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Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1393_22

The impact of Covid-19 pandemic on modification of medical teaching in Italy: A narrative review

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Abstract:

During the first wave of Covid-19 in Italy, there was a problem with University. Universities couldn't do face-to-face (FTF) lessons and started to do online lessons (OL). This study investigates the impressions of students, teachers, and institutions during the first wave situation. A search was conducted on the main international databases, and only studies conducted in Italy starting during the Covid-19 pandemic are considered. 9 studies tell about the impressions of students about OL lessons, and 10 studies speak about medical resident's situation and teacher's impressions. Studies about students give conflicting results, teachers are generally satisfied with the contents, but agree on the difficulty of not having relationships with students. Medical residents have reduced significantly the clinical and surgical practice, sometimes increasing the research. In the future, it is indispensable to create a system that guarantees the efficacy of FTF lessons for practice, it is still low in sanitary and medical courses in Italy during the pandemic period.

Keywords:

Covid-19, digital education, distance learning, university

Introduction

In December 2019, a novel coronavirus, termed "SARS-CoV-2", announced by the World Health Organization (WHO) as being responsible for the outbreak of COVID-19, was reported.^[1] The first case of an unidentified form of viral pneumonia was reported in Wuhan city, Hubei province, China, in December 2019.^[2] As of 15 January 2022, the SARS Covid 2019 syndrome caused about 324 million infections and 5.53 million confirmed deaths (source at google.com). The pandemic has led to containment measures and has inevitably had a significant impact on the lifestyle, work, leisure, and habits in the world. The lockdown due to the COVID emergency was a critical moment with a strong impact, representing a real traumatic event for mental health, and reducing admissions,

hospitalizations, and ambulatory activity for diseases or services other than Covid-19^[3]. Furthermore, the Covid-19 pandemic quarantine is also a situation of negative sensations^[4,5] and fatigue, especially for students and academics.^[6-9] This period is characterized by a change in lesson participation: in Italy, during the quarantine period only possibility was the online lesson (OL); indeed, Italian Law No. 22 of 8 April 2020 allows students to carry out their internship activities in different ways than presence lessons, including OL, while in the next period (September 2020 – June 2021) there was the alternation between traditional face to face (FTF) lesson and OL. This situation has affected all levels of education. More studies had done about the new Italian medical and sanitary teaching situation, underlining the problem and giving solutions.^[10] The same problem was also discussed in many parts of the World.^[11,12] So, the aim of this study is to

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Received: 20-09-2022
Accepted: 20-02-2023
Published: 31-03-2023

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How to cite this article: Brusini A. The impact of Covid-19 pandemic on modification of medical teaching in Italy: A narrative review. *J Edu Health Promot* 2023;12:98.

analyze the response of Italian Universities during this period for medical and sanitary courses, and value a future approach to OL.

Materials and Method

A search was conducted on the main international databases (PubMed, SCOPUS, CINAHL, Web of Science) considering the studies conducted in Italy every time. There is no need to filter time selection. The reason that it was chosen to carry out the research only in Italy is the didactic differences in the medical teaching profession compared to other countries, while it is similar in the all-Italian country. The selection considers studies that indicate didactic methods, surveys on students about e-learning during the Covid-19 Pandemic, and protocols of lessons. Reviews are not considered. Figure 1 shows the inclusion and exclusion criteria.

Results

On 01/29/2022, the search “online learning covid-19 Italy” produced 164 results on PubMed, 4002 results on SCOPUS, 165 on Web of Science, and 13 on CINAHL. After removing duplicated results and after reading the title, 52 results are considered. Finally, after reading the abstract and text, 14 studies were considered on PubMed, 18 on SCOPUS, 9 on Web of Science, and 1 on CINAHL, for a total of 19 studies; 6 results are reviewed, so they are not considered; also, two results starting in a period of study before 2020 are not considered, 25 results are irrelevant. Table 1 shows the results of student responses above and the results of teacher’s or organization responses below.

