Comparison of the Academic Performance of Medical Students Before and During the Pandemic

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ABSTRACT

Background: As the pandemic brought about by COVID-19 became a global burden, educational institutions, including medical schools, shifted their platform for learning from traditional classes to using electronic and online resources – which consequently, may affect the academic performance of most students.

Aim: To compare the academic performance of medical students of FEU-NRMF, particularly the first semester of their first year, across three consecutive academic years - A.Y. 2019-2020, 2020-2021, and 2021-2022, with three different learning set-ups – pre-pandemic, onset of the pandemic, and the subsequent pandemic period.

Methods: Analytical, cross-sectional study was conducted among first-year medical students of FEU-NRMF Institute of Medicine enrolled during AY 2019-2020 (pre-pandemic), AY 2020-2021 (onset of pandemic), and AY 2021-2022 (subsequent pandemic). Raw grades were collected and reviewed with consent through anonymized student records from individualized departments. The data were assessed using the Pearson Chi-square test.

Results: The weighted average of students has statistically significant difference (p=.003), with more medical students having a good academic performance on AY 2020-2021(Pandemic) (15.1%), than AY 2019-2020 (Pre-pandemic) (11.6%) and AY 2021-2022 (Post pandemic) (5.1%), respectively; more students with average academic performance in AY 2021-2022 (45.5%) than in AY 2020-2021 (42.6%) and AY 2019-2020 (39.4%); and more students with poor academic performance in AY 2021-2022 (49.5%) than in AY 2019-2020 (49.0%) and AY 2020-2021 (42.3%).

Conclusion: There is generally a significant difference in the academic performances across the three different periods in all subjects except for Physiology. There is an increasing pattern in the number of poor performers in the comparison between AY 2019-2020 and AY 2021-2022. The prevalence of this pattern seems to be more apparent in laboratory-intense subjects. Therefore, restrictions to online learning modalities and lack of access to the physical face-to-face learning modalities have a negative impact on the academic performance of students.

Key words: Academic performance, medical students, COVID-19, online learning

Face-to-face learning used to be the traditional way of teaching medical students to hone their medical skills sufficiently, as it is the primary preparation for facing an actual patient. The COVID-19 pandemic is one of the things that none of us expected. The effect of it was felt not only in the Philippines but in the whole world. Everyone needed to adjust to the "new normal", fulfilling their professional responsibilities in their own homes, adults working from home,

and students learning in their rooms. There was a thin line between fulfilling their duties as working professionals or students and family members in their homes. More so, as medical schools have shifted away from face-to-face education and towards virtual learning – where students examine cadavers via video clips; look through their computer screens rather than microscopes; conduct examinations online with webcam supervision; and, perform return demonstrations via Zoom, adjusting to these new learning systems can have an effect on their academic performance.

COVID-19 pandemic raised the necessity to incorporate technology into the medical education process. In fact, without virtual learning facilities, the drastic impact of the global crisis on medical education could have been more significant. Within a short amount of time, medical educators were forced to adapt and innovate, creating online learning experiences to compensate for time lost in the classroom, laboratory, or at the patient's bedside. In order to excel academically, students require guidance in cultivating self-regulated learning methods encompassing skills such as time management, metacognition, critical thinking, and effort regulation. As students gain proficiency in online learning platforms, they may be anticipated to adjust and develop a more positive attitude towards online education.[1] E-learning refers to using electronic resources which offer educational content and an interactive environment for students and the faculty.[2] Researches demonstrated that students' academic achievement was not entirely different in face-to-face and online environments, and self-directed e-learning can outperform traditional face-to-face learning.[3,4] This might be because remote learning during the pandemic helped students become self-directed learners and more engaged in their studies.[5] An additional advantage of employing online teaching and learning is the requirement to explore fresh teaching strategies and principles that have a positive impact on distance education. This is due to the decreasing effectiveness of traditional teaching and learning approaches in engaging students in the educational process.[6] Students also have greater control over the material, learning sequence, and time; and unlike printed references, e-learning material may be easily updated and disseminated.[7] Despite the advantages, medical students still need clinical and practical experiences which cannot be acquired and developed online, such as gaining anatomical information in the laboratory and different individual barriers that can affect their academic performance.[1,8] According to Gamage, et al.[9] the primary disadvantage of utilizing online laboratory sessions is that they do not offer hands-on experience with specific methods. Thus, Dowling, et al.[10] argue that making learning materials available online still cannot replace the real experience of traditional learning.

