

Influence of student participation in academic leagues in the choice of specialty for the Bahia 2017 Medical Residency Program

Influência da participação de estudantes em ligas acadêmicas na escolha da especialidade para o Programa de Residência Médica da Bahia 2017

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ABSTRACT: *Introduction:* Participating in Academic Leagues (LAs) nowadays is an important component of the medical student's graduation process. However, this participation may be prematurely promoting specialty choice, limiting the performance and the search for ample and widespread knowledge. *Objective:* Evaluate the influence of participating in LAs with regards to the choice of specialty by new entrants in the Medical Residency Program of Bahia 2017 (PRM/BA/2017). *Methodology:* This is an observational cross-sectional epidemiological study in which residents from the PRM/BA/2017, during the enrollment, were invited to respond a questionnaire containing information about the participation in LAs and the choice of medical specialization. *Results:* 339 individuals were interviewed. 79.8% of interviewed participated in LAs. From those, 45.4% considered that participating in LAs influenced the choice of specialty. The general correlation between participation in LAs and the choice of a specialty at the same area (L-E correlation) reached 30.9%. A higher and significant L-E correlation was found in group that considered participation in LA as a influence in the decision making process, that participated in LA for more than 3 semesters, that occupied 3 or 4 positions at the same league, that participated on "Internship" and that claimed "Affinity/Curiosity" as the main reason for get into LA. Within all the medical specialties, the group that have chosen General Surgery had higher L-E correlation and the one that chose Pediatrics had lower. *Conclusions:* Despite being present in the training process of most students, participating in LAs did not seem to represent their premature specialization. The most associated factor with the L-E correlation was the perception that this participation influenced the choice of the specialization.

Keywords: Internship and residence; Education, medical; Education, higher; Students, medical.

RESUMO: *Introdução:* A participação em Ligas Acadêmicas (LAs), hoje, é um importante componente do processo formativo do estudante de Medicina. No entanto, esta participação pode estar propiciando precocemente a escolha da especialidade futura, limitando a atuação e a busca por conhecimento amplo e generalizado. *Objetivo:* Avaliar a influência da participação em LAs sobre a escolha da especialidade por recém-ingressos no Programa de Residência Médica da Bahia 2017 (PRM/BA/2017). *Métodos:* Estudo epidemiológico observacional transversal, no qual residentes do PRM/BA/2017, durante matrícula, foram convidados a responder questionário contendo informações sobre a participação em LAs e a escolha da especialização médica. *Resultados:* Dos 339 entrevistados, 79,8% participaram de LAs. Destes, 45,4% consideraram que a participação em LAs influenciou a escolha da especialidade. A correlação geral entre participação em LAs e escolha de especialidade na mesma área (correlação L-E) atingiu 30,9% e foi encontrada aumentada de maneira significativa no grupo que considerou que a participação em LAs influenciou o processo decisório, que participou da LA durante mais de 3 semestres, que ocupou 3 ou 4 cargos em uma mesma liga, que participou de "Estágios" e que alegou "Afinidade/Curiosidade" como principal motivo para entrada na LA. Das grandes áreas da Medicina, o grupo que optou por Cirurgia Geral apresentou maior correlação L-E (53,1%) e o que optou pela Pediatria menor (12,5%) *Conclusões:* Apesar de estar presente no processo formativo da maioria dos estudantes, a participação em LAs não pareceu representar a especialização precoce destes. O fator mais associado à correlação L-E foi a percepção de que esta participação influenciou a escolha da especialidade.

Descritores: Internato e residência; Educação médica; Educação superior; Estudantes de medicina.

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INTRODUCTION

The Academic Leagues (ALs) can be characterized as non-profitable student organizations which create to its members didactical, scientific, cultural and social opportunities, always taking place towards an specific health area, intending the learning and development and been managed by its own students, but oriented by the teachers¹.

Accordingly to Rego² (p. 10), “parallel curriculum” is the “set of extracurricular that the students create, subverting, in most times, the formal curricular structure established by the College”.

