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Research Article



# Self-reported stressors and experiences of Maltese dental academics during the COVID-19 pandemic

### A. M. Agius<sup>\*1</sup>, E. Vento Zahra<sup>1</sup>, G. Gatt<sup>1</sup>, A. R. G. Cortes<sup>1</sup>, N. Attard<sup>1</sup>

<sup>1</sup>Faculty of Dental Surgery, University of Malta, Msida, Malta

### Abstract.

### Aim.

To compare self-reported outcomes among dental faculty members during the COVID-19 pandemic.

### Materials and Methods.

An anonymous questionnaire consisting of 13 closed and open-ended questions was sent to all faculty members (n=41) in the Faculty of Dental Surgery at the University of Malta. Categorical (Likert-scale) and qualitative questions on self-reported outcomes were identified and tallied. Non-parametric tests were used to correlate and compare variables among the different genders, departments and roles of the academics (i.e. full-time, part-time, visiting and demonstrators).

### **Results.**

Thirty-two (32) out of forty-one (41) academics completed the online questionnaire. A satisfactory adaptation to online lecturing was noted from the majority of the participants. On the other hand, full-time faculty members were significantly more anxious about contracting COVID-19 than part-time and visiting faculty members (p = 0.020). Most participants were concerned about the lack of practical training opportunities for students. There were no significant differences between gender categories for any of the variables explored in this study (p > 0.05).

### Conclusion.

Academics accepted online platforms for lecturing and examinations as viable alternatives to traditional methods for theoretical learning but they were highly concerned about the possibility of students losing their practical skills during the lockdown and that online tutoring cannot compensate for lost hands-on time in preparation for their upcoming practical examinations. They, however, recognized the benefits of blended modes of tuition in the fu-

\*Correspondence to: A.M. Agius (anne-marie.agius@um.edu.mt) © 2022 Xjenza Online ture.

Keywords: COVID-19, dental students, stress, anxiety

# 1 Introduction

The current COVID-19 pandemic has had a significant impact on people's lifestyle and work. In this context, among the most affected are healthcare facilities and workers; and this is especially true for oral health care professionals who routinely carry out intraoral procedures which generate aerosols. In an effort to control transmission, healthcare facilities adopted new measures, equipment and enhanced personal protective equipment (PPE) to be able to keep providing care for their patients (A. M. Agius et al., 2020; Ather et al., 2020; Izzetti et al., 2020; Meng et al., 2020). Further to the changes in the provision of care mentioned above, there were significant general changes to behaviours internationally. Due to the high transmission rate of SARS-CoV-2, considerable social distancing actions such as country-wide lockdowns and border closures were introduced worldwide. Similarly, educational institutions were required to perform major changes or close down for a period of time until they could successfully reopen with the required safety measures in place. Educational institutions in Malta were closed down during the first wave of the pandemic—March to September 2020 and this included the only dental school in the country. Academics and students alike had to quickly adapt to new online teaching platforms and assessment methods which added further stress to an already challenging curriculum (A. Agius et al., 2020). Upon re-opening, science-related academic institutions needed to adopt even more safety measures, such as patient swabbing before attendance, reduced number of patients in clinical areas and waiting rooms, increased fallow time leading to reduced time of clinical sessions, changes in PPEs, as well as in ventilation and air filtration systems, among others (as per the faculty guidelines issued in 2020). For dental schools, high transmission rates of SARS-CoV-2 have been reported, mostly due to the challenge to safely treat patients routinely, especially when considering dental treatments that generate aerosols (Ren et al., 2020). Consequently, recent studies have reported a severe impact of this new reality on self-reported outcomes such as stress and anxiety in dental students and professionals. Little, however, is known about the effects of the pandemic on the aforementioned outcomes in faculty members of dental schools. Thus, this study aimed to compare self-reported outcomes among dental faculty members from different departments and with different roles within the university, during the current pandemic.

### 2 Materials and Methods

### Sample

This cross-sectional study was conducted involving academics from the Faculty of Dental Surgery, University of Malta. All participants signed informed consent allowing the anonymous use of collected questionnaire data. This study was approved by the local Ethics Committee (Protocol number: DSG/2019–2020/009). The STROBE guidelines for cross-sectional studies and the Helsinki Declaration guidelines were also carefully observed during the research. Failure to submit the questionnaire was the only exclusion criterion. The data were collected between the 11<sup>th</sup> and the 17<sup>th</sup> of May 2020.