Brunelli *et al.*^[13] describe and analyze the online teaching experience carried out for the course in Microscopy

Techniques for Forensic Biology offered as a part of the Master’s degree program in Biology at the University of Calabria, between March 16 2020 to June 8, 2020; furthermore, they administer a survey at 17 students about the conditions of the connection, and only 23.5% (4/17) thought that distance learning could be used only in case of emergencies; De Ponti *et al.*^[14] sent a questionnaire to 115 students of the course of Medicine and Surgery at the University of Rome that participate in a program of the virtual reality of patient cases. 55% of students prefer virtual training to respect to normal lessons, 90% gave a positive evaluation, but 84% considered the future use of this virtual reality training useful only in addition to the traditional method. Di Giacomo *et al.*^[15] dispense a survey of 314 students of the Oral Hygiene degree and Dentistry degree of the Sapienza University of Rome, and find a lack of a structured online curriculum, less interaction with professors, a lower level of attention, a level of perceived stress and fear about the quality and the quantity of acquired knowledge. Giusti *et al.*^[16] administer a questionnaire to 203 students of the Department of Life, Health and Environmental Science of the University of L’Aquila, which manages 17 study programs in 3 areas medical, biological, and environmental sciences, for value the conditions of distance learning during pandemic quarantine. They find worse conditions in 56% of students, with high value on distractions for the perceived sensation of lack of isolated environment and interactions, demoralization, and difficulty in study organization, but the majority of students had no problems with the results of exams. Varvara *et al.*^[21] sent also a survey of 301 students of the Dental School of the “G. D’Annunzio” University of Chieti–Pescara, and showed that the students considered significantly “fair” the level of interest, level of interactivity, correspond with their own expectations and level of personal preparation; the e-teaching approach to the practical aspects of the course was considered significantly “scarce”. Quintiliani *et al.*^[17] administer an online questionnaire to 955 students of the Campus Bio-Medico University of Rome, that included socio-demographic information, COVID-19’s impact on emotions and on university life, perceived stress (89.4% of cases, 66% stress “moderate” and 23.4% “high”) and resilience skills: 54.4% of students reported a decrease in attention span and difficulty in studying with consequent concern about the exam outcomes (55%). Rossettini *et al.*^[18] compared FTF with OL with a survey of satisfaction among the entry-level physiotherapy students (46) of the University of Verona between March and April 2020 with 24-hour online lessons, finding no difference in satisfaction, expressed on a 5-point Likert scale, compared with the year the before (in FTF) with the course. Sotgiu *et al.*^[19] dispense a questionnaire to 326 students of the University of Sassari about the quality of online teaching of gross anatomy in medical and

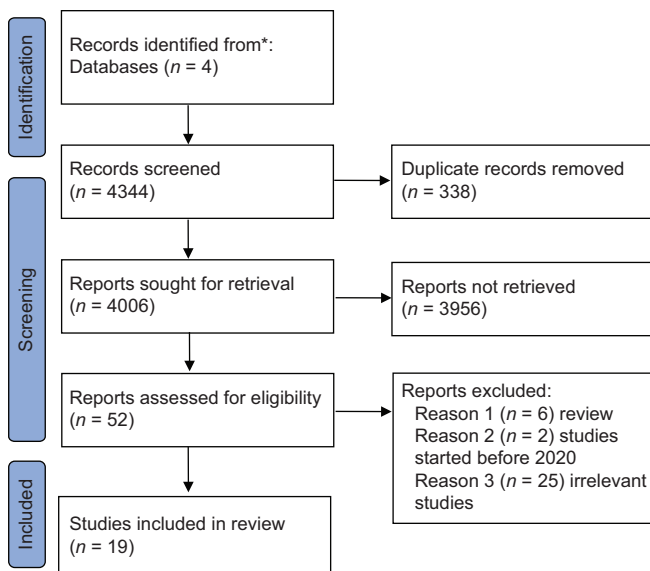


Figure 1: Diagram showing the stages of review and item selection^[30]

non-medical courses; although 60% of students rated 'very good or 'good' the quality of teacher-student interactions during the distance-learning lessons, but a high percentage of students, 76%, expressed a preference for face-to-face tuition. Testoni *et al.*^[20] describe the learning of the course "Death Education" in Psychology master of the University of Padua and administer a questionnaire to 38 students, finding a positive response in the correspondence between the pandemic period and the contents of the course.

