Study habits and academic performance in residents of orthopedics and family medicine

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Abstract

Objective: To evaluate the study habits in the academic performance of residents of the specialties of Orthopaedics and Trauma (OT) and Family Medicine (MF). **Methods:** An observational study was carried out with OT and MF medical residents. An online survey was applied to them, with response options on the Likert scale, to evaluate study habits. For the statistical analysis, measures of central tendency and dispersion were used, as well as correlations, P < 0.05. **Results:** A sample of 112 participants. 51% of participants were male. Mean age of 30.1±3. 75% of participants were single. 84.8% study one hour. 84.8% of respondents answered that they were pursuing the specialty they wanted. 80.4% always or constantly understand what they read. 45.5% of participants draw diagrams or charts. Writing summaries (82.1%) is the most used technique for memorisation. 93.7% always or constantly attend classes on a regular basis. 94.6% of participants strongly agree or agree that study habits can influence academic performance. 58% presented regular habits, 22% good habits and 18% bad habits. It was found that there is a correlation between age and average academic performance (P = 0.016). **Conclusions:** Age and marital status had a direct association with academic performance. Most of the residents are satisfied with the specialty they are studying. Memorisation and writing summaries are the most used study habits. In general, residents have regular study habits.

Keywords: Study habits. Medical residents. Medical residency. Family medicine. Orthopaedics.

Introduction

The resident physician or medical intern is an integral part of the hospital and is the cornerstone for its proper operation[1-3].

Improving medical services and training of health personnel requires a number of factors such as improved facilities, technological upgrading and better teaching conditions[4,5]. The training of medical specialists requires a holistic approach in order to meet the challenges that arise on a daily basis[6]. At present, medical practice, although it must go hand in hand with teaching in order to gain knowledge, is not always possible[7-9]. Many factors make it difficult for the resident physician to carry out their duties: lack of educational tools, extremely short study times, professors who are not fully qualified to teach[10-16].

Efforts by hospital education departments to incorporate elements that enhance resident teaching are faced with heavy workloads, which hinder learning environments, making it difficult for academic interests to predominate in the training of medical specialists, resulting in academic dropout or tension for time and resources between educational and professional needs[17].

It is currently observed that the lack of good study habits and techniques has a direct impact on academic performance[3,18]. Some authors[19] point out that the main predictors of academic performance in medical residencies are the degree of anxiety, motivation and synthesis capacity. All the above makes us understand that this is a complex problem, which is why we focused on studying the habits of medical residents in the specialties of OT and FM, because of the impact they have and the increasing improvement of medical services.

Hence, the objective of this study was to evaluate the study habits in the academic performance of OT and FM residents; then, the causes that lead to poor or good academic performance were also analysed.

Method

An observational, analytical, prospective study was conducted among resident physicians in the OT and FM specialties. All those who agreed to participate and signed the informed consent letter were included. All resident physicians who were on holiday and/or those who did not complete the applied tests, or who were on rotating internship, were excluded.

In order to carry out the research, an online survey was developed using the Google Forms platform, which could be answered at any time. The survey consisted of 72 questions, including a comments section at the end. In the first section of the survey, participants had to fill out an informed consent letter, which was then printed and signed by all of them. In the second section of the survey, questions were asked about general aspects such as age, gender, university degree, specialty and educational institution where the resident physician studied to obtain their degree and their state of origin. In the third section, items assessed study habits in general and in other sections, items specifically related to satisfaction, reading comprehension, memorisation and learning tools. A fourth section assessed socio-economic aspects and family background as well as the resident physician's own expectations. All questions were answered using a Likert scale. Once the descriptive data of the survey was processed, the questions were weighted from 4 to 1. They were classified into several categories:

excellent habits (165-184), good habits (147-164), regular habits (128-146) and bad habits (< 12).

Measures of central tendency and dispersion were used, as well as correlations. The significant statistic value was $P < 0.05$.

