

Family Dynamics and Academic Performance of Medical Students

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ABSTRACT

Despite multiple studies on family dynamics and academic performance, the relationship between the two is not yet fully clarified; only multiple factors have been identified. Different instruments have been used to assess family functionality, and various methods have been proposed to determine academic performance. This study is of an observational nature, employing a cross-sectional, prospective, cross-sectional analytical survey design. The objective of the study is to ascertain the association between family dynamics and the academic performance of third-year medical students (n = 157) at the National School of Medicine and Homeopathy of the IPN in Mexico City. The Intrafamily Relations Scale (long version) is applied in conjunction with the academic performance evaluated using the average student. The sample population comprised 157 participants, predominantly female (n = 106), with a mean age of 21.7 years ± 1.62. The mean school average of 8.14 + 0.48. Bivariate analysis revealed an absence of association between intra-family relationships, as evidenced by the Rho Value of -0.016 for the dimension of Union and Support, 0.012 for the dimension of Expression, 0.029 for the dimension of Difficulties, and -0.014 for the total score. A positive correlation was identified between social variables and the current academic situation, with a statistical significance of t = -4.499, p = 0.000, supporting the hypothesis that regular students exhibit a distinct pattern of social dynamics. The study did not identify a significant association between family dynamics and academic performance. It is imperative to acknowledge the necessity of contemplating the numerous factors and contexts that exert an influence on academic performance.

Keywords: *Family Dynamics, Academic Performance, Medical Students, Primary Care, Family Relations.*

How to cite this article: Núñez MA, Carrillo T*, Espinosa Pozos L, Ortiz TL, Jardón López NA, Flores Solano P, Vázquez Vázquez F and Moreno Almazán A, Family Dynamics and Academic Performance of Medical Students. *Int J Drug Deliv Technol.* 2026;16(10s): 787-793; DOI: 10.25258/ijddt.16.10s.93

Source of support: Nil.

Conflict of interest: None

INTRODUCTION

The family constitutes a social institution whose origins have not been definitively established, and its developmental stages remain indeterminate. Nevertheless, this human organization is as old as culture itself (Estrada, 2012).

Mendoza-Macías and Barcia-Briones (2020) posit that family dynamics constitute an essential component in the integral development of individuals, directly influencing the individual (emotions) and their environment (social and academic). A review of extant studies indicates that the family environment can act as either a protective or

risk factor for academic performance, with the quality of interactions between the family unit serving as a critical determining factor. The review further indicates that effective communication, emotional support, and stability in family relationships are pivotal in determining good or bad school performance, observable from the basic levels of education. In the context of higher education, the role of family accompaniment becomes particularly salient, as it exerts a substantial influence on the student's capacity to cope with stress, maintain motivation, and attain satisfactory academic performance. Consequently, the

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family environment remains a foundational element in the completion of professional training.

Choquehuanca et al. (2024) arrived at the conclusion that family dynamics play a pivotal role in the academic performance of students. The identification of emotional cohesion, communication between members, and co-parenting has been demonstrated to exert a significant influence on student learning. Furthermore, the presence of a conducive home environment has been shown to foster stronger attitudes, heightened motivation, and the development of enhanced problem-solving skills among students. However, in families marked by frequent conflict, unequal roles, and a negligent approach to education by the parents, family values can give rise to unanticipated circumstances conducive to cognitive absorption. It has been determined that students who engage in frequent and open communication with their parents allocate a greater portion of their time to familial engagements. Furthermore, the family's involvement in academic decision-making is characterized by both direct and indirect support, fostering motivation in the students' academic pursuits (Choquehuanca et al. 2024).

Gana et al. (2024), in "Family Functioning, Parental Attachment, and Students' Academic Success," posit that, despite the absence of statistical significance in their findings, the emotional bond and interaction between parents and children constitute a pivotal element that indirectly impacts academic performance. This notion is further elaborated upon by Li et al. (2022) in "Parent-Child Relationships and Academic Performance of College Students." The study examined the chain-mediating roles of gratitude and psychological capital. It was observed that the parent-child relationship influenced academic performance in a positive way, among other factors. These factors were analyzed with a psychological capital scale that evaluated self-confidence, tenacity (recovering from difficulties), optimism, and responsibility.

Medrana (2017), in "Family problems and academic performance of 3rd level students of the Social Work career of the Faculty of Humanistic Sciences" studied the factors involved in academic performance from the composition of the family and family problems, factors present in students that caused low academic performance in a high index, repetition and desertion. These issues are indicative of family dysfunction, the presence of addictions within the family unit, instances of violence, economic disadvantage, or the absence of a family member. These factors have the potential to impede the educational process for students (Medrana and Romnero, 2018).