As example of the importance that the ALs make in the “parallel curriculum”² of Medicine students, Peres et al.³ have showed that the ALs participation was the most frequent activity related by the students from 1^o - 3^o, and “approach the medical practice“ was the main reason pointed in this question.

Detailing the internal operation and organization of the ALs, there are hierarchical positions and central activities directories needed to this organization to work, as: presidency, vice-presidency, secretary, teaching, researching, extension and communication directories. This way, it may be said that the AL still work as an space of development of management and leadership, not very common in the traditional curriculums.

Ferreira et al.⁴ when tried to do a parallel between the ALs and “Learning Communities“, learning group found in the Canadian and American colleges, emphasize specificities seen in the Brazilian ALs that make them unique as an extracurricular activity, which are: student’s autonomy in the activities conduction, organizations based in research, teaching and extension, participants variability under the aspect of the course’s period and distinct College origin and insertion of these organizations in congresses, conferences, regional and national events in this area.

Knowing all the functions and contributions which the ALs play in the curriculum and medical formation, there are critics and reflections to be maid considering the frequent phenomenon of the participation in it. Pêgo-Fernandes et al.¹ points as AL’s negative aspect the fact that some students take these activities as a chance to an “early specialization”, devoting excessively to an area and not giving other important medical formation areas the same attention.

A fact that corroborates with this phenomenon was observed by Monteiro et al.⁵, where by the analysis of the participation of 14 students in the Plactical Surgery League of Bahia (LBCP) of the Medicine College of the Federal University of Bahia between 2006 and 2007, the rate of students which were interested in acting in the area was 28.6% before the league’s participation and evolved to 78.6% in a year’s participation.

This way, the ALs gave the choice of the professional direction too early, limiting the performance and broad and generalized search for knowledge, and, mainly, going against the national curricular guideline to the medical formation according with the actual demands. This fact raise the need of a phenomenon’s analysis, aiming to enable the development of strategies that work with the model of such organizations to reduce a possible restriction.

Taking all this in sight, this paper aims to investigate the correlation between the ALs participation of the Bahia’s Medical Residency Program students and the medical specialty choice in the year of 2017. This way, the goal is to explore the association between the acting in the Leagues in matters of time, occupied charges and developed activities in them and the choice in the medical residency program in the correlated area, to better outline the AL function in the medical graduation process.

MATERIALS AND METHODS

Transversal epidemiologic study approved by the Ethical Committee in Human Beings Research of the Medicine College of the Federal University of Bahia (CAAE 62911816.0.0000.5577). The data was collected by the presential application of the questionnaires, after consent (Enlightened and Free Consent Term - TCLE), in the moment of resident’s registration in the Medical Residency Program Bahia 2017 (PRM/BA 2017), which occurred in Salvador-BA in the period of 02/13/2017 to 02/17/2017. The applied questionnaire contained questions in alternatives and semi dissertative format about demographic data (gender, age, Medicine College where graduated, time graduated), participation in the ALs (nature of the league, time participating, occupied charges, developed activities, main motivation to enter the league, especialty choice’s influence) and the specialty option of direct access or with pre requirement in PRM/BA 2017. The non-readable and partially or improperly fulfilled questionnaires were excluded.

To analyze the correlation between the participation in the ALs and the medical specialty choice, was defined that correlation League – Specialty (correlation L-S) was present in the following situations:

- 1) Interviewed participated in the League of the own specialty chosen. Ex. Participated in the Pediatric League and specialty to be enrolled Pediatrics;
- 2) Interviewed participated in the League of specialty that needs as pre requirement to enter the specialty that will be made in this moment. Ex. Participated in the Cardiologic League and specialty to be enrolled Medicine Interne;
- 3) Interviewed participated in League of specialty that is pre requirement to the specialty that will be enrolled

now. Ex. Participated in the Medicine Interne League and specialty to be enrolled Cardiology;

4) Interviewed participated in actuation's area League that needs as pre requirement to the entry of the specialty that will be made in this moment. Ex. Participated of Video Surgery League and specialty to be enrolled General Surgery;