This study was subject to review and approval by the research and ethics committees. All participants were volunteers and signed the informed consent letter. The data collected was downloaded from the cloud and stored in a folder on a computer.

Results

A total sample of 112 participants, 51% male and 21% female, was obtained. In the distribution by specialty (50%) 56 resident physicians per specialty. The mean age was 30.1±3. Distribution by academic year and specialty, for first year FM residents (R1) 25%, second year (R2) 34% and third year (R3) 41%. OT: R1 34%, R2 20%, R3 30% and fourth year (R4) 16%. As for marital status, 75% were single, 24% married/common-law marriage and 1% divorced. Twenty percent had children and 80% had no children (Table 1).

The average score for the National Medical Residency Examination (ENARM) was 67.7 (80.4-52.00), while the current average is 91.3 (98.2-73.64).

Regarding the analysis of study habits, it was observed that in general 84.8% study for one hour on average. With regard to daily study as a learning option, 44.6% of respondents strongly agreed and 50.9% agreed. Furthermore, most respondents answered that they split their time throughout the week to study (Table 1).

In the satisfaction survey, 33.9% think that the specialty they are studying is what they expected, 63.4% answered that only sometimes and 84.8% answered that it was the specialty they wanted, while 15.17% do not think so (Table 2).

With regard to reading comprehension, 80.4% of the residents stated that they always or constantly understood what they rea., However, 45.5% drew diagrams or charts to organise and complete their studies, as well as concept maps, of which only 41.9% did so to pass their exams. Writing a summary for an exam is the most important memorisation and study technique for 59.8% of the respondents (Table 3).

With regard to memorising, writing down data is one of the most important techniques (82.1%) of the residents who always or constantly do so, as well as paying attention to the classes they attend (86.6%). In comparison, diagrams, charts and schematics or other resources are used by 61.6%. Fifty-seven point seven percent

Table 1. General overview of study habits

n = 112	n (%)
Hours of daily study	
< 1 hour	4 (3.6)
1 hour	95 (84.8)
> 3 hours	13 (11.6)
Daily study as a learning option	
Strongly disagree	3 (2.7)
Disagree	2 (1.8)
Agree	50 (44.6)
Totally agree	57 (50.9)
Teachers trained in education.	
Strongly disagree	2 (1.8)
Disagree	1 (0.9)
Agree	41 (36.6)
Totally agree	68 (60.7)
Attention to studies (concentration)	
Strongly disagree	4 (3.6)
Disagree	22 (19.6)
Agree	75 (67)
Totally agree	11 (9.8)
Distribution of study time during the week	
Strongly disagree	2 (1.8)
Disagree	16 (14.2)
Agree	79 (70.5)
Totally agree	15 (13.4)
Breaks during study time	
Strongly disagree	2 (1.8)
Disagree	19 (17)
Agree	77 (68.7)
Totally agree	14 (12.5)
Conscious intention to make use of time	
Strongly disagree	1 (0.9)
Disagree	3 (2.7)
Agree	89 (79.4)
Totally agree	19 (17)
Pursuit of studies even if not concentrating	
Strongly disagree	1 (0.9)
Disagree	15 (13.4)
Agree	83 (74.1)
Totally agree	13 (11.6)

Table 2. Satisfaction section

n = 112	n (%)
Expected specialty	
Never	3 (2.7)
Sometimes	71 (63.4)
Constantly	38 (33.9)
Thoughts of dropping out of specialty	
Never	77 (68.7)
Sometimes	35 (31.3)
Thoughts at the completion of the medical residency	
I had a precise idea of what specialty I wanted to pursue.	49 (43.8)
I was undecided between two or three specialities	53 (47.3)
I had no idea which specialty to take	7 (6.3)
I was not interested in pursuing a specialty	3 (2.7)
Current specialty is the one you wished to study	
Yes	95 (84.8)
No	17 (15.2)

of respondents always or almost always use mnemonics to memorise topics (Table 4).

