










Research Article

Evaluating the Academic Performance of Mustansiriyah Medical College Teaching Staff vs. Final-Year Students Failure Rates

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Received: 29 August 2023; Revised: 4 October 2023; Accepted: 13 October 2023

Abstract

Background: Evaluating medical colleges' teaching staff performance is an essential topic for evaluating academic performance. **Objective:** To assess the academic performance of the teaching staff in the pediatric, surgical, and gynecology branches in comparison to the medicine branch performance from 2014 to 2018. **Methods:** The total number and the number of failed students being examined in final years were obtained officially from the examination committee in Mustansiriyah Medical College for the final 6th-year students for the four main branches (medicine, pediatrics, surgery, and obstetrics and gynecology). The students' number in the medicine branch was used as the control group against which the performance of other branches was compared. We utilized the odds ratio from meta-analysis statistics and compared student failure and success rates. **Results:** The odd ratio of pediatric branch performance versus medicine branch was 1.02 with a 95% confidence interval of 0.68–1.53, while for surgery, it was 0.67 with a 95% CI (0.46 to 0.98) and 3.13 with a 95% CI (1.79 to 5.47) for the obstetrics and the gynecology departments. **Conclusion:** The performance of the pediatric branch was the only one compatible with the performance of the medicine branch. In contrast, both the surgery and gynecology branches significantly deviated from the medicine branch's performance. Further research is needed to pinpoint the causes of these performance deviations.

Keywords: Academic performance, Iraq, Medical students, Medical teaching staff.

تقييم الأداء الأكاديمي لأعضاء هيئة التدريس في الكلية الطبية، الجامعة المستنصرية مقابل معدلات رسوب طلبة المرحلة النهائية

الخلاصة

الخلفية: يعد تقييم أداء أعضاء هيئة التدريس في كليات الطب موضوعاً أساسياً لتقييم الأداء الأكاديمي. **الهدف:** تقييم الأداء الأكاديمي لأعضاء هيئة التدريس في فروع طب الأطفال والجراحة وأمراض النساء مقارنة بأداء فرع الطب من 2014 إلى 2018. **الطريقة:** تم الحصول على العدد الإجمالي وعدد الطلاب الراشدين الذين يتم اختبارهم في السنوات النهائية رسمياً من لجنة الامتحانات في كلية الطب المستنصرية لطلاب السنة 6 النهائية للفروع الأربعة الرئيسية (الطب، طب الأطفال، الجراحة، أمراض النساء والتوليد). تم استخدام رقم الطلاب في فرع الطب كمجموعة تحكم تمت مقارنة أداء الفروع الأخرى مقابلها. استخدمنا نسبة الأرجحية من إحصائيات التحليل التلوي وقارنا معدلات فشل الطلاب ونجاحهم. **النتائج:** كانت النسبة الفردية لأداء فرع طب الأطفال مقابل فرع الطب 1.02 مع فاصل ثقة 95% من 0.68-1.53، بينما بالنسبة للجراحة، كانت 0.67 مع فاصل ثقة 95% من 0.46-0.98، و3.13 مع فاصل ثقة 95% من 1.79-5.47 لأقسام التوليد وأمراض النساء. **الاستنتاجات:** كان أداء فرع الأطفال هو الوحيد المتوافق مع أداء فرع الطب. في المقابل، انحرف كل من فرعي الجراحة وأمراض النساء بشكل كبير عن أداء فرع الطب. هناك حاجة إلى مزيد من البحث لتحديد أسباب هذه الانحرافات في الأداء.

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Article citation: Nori W, Akram W, Rasheed SM, Akram NN, Taher TMJ, Kassim MAK, Pantazi AC. Evaluating the Academic Performance of Mustansiriyah Medical College Teaching Staff vs. Final-Year Students Failure Rates. *Al-Rafidain J Med Sci.* 2023;5(Suppl 1):S151-156. doi: <https://doi.org/10.54133/ajms.v5i1S.320>