5) Interviewed participated in Leagues with highly suggestible names of correlation with specialties or known areas of actuation. Ex. Participated of STD/AIDS League, which is correlated to Infectology specialty, Woman's Health League is correlated to Gynecology and Obstetrics etc.;

6) Interviewed participated in Leagues of specialties intimately connected to others. Ex. Oncology League is to the specialties or actuation area Hematology, Clinical Cancerology, Surgical Cancerology, Pediatrics Cancerology or Radiotherapy; Clinical-Surgical Anatomy League or Surgical Anatomy is to General Surgery; Legal Medicine League is to Patology

Were considered "undetermined" correlation the participation in transversal area's Leagues such: Emergency, Trauma, Anatomy, Clinical Anatomy, Pharmacology, Physiology, Physiopathology, Medical Semiology, Internal Medicine, Sport's Nutrition, Pain, Health and Spirituality etc.

The data was tabulated in the program Excel 2013® (Microsoft) and analyzed using the program GraphPad Prism 7® (GraphPad Software Inc.). The continuous variables of normal distribution were described in averagevaluables, median, mode and standard deviation. The categoric variables were described in proportions. Were performed comparisons between the categoric variables with chi-square test to the data with numerical values >15 and with Fisher's exact test to the data with numerical values < or equal to 15. The confidence interval (CI) was 95% with accepted alpha error of 5%.

RESULTS

There were 692 vacancies offered by PRM/BA 2017, between specialties of direct access and with requirements, of which we managed to interview 346 individuals, being that of those, 7 questionnaires were non-readable or partially fulfilled and 2 did not have the TCLE signature. There by 337 questionnaires were included in the study.

The Table 1 shows the social demographical data of the subjects.

Table 1. Social demographic data of the 337 physicians at the Medical Residency Program of Bahia in 2017

Feature	Value - n (%)
Sex	
Female	202 (59.9%)
Male	135 (40.1%)
Age	
21-25 years	91 (27%)
26-30 years	195 (57.9%)
31-35 years	39 (11.6%)
36-40 years	9 (2.7%)
41 years or older	3 (0.9%)
Colleges: Nationality	
Brazilian	330 (97.9%)
Foreign	5 (1.5%)
Unspecified	2 (0.6%)
Brazilian colleges: Nature of the Institution	
Public	130 (39.4%)
Private	200 (60.6%)
Brazilian colleges: Regions	
Northeast	275 (83.3%)
Southeast	39 (11.8%)
North	10 (3%)
South	5 (1.5%)
Midwest	1 (0.3%)
Colleges from Northeast: State	
Bahia	215 (78.2%)
Paraíba	17 (6.2%)
Ceará	16 (5.8%)
Sergipe	13 (4.7%)
Pernambuco	9 (3.3%)
Maranhão	3 (1.1%)
Piauí	2 (0.7%)
Colleges from Bahia: Institutions	
BAHIANA	97 (45.1%)
UFBA	48 (22.3%)
FTC	29 (13.5%)
UESC	19 (8.8%)
UESB	13 (6.0%)
UEFS	9 (4.2%)
Time since graduation	
0-2 years	204 (60.5%)
2 years and 1 day - 4 years	96 (28.5%)
4 years and 1 day - 6 years	25 (7.4%)
6 years and 1 day or more	12 (3.6%)

In regards to the participation in ALs during graduation, 269 (79.8%) of the 337 interviewed subjects said to have participated in this activity, being that of these, 68.4% joined only one ALs during graduation and the remaining took part in more than one. Thus we accounted 371 responses in regards to ALs participation.

The Table 2 summarizes the 371 participations related by the 269 students that took part in some ALs during graduation in regards to the amount, duration of the participation, influence, positions occupied, activities developed and motivations to join the leagues.