Regarding learning tools, 93.7% responded that they always or constantly attend classes regularly and with a good attitude. As for homework, 85.7% answered that they always or constantly do homework as a learning method. Sixty-two point five percent of respondents answered that they sometimes copy and paste their homework, which represents more than half of the surveyed population (Table 5).

In the section on academic performance, 94.6% of participants responded that they strongly agree or agree that study habits can influence academic performance.

Furthermore, 91.1% responded that they strongly agree or agree that they get a good grade. However, some respondents did not agree or strongly disagree that they have time to study and then perform well on a test (Table 6).

Overall, 58% of respondents had regular habits, 22% had good habits and 18% had bad habits. When analysing the correlation between variables, we observed that there was a correlation between age and average academic performance (p = 0.016) (Fig. 1). Between study habits and marital status, there is a correlation for those who are single (p = 0.004) and married/common-law marriage (p = 0.009), but not for those divorced (p = 0.170). In the correlation between gender and academic performance (p = 0.545), university of study and sum of study habits (p = 0.899), as well as between sum of study habits and year of specialisation (p = 0.994), the correlations were not statistically significant.

Discussion

Academic performance refers to the knowledge acquired throughout residency, which is related to study habits. The scales measuring these habits are most often classified as good or bad, with positive or negative consequences, which are reflected in the students' grades.

A variety of factors can influence academic performance. Gonzales[20] found that in Gynaecology and Obstetrics residents, economic and family factors affect

Table 3. Reading comprehension section

n = 112	n (%)
Attention to studies (concentration)	
Never	4 (3.6)
Sometimes	51 (45.5)
Constantly	49 (43.7)
Always	8 (7.1)
Arrangement of table, desk or their equivalents for study	
Never	5 (4.5)
Sometimes	23 (20.5)
Constantly	27 (24.1)
Always	57 (50.9)
Sufficient light when studying	
Sometimes	16 (14.3)
Constantly	38 (33.92)
Always	58 (51.8)
Reading comprehension	
Sometimes	22 (19.6)
Constantly	69 (61.6)
Always	21 (18.7)
Ability to distinguish the main fundamental points of each topic	
Sometimes	13 (11.6)
Constantly	71 (63.4)
Always	28 (25)
Drawing up diagrams or charts for a better organisation of the study	
Never	10 (9)
Sometimes	51 (45.5)
Constantly	30 (26.8)
Always	21 (18.7)
Completion of work within the proposed timeframe	
Never	2 (1.8)
Sometimes	38 (34)
Constantly	48 (43)
Always	24 (21.4)
Study ahead of time to achieve good results in scheduled exams	
Never	1 (0.9)
Sometimes	36 (32.1)
Constantly	56 (50)
Always	19 (17)
Consideration as to whether the form of study is adequate to perform well in an exam	
Never	2 (1.8)
Sometimes	41 (36.6)
Constantly	59 (52.6)
Always	10 (9)
Writing a summary when studying	
Never	5 (4.5)
Sometimes	40 (35.7)
Constantly	39 (35)
Always	28 (25)
Drawing concept maps when studying	
Never	17 (15.1)
Sometimes	48 (43)
Constantly	34 (30.3)
Always	13 (11.6)

