001$), underscoring the importance of considering social determinants in educational contexts, as they directly influence students' retention, academic performance, and financial autonomy.

Data on expected student debt at the end of undergraduate training indicated that most students (74.5%) did not anticipate incurring any educational debt, possibly reflecting access to personal resources, full scholarships, or family support. Among the 25.5% who anticipated debt, a marked concentration of high debt levels was observed: 15.5% estimated debts exceeding BRL 200,000.00, highlighting the high cost of medical education in private institutions or the absence of subsidized financing. The remaining 10% were projected to have lower debt levels, with most below BRL 200,000.00. The statistically significant difference among debt categories ($p < 0.0001$) reinforces the existence of distinct economic profiles among students and points to potential future financial impacts, which may influence professional choices, such as pursuing more lucrative specialties (Royce; Davenport; Dahle, 2019) or postponing personal plans after graduation. Despite the financial burden, no statistically significant association was observed between student debt and greater interest in seeking financial education, suggesting an important gap in students' risk awareness and financial planning proactivity.

A predominance of students from Paraná was observed, followed by participants from Santa Catarina, São Paulo, Mato Grosso do Sul, and other states with lower representation. Similarly, the HEIs to which respondents were affiliated were mainly located in Paraná, followed by Santa Catarina, Mato Grosso do Sul, Alagoas, and other Brazilian states. The initial dissemination of the questionnaire in Paraná state may explain this geographic distribution. Given that chain-referral (snowball) sampling was employed, early respondents plausibly influenced the regional composition of the sample, increasing participation from their localities.

Knowledge and Interest in Financial Education Among Medical Students

An analysis of prior access to financial education courses revealed that most students, regardless of their academic year, had never participated in any training in this area. This lack of exposure was particularly pronounced in the early years of medical school, with 90.91% reporting no prior contact with the topic, which decreased slightly in the intermediate (82.56%) and final years (78.57%). These findings reinforce the widespread lack of financial education among medical students and highlight the need to incorporate this content into undergraduate training at all stages.

Students' perceptions of the most appropriate time to introduce financial education into the medical curriculum varied by training stage, with a predominant preference for the 3rd, 4th, and 6th years. The differences between the groups suggest greater receptivity during the intermediate and final years, possibly reflecting increased academic maturity, clinical exposure, and proximity to professional practice. These findings indicate that introducing financial education during this period may enhance its practical applicability and better prepare students to manage both professional and personal financial challenges in the medical context.

Most participants believed that financial education should be a mandatory component of the medical curriculum. A progressive increase in agreement was observed as students progressed through the course, with statistically significant differences across academic periods. This trend reinforces the

cross-cutting perception of the importance of financial education and reflects growing awareness of the financial challenges of entering the workforce and achieving professional autonomy. These findings underscore the need to better prepare future physicians by placing greater emphasis on financial skills during training (Igu; Zakaria; Bar-Or, 2022) and highlight a curricular gap recognized by students.

The belief that financial education can help reduce stress related to personal finances was widely shared across all academic years (95.3%–100%). This result indicates that, regardless of the training stage, students recognize the impact of financial insecurity on mental and emotional health. The association between financial instability and high stress levels is well documented in the literature (Lee et al., 2024), particularly in long and demanding training contexts such as medicine, reinforcing the importance of providing adequate support and education in this area from the early years of undergraduate study.

Similarly, the perception that financial training is as necessary as clinical training was broadly accepted, with agreement rates exceeding 51.4% across all groups. This growing appreciation for management and financially informed decision-making reflects an expansion of the competencies expected in medical training (Rodrigues; Damiance; Juliani, 2022), extending beyond technical excellence and aligning with contemporary professional demands.