Table 2. Description of the participation in Academic Leagues (AL) during the graduation of the 269 physicians at the Medical Residency Program of Bahia in 2017

Amount	
1 League	184 (68.4%)
2 Leagues	68 (25.3%)
3 Leagues	17 (6.3%)
Duration of participation	
Average	3
Median	2
Influence of participation in AL on the choice of specialty	
Value - n (%)	
Yes	122 (45.4%)
No	140 (52%)
Undetermined	7 (2.6%)
Positions held in AL (Total: 328 positions held reports)	
Undetermined	105 (28.3%)
Amount of occupied positions in the same league	
1	222 (83.5%)
2	28 (10.5%)
3	14 (5.3%)
4	2 (0.7%)
Office occupancy reports	
Presidency	42 (12.8%)
Vice presidency	41 (12.5%)
Treasury	34 (10.4%)
Secretary	54 (16.5%)
Boards (teaching, research, extension, communication)	167 (47.9%)
Activities in AL (Total: 1072 developed activities reports)	
Undetermined	11 (3%)
Number of activities carried out in the same league	
1	66 (1.3%)
2	79 (21.9%)
3	77 (21.4%)
4	73 (20.3%)
5	65 (18.1%)
Reports of activities developed	
Events	282 (26.3%)
Internship	245 (22.9%)
Teaching	242 (22.6%)
Academic extension	157 (14.6%)
Research	146 (13.6%)
Motivation to participate in AK (Total: 416 reported motivations)	
Undetermined	17 (4.6%)
Affinity / Curiosity	292 (70.2%)
Learn something specific / Difficulty in the area	105 (25.2%)
Belonging - "all my colleagues were part of any league at the time, so I felt induced to participate in this one"	16 (3.8%)
Others	3 (0.7%)

In relation to the correlation L-S, meaning, participating in a League of one specific area and the choice for a specialty in the correlated area, as previously detailed, it demonstrate that this correlation was positive for 30.9% of the 269 subjects. The Graphic 1 illustrates the L-S percentages of correlation found.

Analyzing the correlation L-S in regards to the specialties that represent the major areas of Medicine (Table 3), we noticed that in “General Surgery” more than half the students (53.1%) participated in Leagues of a correlated area. In regards to “Internal Medicine” e “Gynecology and Obstetrics” the noted correlation was similar to the general sample, 36.2% and 29.4%, respectively. In “Pediatrics” we obtained a very small correlation percentage (12.5%). In the specialty “Family and Community Medicine”, due to the small number of subjects, we didn’t find any level of correlation.

We compared groups separated by specificities of participation and Table 4 shows the values of correlation L-S found in each group, as if those specificities was significantly associated with a difference in the L-S correlation (p value).

Graphic 1. Correlation League-Specialty (L-S) between the 371 Academic Leagues (AL) participations reported by the 269 physicians at the Medical Residency Program of Bahia in 2017

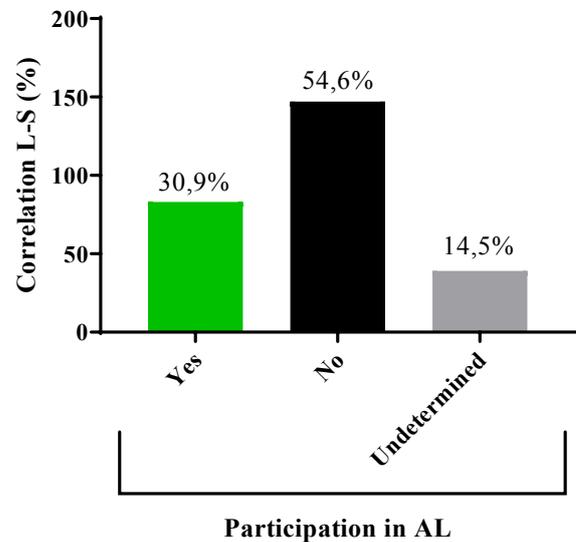


Table 3. Participation in Academic Leagues and correlation with choice of specialty (correlation L-S) for students selected for major areas on Medical Residency Program of Bahia in 2017

Major areas	Number of vacancies offered*	Amount of questionnaires answered n (%)	Participation in leagues n (%)	Correlation L-S n (%)
General Surgery	65	36 (55.4%)	32 (88.9%)	17 (53.1%)
Internal Medicine	129	69 (53.5%)	58 (85.3%)	21 (36.2%)
Gynecology and Obstetrics	35	19 (54.3%)	17 (89.5%)	5 (29.4%)
Family and Community Medicine	52	4 (7.7%)	2 (50%)	0
Pediatrics	83	49 (59%)	32 (65.3%)	4 (12.5%)

* According to the open announcement of the Medical Residency Program of Bahia in 2017.