Gómez (2015) conducted a study titled "Comparison of Social Factors Associated with Academic Status in Medical Students" on a sample of medical students from a private university. The study revealed that there was a higher proportion of female irregular students compared to regular students. Additionally, the analysis found no statistically significant association between parents'

academic status and their children's regularity in attending classes. However, the study did establish a notable correlation between family cohesion and regular student attendance, though this correlation did not align with the expected pattern of social inequalities being directly proportional to educational inequalities. A variety of factors, including the family environment, the efficacy of the educational system, and the characteristics of the school itself, have the potential to either exacerbate or mitigate disparities among students. A conducive family environment, characterized by the presence of both parents, has been demonstrated to exert a significant influence on an adequate academic performance, as evidenced by school grades. This environment fosters regularity in students, thereby contributing to their overall academic success. This phenomenon does not occur in the same way among students who are reared in authoritarian and indifferent family environments (Gómez et al., 2015).

Castro's (2017) study, "The family as a sociocultural mediator in the academic performance of students at high school No. 2 of the Benito Juárez Autonomous University of Oaxaca," found that parental influence plays a significant role in students' academic performance, defined as their final grade at the conclusion of their secondary education. The study indicated that the absence of parental involvement can lead to a lack of awareness regarding economic challenges, as well as a deficiency in relevant knowledge. Furthermore, it was observed that this absence can result in inefficient organization of family time and extended working hours, which hinder effective communication with children. In a similar vein, the methods employed by families to communicate are not efficacious. Consequently, intervention actions must be implemented to elucidate the attitudes of parents toward family and school-related issues. These actions should assist parents in articulating their concerns regarding their children's education and underscore the necessity for student support and the distribution of family and school responsibilities (Castro and Chavez, 2016).

Rocha (2017) conducted a study in Mexico at the secondary level entitled "Influence of intra-family relationships on academic performance in secondary school students." In this study, Rocha evaluated academic performance in addition to the academic average, applying intelligence assessment tests. The conclusion of this study indicates the potential for enhancement in the domain of learning when families are made aware of the significance of establishing limits among its members. This is due to the family unit serving as the primary educational institution for individuals, with parents assuming the role of initial educators. The efficacy of this learning process is augmented by communication with external sources, particularly those within the immediate social circle. The secondary role of educational institutions is to oversee the learning process and evaluate academic performance. The findings of this study reveal that the structure and functioning of the family unit exert a notable influence on academic performance. However, a distinguishing aspect of this study is its examination of family dynamics as a

non-significant factor in academic performance within the context of the educational institution (Rocha et al., 2017).

The present body of research suggests a correlation between family dynamics and academic performance. Specifically, students who perceive their family environment positively have been shown to exhibit enhanced academic performance, while those who perceive their family environment negatively have demonstrated poorer academic performance. The association between depression or anxiety in the student and diminished academic performance has also been documented. These findings underscore the impact of familial dynamics on the learning process and academic performance.

The objective of this research is to evaluate the medical student's academic performance within his family environment and identify the factors that influence it. The study will also assess the intra-family relationships of third-year medical students at a National Polytechnic Institute school. The findings will inform the development of strategies to enhance the academic performance and training of medical students, contributing to their success in the medical field.

METHODOLOGY

Study Design

Non-experimental study, subdesign Cross-sectional, prospective, cross-sectional, analytical survey

Study Location

The study took place at the National School of Medicine and Homeopathy of the IPN, in Mexico City, which belongs to the National Polytechnic Institute.

Selection Criteria

The inclusion criteria included each of the following characteristics of the participants:

- Student at the National School of Medicine and Homeopathy
- Attending classes in the fifth semester
- Attending classes in the sixth semester
- Select any of the 2 academic programs
- Any gender
- Report desire to participate and sign the informed consent form.

The following exclusion criteria were considered:

- Attending any other semester at the National School of Medicine and Homeopathy
- Stop attending classes during study.
- Academic dropout during the study time

Elimination criteria:

- Inconclusive questionnaires.

Sample size

The sample is calculated with the formula for a proportion with a known sampling frame, (García, 2013), having a confidence level of 95%, an alpha value of 5% and an accuracy of 5%, taking into account that the total population is 266 students in the third year, there is a sample size of 157 (n=157) (García et al., 2013).¹⁰

Variables

The variables considered in designing the questionnaire are shown in Table 1, where each one is divided into three types: dependent, independent, and moderate.