Due to the different factors mentioned, the authors expect to see a significant difference in the academic performances of the students among the pre-pandemic, onset of the pandemic, and subsequent pandemic set-ups. This will be especially true for courses that need students to participate in laboratory sessions, such as Gross Anatomy, Micro Anatomy, Biochemistry, and Physiology among others. The study aimed to compare the academic performance of medical students, particularly the first semester of their first-year academic performance, across three consecutive academic years, with three different learning set-ups -- pre-pandemic, the onset of the pandemic, and subsequent pandemic setting. Establishing a profile of the academic performance across the three periods can be a basis for curriculum development in the shift towards blended learning in the future.

MATERIALS AND METHODS

The study is an analytical cross-sectional study wherein the academic performance of first-year medical students between three consecutive first semesters – pre-pandemic, onset of the pandemic, and subsequent pandemic period set-ups were compared. The study population were first-year medical students from three different batches of first-year students who took identical first semester courses in the three identified periods. The study site was the FEU - Nicanor Reyes Medical Foundation Institute of Medicine in West Fairview, Quezon City.

This is a pilot study comparing the academic performance with three different pandemic periods and therefore sample size computation was not necessary. No recruitment of participants was necessary for a review of anonymized student records on the grades of all the major subjects during the first semester of the three consecutive academic years was specified. The data gathered composed of a total enumeration of all raw grades of all regular first-year students enrolled in the first semester of A.Y. 2019-2020, 2020-2021, and 2021-2022 excluding grades of

students who dropped subjects and/or filed a leave of absence during the course of the first semester of the same academic periods.

A letter of permission from the Dean's Office and Data Privacy Office was obtained to release academic records per subject, as well as a waiver for informed consent, was obtained from the Institutional Ethics Review Committee (IERC).

All data were decoded by the source department of the School of Medicine to preserve the participants' anonymity prior to release to the investigators.

Academic performance is defined as the final raw grade of students prior to the application of promo boards, removal exams, and further deliberation by the different departments. This will be classified as:

1. Good academic performance - final raw grades ranging from 85-100%.
2. Average academic performance - final raw grades ranging from 75-84.9%.
3. Poor academic performance – final raw grades that are conditional, incomplete, or a grade of below 75%.

The first semester subjects for the first year were further classified into laboratory-intense subjects, if the subjects require laboratory sessions that focus on skill-based activities; and non-laboratory-intense subjects, if the subjects also have laboratory sessions but do not necessarily require skill-based activities.

1. Laboratory-intense subjects are defined as subjects that require laboratory sessions that focus on skill-based activities. These subjects are Gross Anatomy, and Micro Anatomy.
2. Non-laboratory intense subjects are defined as subjects that also have laboratory sessions but do not necessarily require skill-based activities. These subjects are Biochemistry and Physiology.

Learning set-ups are classified as follows:

1. Pre-pandemic setting is defined as the normal face-to-face class teaching modality before the pandemic. In this particular study, the specific time period considered as the pre-pandemic setting would be the First Year First Semester of AY 2019-2020 starting from August 5, 2019-December 18, 2019.
2. Onset of Pandemic setting is defined as the period wherein the mode of teaching shifted to online learning, approximately from August 3, 2020 - December 18, 2020.
3. Subsequent Pandemic setting is defined as the school year one year after the start of the pandemic. In this particular study, the specific time period considered as the pandemic setting would be the First Year Semester 1 of AY 2021-2022, starting from August 2, 2021-December 17, 2021.

Student variables are defined as the variations in the learning environment, adjustments made, and coping strategies of the students. Course variables are defined as the variations in the topic coverage, grading system, and adaptive learning implemented unique to the grading period. Professor variables are defined as the variations in the teaching environment, adjustments made to online-based teaching, and coping strategies of the professors.

