The impact of COVID-19 on RMO medical education and training at CDHB
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The COVID-19 virus has caused unprecedented disruption to health services across the world. As a result, the education and training of Resident Medical Officers (RMOs) has also been greatly affected. In many countries, RMOs have been required to work at the forefront of the pandemic whilst continuing their specialty training. In New Zealand, many opportunities for education and training have been cancelled, postponed, and altered, creating a multitude of challenges. The effect on RMOs has been considerable and has required educators to rethink how training is being delivered in these challenging times.

A survey of RMOs at Canterbury District Health Board (CDHB) was undertaken to determine the domains in which RMOs had experienced the most disruption and whom was most affected. An email invitation was sent to all house officers, registrars not currently in a vocational training programme, and training registrars asking them to participate in a brief online survey, using SurveyMonkey®. A total of 141 responses were obtained from the 559 RMOs invited. Nearly 60% (82/141) of the respondents were registrars in a vocational training programme, with the remainder being house officers and non-training registrars.

In addition to demographic information, the survey asked on a 5-point Likert scale (from strong negative impact to strong positive impact) what impact COVID-19 has had on ten educational, professional, and personal domains. There was also the opportunity for free-text comments. The majority responded that they have experienced a strong or slight negative impact on their ability to attend training and courses (118/141), their clinical learning (114/141), their clinical experience (102/141), and their personally (98/141). Data also indicated that the impact on the ability to attend training and courses became more negative the further through vocational training they are, with 68% (36/52) of training registrars reporting a strong negative impact as compared with 12% (2/17) of first year house officers. A strong negative impact was reported by a greater proportion of training registrars than house officers and non-training registrars with regard to the timing of examinations (36/82 vs. 6/59), the advancement of training (23/82 vs. 2/59), and career progression (12/82 vs. 1/59).

The responses made in the free-text comments further reinforced the quantitative findings. Of the comments made, 31% (14/45) related to delays and cancellations of examinations and assessments, a further 22% (10/45) related to the lack of training opportunities, exam preparation, and clinical time, and 18% (8/45) related to the uncertainty created. On a positive note, 13% (6/45) saw multiple advantages in the introduction and wider implementation of Zoom® and online education to enhance educational and teaching opportunities.

The findings in this study in many ways mirror the impact COVID-19 is having on the education and training of RMOs globally. During the SARS epidemic many educational opportunities were cancelled and a similar outcome has now occurred as a result of the COVID-19 pandemic. In this study, clinical learning and experience were found to have been greatly impacted, which supports the findings of Aziz et al. and Rambaldini et al. who found residents had a significant reduction in their clinical experience due to reduced clinic and theatre time and disruption within some core rotations. Aziz et al. found nearly half the respondents felt they would not meet case...
requirements for graduation, and similarly the advancement of training was reported as being negatively impacted in this study. Garcia et al.\textsuperscript{3} reported that COVID-19 has had a negative impact on the ‘academic productivity’ of more than half those surveyed, and Carvero et al.\textsuperscript{4} found respondents were concerned about the effect on their ‘future preparedness for independent practice’. Both these findings are echoed in the current study.

The positive outcome found in relation to the uptake of technology has also been found in other studies.\textsuperscript{1, 5}Continued long-term benefits would be expected should the increased use of technology remain, post-pandemic. Learners are able to access more educational opportunities with online technology, both nationally and internationally, at any time of the day and from anywhere.

The long term effect of COVID-19 on the pipeline for trainees locally has yet to be determined. District Health Boards will need to monitor whether issues will develop with the delayed timing of completion of vocational training programmes for training registrars as a result of the disruption in education and training caused by COVID-19.

We acknowledge the relatively low response rate (25%) and the fact that our data is from one DHB only. Both these factors limit the generalisability of these findings. However given the findings are consistent with other international studies, it would appear to add to the growing evidence-base that COVID-19 has caused, and continues to cause, disruption to RMOs with regard to their education, training, career progression, and their personal lives.

\textbf{Competing interests:}
Nil.

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