Findings on self-confidence in managing personal finances revealed a concerning trend: more than half of students across all academic years reported disagreeing with their ability to manage their finances. The absence of statistically significant differences between the groups suggests that this insecurity persists throughout undergraduate training, indicating that progression through the course alone does not foster the development of this competency. This highlights a relevant educational gap, given that personal financial management is an essential life and professional skill (Igu; Zakaria; Bar-Or, 2022), particularly in a career such as medicine, which often involves complex financial decisions and early autonomy in financial matters. Low self-confidence in this domain reinforces the need to incorporate structured financial education into the medical curriculum to promote greater security, preparedness, and autonomy in adulthood (Mizell et al., 2014).

A large proportion of students across all academic years reported feeling motivated to seek financial education independently beyond the formal curriculum. The absence of statistically significant differences indicates that this motivation is consistent throughout medical training, suggesting that interest in financial education reflects a universal demand among all students. However, it is noteworthy that 51.2% of 1st and 2nd-year students were indifferent to or opposed to pursuing this knowledge independently. This finding suggests that students closer to graduation may seek financial education out of practical necessity, a situation that could be mitigated if these competencies were developed more systematically throughout the curriculum.

Strong agreement was observed regarding the statement that a lack of financial education may negatively affect career choices, with more than 73.7% of students across all academic years endorsing this view. These data indicate increasing awareness, throughout training, of the relevance of financial education for future professional decision-making. Most participants, regardless of academic year, also recognized that insufficient financial preparation may negatively affect the quality of patient care, with agreement rates exceeding 56.5% across all groups. The consistency across groups suggests that this understanding is consistent throughout training and is not limited to a later stage.

Regarding the influence of student debt on the choice of medical specialty, this item was directed exclusively to students who reported having or anticipating debt. Similar perceptions across academic years indicate that this belief has remained relatively stable throughout training. Nevertheless, a substantial proportion of participants agreed that debt influences specialty choice (33% to 47.7%), while another segment (33.3% to 54.2%) disagreed, demonstrating a clear division in opinions. These findings suggest that, although not unanimous, students with debt perceive a preference for higher-paying specialties over lower-remuneration or longer-training fields as a relevant factor (Fong et al., 2018), underscoring the practical importance of this issue.

The analysis revealed broad agreement among medical students, regardless of academic year, regarding the importance of disciplines focused on financial and administrative management in the medical curriculum. A homogeneous understanding of the relevance of personal budgeting, debt management, and financial competencies emerged throughout undergraduate training. More than 90% of participants acknowledged the need for specific content on personal budgeting, professional investment planning, and retirement planning.

Consistently, more than 84.1% of students considered offering a discipline, an elective, or a course on entrepreneurship to be practical for a medical career. Moreover, competencies related to managing medical offices, clinics, and hospitals were recognized as necessary, with agreement exceeding 86.4%. These findings reflect the demand for training that extends beyond clinical education to include essential administrative competencies for professional practice (Wang et al., 2019). In all cases, the absence of statistically significant differences between groups reinforces that these demands are perceived uniformly throughout training, indicating the importance of incorporating financial education and health management content into medical curricula from the early stages.

When Likert-scale responses were summed, and mean scores were compared across academic years, statistical analyses revealed no significant differences between groups, indicating a homogeneous distribution of results. This finding demonstrates that students, regardless of the training stage, share similar levels of knowledge, prior experience, and interest in financial education, suggesting that educational gaps and demands in this area are consistent throughout the entire course.

Finally, although no differences were observed in perceptions of financial education across academic years, family income had a significant influence on these assessments. When students were grouped solely by family income, those with incomes below BRL 3,000.00 and above BRL 30,000.00 had lower mean scores for the perceived importance of financial education. This finding suggests that extreme socioeconomic conditions may undermine recognition of the relevance of financial education, regardless of training stage, reinforcing the need for pedagogical strategies that account for the diversity of students' financial contexts.