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INTRODUCTION

The past century has been marked by a rapid and significant increase in medical research initiatives and advancements. An enormous surge in the availability of information has occurred abruptly due to the proliferation of eBooks and websites. In addition, their accessibility has exacerbated the difficulty of deviating from the standardized format when teaching medicine [1,2]. Evaluating medical colleges' teaching staff performance is an essential topic, and many methods were used to measure it. For example, the teaching portfolio is a comprehensive way to evaluate teaching staff performance, expertise, and accomplishments, yet it is time-consuming [3]. Another method is student evaluation of teaching staff (SETs). It is easy and gives valuable student feedback. Yet it can be biased, undependable, and unfair [4]. Another option is to evaluate students' learning outcomes, where the impact of teaching on students' performance is assessed. Still, it can be inaccurate [5]. The last method is to assess the research productivity of the teaching staff and their service to the profession. All of these methods indirectly assess performance [6]. A thorough assessment of the educational staff presents difficulties, given the absence of a universally applicable method. To enhance the educational process, objective and equitable assessment systems are required. Assessing medical personnel according to the success and failure rates of their students illustrates a clear correlation between pedagogical effectiveness and student outcomes. The latter consists of measurable information utilized to evaluate and assess the contribution of teaching instructors. Additionally, it facilitates staff modification in order to enhance the quality of education. Nevertheless, because they are focused on accomplishment rather than developing critical thinking, they may not represent student involvement and satisfaction [7]. Unfortunately, while numerous studies evaluate the performance of universities, the performance of medical faculties in Iraq is rarely evaluated. Meta-analysis is a statistical method in which the purpose of evaluating, validating, or rejecting the practical application of any medical application is achieved through the participation in numerous randomized trials conducted over years [8]. Medical examinations consist of thoroughly randomized questions and assessors, providing students with a realistic simulation that could be subjected to meta-analysis if the failure rate for final exams over an extended period of time is considered [9]. Our objective was to document and identify weaknesses and strengths in the performance of three clinical branches: pediatrics, surgery, and gynecology and obstetrics (OBG), as reflected by the students' success rates and failures for the academic years 2014–2018 *vs.* medicine department success, which serves as the foundation for the study of all other medical branches [9,10]. This project was

constructed for the purpose of evaluating the performance of Mustansiriyah Medical College.

METHODS

A retrospective cross-sectional study utilizing meta-analysis statistics was conducted at Mustansiriyah Medical College in Baghdad, Iraq, from 2020 to 2021. The data was obtained by the authorized document issued with the approval of the dean's office, in which the total number of candidates in final years and the number of failed candidates were documented as issued by the examination committee. The document numbered 257 was issued on November 26, 2020. In this document, the total number of candidates and the number of failed candidates are given for 2014–2018 and the four branches (Figure 1).

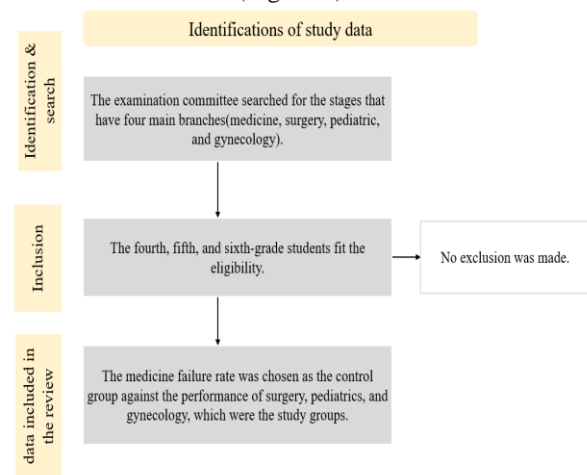


Figure 1. Study workflow chart.

Statistical analysis

The study utilized the primary data from the four scientific branches of Mustansiriyah Medical College, namely medicine, pediatrics, surgery, and OBG. Additionally, for 2014–2018, the total number of attending and failing students was computed. The p-values for the odd ratio and fixed effect models were computed in accordance with the methodology described by Mantel and Haenszel (1959) [8]. The heterogeneity test was conducted as described by Higgins and Green [11]. In the absence of a significant heterogeneity test result, the fixed OR effect model is implemented. However, in the case where the heterogeneity test yielded a significant result, the random effect for the OR is applied. All of our data were found to be non-significant upon analysis; therefore, a fixed OR model was considered. Egger's test for determining publication bias was not applicable in this instance, so it was not conducted [12]. In order to compare the failure rates of pediatrics, surgery, OBG, and the medicine branch, a forest plot was constructed to illustrate the contribution of each year to the overall

OR. As a result, three meta-analyses were developed. A p-value less than 0.05 was deemed statistically significant across all tests. Version 20 of Medcalc was utilized for the statistical analysis.