Data encoding to organize the raw data was done using Microsoft Excel® and subsequently analyzed utilizing the software SPSS 23. Descriptive statistics was used to describe the profile of the participants based on the academic criteria and academic performance of the participants. The qualitative data was analyzed using Chi-square Test.

The study complied with the principles of ICH-GCP and was approved by a PHREB-accredited Institutional Review Board (FEU-NRMF Institutional Review Board) prior to implementation.

RESULTS

For Gross Human Structural Biology A, there was a statistically significant difference among those who had a good academic performance between AY 2019-2020 and AY 2020-2021, AY 2020-2021 and AY 2021-2022, and AY 2019-2020 and AY 2021-2022 with p-value of =.001 ($p<0.05$), which means that there is a statistically significant difference between the academic performance in Gross Human Structural Biology A and the three academic periods.

For Microscopic Human Structural Biology A, students who had a good academic performance in AY 2019-2020 and AY 2020-2021 had no statistically significant difference from each other. Whereas, those who had a good performance in AY 2021-2022 showed a statistically significant difference when compared to AY 2019-2020 and AY 2020-2021. The Pearson Chi-square Test p-value is $p=.001$ ($p<0.05$).

For Biochemistry A, there was a statistically significant difference among those who had a good academic performance between AY 2019-2020 and AY 2020-2021, and AY 2020-2021 and AY 2021-202, but no statistically significant difference between AY 2019-2020 and AY 2021-2022. The Pearson Chi-square Test p-value is .001 ($p<0.05$).

For Physiology A, the Pearson's Chi-square p-value for Physiology is $p=0.112$ ($p>0.05$) which means that there is no statistically significant difference between the academic performance of students in the subjects across all three periods that were compared.

Table 1. Major subjects academic performance during the three consecutive academic tears.

Major Subjects	Academic Year AY 2019-2020 n (%)	AY 2020-2021 n (%)	AY 2021-2022 n (%)	p value = < 0.05
GROSS HSB A				
Good academic performance	192_a (0.0)	194_b (46.4)	26_c (13.1)	p value = 0.001
Average academic performance	377_a (48.70	208_b (49.8)	131_a (66.2)	
Poor academic performance	51_a (51.3)	16_b (3.8)	41_c (20.7)	
Total	620 (100.0)	418 (100.0)	198 (100.0)	
MICRO HSB A				
Good academic performance	292_a (47.1)	203_a (48.6)	42_b (21.2)	p value = 0.001
Average academic performance	260_a (41.9)	184_a (44.0)	119_b (60.1)	
Poor academic performance	68_a (11.0)	31_a (7.4)	37_b (18.7)	
BIOCHEMISTRY A				
Good academic performance	68_a (11.0)	104_b (24.9)	16_a (8.1)	p value =
Average academic performance	317_a (51.1)	251_b (60.0)	80_c (40.4)	0.001
Poor academic performance	235_a (37.9)	63_b (15.1)	102_c (51.5)	
PHYSIOLOGY A				
Good academic performance	8_a (1.3)	6_a (1.4)	3_a (1.5)	p value =
Average academic performance	$80_{a,b}$ (12.9)	62_a (14.8)	14_b (7.1)	0.112
Poor academic performance	$532_{a,b}$ (85.8)	350_a (83.7)	181_b (91.4)	

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[2]
1. This category is not used in comparisons because its column proportion is equal to zero or one.
2. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Table 2. Minor subjects academic performance during the three consecutive academic years.

