Evaluation of Emergency Remote Teaching and Learning in the MBBS Programme, Faculty of Medical Sciences, Mona

Students' Perspectives

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Abstract

The COVID-19 pandemic has had a profound impact on medical education worldwide. At the Faculty of Medical Sciences (FMS), of The University of the West Indies, Mona, teaching was suspended on 13 March 2020. During the period 13 March to 13 April 2020, faculty were mandated to emergently modify courses and adopt remote learning approaches for completion of students' learning outcomes. Faculty managers conducted a rapid assessment of student access for remote learning prior to the Semester 2 restart date (14 April 2020). Measures were instituted to address identified and anticipated challenges (connectivity and access; course-related and lecturer-associated issues).

We sought to determine student satisfaction and evaluate the administration of emergency remote learning during completion of Semester 2, 2019/2020 for quality assurance purposes. An online survey was developed using Microsoft Forms© with the following key items: Demographics (setting, MBBS programme year); Access (devices, internet access modality, challenges); Perception and rating of instruction, teaching, lecturers, and remote learning. Univariate analyses were used to summarise responses and open-ended responses categorised using thematic analyses.

Results showed that students were overall satisfied with content, communication, lecturer preparation, instructional material, and online learning activities during emergency remote administration. Students appreciated the utility of Blackboard Collaborate Ultra® combined with Zoom.

Conclusion

The COVID-19 pandemic has created opportunity for innovation in administration of remote teaching and learning in the MBBS Programme. The agility of the FMS to adapt to this new situation is commendable. Further optimisation will require identification of at risk and disadvantaged students, increasing capacity among faculty for remote teaching and learning competencies and collaboration with key stakeholders.

Keywords: education, medical, online learning, COVID-19

Introduction

ON 31 DECEMBER 2019 THE MUNICIPAL HEALTH COMMISSION in Wuhan China reported on "viral pneumonias" being seen in the community, and by 5 January 2020 the first Disease Outbreak news was reported (WHO 2020). These clusters of "viral pneumonias" or "pneumonias of unknown origin" quickly progressed to a global pandemic caused by the novel SARS-CoV-2 2019 (COVID-19). With the advent of the first confirmed case in the Caribbean region on 1 March 2020, the COVID-19 pandemic advanced and affected member states in a heterogeneous manner, and was associated with varying country-specific mandated precautions and restrictions (Christie, Thompson, and Webster-Kerr 2020).

Globally, the impact of the Coronavirus pandemic has been felt not only by financial and health systems but also by educational systems. The educational systems find themselves in the unique situation of continuing education whilst limiting the spread of the Coronavirus. The response has been to deliver education remotely using different technologies (UNESCO 2020). At the time of the outbreak in Wuhan, schools were on holiday for the Chinese New Year. Schools reopened 9 February 2020 remotely with what has been described as the "largest simultaneous online learning exercise in human history" (The World Bank n.d.), with approximately 200 million children starting school remotely. Medical

schools globally have had to temporarily suspend all clinical-related teaching in response to the pandemic (Wong 2020, 170–71).

At the Faculty of Medical Sciences (FMS) of The University of the West Indies (UWI), Mona, all teaching was suspended on 13 March 2020, during Semester 2, 2019/2020 in compliance with the Government of Jamaica mandate (12 March 2020). This was done to reduce gatherings, travelling, and congregation with an overall aim to reduce transmission (The University of the West Indies 2020). Courses and clerkships in the undergraduate medical programme (Bachelor of Medicine, Bachelor of Surgery – MBBS) were interrupted disproportionately. Students (local, regional, and international) returned to their homes, uncertain about continuation in their respective courses and clerkships and concerned about progression to graduation or to the next level in the programme.

During the period 13 March to 13 April 2020, faculty were mandated to emergently review courses and adopt revised remote learning and assessment approaches to complete students' learning outcomes for the remainder of Semester 2, 2019/2020 (The University of the West Indies 2020).