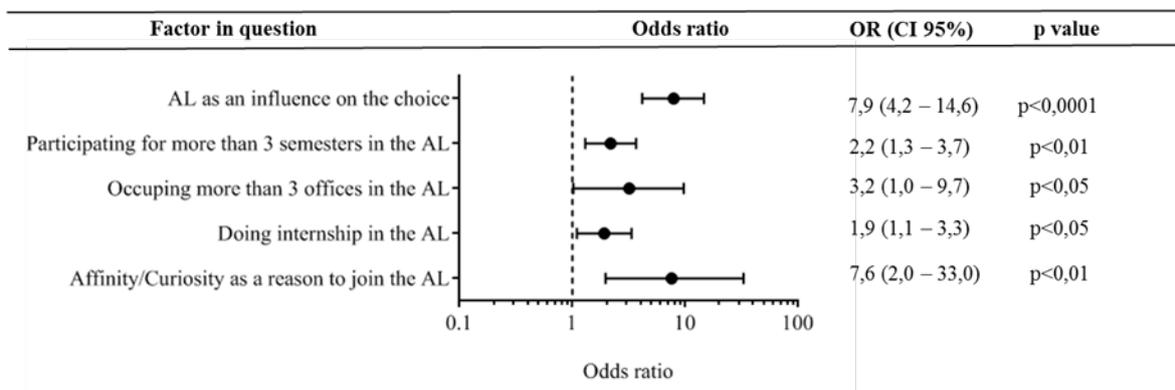
Table 4. Correlation level (%) between participation in Academic League (AL) and chosen specialty (correlation L-S) in different groups separated by participation’s specificities among physicians of the Medical Residency Program of Bahia in 2017

Groups	Correlation L-S (%)	p value
Perception that participation in AL influenced the choice of specialty: (Total: 361 reports)		<0.001
No	26.5%	
Yes	81.3%	
Duration of participation in AL: (Total: 356 reports)		<0.01
Less than or equal to 3 semesters	25.7%	
Greater than 3 semesters	43.0%	
Office occupancy in the AL: (Total: 266 reports)		0.389
Others	29.5%	
Presidency / Vice President	36.4%	
Number of positions held in the same AL: (Total: 266 reports)		<0.05
1 or 2 positions	29.5%	
3 or 4 positions	57.1%	
Nature of the activity carried out in AL: (Total: 360 reports)		<0.05
Others	22.8%	
Internship	36.2%	
Motivations for entry into AL: (Total: 341 reports)		<0.01
Curiosity / Affinity for the area	35.9%	
Learning / Difficulty in the area	6.9%	

After calculating the Odds-Ratio of all factors regarding the participation in ALs, which were associated

with the correlation L-S in a meaningful way, we obtained Graphic 2.

Graphic 2. Odds ratio of opting for specialty in related area of the Academic League (correlation L-S) depending on the factor in question among physicians of the Medical Residency Program of Bahia in 2017



DISCUSSION

In our study, almost 80% of those interviewed participated of Academic Leagues (ALs) during graduation, showing that ALs figure as an important activity in the “parallel” curriculum of Medicine undergraduate students.

These spaces are administered by the students under the guidance of a teacher/professional in the area, in which competences such as leadership, management, organization, events promotion, teaching, among others, can be exercised. Thus, in a reality where distinct skills are increasingly valued, the participation in ALs becomes a fruitful opportunity to develop other skills than the technical-scientific, classically offered in the academic environment. In addition, the possibility of contact with the area more intensely through practical-observational stages or even discussion of specific themes motivates many students to participate in these spaces.