Table 4. Memorisation section

n = 112	n (%)
Conducting a general assessment before concentrating on the study	
Never	11 (10)
Sometimes	38 (34)
Constantly	55 (49.1)
Always	8 (7.1)
Drafting of important data that are difficult to memorise	
Never	3 (2.7)
Sometimes	17 (15.1)
Constantly	56 (50)
Always	36 (32.1)
Mental summary of what you are studying	
Never	2 (1.8)
Sometimes	20 (18)
Constantly	62 (55.3)
Always	28 (25)
Memorisation of the most important parts of your reading	
Never	4 (3.6)
Sometimes	24 (21.4)
Constantly	50 (44.6)
Always	34 (30.3)
Use of mnemonic techniques to facilitate memorisation of the subject being studied	
Never	11 (9.8)
Sometimes	43 (38.3)
Constantly	40 (35.7)
Always	18 (16)
Actual memorisation of the important information on each topic	
Never	3 (2.6)
Sometimes	28 (25)
Constantly	68 (60.7)
Always	13 (11.6)
Importance of drawing charts, schematics, diagrams and other resources for the improvement of the memorisation process	
Never	8 (7.1)
Sometimes	35 (31.2)
Constantly	41 (36.6)
Always	28 (25)
Association of texts that are difficult to memorise with everyday subjects in order to achieve better results	
Never	9 (8)
Sometimes	36 (32.1)
Constantly	42 (37.5)
Always	25 (22.3)
The resident pays more attention in class in order to remember topics that are more relevant	
Never	2 (1.8)
Sometimes	13 (11.6)
Constantly	66 (59)
Always	31 (27.7)

academic performance, regardless of marital status. However, they have been found to influence consistent motivation. We found that the factors that influence OT

Table 5. Learning tools section

n = 112	n (%)
Daily and regular class attendance with a willingness to learn	
Sometimes	7 (6.2)
Constantly	50 (44.6)
Always	55 (49.1)
Consideration of the teacher's previous pedagogical training in order to change the way classes are taught	
Never	4 (3.6)
Sometimes	22 (19.6)
Constantly	45 (40.1)
Always	41 (36.6)
Undertaking review studies before taking the exam	
Never	2 (1.8)
Sometimes	18 (16)
Constantly	46 (41)
Always	46 (41)
Study of the subject before attending class	
Sometimes	31 (27.6)
Constantly	60 (53.6)
Always	21 (18.7)
Doing homework as a learning process	
Never	3 (2.7)
Sometimes	13 (11.6)
Constantly	69 (61.6)
Always	27 (24.1)
"Copying and pasting" on assignments	
Never	31 (27.7)
Sometimes	70 (62.5)
Constantly	10 (9)
Always	1 (0.9)
Taking notes and doing exercises up to date and in order	
Never	4 (3.6)
Sometimes	25 (22.3)
Constantly	66 (59)
Always	17 (15.1)
Active participation in class and fulfilment of your role as a student	
Never	1 (0.9)
Sometimes	31 (27.7)
Constantly	66 (59)
Always	14 (12.5)
Follow the teacher's explanations, by taking an active interest and asking questions	
Never	1 (0.9)
Sometimes	24 (21.4)
Constantly	72 (64.3)
Always	15 (13.4)
Time management in order to be able to study and achieve better results	
Never	1 (0.9)
Sometimes	32 (28.6)
Constantly	64 (57.1)
Always	15 (13.4)
Intense work to improve understanding of the content	
Sometimes	25 (22.3)
Constantly	71 (63.4)
Always	16 (14.2)

(Continues)

Table 5. Learning tools section *(continued)*

n = 112	n (%)
Working in a team with other colleagues helps you to achieve your personal learning goals	
Never	3 (2.7)
Constantly	63 (56.2)
Always	46 (41)
Preferable to be in the classroom where one can listen better and have more attention	
Never	1 (0.9)
Sometimes	10 (8.9)
Constantly	57 (51)
Always	44 (39.2)
Necessary complementary material to study properly	
Never	1 (0.9)
Sometimes	20 (18)
Constantly	55 (49.1)
Always	36 (32.1)
Study what has been explained and have a creative and critical attitude	
Never	1 (0.9)
Sometimes	11 (9.8)
Constantly	73 (65.1)
Always	27 (24.1)
Consult other books in addition to the texts suggested by the teacher	
Sometimes	27 (24.1)
Constantly	56 (50)
Always	29 (25.8)
Make every effort to write your papers in a clear manner	
Sometimes	8 (7.1)
Constantly	65 (58)
Always	39 (34.8)
Carrying out compulsory activities in time	
Never	2 (1.8)
Sometimes	24 (21.4)
Constantly	63 (56.2)
Always	23 (20.5)

and MF residents are age and marital status, as they have a direct association with academic performance. We found that at the age of 32±3 years, in our population, there is an association with poorer performance compared to younger resident physicians; most residents at this age are already married and have one or more children.