Subjects	Academic Year AY 2019-2020 n (%)	AY 2020-2021 n (%)	AY 2021-2022 n (%)	p value = < 0.05
BIOETHICS A				
Good academic performance	0^1 (0.0)	243_a (58.1)	100_a (50.5)	p value = 0.001
Average academic performance	302_a (48.70)	169_b (40.4)	$94_{a,b}$ (47.5)	
Poor academic performance	318_a (51.3)	6_b (91.4)	4_b (2.0)	
RESEARCH A				
Good academic performance	243_a (76.9)	20_b (10.1)	39_c (29.8)	p value = 0.001
Average academic performance	70_a (22.2)	108_b (54.5)	82_b (62.6)	
Poor academic performance	3_a (0.9)	70_b (35.4)	10_c (7.6)	

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[2]
1. This category is not used in comparisons because its column proportion is equal to zero or one.
2. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Bioethics results show that for good academic performance, no significant difference was observed across the three academic periods. The Pearson Chi-square Test for Bioethics A shows that the p-value is .001 ($p<0.05$) which means that there is a statistically significant difference between those who had average and poor academic performance and the three academic periods.

For Research A, there was a statistically significant difference among those who had a good academic performance between AY 2019-2020 and AY 2020-2021, but no statistically significant difference between AY 2020-2021 and AY 2021-2022, and AY 2019-2020 and AY 2021-2022. The Pearson Chi-square Test p-value of =.001($p<.05$), means that there is a statistically significant difference between academic performance and the three academic periods.

The results of the weighted average for major subjects show that there is generally no difference in the academic performance in AY 2019-2020 and AY 2021-2022 for those with good performance. However, there is a significant difference in the academic performance of AY 2021-2022 to the other periods for average and poor performers.

Pearson Chi-square test, table shows that the result is .003. Since it is lower than the p-value 0.05, this can be interpreted as statistically significant.

When limited to the weighted average in major subjects, there is also no apparent trend when examined across the three time periods. Majority of the students in both AY 2019-2020 and AY 2020-2021 have average academic performance in their major subjects with 48.2% and 59.8%, respectively. In contrast to this, the majority of students (51.5%) in AY 2021-2022 had poor academic performance.

When tested using the Pearson Chi-square, the result was .000. This is lower than the set p-value of 0.05 and as such, is considered to be statistically significant.

Table 3. Weighted average for all subjects.

	Academic Year						
	AY 2019-2022		AY 2020-2021		AY 2021-2022		P value
	n	(%)	n	(%)	n	(%)	
Weighted Average Minor Subjects							
Good academic performance	72	$(11.6)_a$	63	$(15.1)_a$	10	$(5.1)_b$	P value = 0.003
Average academic performance	244	$(39.4)_a$	178	$(42.6)_a$	90	$(45.5)_a$	
Poor academic performance	304	$(49)_a$	177	$(42.3)_a$	98	$(49.5)_a$	
Total	620	(100)	418	(100)	198	(100)	
Weighted Average Major Subjects							
Good academic performance	71	$(11.5)_a$	63	$(15.1)_a$	9	$(4.5)_a$	P value = 0.001
Average academic performance	299	$(48.2)_a$	250	$(59.8)_b$	87	$(43.9)_a$	
Poor academic performance	250	$(40.3)_a$	105	$(25.1)_b$	102	$(51.5)_a$	
Total	620	(100)	418	(100)	198	(100)	

Note: Values in the same row and subtable not sharing the same subscript are significantly different at $p< .05$ in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[1]
1. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction

Table 1.1. Gross human structural biology a crosstab.

			A.Y.			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
GROSS HSB A	Good academic performance	Count	192	194	26	412
		% within A.Y.	31.0%	46.4%	13.1%	33.3%
	Average academic performance	Count	377	208	131	716
		% within A.Y.	60.8%	49.8%	66.2%	57.9%
	Poor academic performance	Count	51	16	41	108
		% within A.Y.	8.2%	3.8%	20.7%	8.7%
Total		Count	620	418	198	1236
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 1.2. Gross HSB-A chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	98.931[a]	4	.000
Likelihood Ratio	98.038	4	.000
Linear-by-Linear Association	11.218	1	.001
N of Valid Cases	1236		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.30.

Table 2.1. Microscopic human structural biology a crosstab.

			A.Y.			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
MICRO HSB A	Good academic performance	Count	292	203	42	537
		% within A.Y.	47.1%	48.6%	21.2%	43.4%
	Average academic performance	Count	260	184	119	563
		% within A.Y.	41.9%	44.0%	60.1%	45.6%
	Poor academic performance	Count	68	31	37	136
		% within A.Y.	11.0%	7.4%	18.7%	11.0%
Total		Count	620	418	198	1236
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 2.2. Microscopic HSB a chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	53.661[a]	4	.000
Likelihood Ratio	56.794	4	.000
Linear-by-Linear Association	22.746	1	.000
N of Valid Cases	1236		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.79.