CONCLUSION

The findings of this study revealed a markedly heterogeneous sociodemographic and economic profile among medical students in Brazil, with a predominance of women, a high proportion of private institutions, and a substantial share of participants without access to financial aid. Although a significant share of respondents reported high family incomes and no anticipated debt, a considerable contingent remains economically vulnerable, reinforcing the persistence of barriers to access and retention in higher education.

With regard to financial education, the data demonstrated broad consensus among students on its importance, regardless of training year. Most participants strongly agreed that curricular components addressing personal financial management, budget planning, clinic administration, and debt management are essential, reflecting a growing appreciation of nonclinical competencies in medical education. Furthermore, low self-confidence in managing personal finances and limited prior exposure to financial education courses highlight significant educational gaps and a mismatch between perceived demand and existing educational offerings.

This study has some limitations that should be considered when interpreting the results. First, the cross-sectional design precluded establishing causal relationships between the variables analyzed. Additionally, participant recruitment was conducted through snowball sampling, which may have introduced selection bias and limited the sample's representativeness relative to the broader population of Brazilian medical students. Finally, the use of a self-administered questionnaire may have introduced information bias, either due to socially desirable responses or difficulty understanding the questions.

In light of these findings, the results reinforce the need to include financial education in the Brazilian medical curriculum to better prepare future physicians for the financial challenges of medical practice and adult life. Moreover, the data point to the need for educational and institutional policies that promote equitable access to financial knowledge, regardless of students' socioeconomic backgrounds, thereby contributing to a more comprehensive, critical, and sustainable medical education.

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DECLARATION REGARDING DATA AVAILABILITY (Declaração de disponibilidade de dados da pesquisa)

According to the Open Science form, the manuscript has not been deposited in a preprint server. Regarding the availability of research data and materials, the authors declare that all contents underlying the study are fully contained within the manuscript, with no additional data to be made available at the time of publication. Concerning open peer review practices, the authors do not agree with the publication of reviewers' reports; however, they agree to interact directly with the reviewers responsible for the evaluation of the manuscript when this option is offered by the journal.

DECLARATION OF AUTHORSHIP

According to the CRediT (Contributor Roles Taxonomy), the authors' contributions to this manuscript were distributed as described below:

Author 1 - Conceptualization, Investigation, Methodology, Data curation, Formal analysis, Resources, Validation, Visualization, Writing (original draft), Writing (review and editing);

Author 2 - Funding acquisition, Visualization, Writing (original draft), Writing (review and editing);

Author 3 - Project administration, Data curation, Supervision, Visualization, Writing (original draft), Writing (review and editing).

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest related to this article.

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APPENDIX 1

Educação Financeira na Formação e Prática Médica

3. Idade:

_____

4. Identidade de gênero:

Marcar apenas uma oval.

- ◯ Feminino
- ◯ Masculino
- ◯ Não me identifico com nenhuma acima
- ◯ Prefiro não responder

5. Estado civil:

Marcar apenas uma oval.

- ◯ Solteiro
- ◯ Casado
- ◯ União Estável
- ◯ Separado
- ◯ Divorciado
- ◯ Viúvo

6. Cidade/Estado:

_____

7. Cidade de origem:

_____

8. Instituição em que cursa(ou) Medicina é/era:

Marcar apenas uma oval.

- ◯ Pública
- ◯ Privada

9. Tem/teve auxílio financeiro para pagamento do curso de Medicina:

Marcar apenas uma oval.

- ◯ ProUni
- ◯ FIES
- ◯ Financiamento
- ◯ Empréstimo
- ◯ Não tem/teve auxílio financeiro

10. Moro:

Marcar apenas uma oval.

- ◯ Sozinho
- ◯ Com familiar(es)
- ◯ Divido apto com colega(s)
- ◯ Outro: _____

11. Quantas pessoas, incluindo você, residem em sua casa atualmente? (Por favor, considere apenas pessoas que moram com você de forma contínua, não visitantes ocasionais).

Marcar apenas uma oval.

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 ou mais

12. Renda familiar:

Marcar apenas uma oval.