Eighty-four point eight percent of the medical residents stated that the specialty they are studying is the one they chose, as reflected in the average obtained at ENARM, since most of them are above the general average. In the same section, there is a contrasting point, as an unsatisfactory part is expressed: only 33.6% of the residents think that the specialty they are

Table 6. Academic performance section

n = 112	n (%)
The financial situation of the resident does not allow for suitable academic performance	
Strongly disagree	28 (25)
Disagree	41 (36.6)
Agree	25 (22.3)
Totally agree	18 (16)
Study habits influence academic performance	
Strongly disagree	1 (0.9)
Disagree	5 (4.5)
Agree	62 (55.3)
Totally agree	44 (39.2)
Consideration that study time is insufficient to perform well in a test	
Strongly disagree	6 (5.3)
Disagree	37 (33)
Agree	51 (45.5)
Totally agree	18 (16)
Feeling capable of getting a good grade	
Strongly disagree	1 (0.9)
Disagree	9 (8)
Agree	40 (35.7)
Totally agree	62 (55.3)
Forgetting the subject when taking an exam, which affects academic performance	
Strongly disagree	18 (16)
Disagree	69 (61.6)
Agree	20 (17.8)
Totally agree	5 (4.5)
Constantly asking colleagues about the subject that will be assessed	
Strongly disagree	14 (12.5)
Disagree	49 (43.7)
Agree	45 (40.1)
Totally agree	4 (3.6)
Perception that one is studying hard, but grades are not quite good	
Strongly disagree	17 (15.1)
Disagree	58 (51.7)
Agree	30 (26.8)
Totally agree	7 (6.2)
Thoughts that one performs better when there is teamwork	
Strongly disagree	5 (4.5)
Disagree	51 (45.5)
Agree	45 (40.1)
Totally agree	11 (9.8)
Connection between the time spent studying and grades obtained	
Strongly disagree	2 (1.8)
Disagree	17 (15.1)
Agree	76 (67.8)
Totally agree	17 (15.1)
The study methodology is adequate for subsequent good performance in a test and considerations on whether grades could be better	
Strongly disagree	1 (0.9)
Disagree	5 (4.5)
Agree	92 (82.1)
Totally agree	14 (12.5)

(Continues)

Table 6. Learning tools section *(continued)*

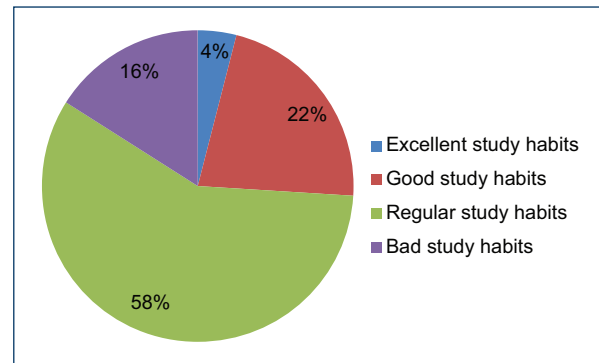| n = 112	n (%)
Learning time is worth living intensely	
Disagree	17 (15.1)
Agree	82 (73.2)
Totally agree	13 (11.6)

Figure 1. General study habits of FM and OT residents.

studying matches their expectations. To a large degree, in this answer given by FM residents and reinforced by data provided by authors such as Sevillano[21], it is mentioned that they often opt for this specialty as a second option without giving it the importance it deserves, which explains why these residents show signs of dissatisfaction.