The faculty managers were concerned about the preparedness for emergency remote learning among the cohorts of students. Effective access to online content would require reliable and consistent internet connection, bandwidth strength to allow downloading/uploading of various media, appropriate devices, and software applications to utilise the material, among other factors. The success of any distance learning would also be dependent on readiness at different levels. These include technological, content and pedagogical readiness as well as the ability to monitor and evaluate (UNESCO 2020).

The MBBS Programme of the FMS, Mona is a five-year undergraduate medical programme that comprises Stage 1 (Years 1–3) and 2 (Years 4–5). Stage 1 is system-based, with sequential integration of basic and clinical medical sciences, and early patient contact. Assessment and testing modes are written (Multiple Choice Questions – MCQs, Short Answer Questions – SAQs, structured essays), laboratory-based, and clinical. Students are awarded the BMedSci Degree at the end of Stage 1, once they have fulfilled the UWI criteria. Stage 2 instructs students in core, elective, and specialist clinical clerkships. Assessment modes are written (MCQs, SAQs), clinical, and continuous evaluation. The final MBBS examination serves as an "exit" assessment for students who have successfully completed the programme of study. Currently the final MBBS examination is discipline-based (Medicine & Therapeutics, Obstetrics & Gynaecology, Surgery) and comprises

written, clinical, and oral components. Students are eligible to sit this examination once they have successfully completed all courses and clerkships in the MBBS programme. The written components consist of MCQs, SAQs, and structured short answers, while the clinical/oral components are primarily of the Objective Structured Clinical Examination type. Teams of internal and external examiners are involved in the process.

Most of the teaching and learning instruction in the MBBS programme is face-to-face, and practice-based clinical instruction in Stage 2 is highly reliant on tutor-student interaction and feedback during exposure to patients and other relevant clinical material, hence the anticipated major challenge for administering clinical instruction in the context of pandemic-mandated restrictions and protocols. A rapid assessment of student access and preparedness for remote learning was therefore conducted prior to the Semester 2 restart date (14 April 2020) (Pierre, Garbutt, and Trotman-Edwards 2020). Utilising an online survey modality [Jotform© (https://www.jotform.com/)], student data and views of the following key items were collated one week prior to the re-commencement of teaching: Demographics (gender, preferred email address, current country of residence, setting); Access (setting – urban versus rural, available devices, internet access options); Remote/online learning (prior experience, modality of remote learning opportunities); Perception of utility (ability to learn via remote/online format, anticipated challenges).

Most respondents had access to a laptop and/or multiple devices and 88% used personal/family WiFi for internet access. However, 12% were challenged since they relied on prepaid internet plans, neighbours' WiFi, or free public WiFi, and a third of respondents resided in rural settings with implications for limited access to content. Only 57% had previous experience with remote/online learning platforms and 44% felt "comfortable" about remote/online learning. Major anticipated challenges were connectivity and access, as well as course-related and student-related factors. Identified and anticipated challenges included connectivity and access, along with course-related and lecturer-associated issues. Interventions were instituted to address these.

Disadvantaged students were loaned devices via the Mona Library Services and all students benefitted from negotiated zero-rated access to the online learning platforms. Pedagogical modifications were made to all courses and clerkships for conversion to online administration and ratified by the UWI Board for Undergraduate Studies. An aggressive approach to faculty training in the use of online

resources for teaching and assessments was expedited with the collaboration of Mona Information Technology Services (MITS), Centre for Excellence in Teaching and Learning (CETL), and the Health Professions Education Unit, FMS. Synchronous and asynchronous approaches were utilised in training delivery and included checklists for student, staff, and faculty readiness for online teaching.

We therefore sought to determine student satisfaction and evaluate the administration of emergency remote learning during completion of Semester 2, 2019/2020 for quality assurance purposes.