The aim is to know the League-Specialty (L-S) correlation level, which is the student’s participation in an AL and then the choice for a specialty in a related area. An L-S correlation of 30.9% was found among the 269 students who participated at least of one AL during their stay in medical school (Table 1). This percentage is lower than the one found by Lima, when interviewing 133 students from the leagues of medical schools in the city of Belém. Most of them were attending 1st-3rd year, among which 44.11% declared that the object of study from the league in which they worked was the specialty they thought to follow⁶.

We must take into account the fact that in this sample, the students are at the beginning of the medical course, different from ours composed by doctors, with a specialty decision already consummated. There is also the possibility that the L-S correlation values found in

our study were higher if we used more comprehensive “L-S correlation” definition criteria - for example, we considered the Multidisciplinary Trauma area and the correlation could not be determined in this case. But we have chosen to restrict this definition in order to establish a more precise and careful level of AL’s influence on the choice of specialty.

When we did the analysis of L-S correlation separately within the major areas of Medicine (Table 3), we noticed that “General Surgery” obtained a higher level of L-S correlation (53.1%) than the general sample, and “Pediatrics” obtained a lower level (12.5%). The “Medicine Interne” and the “Gynecology and Obstetrics” obtained correlation values close to the general one, respectively 36.2% and 29.4%.

The level of L-S correlation found for General Surgery in our sample was higher than that shown by Simões⁷, in which from 363 graduates of the Trauma League of the State University of Campinas (UNICAMP), 131 (36.1%) chose to do of General Surgery. In the Campinas sample, the author considered Trauma and General Surgery related areas, while in our study, Trauma was designated as an undetermined correlation area, that is, the L-S correlation value found could be even higher.

Differently, Souza et al.⁸, in his sample of 1225 people among physicians who would tender for medical residency in 2013 (28.3%) and medical students from the last two years of course (between 9th to 12th period) from public and private colleges (70.1%) of Rio de Janeiro and Salvador, showed that students who did Pediatric leagues had a 9.5 times greater chance of referring the option than the remaining population. Meanwhile, in our study we obtained a lower correlation than the general one. In the same sense, Silva et al.⁹ showed that 64% of the 28 medical graduation students from the University Gama Filho/RJ regularly enrolled in the 9th to 12th period in

2012 who had Pediatrics as a specialty to be followed, participated in ALs and teaching assistants in the area. The L-S correlation found for Pediatrics in our study (12.5%) was very low considering the strong influence of participation in extracurricular activities described above. Again, our sample differs from those cited above due to the fact that the choice process has already been consummated, while among undergraduates there is only the intention to choose. Thus, it may be that during the graduation process and perhaps going to the labor market there are factors that may be altering the previously established decision flow. In addition, among the large areas with a significant number of students responders in our study, Pediatrics presented the lowest percentage of students who participated in ALs (65.3%, Table 3).

Although we did not obtain a significant general L-S correlation, we decided to analyze whether there was an association between different factors related to participation in AL with this correlation. That is, we analyzed whether some aspects of participation in these organizations could be linked to an unobserved L-S correlation tendency.

Regarding the perception that participation in AL influenced or not the choice of specialty, it was shown that students who considered that participation in AL was important for the decision-making moment of the specialty had an almost 8-fold greater chance of presenting LS correlation (Graph 2), and this was the isolated factor that seemed to be more associated with participation in the League and choice of specialty in the same areas. Therefore, among those who claimed that participation in AL influenced their decision-making process, this influence seemed to be more positive and favorable than to reject or distance from the area in question (negative influence).

We noticed that staying in an AL for more than 3 semesters have increased the chance of specialty choice in the area by two times. Possibly, longer time in an AL increases the likelihood of involvement and deepening with the area in question.