In the section on study habits, it is worth noting that study time is on average one hour. This does not mean that it is a direct aspect that can be linked to academic performance. Because of the external factors surrounding it, such as the quality of the study and the attention given thereto, as attention is the focus of one's conscious mind in a sustained way on a certain activity or object that allows a clear reflection thereof[22].

Likewise, Ortega[23] argues that poor academic performance occurs when students do not organise their time, do not develop study plans and do not have the appropriate methodology and study technique.

Therefore, success in studies becomes multifactorial and does not depend directly on intelligence and effort, but also on effective study habits, as the development of academic skills leads to real study and optimal academic results.

It was observed that residents developed regular study habits (58%), and that the most important habit was memorisation. This makes a lot of sense since

having taken and passed the ENARM exam and staying in a medical residency requires adequate knowledge acquired in order to put it into practice and to show good academic performance[24].

According to the results obtained and the relationship with academic performance (average of the ENARM exam and residency), it was found that there is a direct correlation between the resident physician's marital status and academic performance. The presence or absence of children did not affect their study skills and, consequently, their academic performance.

We also assessed whether during residency there was an intention to quit, and found responses indicating that they either had never thought of quitting from the specialty (n = 77, 69%) or sometimes (n = 35, 31%).

It has often been observed that when some residents over the age of 30 take the ENARM exam it is their second time round and have difficulty passing it and entering a medical specialty that requires a higher than average score. Therefore, their last option is FM, as the entry score is lower than other specialties. Therefore, many residents choose to take the FM exam as it is their last option to enter the medical specialty. This is also reflected in the answer to the question whether they have ever thought of dropping out of their residency: The answer is "never".

In the case of the FM residents, the reason for dropping out for most of them was that it was not their first choice of specialty. When asked if the specialty they were currently studying was the one they wanted to pursue, 17 medical residents answered that it was not their first choice. Among the causes described in the literature in relation to the present survey, it was observed that those of a family nature[17,21] were the most influential on family doctors. In the present study, 6 FM residents were married with children, and this factor partially influences their academic performance, as it is multifactorial.

The dropout rate in the OT specialty is minimal. In the analysis of those residents who responded that they had ever thought of dropping out, the factors that could be inferred were work and family, although this was not directly considered in this study, which could be seen as one of the weaknesses of this research. This could be the basis for a further study to determine the factors that influence their pursuit of OT and FM residency[25].

Among the strengths of the study is that it correlates a surgical specialty with a clinical specialty, with a sufficient sample of medical residents.

As for weaknesses, there was no contrast with other medical and surgical specialties, where most residents make their first choice to enter a medical residency. This contrasts with one specialty (FM) that was not their first choice of entry and relates to residents who have taken the ENARM exam several times, so there is a selection bias and a manoeuvre bias.

We intended to conduct a multicentre study of all medical residency training sites in the state and outside the state of Puebla. The extension of the sample size and the analysis of other factors such as family, economic and social factors that can influence academic performance in a surgical specialty as well as clinical specialty. In addition, an analysis of workload and care, as well as a purposive search for stress and anxiety, as these factors may also affect academic performance within the specialty. It would also be important to analyse the use of ICT access and academic infrastructure, as well as the time and educational training of teachers and clinical practice tutors in the medical practice of resident physicians.

We also propose a practice analysis and evaluation of knowledge transfer horizontally (resident to resident) and vertically (clinical practice tutor to residents).

Conclusion

Age and marital status have a direct correlation with academic performance, while gender, university of study and year of residence do not. It is worth highlighting that an association was found between both specialties and the development of different study habits, due to the fact that the focus of each specialty is different, which requires different study habits. In general, TO and FM residents have regular study habits.

In terms of satisfaction, most residents felt that they were doing the specialty that was their first choice. A smaller percentage considered that they did not choose the specialisation they had planned (FM); on the other hand, a large percentage indicated that sometimes this was what they expected.