Amparore *et al.*^[22] show the reduction of urological surgery for urology residents training with a survey in the pandemic period respect before: an online survey sent to Italian urological residents told that residents experiencing a severe reduction (>40%) or complete suppression (>80%) of training exposure ranged between 41.1% and 81.2% for "clinical" activities and between 44.2% and 62.1% for "surgical" activities (higher for residents attending the final year of training). Similar considerations are reported by Busetto *et al.*^[25] clinical and learning activity at the hospital was significantly reduced for the overall group of study, with a significant decrease in outpatient and invasive diagnostic procedures, outpatient surgical activities, and endoscopic activity significantly decreased. Furthermore, 52.9% of the residents reported that distance teaching tools for the residents' education had never been used, 12.9 and 33.2% of the residents reported that the use of distance teaching tools for any kind of activities "increased" and "significantly increased," and 61.1% of them reported that no multidisciplinary virtual meeting was performed at their hospital during March 2020. Bandi *et al.*^[23] had a similar idea with otolaryngology residents working in some hospitals of Lombardia: surgical training has been reported by residents as the activity perceived to be the most contracted during the pandemic, with higher time for research. Casacchia *et al.*^[25] administer a questionnaire to 97 university teachers of the Department of Life, Health and Environmental Science of the University of L'Aquila, finding that teachers reported difficulties in technical aspects, psychological factors with depressive symptoms, in sleep patterns, and reported a loss of energy. Teachers reported the discomfort of "speaking in the void" (64.7%) and the absence of "face-to-face" eye (81%). Consorti *et al.*^[26] send a survey of 20 Italian medical school directors, finding rapidly adaptation to the pandemic situation. Rota *et al.*^[27] administer a questionnaire to 122 Italian academics of medical statistics: 61% of Italian academics of medical statistics declared to be favorable to providing online teaching of medical statistics, biostatistics, and epidemiology in the future, but 42% declared the online experience less effective respect traditional method and only 35.1% declared to change the modality in online teaching in the future. Saverino *et al.*^[28] describe two academic

years of lessons, the first semester, in histology and anatomy, for 2019/20 (in FTF) and 2020/21 (in OL), observing improvements in exams in 2020. Furthermore, instruments like social networks and new technologies are used by students to collaborate and find information better than pre-pandemic era; Zarcone *et al.*^[29] compare the first academic year of medicine degree in 2019/20, that use online methods of lessons, with the same academic in 2018/19, with traditional face to face lessons, in University of Genoa. Votes are higher in 2019/20, and online lessons are perceived by most students as useful and positive. Zingaretti *et al.*^[30] showed a reduction of training of plastic surgery residents with a survey: about 115 residents, most of them feel the decrease in surgical activities, 52% considered useful, but not sufficient the didactical tools available to study and deepen topics concerning plastic surgery available in COVID-19 time. Zoia *et al.*^[31] investigate at 192 residents about neurosurgical training and education during a pandemic, finding time spent in neurosurgical departments reduced in 139 cases (72.4%), unchanged in 40 cases (20.8%), and increased only in 13 cases (6.8%); almost all of the interviewed reduced their surgical activity (78.6% perform less operation and 16.1% did not perform any operation at all).