Table 1: Variables of the study.

| <i>Dependent</i> | <i>Independent</i> | <i>Moderating</i> |
|--|--|---|
| <ul style="list-style-type: none"> • Academic performance | <ul style="list-style-type: none"> • Family dynamics • Expression • Difficulties • Union | <ul style="list-style-type: none"> • Structural typology • Age • Sex • Marital status • Occupation • Regular academic status • Family role |

Instrument

The Rivera Heredia Intrafamily Relations Scale, in its extended form comprising 56 items, was applied as the primary evaluative instrument. The concept encompasses a multifaceted set of factors, including the perception of familial cohesion, the management of interpersonal challenges, the articulation of emotional sentiments, the navigation of social norms, and the adaptation to circumstances of transition. The measurement of three dimensions is proposed: union, support and the tendency of the family to engage in activities together, to cohabit, and to provide mutual support. The 'difficulties dimension'

is indicative of issues such as problems, while the 'expression dimension' is associated with the capacity to communicate emotions, ideas and events experienced by family members (reliability of 0.93 in the Mexican population). This dimension can be applied to oneself (Rivera and Andrade, 2010).

Statistical analysis

Data was captured in an Excel sheet of the students who met the inclusion criteria described above.

Descriptive Statistics

A univariate analysis was performed for the quantitative variables using measures of central tendency (mean and median), and measures of dispersion (standard deviation), as well as frequencies and proportions for qualitative variables.

Spearman's Rho statistical tests were used for bivariate analysis, looking for the association of our main variables and Student's t for social quantitative variables with a $p \leq 0.05$ for statistical significance, in order to determine the independence between variables looking for a confidence interval of 95 (95% CI).

For statistical analysis, the IBM SPSS version 25 program for Windows was used.

Ethical considerations

It was presented to the local investigation committee 3404 obtaining the approval number R-2019-3404-097 and with No inconvenience on the part of the educational authorities.

It was based on the guidelines established by the Regulations of the General Health Law on Research, the Declaration of Helsinki, the Nuremberg Code, and the Belmont Report.

RESULTS AND DISCUSSION

A total of 157 students from the third year of the Bachelor of Medicine program at a public university in Mexico City were included in the study. The students were divided into two groups: those pursuing the Medical Surgeon track and those pursuing the Homeopath track. The Homeopath track was the more popular of the two, with a higher percentage of students choosing it. The mean school average for the entire sample was 8.14 (95% CI: 7.98–8.30). The study found a predominance of female students, with a mean age of 21.7 years (95% CI: 21.3–22.1) (Table 2).

Table 2: Data collection of sociodemographic variables

| Variables | Sociodemographic variable n=157 (%) |
|--|--|
| Sex – n (%) | |
| Men | 51 (32.5) |
| Women | 106 (67.5) |
| Age | |
| Medium (SD) | 21.76 (1.623) |
| Academic program – n (%) | |
| MCH | 75 (47.8) |
| MCP | 82 (52.2) |
| Occupancy – n (%) | |
| Studies | 138 (87.9) |
| Study and work | 19 (12.1) |
| Who you live with – n (%)^a | |
| Parents and siblings | 64 (41.6) |
| Parents Only | 9 (5.8) |
| Parents and another family member | 6 (3.9) |
| Only with one of your parents | 23 (14.9) |
| With friends | 21 (13.6) |
| With your partner | 1(0.6) |
| Alone | 20 (13) |
| Monthly Income | |
| Less than \$5000 | 41 (28.3) |
| From \$5001 to \$10000 | 63 (43.4) |
| From \$10001 to \$15000 | 19 (13.1) |
| More than \$15000 | 22 (15.2) |
| No response | 11 (7.6) |
| School Average | |
| Medium (SD) | 8.14 (0.484) |
| Academic situation | |
| Regular | 132 (84.6) |
| Irregular | 24 (15.4) |

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A negligible percentage of students who are both in school and employed are reported, according to the participants' occupations (Table 2).

In regard to the residential circumstances of the participants at the time of the study, it has been documented that the majority reside with their parents and siblings. Those who reside with only one of their parents are the second largest group, followed by those who live with friends, and finally, those who live alone (Table 2).

In regard to medical academic performance in relation to the school average, the majority of students are considered to be regular students (Table 2)

The following inquiry is posed: To what extent do intra-family relationships vary according to each of the specified dimensions?

Union and Support, Expression and Difficulties

In the results of the Intrafamily Relations Scale in its long version (56 items), in the **Union and Support Dimension**, the following are reported: most of the participants perceive a high level of union and support, followed by a perception of high level, Medium High level, Medium level, Medium Low level and only 1 low level.

In the Expression Dimension , the following are reported: there was most of the perception at the Medium-High level, followed by a high level, Medium level, Medium-Low level, and none at a low level.