In the study habits section, it was found that the study time was adequate. However, there were difficulties in concentrating during the study and in the distribution of the study time.

In the reading comprehension section, it was inferred that this is the most difficult study habit for the residents, as they found it difficult to understand and distinguish the main points of the topics they have read.

In the memorisation section, we observed that they presented problems in associating information with

everyday affairs and using mnemonic techniques to facilitate information. However, they again displayed mastery of learning strategies oriented towards this habit.

As far as learning tools are concerned, the classroom has been shown to complement medical training. A negative aspect found is that most of them copy and paste information in their homework, as they deem it unnecessary, and they do not look for other sources of information to enrich their knowledge.

In conclusion, knowledge of study habits is not the only factor predisposing to academic performance, as there are other factors, which have not been analysed in this research. We propose to carry out another study where a multifactorial analysis is considered, that includes academic, social, family, professional and economic factors, and especially purposive search for stress and anxiety, as well as a multicentre study where other clinical and surgical specialties are analysed and contrasted.

Funding

Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical disclosures

Protection of people and animals. The authors declare that no experiments were carried out on humans or animals for this research.

Data confidentiality. The authors declare that no patient data appears in this article.

Right to privacy and informed consent. The authors declare that no patient data appears in this article.

References

1. Ramírez Arias JL, Rodríguez Weber FL. Entre la tradición y lo moderno, ¿un aprendizaje de la medicina más completo? Acta Médica Grup Ángeles. 2020;18(1):5–6.
2. Barajas-Ochoa A, Ramos-Remus C, Ramos-Gómez S, Barajas-Ochoa Z, Sánchez-González JM, Hernández-Ávila M, et al. Desempeño de las escuelas de medicina en México: resultados del Examen Nacional para Aspirantes a Residencias Médicas. Salud Publica Mex. 2019; 61(4):495.
3. Bedolla-Solano R. Programa educativo de técnicas y hábitos de estudio para lograr aprendizajes sustentables en estudiantes de nuevo ingreso al nivel superior. Rev Iberoam Educ. 2018;76(2):73–94.
4. Chávez E. IMSS Puebla, cuarto lugar nacional en ranking de delegaciones [Internet]. Contrastes de Puebla. 2018. p. 1–4. Available from: http://www.contrastesdepuebla.mx/imss-puebla-cuarto-lugar-nacional-en-ranking-de-delegaciones
5. Monroy González LA, Mendoza Hernández LE, Alarcon Acosta H. Uso de medios electrónicos como estrategia de enseñanza para generar un aprendizaje dinámico e interactivo. Edähi Boletín Científico Ciencias Soc y Humanidades del ICSHu. 2019;7(14):44–50.
6. IMCO. Las 10 carreras con mayor número de profesionistas [Internet]. Instituto Mexicano para la Competitividad AC. 2021. p. 1. Available from: www.imco.org/comparacarreras
7. Centeno ÁM, Martínez Carretero JM. Innovaciones, investigación y evidencias en educación médica: La colaboración EMBE (Educación Médica Basada en la mejor Evidencia). Rev la Fund Educ Médica. 2003;6(1):26.
8. Durante E. La enseñanza en el ambiente clínico: principios y métodos. Rev Docencia Univ. 2012;10:149–75.
9. Reyes RA, Ballagas JP, Machín LV, Morejón YL. Experience in adapting activities to the learning styles of postgraduate distance learning | Experiencia en la adaptación de actividades a los estilos de aprendizaje desde la educación de posgrado a distancia. Rev Cuba Educ Medica Super. 2017;31(2):1–14.