Methods

During May and June 2020 we conducted a cross-sectional study using an anonymous online survey. The survey was sequentially disseminated to student cohorts of the MBBS programme (Years 1–5) as each completed Semester 2, 2019/2020. Dissemination was facilitated via the Undergraduate Affairs Section, Dean's Office, FMS and also through student leaders for each cohort year. Students were assured of the anonymous nature of the survey and its use primarily for quality assurance purposes. An online survey instrument was developed and administered using Microsoft Forms© (https://forms.office.com/Pages/DesignPage.aspx) with the following key domains and items:

- **Demographics** – current country of residence, setting (urban, rural), MBBS cohort year;
- **Access** – devices (laptop, desktop, tablet, smartphone), internet access modality (personal/family WiFi, UWI WiFi, mobile data, public WiFi), challenges (WiFi and connectivity, device access, lecturer issues and quality of teaching, personal issues, communication);
- **Perception and rating of instruction, teaching, lecturers, remote/online learning – asking the following:**
    - How satisfied are you with the knowledge you gained throughout the completion of the course/clerkship?
    - Do you feel you achieved your desired learning outcome?
    - How would you rate the lecturers'/instructors' overall teaching performance? (Likert rating scale 1 to 10)?
    - How well did the lecturers/instructors communicate course/clerkship expectations?

- How well did your lecturers/instructor communicate course/clerkship assignments and examinations?
- How prepared were your lecturers/instructors for the online learning approach for your course/clerkship?
- How effective were the instructional materials used in the online teaching of your course/clerkship?
- How effective were the online learning activities used in this course/clerkship?
- Please list your preferred and most effective online learning activity
- Did the completion of the course/clerkship meet your expectation?
- How likely are you to recommend this remote learning approach for the course/clerkship to a friend or classmate?
- Provide one major aspect that can improve the remote learning experience.

Responses were collated electronically via Microsoft Forms and univariate analyses conducted to summarise data using IBM® SPSS® Statistics version 22. Open-ended responses were coded by two researchers independently, achieving thematic saturation.

Results

Of 576 responses 22.7% were Year 1, 19.6% Year 2, 21.9% Year 3, 19.6% Year 4, 16.1% Year 5 MBBS students, and average response "rate" was 44% (range 31 to 53%) (*see* table 1).

Table 1. Response rate by MBBS cohort year

Cohort Year MBBS	Number of students	Number of respondents	Response rate (%)
Year 1	248	131	52.8
Year 2	257	113	44.0
Year 3	126	126	48.5
Year 4	260	113	43.5
Year 5	300	93	31.0

Demographics

The majority of students (96.4%) accessed online learning from Jamaica, Trinidad, The Bahamas, and Barbados; urban settings (72%); and there was no difference in setting by MBBS cohort year ($p = 0.054$). Main devices used were laptops (81.9%) and tablets (9.9%), while personal/family WiFi (89.6%) and UWI WiFi (7.0%) were the commonest means for internet access.

Challenges

Challenges experienced were mainly WiFi access and connectivity issues (43.1%), lecturer/tutor issues (quality of teaching) (30.2%) and communication with teachers/coordinator (13.4%). Few students cited personal (9.5%) and device access (2.1%) challenges.

Student views and perceptions of emergency remote teaching and learning

Students were overall satisfied (32.2% extremely/very; 46.3% somewhat satisfied) with content, communication, lecturer preparation, instructional material and online learning activities during emergency remote administration (table 2). Students in Year 5 consistently expressed satisfaction with all domains of emergency remote administration compared to Year 1 and 2 student cohorts ($p < 0.001$), and ratings correlated positively with MBBS cohort year ($p < 0.01$).

Student rating of lecturers was positive (modal rating 7; 70.1% respondents rated 6 to 10 on a 10-point Likert scale).

There was significant difference in lecturer rating by MBBS cohort year, oneway ANOVA [$F(4, 571) = 44.00$, $p<0.001$], and lecturer rating correlated positively with MBBS cohort year ($p < 0.01$). Recommendation of remote teaching approach correlated positively with MBBS cohort year ($p < 0.01$) and was more likely among students in Year 5, oneway ANOVA [$F(4, 571) = 18.92$, $p < 0.001$] (table 3).