In the **Difficulties Dimension**, it was observed that most of them are at a Medium-Low level of perception of difficulty resolution, followed by Medium level, followed by Low level and finally a Medium-High level and a High Level (Table 3)

Table 3: Results of the Intrafamily Relations Scale

| Variables | ERI n=157 (%) |
|----------------------------|--------------------------|
| Expression | |
| High | 50 (31.8) |
| Medium High | 59 (37.6) |
| Middle | 42 (26.8) |
| Medium Low | 6 (3.8) |
| Low | 1 (0.6) |
| Bonding and support | |
| High | 59 (37.6) |
| Medium High | 58 (36.9) |
| Middle | 31 (19.7) |
| Medium Low | 8 (5.1) |
| Low | 1 (0.6) |
| Difficulties | |
| High | 3 (1.9) |
| Medium High | 14 (8.9) |
| Middle | 46 (29.3) |
| Medium Low | 62 (39.5) |
| Low | 32 (20.4) |

Inferential Analysis

The application of the SPSS 25 program entailed the implementation of non-parametric tests for the purpose of conducting inferential statistics. The Kolmogorov-Smirnov test (K-S test) was employed to ascertain the normality of the distribution of the results, which revealed a non-normal distribution. This was followed by the

implementation of Spearman's Rho statistical test for the association between family dynamics and academic performance (school average). The following conclusions were reported through bivariate analysis: The Rho value was determined to be -0.016 for Union and Support, 0.12 for Expression, and 0.29 for Difficulties. These findings indicate an absence of association between the various dimensions of the scale and the school average (Table 4).

Table 4: Sepearman's Rho correlation coefficient by dimension

| Spearman's Rho | | |
|-----------------------|-----------|------------------------|
| Dimension | Rho Value | Bilateral significance |
| Bonding and support | - 0.016 | 0.840 |
| Difficulties | - 0.012 | 0.877 |
| Expression | 0.029 | 0.722 |
| ERI (Total Score) | 0.014 | 0.865 |

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For comparisons using Student's t-test evaluating the relationship between the school average and sociodemographic variables: finding only the academic situation (regular or irregular student) with significant results (Table 5).

Table 5: Comparison of social variables with school average.

| T for Student | | |
|--|---------|---------|
| Variable | T Value | P value |
| Sex | -1.358 | 0.177 |
| Employment status (working or not working) | -1.027 | 0.306 |
| Number of family members | -1.219 | 0.225 |
| Age | 1.108 | 0.269 |
| Monthly expenses | 0.540 | 0.590 |
| Who you live with | -0.240 | 0.811 |
| Role in the Family | 0.303 | 0.762 |
| Academic status (fair or irregular) | 4.499 | 0.000 |
| Curriculum | -1.593 | 0.113 |

DISCUSSION AND CONCLUSIONS

A comparison of the present study with the extant literature reveals the importance of family support and functionality in academic performance, as indicated by numerous studies. As Munares' research indicates, family support is a significant protective factor for academic achievement. However, the present study observed that the development of intra-family relationships, such as support, does not have a negative or positive impact on academic performance.

Medrana's research suggests a correlation between family dynamics, including the presence of addictions or domestic violence, and adverse academic outcomes. In the present study, no significant association was identified between the dimension of intra-family difficulties and academic performance.

This observation prompts the consideration of the potential influence of unmeasured factors on the academic performance of medical students. Such factors may include social dynamics and parental characteristics, as previously discussed by Gómez.

This dearth of significant associations could be attributed to the arduous nature and structure of medical programs, which have been shown to cultivate students' resilience and academic autonomy, thereby diminishing the direct impact of family dynamics.

An alternative explanation could be attributed to variability in the perception of family support and its actual impact on academic performance, which may vary between individuals and across social and cultural contexts. It is important to note that students may interpret the concepts of support and family togetherness differently, and that these perceptions may not directly correlate with their academic performance.

It is possible to consider certain limitations that may have influenced the results. One such limitation is the restriction of the sample to a single institution and academic year. Furthermore, the instrument employed for the assessment of family dynamics was predicated on self-reports, a method that is susceptible to response biases.

The findings of this study suggest that there is no significant association between family dynamics and academic performance. However, the extant literature indicates that family dynamics may impact academic performance in different contexts. It is imperative to conduct supplementary investigations that encompass an array of variables, encompass diverse academic and cultural contexts, and consider disparate academic degrees. This is essential to enhance comprehension of the intricate interplay between familial dynamics and academic accomplishment.

The investigation yielded the conclusion that there is an absence of a significant association between family dynamics and the academic performance of third-year medical students in an IPN school. It is imperative to acknowledge the necessity of contemplating an array of factors and contexts, encompassing social elements, academic settings, and familial environments, within which these relationships are examined. This examination should be conducted with a more extensive and diverse sample.

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