RESULTS

In the current study, Table 1 compares odds ratios (OR) for fixed and random effects between the medicine and pediatrics departments. There was no significant heterogeneity observed ($p=0.96$), so the total fixed effect was applied with an OR of 1.019. The corresponding 95% confidence interval (CI) was 0.68–1.53, with non-significant differences ($p=0.93$).

Table 1: Meta-analysis odd ratio for the medicine department vs. pediatrics department in the years 2014-2018

Year	Intervention	Controls	Odds ratio	95% CI	z	p	Weight (%)	
							Fixed	Random
2014	8/168	8/160	0.95	0.35-2.59			16.70	16.70
2015	5/146	9/153	0.57	0.19-1.74			13.50	13.50
2016	19/157	18/157	1.06	0.54-2.11			35.79	35.79
2017	14/177	9/176	1.59	0.67-3.78			22.55	22.55
2018	5/130	6/130	0.83	0.25-2.78			11.47	11.47
Total (fixed effects)	51/778	50/776	1.02	0.68-1.53	0.09	0.93	100.0	100.0
Total (random effects)	51/778	50/776	1.02	0.68-1.54	0.096	0.92	100.0	100.0

Intervention group refers to the number of failed students divided by the total number of students attending medicine exam. As for the control group, it refers to the number of failed students divided by the total number of students attending pediatrics exams.

Figure 2A highlights a visual representation of the yearly contributions from both the pediatric and medicine departments toward the overall odds ratio through a forest plot. Table 2 describes the odds ratios for fixed and random effects, comparing the medicine to the surgical department. The heterogeneity test yielded

a p-value of 0.19. The total fixed effects OR was registered at 0.674, having a 95% CI range of 0.46 to 0.98, and was found significant with a $p=0.038$. This indicates higher failure rates in the surgical department when compared to the medical department.

Table 2: Meta-analysis odd ratio OR for the medicine department vs. surgery department in the years 2014-2018

Year	Intervention	Controls	Odds ratio	95% CI	z	p	Weight (%)	
							Fixed	Random
2014	8/168	20/161	0.35	0.15-0.83			20.21	20.77
2015	5/146	13/152	0.38	0.13-1.09			13.07	15.35
2016	19/157	18/157	1.06	0.54-2.11			31.04	26.82
2017	14/177	14/177	1.00	0.46-2.16			24.53	23.44
2018	5/130	8/130	0.61	0.19-1.92			11.15	13.62
Total (fixed effects)	51/778	73/777	0.67	0.46-0.98	-2.073	0.038	100.0	100.0
Total (random effects)	51/778	73/777	0.66	0.41-1.07	-1.692	0.091	100.0	100.0

Intervention group refers to the number of failed students divided by the total number of students attending the medicine exam. As for the control group, it refers to the number of failed students divided by the total number of students attending surgery exams.

Figure 2B provides a forest plot illustrating the annual contributions of both surgical and medical departments towards the overarching OR. Lastly, Table 3 elucidates the odds ratios for fixed and random effects, contrasting

the medicine department against the obstetrics and gynecology departments. The heterogeneity test shows non-significant differences ($p=0.61$). The calculated total fixed effects OR was 3.13, with a 95% CI of 1.79 to 5.47, showing significant differences ($p<0.001$).

Table 3: Meta-analysis odd ratio for the medicine department vs. OBG department in the years 2014-2018

Year	Intervention	Controls	Odds ratio	95% CI	z	p	Weight (%)	
							Fixed	Random
2014	8/168	1/161	8.00	0.98-64.71			7.45	7.45
2015	5/146	0/145	11.31	0.62-206.46			3.86	3.86
2016	19/157	8/158	2.58	1.09-6.09			44.26	44.26
2017	14/177	7/177	2.09	0.82-5.3			37.46	37.46
2018	5/130	1/130	5.16	0.59-44.79			6.97	6.97
Total (fixed effects)	51/778	17/771	3.13	1.79-5.47	4.01	<0.001	100.0	100.0
Total (random effects)	51/778	17/771	2.88	1.63-5.1	3.63	<0.001	100.0	100.0

Intervention group refers to the number of failed students divided by the total number of students attending medicine exam. As for the control group, it refers to the number of failed students divided by the total number of students attending OBG exams.