Among respondents, 24.1% and 26.7% felt they achieved their desired learning outcomes and that the course/clerkship met their expectation, respectively. These perceptions correlated positively with MBBS cohort year ($p < 0.01$).

Active learning strategies were overwhelmingly cited as the preferred and most effective online activities (table 4). These included (in decreasing frequency) online formative assessments and polling during learning activities (clickers,

Table 2. Student perception and rating of emergency remote teaching and learning

Questions	Rating (%)					P value*
	Extremely	Very	Somewhat	Not so	Not at all	
	5	4	3	2	1	
How satisfied are you with the knowledge you gained throughout the completion of the course/ clerkship?	4.5	36.8	34.7	19.8	4.2	0.000
How well did the lecturers/instructors communicate course/ clerkship expectations?	4.3	25.5	50.3	15.6	4.2	0.000
How well did your lecturers/instructors communicate course/ clerkship assignments and examinations?	4.3	28.0	37.2	19.6	10.9	0.000
How prepared were your lecturers/instructors for the online learning approach for your course/ clerkship?	3.5	29.0	48.3	16.3	3.0	0.000
How effective were the instructional materi- als used in the online teaching of your course/ clerkship?	1.6	28.5	55.7	13.2	1.0	0.000
How effective were the online learning activities used in this course/ clerkship?	1.7	26.0	51.7	17.9	2.6	0.000

*oneway ANOVA; difference between MBBS cohort year

Kahoots®, Socrative®), interactive lectures, case-based tutorials and discussions, media-driven discussions and other discussion forums. Students appreciated the utility of the Blackboard Collaborate Ultra® combined with Zoom (recorded sessions accessible for asynchronous learning; virtual face-to-face features; ease of interactions with lecturer). They expressed concerns about the gaps in

Table 3. Rating of lecturers and recommendation of remote teaching by cohort year

Cohort Year MBBS	Lecturer Rating Mean [95% CI)	Recommendation Rating Mean [95% CI]
Year 1	5.37 [5.01, 5.60]	3.84 [3.46, 4.22]
Year 2	5.61 [5.31, 5.91]	4.81 [4.33, 5.30]
Year 3	7.02 [6.79, 7.26]	4.94 [4.56, 5.33]
Year 4	7.05 [6.81, 7.30]	5.01 [4.61, 5.41]
Year 5	7.42 [7.10, 7.74]	6.46 [6.07, 6.86]

competency among lecturers and tutors regarding active learning strategies, use of the learning management platforms, and video-conferencing tools, communication, and feedback.

Table 4. Students preferred online learning modality

Preferred Online Activity and Modality	Frequency (%)
Formative assessments (online quizzes; polling, Clicker, Kahoots, Socrative, Quizziz)	130 (22.6)
Lectures (interactive)	105 (18.2)
Tutorials	93 (16.1)
Case-based activities	70 (12.2)
Learning management system and videoconferencing modalities	59 (10.2)
Videos	28 (4.9)
Discussion forums	27 (4.7)
None	64 (11.1)
Total	**576 (100.0)**

Discussion

The majority of students accessed remote/online learning using laptops and personal/family WiFi from urban settings. Although the challenges experienced were mainly WiFi access, connectivity, and lecturer/tutor-related issues, students were enthusiastically engaged with the active learning strategies. Students' perception was positive and a third were satisfied with content, communication, lecturer

preparation, instructional material and online learning activities during emergency remote administration. However, just about 25% felt they had achieved their desired learning outcomes and that the courses/clerkships met their expectations.

Satisfaction for all domains of remote teaching and learning was statistically greater among students in Year 5. It is probable that students in the final year of the programme had previous experience with online instruction, were more familiar with lecturers/tutors and more inclined to adopt self-directed learning approaches compared to students at the earlier stages.