10. Méndez L. Practicum Psicología. La formación de profesionales en la enseñanza no presencial. Rev Latinoam Psicol. 2012;44(3):1–10.
11. Caraballo Yohama. Epidemiología de los trastornos músculo-esqueléticos de origen ocupacional. Temas Epidemiol y salud pública [Internet]. 2013;II:745–64. Available from: http://www.mundocupacional.com/descargas/articulos/Epidemiologia_trastornos_musculoesqueleticos_origen_ocupacional.pdf
12. Mondragón Albarrán CM, Cardoso Jiménez D, Bobadilla Beltrán S. Hábitos de estudio y rendimiento académico. Caso estudiantes de la licenciatura en Administración de la Unidad Académica Profesional Tejupilco, 2016/Study habits and academic performance: A research study of Business Administration undergraduate students at the Tejupilco Professional Academic Unit, 2016. RIDE Rev Iberoam para la Investig y el Desarro Educ. 2017;8(15):661–85.
13. Aberg KC, Doell KC, Schwartz S. Linking individual learning styles to approach-avoidance motivational traits and computational aspects of reinforcement learning. PLoS One. 2016;11(11):1–16.
14. Hidalgo-Vicario MI. La formación en medicina de los MILLENNIALS. Adolescere [Internet]. 2017;5(1):3–6. Available from: https://www.adolescenciasema.org/ficheros/REVISTA ADOLESCERE/vol5num1-2017/03-06 Editorial.pdf
15. Luc JGY, Antonoff MB. Active Learning in Medical Education: Application to the Training of Surgeons. J Med Educ Curric Dev. 2016;3:JMECD.S18929.
16. Brissette A. Motivation In Medical Education : A Systematic Review Motivation In Medical Education : A Systematic Review Abstract. WebmedCentral Med Educ [Internet]. 2010;1(12):WMC001261. Available from: http://www.webmedcentral.com/article_view/1261
17. Vázquez Martínez FD. La teoría de la evolución educativa y la formación de médicos especialistas. Investig en Educ Médica [Internet]. 2016;5(18):121–7. Available from: http://dx.doi.org/10.1016/j.riem.2015.10.003
18. Chiu YC, Liang JC, Hsu HY, Chu TS, Lin KH, Chen YY, et al. To examine the associations between medical students' conceptions of learning, strategies to learning, and learning outcome in a medical humanities course. BMC Med Educ. 2019;19(1):1–14.
19. García-Jiménez EP, Rojas-Pérez EM, Ruiz-Ruisánchez A. Técnicas de estudio para mejorar el aprendizaje en la residencia médica. Rev Mex Anestesiol. 2012;35(SUPPL1):242–4.
20. González Mariño MA. Factores que influyen en el rendimiento académico de residentes de Obstetricia y Ginecología de una universidad en Bogotá, Colombia. Rev UDCA Actual Divulg Científica. 2019;22(2):e1377.
21. Sevillano EG. No quiero ser médico de familia. El País [Internet]. 2010;850125. Available from: elpais.com/diario/2010/06/07/sociedad/1275861601_850215.htlm
22. Palomino-Gómez J. Compresión lectora y rendimiento escolar: una ruta para mejorar la comunicación. COMUNI@CCION Rev Investig en Comun y Desarro [Internet]. 2011;2(2):27–36. Available from: http://www.redalyc.org/articulo.oa?id=449845038003
23. Ortega Molio V. Hábitos De Estudio Y Rendimiento Académico En Estudiantes De Segundo De Secundaria De Una Institución Educativa Del Callao. Univ San Ignacio Loyola [Internet]. 2015;43. Available from: http://200.37.102.150/bitstream/123456789/1215/1/2012_Ortega_Hábitos de estudio y rendimiento académico en estudiantes de segundo de secundaria de una institución educativa del Callao.pdf
24. Akaki Blancas JL, López Bárcena J. Specialist medical training in Mexico. Educ Medica [Internet]. 2018;19(xx):36–42. Available from: https://doi.org/10.1016/j.edumed.2018.03.007
25. Manterola-Álvarez D. Factores socioeconómicos y psicoafectivos y su influencia en el rendimiento académico de los residentes de Ginecología y Obstetricia. Ginecol Obstet Mex. 2015;83(3):139–47.