Table 3.1. Biochemistry a crosstab.

			ACADEMIC YEAR			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
BIOCHEMISTRY A	Good academic performance	Count	68	104	16	188
		% within A.Y.	11.0%	24.9%	8.1%	15.2%
	Average academic performance	Count	317	251	80	648
		% within A.Y.	51.1%	60.0%	40.4%	52.4%
	Poor academic performance	Count	235	63	102	400
		% within A.Y.	37.9%	15.1%	51.5%	32.4%
Total		Count	620	418	198	1236
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 3.2. Biochemistry a chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	116.880[a]	4	.000
Likelihood Ratio	121.024	4	.000
Linear-by-Linear Association	.247	1	.619
N of Valid Cases	1236		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 30.12.

Table 4.1. Physiology a crosstab.

			A.Y.			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
PHYSIOLOGY A	Good academic performance	Count	8	6	3	17
		% within A.Y.	1.3%	1.4%	1.5%	1.4%
	Average academic performance	Count	80	62	14	156
		% within A.Y.	12.9%	14.8%	7.1%	12.6%
	Poor academic performance	Count	532	350	181	1063
		% within A.Y.	85.8%	83.7%	91.4%	86.0%
Total		Count	620	418	198	1236
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 4.2. Physiology a chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.491[a]	4	.112
Likelihood Ratio	8.315	4	.081
Linear-by-Linear Association	1.165	1	.280
N of Valid Cases	1236		

[a] 1 cells (11.1%) have expected count less than 5. The minimum expected count is 2.72.

Table 5.1. Bioethics a crosstab.

			A.Y.			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
BIOETHICS A	Good academic performance	Count	0	243	100	343
		% within A.Y.	0.0%	58.1%	50.5%	27.8%
	Average academic performance	Count	302	169	94	565
		% within A.Y.	48.7%	40.4%	47.5%	45.7%
	Poor academic performance	Count	318	6	4	328
		% within A.Y.	51.3%	1.4%	2.0%	26.5%
Total		Count	620	418	198	1236
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 5.2. Bioethics a chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	639.199[a]	4	.000
Likelihood Ratio	846.619	4	.000
Linear-by-Linear Association	479.882	1	.000
N of Valid Cases	1236		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 52.54.

Table 6.1. Research a crosstab.

			A.Y.			
			AY 2019-2020	AY 2020-2021	AY 2021-2022	Total
RESEARCH A	Good academic performance	Count	243	20	39	302
		% within A.Y.	76.9%	10.1%	29.8%	46.8%
	Average academic performance	Count	70	108	82	260
		% within A.Y.	22.2%	54.5%	62.6%	40.3%
	Poor academic performance	Count	3	70	10	83
		% within A.Y.	0.9%	35.4%	7.6%	12.9%
Total		Count	316	198	131	645
		% within A.Y.	100.0%	100.0%	100.0%	100.0%

Table 6.2. Research a chi-square tests.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	293.618[a]	4	.000
Likelihood Ratio	313.548	4	.000
Linear-by-Linear Association	115.561	1	.000
N of Valid Cases	645		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.86.

DISCUSSION

The results of the study show that there is a significant difference in the academic performance of first year medical students taking major subjects in the first semester across three academic periods ($p<0.5$). Contrary to this, the academic performance of students in the subject Physiology showed no statistical difference ($p=0.112$) and can be interpreted to be independent of the three academic periods. The overall performance of the students represented as their weighted averages also showed a significant statistical difference ($p=.003$). Majority of the students in AY 2019-2020 and AY 2021-2022 had poor academic performance with percentages of 49.0% and 49.5%, respectively. On the other hand, the majority of the students in AY 2020-2021 had average academic performance with a percentage of 42.6%. Upon closer inspection of the weighted average limited only to major subjects, it also shows statistical significance

(p=.001) and can be interpreted as the weighted average in major subjects and the academic period being dependent on each other.