### Questionnaire

The anonymous questionnaire consisted of 24 questions to gather both quantitative and qualitative data (table 1). Most questions were closed-ended, in the form of multiple-choice questions, checklists, or Likert scales (Attard et al., 2018). Also included were four open-ended questions to allow academics to express themselves better and discuss any issues or topics that were not covered within the other questions. The only demographic data requested were, their role within the university, department section and gender, with the option to choose "other" if they felt this could potentially identify them due to small numbers. The faculty's secretary forwarded a link to the questionnaire hosted on Google Forms to all academics. This ensured the anonymity of data. Automatically gathered responses into Google Forms and a data sheet was generated in Microsoft Excel. These data were then cleaned and coded. The resulting quantitative data were tabulated and used for statistical analyses, whereas the qualitative data were analysed by studying the different emergent themes from every answer and the number of times these themes featured in the data col-

#### lected (Masood et al., 2010).

#### **Statistical Analysis**

The sample size was previously estimated with Noether's formula (Noether, 1987), to give the study a statistical power of 80% within a significance level of 5%. Multiplechoice questions were treated as qualitative variables and were compared among groups using the chi-square test. Questionnaire data obtained from Likert scales, in turn, were treated as categorical ranks and therefore assessed using the Kruskal-Wallis test. Results from all variables obtained from the questionnaire were compared among academic members with different roles in the university (full-time resident academic, part-time resident academic, visiting academic, and clinical demonstrator) and among different departments within the Faculty of Dentistry (Oral Rehabilitation and Community Care, Dental Surgery, Restorative Dentistry, and Child Dental Health & Orthodontics). Additional comparisons between participants of different genders were assessed. Finally, nonparametric correlations between categorical variables observed through the questionnaires were assessed using the Spearman's Test. A p < 0.05 significance level was used for all the tests. All statistical analyses were performed with the same software (SPSS 22.0; SPSS Inc, Chicago, IL, USA).

### **3** Results

The questionnaire was distributed to all 41 academics working within the Faculty of Dental Surgery at the University of Malta. This is considered a total population of dental academics in Malta as this is the only dental school in the country to date. Thirty-two (32) academics completed the online questionnaire whilst nine (9) academics did not and were therefore excluded from the study. The response rate was that of 78%. The respondents were 50% male (n=16) and 43.8% female (n=14). Two participants preferred not to disclose their gender to preserve their anonymity. There were no significant differences between gender categories for any of the variables explored in this study (p > 0.05). Regarding university appointment, the majority of respondents (56.3%, n=18) were visiting academics, 21.9% (n=7) were full-time resident academics, 15.6% (n=5) were part-time resident academics and 6.3% (n=2) were those who only did clinical demonstration. The distribution of academics within the four faculty departments can be seen in figure 1.

# **Online Teaching Methods**

Participants were asked about their experiences regarding the transition to online lecturing. There was an overall positive response with 15.6% (n=5) saying they did very well and they prefer online teaching to the usual

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teaching methods. However, the majority of academics (68.8%, n=22) reported the experience was 'good overall' but they prefer 'in-person' teaching methods. A few academics (12.5%, n=4) said the experience was 'the same overall' and they do not feel they had any preference towards teaching online or in-person, whilst one academic responded that the online experience was very bad and it was difficult to connect with students and communicate on camera. Nevertheless, most of the lectures were ultimately delivered, even during the period of the pandemic assessed herein (figure 3). Lecture output increased to almost 100% during most weeks with the first week being the worst. Most participants (87.5%, n=28) were

on camera. Nevertheless, most of the lectures were ultimately delivered, even during the period of the pandemic assessed herein (figure 3). Lecture output increased to almost 100% during most weeks with the first week being the worst. Most participants (87.5%, n=28) were concerned students would lose their practical (manual) skills and training during the lockdown period. They also showed concern that the Faculty teaching clinics would probably not start functioning again upon re-opening of the university and other educational institutions within the country due to the changes needed in equipment, facilities and PPE in light of the pandemic. When asked about how participants felt about working from home/off-site, there was a very balanced distribution of answers with 31.3% (n=10) who responded 'better', 31.3% (n=10) who responded 'the same' and 37.5% (n=12) who responded 'worse'. An open-ended question further explored the reason for their answers. Academics responded that while they preferred not having to commute to University in traffic and face parking issues, they also missed the inperson interaction with students during lectures and were worried about the lack of contact time with regards to clinical practice. Academics were also asked how they think this pandemic will change the way they deliver lectures long-term. Common answers that emerged were there should be a combination of online teaching and inperson clinical training so that students and educators alike can benefit from the advantages of both methods.