Perceptions of dissatisfaction among the cohorts, particularly in earlier programme years may have been influenced by adjustment challenges associated with the sudden disruption in the traditional approach to pedagogy in the undergraduate medical programme. These may have been compounded by tutors now having to adapt to unfamiliar e-learning and virtual teaching modalities for instruction.

Challenges to medical education are considerable during this period of social distancing and other precautions. Medical education in the traditional sense is practice-based in pedagogy, and students reinforce and augment theoretical knowledge with practical application in the "wet" laboratories (anatomy, physiology, pathology), simulated settings and clinical spaces (outpatient departments, wards, operating theatres, for example). The impact is profound since students have been removed from these settings to limit risk of exposure to COVID-19 (Kachra and Brown 2020; Gill, Whitehead, and Wondimagegn 2020, 77–79). They will miss weeks to months of experiential learning that would normally be considered critical to their training and acquisition of clinical competencies.

In-person communication is critical to the teaching and learning process, and this was cited as a significant challenge in the transition to online learning among medical students in a Saudi Arabia medical school (Rajab, Gazal, and Alkattan 2020). This was similar in our student cohorts, and included other challenges related to online assessment, access to computer hardware and software, technical barriers, not having much experience with online learning, and pandemic-related anxiety.

The overall positive students' perception of online learning is encouraging, and suggests their willingness to embrace online learning and enhanced active learning strategies. Students' engagement is paramount as recognised in other settings and the transformation to remote teaching and learning has optimised these strategies and processes (Demuyakor 2020; Rajab, Gazal, and Alkattan 2020).

The agility of the FMS to adapt to this new paradigm through an aggressive approach to training and innovation is commendable, and faculty have had to utilise already existing resources to emergently deliver the interrupted semester's curriculum. Similar to medical schools globally, faculty have embarked on the transformation of curricula to meet the current workforce needs even with the challenges of the epidemic (Lucey 2013; Skochelak and Stack 2017; Lucey and Johnston 2020). Students' concern regarding the capacity gap among faculty for remote teaching pedagogy and technical expertise must be swiftly addressed.

Limitations

The average response rate was 44% (range 31% to 53%), hence the perceptions and opinions of at least 50% of the MBBS cohorts are unknown. Possible reasons for non-responders to the online survey could be COVID-19 survey fatigue, lack of access and connectivity, or negative psychological impact of the pandemic, among others. The authors opine, however, that the recorded perceptions are a general reflection of the cohorts and must be considered in forward planning strategies by the FMS.

Another limitation of this study is that students' perception of self-efficacy with online learning was not explored. Neither did the study look at whether the ratings for satisfaction with course delivery or achievement of learning objectives differed between students who had had previous experience with online learning and those who had not. Previous studies have shown differences in student satisfaction with quality of online courses based on whether or not they had prior experience with online learning (Hixon, Ralston-Berg, Buckenmeyer, and Barczyk 2016).

These student perceptions are probably also applicable to students in the other health professions in the FMS, Mona (Dentistry, Nursing, Diagnostic Radiation, Pharmacy, Physical Therapy), given the similar practice-based pedagogy and challenges associated with interruption of teaching and training due to the pandemic. Evaluation of students' perception of self-efficacy with online learning should, however, be determined to identify competency gaps and to address them accordingly.

As we move to the next phase of curricular transformation, it is incumbent on faculty to continue the education of these doctors in training in the healthcare settings that are continuously responding and adapting to public health virus

management initiatives. Curricula redesign will need to consider a public health systems approach to teaching and learning in this new dispensation.

Conclusion

The COVID-19 pandemic has created an opportunity for innovation and curricula transformation in administration of remote teaching and learning in the MBBS Programme. Students' perceptions were positive, and they were enthusiastically engaged in active learning strategies. Further optimisation will require identification of at-risk and disadvantaged students, increasing capacity among faculty for remote teaching and learning competencies, and collaboration with key stakeholders.

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