The COVID-19 pandemic caused a significant shift in the primary means of curriculum delivery from the traditional face-to-face basis to online learning. These adaptive measures enabled the students and faculty members alike to proceed with the academic curriculum with utmost efficiency, solving each problem that arose one step at a time.

One of the major concerns during the shift to online learning was the displacement of the practical and clinical skills aspect. According to Franchi (2020)[8], cadaver dissection, models, pathology specimens and skeletons is often still considered to be the most effective method in gaining anatomical information. From the results of the study, particularly that of Gross HSB A, poor performers during AY 2019-2020 comprised 8.2% of that population. However, this significantly rose to 20.7% during AY 2021-2022. This proves Franchi's (2020)[8] claims that limited access to the traditional study materials can negatively impact the performance of the students in the practical and clinical skills aspect. To further prove the gravity of these claims, upon closer examination of other laboratory-intense subjects, this statement also proves to be true. While poor academic performance in AY 2020-2021 varied across different subjects, data show that there is a stable and consistent increase in the percentage of poor performers particularly when comparing AY 2019-2020 and AY 2021-2022 in all subjects that had a practical/laboratory component.

In another recent study conducted by Baczek, et al. (2021)[4], the results showed that self-directed studying could surpass the overall learning provided by traditional face-to-face studying. However, based on the overall weighted average across the 3 academic periods, the data show that there is still a consistent increase in the number of poorly performing students particularly in AY 2019-2020 (49.0%) and AY 2021-2022 (49.5%), with a slight decrease during AY 2020-2021 (42.3%). The increase may not appear to be significant in this aspect. However, when limited to the major subjects, this increase in the amount of poor performers becomes more evident. Based on the data gathered, a larger percentage of students had poor academic performance in major subjects during AY 2021-2022 (51.5%) compared to AY 2019-2020 (40.3%) which was before online learning became the norm. The percentage of poor academic performers in AY 2020-2021 has also significantly decreased as compared to the two. From these data, the increasing pattern of poorly performing students is still apparent across the academic periods. This supports the recent literature that states that despite the easy accessibility to information and wide variety of learning materials that come with online learning[7], it can never fully replace the interpersonal interaction that is necessary for overall improved learning[10] which was demonstrated by most of the data gathered. Majority of the subjects taken up by first year students included laboratory components that were aimed to develop practical skills they will need as future doctors. Therefore, the negative impact on each individual subject can accumulate and is thereby reflected by the weighted average of the students.

The sudden shift to online learning comes with different barriers that could affect the medical students' academic performance. This includes both intrinsic and extrinsic factors such as deteriorating mental health, limited access to relevant and appropriate software that help students to accomplish and perform the required task and asynchronous classes leading to less exchange of shared knowledge and ideas (Rizada, et al. 2021). It is also important to consider other contributory factors that influence the academic performance apart from student-identified factors such as adjustments done by the faculty and the school in the shift to online learning into blended learning. All in all, academic performance is multifactorial and complex in nature. Due to certain limiting factors such as data privacy and lack of time, determining these factors were not feasible. However, identifying the factors that greatly contributed to the academic performance of the majority of the students could be important as the school curriculum slowly shifts to blended learning. This study could serve as a foundation for further research regarding these factors and certain solutions may be implemented to fully optimize the learning capabilities and improve the academic performance of medical students in the future.

CONCLUSION

The results of the study show that there is generally a significant difference in the academic performances across the three different periods in all subjects except for Physiology. There is an increasing pattern

in the number of poor performers upon comparison between AY 2019-2020 and AY 2021-2022. The prevalence of this pattern seems to be more apparent in laboratory-intense subjects. This is cumulatively reflected in their weighted averages. Restriction to online learning modalities and lack of access to the physical face-to-face learning modalities may have a negative impact on the academic performance of students, as reflected by the increasing number of poorly performing students.

RECOMMENDATIONS

It is recommended that other factors that could affect academic performance should be included as independent variables.

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