#### **Stress-related Factors**

Academics were asked a series of factors that could cause anxiety during the pandemic and they chose answers from a Likert scale ranging from "Strongly agree" to "Strongly disagree". The highest anxiety-provoking factors (defined as those factors with a majority of "agree" or "strongly agree" answers) were "fear about a family member contracting COVID-19" (75%, n=24), "not being able to meet the students in person" (87.5%, n=28), "major changes required at the teaching clinic in relation to COVID-19 which will result in a delay in re-opening" (59.3%, n=19). Full-time faculty members were significantly more anxious about contracting COVID-19, than part-time and visiting faculty members (p = 0.020, figure 2). When asked about their coping strategies in an

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open-ended question, several common themes emerged, namely: living day-by-day but keeping oneself occupied with housework and re-discovering hobbies, countryside walks and exercise, catching up on home projects and preparing lectures and examinations.

#### Academics' concerns regarding students

Academics were asked for their thoughts regarding upcoming examinations and novel methods of assessment and a number of common themes emerged. Academics were most concerned about the possibility of students having connectivity problems during online examinations, lack of timely face-to-face communication, increased student stress during this examination period compounded by the changes in assessment methods, concerns regarding the possibility of students cheating, and students not being well-prepared for practical examinations due to lack of clinical time. Eighty-eight percent (n=28) of academics were concerned students would lose their manual dexterity and practical skills during the university lockdown. The rest believed the students would recover these skills in time (12%, n=4).

#### **Correlations between categorical variables**

Several relevant and significant correlations have been found among the variables analysed in the questionnaires. Anxiety of contracting COVID-19 was moderately inversely correlated with experience with online lecturing (R = -0.437, P = 0.012) and with concerns of losing training (R = -0.421, P = 0.016) and directly correlated with feeling anxious most of the time (R = 0.408, P =0.023). Similarly, a direct moderate significant correlation was found between not being able to work as much as used to, and anxiety most of the time (R = 0.494, P = 0.005). Furthermore, moderate to strong direct correlations were detected between not being able to meet students and concerns about reopening time (R = 0.583, P = 0.001) and changes (R = 0.596, P = 0.001) in the teaching clinic. All other correlations assessed herein were not significant (P > 0.05).

### Suggestions for the faculty

A couple of open-ended questions regarding faculty improvements needed for re-opening of the dental teaching clinics resulted in a number of suggestions. The commonest suggestions were to re-consider cross-contamination procedures and ventilation systems, enhanced PPE for aerosol-generating procedures, better timely communication with students regarding fast-paced changes in their theoretical and practical teaching, examination methods and platforms and more individual support for students when they return to the teaching clinics.

# 4 Discussion

The present cross-sectional study assessed self-reported outcomes on dental academics during the COVID-19 pandemic. Results indicated the majority of the participants were considerably affected by the current pandemic regarding self-reported stress, which corroborates previous studies about health-care educators (Kaup et al., 2020). Among the concerns reported by the majority were that students would lose their clinical skills due to lack of training and those related to the reopening of the teaching clinic. Such findings are in agreement with a previous study about students from the same dental school reporting similar concerns and who were also affected significantly during the pandemic (A. Agius et al., 2020). Similarly, situations reported herein, such as the impact on dental practitioners of the lack of PPE, have also been reported in literature (Tysiac-Mista et al., 2020). On the other hand, acceptability of online lecturing from dental academics was in general satisfactory. Among the primary explanations given for this is the dental faculty provided training and guidance documents with immediate effect upon the physical closing down of all academic institutions of the country. As a result, most faculty members could adapt to the technology advances necessary and to continue the theoretical teaching. Very few experienced problems with connectivity or delivery during the lectures, however, most still preferred face-to-face lectures due to better communication and rapport with the students. In this context, similar findings have also been reported from dental students (A. Agius et al., 2020). This supports the usefulness of online lecturing during the current pandemic and the possibility of combining modes of tuition even after the pandemic. Furthermore, this is the first article describing the concern of not being able to meet the students in person as one of the main factors impacting selfreported outcomes of dental academics during the pandemic. Similarly, participants were also concerned about the possible late re-opening of teaching clinics due to having to make significant changes to the facilities, protocols and student clinic time-tables. Following several meetings and suggestions with students and academics alike, the faculty worked hard and fast to transition to online examinations, creating protocols and planning training sessions for academic and administrative staff and students. New ventilation and air filtration equipment was installed in all teaching clinics, improved PPE was bought and provided. Student clinic timetables were changed to have fewer students, patients and staff present at any one time to respect social distancing measures. Students were given the opportunity to practice more in simulation dental laboratories to make up for reduced clinic time. Clinical time was spread throughout the day to allow for more regular albeit