This data underscores a notably higher success rate in the obstetrics and gynecology department when juxtaposed with the medical division. Figure 2C

showcases a forest plot detailing each year's contribution from both the OBG and medicine departments toward the collective odds ratio.

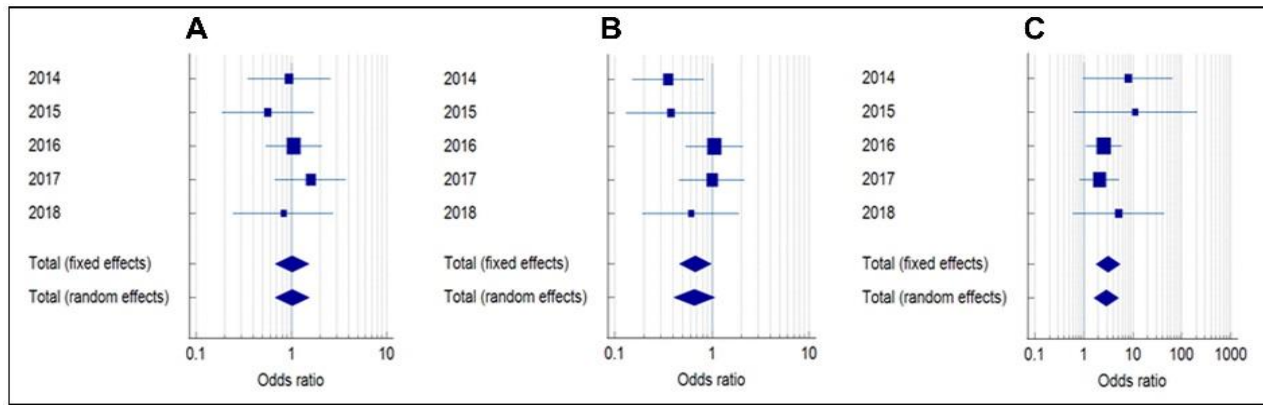


Figure 2: Forest plot for the medical department versus the pediatrics (A), surgery (B), and OBG (C) departments

DISCUSSION

Medical education requires a strong and multifaceted evaluation system because the medical profession and its outputs impact graduating students and the public [13]. A practical evaluation system allows educational leaders to make judgments about trainees' progress and ways to boost faculty performance [13]. The ultimate objective of learning is experience since education does not cease with training completion; education is an industry that includes continuous evaluation [14]. The results of this study have shown that pediatric branch performance in the final year's exam of the first term is compatible with respect to failure rates with the performance of the medical branch for the five academic years. The surgery branch was significantly different from the medicine department; it showed higher failure rates. The more drastic picture is shown for OBG department performance compared to the medicine branch, which has higher success rates. The high failure rates in surgery compared to their counterparts in the medical department may be attributed to the multiplicity of surgical branches [15]. Contradictory high success rates in obstetrics and gynecology departments can be explained in more than one way. The schedule for all major divisions is the same. However, the medicine lectures are twice as large as the OBG lectures, thus enabling the students to comprehend them better [16]. Second, the adoption of the Objective Structured Clinical Examination (OSCI) and animated models helped students master the obstetrical clinical examination. This fact was clear to the college leadership, who instructed the equipping of skills labs with the latest medical equipment and the clinical examination model, which are in the student's best interest and increase his clinical skills [17,18]. Other teaching methods, such as problem-based learning (PBL), a regularly utilized teaching approach at Middle East Medical College [19], have been found to have a greater influence on students' performance in gynecological tests than other clinical disciplines, such as medicine and pediatrics [20]. It is no secret that the