Regarding the positions held in LA, although there is a hierarchy in the AL, we did not notice significant differences between the different positions held and the level of L-S correlation in each group. Only the highest hierarchical posts were analyzed (“Presidency” and “Vice-Presidency”), since under these circumstances there could be a greater commitment to AL, greater participation time, greater proximity to the activities carried out, etc. But these factors seem to not exist or to not be important enough to bring differences to L-S correlation levels in the future. The number of positions occupied, in turn, was associated with a greater chance of choosing the correlative area (Table 4 and Graph 2), but

being related to the variable “participation time in AL”, and thus, we could not clearly define the strength of either factor in question. Probably, the two facts are relevant, with time as a factor that denotes greater exposure, and the number of positions, as a sign of greater commitment, both providing greater L-Scorrelation.

Taking into account the influence of the practical experiences on the final choice, we analyzed the L-S correlation on groups that developed different activities in AL. Of the activities that we list in our questionnaire, the one that is closest to the daily professional routine was “Internships”. In this way, when analyzing the group that did it in relation to another that carried out other activities, it was almost twice as likely to choose specialty in the area related to AL (Graph 2). Nogueira-Martins et al.¹⁰, when exploring the perceptions of students of the 5th year of Medicine of the University of São Paulo showed a great desire by this group for the experience of the clinical practice in the pre-internship period. In our study, this “approximation of the medical practice”⁵, in turn, seemed to contribute to the choice of specialty in the correlative area of that experienced in undergraduate studies. Probably, this approach was positive for those who did it, reinforcing the choice for the specific area that already existed previously or creating in the student the desire to follow the area in the future.

Another factor that deserves attention is the motivations reported for entry into AL. When we crossed the levels of LS correlation with the motivations indicated, we obtained almost eight times more chances of correlative choice in the group that entered AL due to “Affinity/Curiosity” than in the group that came in to learn something specific or that had difficulty in the area (Graph 2). Thus, even with the need for curricular complementation discussed by some authors as one of the reasons for the majority of medical students to join this leagues^{6,7}, this motivation in our sample was not associated with the specialty choice in the area related to of the league sought for this purpose. We do not know if the expectations of learning were frustrated or even after the end of the sensation and difficulty in the area, the student chose not to follow it.

The study questionnaire was composed of semi-objective questions, therefore comments about the options indicated were not possible, limiting the more detailed and deep analysis of the phenomena observed. In addition, the choice of the medical specialty to be followed is complex and multifactorial, being present from more direct aspects such as affinity for the area, financial return, possible lifestyle for specialty and even the offer of specialty on the place where the student resides, family tradition (with doctors who have already consecrated themselves in a certain area), among others.

In the various studies evaluating the factors determining the choice of the medical specialty among undergraduates and physicians who would tender for residence, affinity for the area, quality of life and financial return were the most remembered aspects^{8,11,12}.

Regarding the role ALs play in choosing specialization, there are few studies on the topic. Cavalcante et al.¹³, when analyzing the Brazilian scientific production about the Academic Leagues, in order to identify knowledge gaps, showed that there is a precarious literature on the subject, bringing the importance of reflecting on the role of the ALs in order to identify the positive aspects for graduation or if they serve only for an early academic specialization, as suggested by some authors analyzed.

Thus, even if our work do not suggest the participation in AL as a determining factor in the choice of the future specialty, more works are necessary to determine the ALs role in medical research.

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Author contributions: *Sara Pontes*: Conception and draft of the research; Data collection; Data analysis and interpretation; Statistical analysis; Manuscript draft. *Lara Torreão*: Conception and draft of the research; Data analysis and interpretation; Review of the manuscript.

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CONCLUSION

Although present in the formative process of most of the students, the participation in Academic Leagues (ALs) doesn't appear to represent an "early specialization" for them. The perception that the participation in AL influenced the choice of the specialty was the most significant factor associated with the correlation League-Specialty (L-S), that is, electing a specialty correlated with the League in which the student participated, suggesting that this influence is felt by the student in the direction of favoring a posterior contact with the area in regard.

The choice of the specialty, beyond that, is complex and multidimensional, therefore the participation in ALs, when influencing the decision making process, is just one component of a large network of factors interconnected in the choice. By itself, in isolation, this extracurricular activity does not seem to be determinant in the final election of the specialty to be pursued by the general practitioner.

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