- ◯ até R$ 3.000,00
- ◯ R$ 3.000,00 a R$ 5.000,00
- ◯ R$ 5000,00 a R$ 10.000,00
- ◯ R$ 10.000,00 a R$ 30.000,00
- ◯ Acima de R$ 30.000,00

13. Você teve acesso a alguma formação ou curso sobre educação financeira?

Marcar apenas uma oval.

- ◯ Na graduação em Medicina
- ◯ Na residência
- ◯ Fiz um curso extra-curricular
- ◯ Pós-graduação Lato Sensu
- ◯ Pós-graduação Stricto Sensu
- ◯ Outra graduação
- ◯ Não tive

14. Caso tivesse, no currículo da sua instituição de formação, uma disciplina de educação financeira, consideraria interessante cursar esta disciplina em qual ano?

Marcar apenas uma oval.

- ◯ 1º
- ◯ 2º
- ◯ 3º
- ◯ 4º
- ◯ 5º
- ◯ 6º

15. Sou:

Marcar apenas uma oval.

- ◯ Estudante de Medicina *Pular para a pergunta 16*
- ◯ Residente
- ◯ Médico Especialista

16. Ano que está cursando:

Marcar apenas uma oval.

- ◯ 1º
- ◯ 2º
- ◯ 3º
- ◯ 4º
- ◯ 5º
- ◯ 6º

17. Qual será o valor estimado da sua dívida estudantil ao final do curso?

Marcar apenas uma oval.

- ◯ Menos de R$50.000
- ◯ Entre R$50.000 e R$100.000
- ◯ Entre R$100.000 e R$200.000
- ◯ Mais de R$200.000
- ◯ Não terei dívida

Pular para a pergunta 18

Conhecimento em Educação Financeira

Em uma escala Likert onde 1 Discordo Fortemente, 2 Discordo, 3 Indiferente, 4 Concordo, 5 Concordo Fortemente, responda:

18. Considero que uma disciplina/curso/optativa focada em Gestão de Dívidas seria relevante para o meu desenvolvimento profissional.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

19. Sinto-me confiante na minha capacidade de gerenciar minhas finanças pessoais.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

20. Acredito que uma disciplina/curso/optativa sobre Planejamento de Orçamento Pessoal seria benéfica para mim.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

21. Acredito que a educação financeira deveria ser um componente obrigatório no currículo de Medicina.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

22. Considero importante ter uma disciplina/curso/optativa que aborde Investimentos para a minha vida profissional.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

23. A falta de educação financeira pode impactar negativamente minhas escolhas de carreira.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

24. Acredito que uma disciplina/curso/optativa sobre Planejamento de Aposentadoria seria útil para o meu futuro.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

25. O tamanho da minha dívida influenciou/influenciará a escolha da minha especialidade (responda somente se você têm, teve ou prevê ter dívidas).

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

26. Considero que uma disciplina/curso/optativa sobre Administração de Consultório, Clínica e/ou Hospital é relevante para o meu desenvolvimento profissional.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

27. A educação financeira pode ajudar a reduzir o estresse relacionado às finanças pessoais durante e após a formação médica.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

28. Uma disciplina/curso/optativa que aborde Empreendedorismo seria útil para a minha carreira.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

29. A falta de preparo financeiro pode impactar negativamente a qualidade do atendimento que presto aos pacientes.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

30. Sinto-me motivado(a) a buscar educação financeira por conta própria, além do currículo formal de Medicina.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

31. Considero que o treinamento em habilidades financeiras é tão importante quanto o treinamento em habilidades clínicas.

Marcar apenas uma oval.

1	2	3	4	5
◯	◯	◯	◯	◯

32. Há algum comentário/sugestão adicional que você gostaria de fazer sobre a educação financeira na formação médica?

_____

_____

_____

_____

_____

33. Defina "alfabetização financeira" em uma palavra:

_____

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