multiplicity and diversity of teaching methods effectively motivate students and their interaction with the scientific material [18,21]. The same approach was adopted during the COVID-19 pandemic, during which teachers utilized diverse methods to increase student interest in online teaching [2,22]. It is hard to draw a conclusive opinion about this deviation in two major branch performances from the standard medicine branch. The most likely explanation is the major unrest in Iraq expanding over the aforementioned years, caused by a large number of medical student candidates being transferred from other medical faculties in a very rapid and random way to our medical colleges, with their unfamiliarity with the protocols of study adopted by our college, which included both hosted and transferred students in addition to parallel education. This unfamiliarity was extended from the 4th to the 6th medical college candidates [21]. Additionally, it is important to consider the significant stress surrounding the liberation of Mosul during this time period. It is plausible that this stress may have been compounded by the subsequent unrest that emerged in the form of demonstrations in Baghdad province, commencing in October 2019 [21,23]. Urrutia-Aguilar *et al.* [24] conducted a study assessing academic performance in medical schools using three approaches: the students' performance achievement by validated exams, the instructors' performance by students' opinions through a validated instrument, and the instructors' self-assessment tools. They declared significant differences among the three approaches and were able to signify high-performance instructors, those who need further growth, and those who do not fulfill their teaching duties [24]. Assessing medical colleges' teaching faculty by the success and failure rates of their students is a subject of debate. Many factors might potentially impact students' success rates. Like the students' academic abilities, their background, and the quality of instruction they get. Some have proposed that standardized testing may result in an emphasis on exam preparation rather than fostering comprehensive comprehension, thereby impeding innovative approaches to education [25]. Several strategies may enhance the assessment of teaching

personnel. One is adopting a holistic approach encompassing several elements, such as soliciting student input, conducting peer assessments, evaluating teaching effectiveness, assessing research output, and contributing to the academic community [26]. An alternative strategy involves assigning varying weights to different elements, ensuring that no individual factor excessively impacts the total judgment. Utilizing diverse data collection techniques, including surveys, interviews, and observations, is paramount [27]. Al Alak et al. [28] assessed final-year students' success rates in the years 2015–2016 at Kerbala Medical College. According to their study, pediatrics had the highest success rates in 2015, while surgery, OBG, and medicine had the lowest success rates in the four major branches. Surgery had the lowest success rate in 2016, and the highest success rates were for medicine, OBG, and pediatric. The authors ascribed the discrepancy between the two years to environmental conditions and personal traits that produced a disparity in the measurement of a student's achievement, hence reducing the reliability of the measurement [28]. Another study by Younis from Tikrit's radiology department aimed to evaluate the current teaching methods' efficiency to boost department teaching credibility and facilitate faculty members' fulfillment in their academic pursuits [29]. This study looked into the success and failure rates of 5th-year students, and the results showed a 5% failure rate. This result emphasized adopting novel examination scoring methods like small group learning and objective student evaluation [29].

Study strengths and limitations

The current study identified the pitfall in medical university teaching academic performance by employing meta-analysis statistics with a sufficient sample size spanning five academic years; this constituted the study's strength. The study's limitations must be duly recognized, with its primary concentration being on a solitary medical college. The potential impact of external pressures, swift and arbitrary student transfers resulting from socio-political events, and their lack of familiarity with the college's study protocols on the outcomes cannot be ruled out [21,23]. The impact of psychological variables (such as anxiety, depression, and emotional intelligence) on student achievement, as evidenced by the rates of academic success and failure, was not examined [30].

Future perspectives and suggestions

By transcending success rates and empowering teaching staff to develop through research, a more precise assessment of teaching staff performance can be generated in support of overarching educational objectives. Concurrently, it will establish the foundation for comprehensive medical practitioners who are geared

toward ongoing development and are ready to confront the complexities of the discipline. Further investigation is warranted to broaden the scope of this study to encompass multiple colleges, explore the more extensive ramifications of socio-political unrest on academic achievement, and further explore the significance of students' psychological well-being in influencing their academic trajectory [30,31]. Ensuring optimal outcomes can be accomplished by adopting innovative teaching techniques and aligning with global medical education trends. The identification of disparities in educational process outcomes can be accomplished through the application of contemporary statistical evaluation methods, such as correlation coefficients, particularly when comparisons are predicated on the upper and lower limits of students' grades and the success threshold value. In regards to the evolution of teaching curricula and the experiences of contemporary medical education, we ought to select what is most suitable for our college.

Conclusion

This research emphasizes the substantial differences in academic achievement among medical specialties, attributing them to external sociopolitical events and pedagogical approaches. Notwithstanding external obstacles, specific departments, such as OBG, flourished on account of inventive pedagogical resources and regular timetables. Additionally, emotional intelligence and mental health were identified as significant predictors of academic achievement.

Conflict of interests

No conflict of interest was declared by the authors

Funding source

The authors did not receive any source of fund.

Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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