shorter sessions for each student. A COVID-19 swab test was also being requested for all patients being seen at the dental teaching clinic, whilst clinic staff and students were asked to present a swab test result every two weeks. It can be anticipated that although the pandemic is still raging and the scenario is currently worse than when this study was carried out, due to the organizational, technological and people-oriented changes the faculty implemented, one might anticipate the academic staff concerns and anxieties related to new teaching methods and the ability to reach out to students and safety might be less however student anxieties related to their learning and target acquisition might still be the same. For academic staff there was a steep learning curve in online teaching and examining skills which might have caused some anxiety but which will serve to improve the operations of the faculty beyond the pandemic. One of the limitations of this study is that it is cross-sectional and it examined academics' experiences only during one period of the on-going pandemic. The sample size is also small, even though the response rate is high, as this is the only dental school in a small country (Malta). In future, further studies regarding the experiences of academics and students during the second phase of the pandemic would be interesting to note any possible changes in their perspectives and challenges. Future studies and comparisons with other dental schools worldwide would also provide interesting data and learning experiences the impact of the COVID-19 pandemic on dental academics.

# 5 Conclusion

Academics accepted online platforms for lecturing and examinations as viable alternatives to traditional methods for theoretical learning but they were highly concerned about the possibility of students losing their practical skills during the lockdown and that online tutoring cannot compensate for lost hands-on time in preparation for their upcoming practical examinations. They, however, recognized the benefits of blended modes of tuition in the future. Academics also voiced concerns regarding the Faculty's ability to safely re-open teaching clinics with new protocols and equipment in place in time for training for practical examinations. Rapid training of academics to adapt to online teaching helped in having a smooth and quick transition while avoiding significant consequences to the lecturing profile and student curriculum of this dental school.

## 6 Acknowledgements

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# 7 Conflict of Interest

None of the authors have any conflict of interest regarding this study. There was no funding provided for this study.

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Append	lices
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Category	Questions	Type of answers
Demographics	Gender	Multiple choice an- swer
	What is your role within the University?	Multiple choice an-
Current changes	Which department do the majority of the modules you teach fall under?	Multiple choice an- swer
	Rate your experience with regards to online lecturing	Multiple choice an- swer
	How would you describe your experience of working from home/ off-site?	Better The Same
	How do you think this will affect your teaching methods long-term, if at all? Do you have any particular problems or concerns regarding the student examinations?	Worse Open-ended ques- tion Open-ended ques- tion
	Do you have any particular problems or concerns regarding the students losing training or skills?	Yes/No/Other
	Do you feel that the lost time should be compensated for with additional study time?	Yes/No/Other
	Can you suggest any improvements for the Faculty to consider?	Open-ended ques- tion
	Do you think the Faculty will need to reconsider all cross- infection procedures?	Yes/No/Other
Mental and emotional well-being	I feel anxious most of the time I am anxious of contracting COVID-19	Likert Scale Likert Scale
	I am worried that one of my family members contracts COVID19	Likert Scale
	This has affected my personal relationship with my partner This has affected my relationships with family	Likert Scale Likert Scale
Student Concerns	This has affected my relationships with friends and work colleagues	Likert Scale
	I worry about not being able to work as much as I used to I don't like not being able to meet my students in person	Likert Scale Likert Scale
	I feel more stressed about having to deliver all my lectures online	Likert Scale
	I am more anxious about preparing the examinations this year because of the challenges we're facing	Likert Scale
	I am concerned about losing my manual dexterity skills because I haven't been able to practice as much	Likert Scale
	Not being in a University/hospital environment has af- fected my aptitude for working	Likert Scale
	How are you coping with the current pandemic situation? What are your coping strategies, if any?	Open-ended ques- tion

 $\label{eq:Table 1: Questionnaire for Academics at the Faculty of Dental Surgery$ 



Figure 1: Distribution of participating academics within different departments in the Faculty of Dental Surgery, University of Malta.



Figure 2: Comparison between different faculty members with different academic appointments regarding anxiety of contracting COVID-19 (P = 0.020).



Figure 3: Lecturing profile during the pandemic.