Discussion

The results are divided into two categories: the response of students about OL [Table 2, above], and the investigations about teacher impressions [Table 2, below]. Students generally appreciated the OL method during emergency. However, it is difficult to establish if negative feelings are connected to OL or to the quarantine period. In University studies, data are varied: Brunelli, De Ponti, and Testoni found positive consent from the majority of participants about the possibility to continue to use OL modality; instead, in other studies participants manifest the will to return to FTF lessons, and use OL only for an emergency period or like support, considering OL contents poor. Furthermore, the study of De Ponti analyzes the response to virtual reality, a different method with respect to traditional OL. The studies that investigate teacher response show a difficulty to interact with students: the "speaking on the void", the absence of FTF eye, and the sensation of an experience less effective are preferred. The results of the exam seem better than precedent years where it is investigated. Consorti and Zarcone show positive results in their studies about OL, and a prompt response to the change of modality caused by the Covid-19 pandemic. Studies about medical residents are agreeing about the lack of clinical and surgical practice during the first Italian lockdown. Negative sentiments about OL can be a consequence of a prolonged quarantine periods:

Table 1: Above, summary of the reviewed studies about response of students. Below, summary of the reviewed studies about response of teachers and medical residents

First author	Year of publication	Methods
Brunelli <i>et al.</i> ^[13]	2021	Cross-sectional survey about online teaching experience
De Ponti <i>et al.</i> ^[14]	2020	A questionnaire on 115 students of the course of Medicine and Surgery about virtual reality training
Di Giacomo <i>et al.</i> ^[15]	2021	Survey on 314 students of Oral Hygiene degree and Dentistry degree
Giusti <i>et al.</i> ^[16]	2021	Survey on 203 students of Department of Life, Health and Environmental Science
Quintiliani <i>et al.</i> ^[17]	2022	Online questionnaire at 955 students about socio-demographic information, COVID-19 impact on emotions and on university life
Rossettini <i>et al.</i> ^[18]	2021	Comparative study with survey
Sotgiu <i>et al.</i> ^[19]	2021	Survey at 326 students about quality of online teaching of gross anatomy
Testoni <i>et al.</i> ^[20]	2021	Survey on response of students about learning of critical arguments during pandemic restrictions
Varvara <i>et al.</i> ^[21]	2021	Survey on 301 students of Dentistry degree
Amparore <i>et al.</i> ^[22]	2020	Comparative study with survey about surgical and clinical activity for urology residents
Bandi <i>et al.</i> ^[23]	2020	Survey on otolaryngology residents training during pandemic
Busetto <i>et al.</i> ^[24]	2020	Comparative study with survey about surgical and clinical activity for urology residents
Casacchia <i>et al.</i> ^[25]	2021	Survey on 97 university teachers of Department of Life, Health and Environmental Science of the University of L'Aquila
Consorti <i>et al.</i> ^[26]	2021	Survey on 20 medical school directors
Rota <i>et al.</i> ^[27]	2021	Questionnaire at 122 Italian academics of medical statistics
Saverino <i>et al.</i> ^[28]	2022	Qualitative analysis of teaching online during pandemic restrictions
Zarcone <i>et al.</i> ^[29]	2022	Comparative study
Zingaretti <i>et al.</i> ^[30]	2020	Survey on plastic surgery residents training during pandemic
Zoia <i>et al.</i> ^[31]	2020	Survey on neurosurgical residents training during pandemic

Table 2: Inclusion and exclusion criteria

Concept	Inclusion criteria	Exclusion criteria
Population	Healthcare students and medical residents, healthcare and medical teachers/directors	Group of students without specific course numbers
Study type	Primary studies	Review, irrelevant studies
Time	Start during pandemic period	Start before pandemic period
Comparison	Comparison between FTL and OL	

anxiety and depression correlated to lockdown are shown in many cited studies; so, it is difficult to divide the negative sensations of OL from negative sensations of lockdown. It is interesting that Ruta *et al.*^[32] tell about his study: the satisfaction of medical users with the webinar proposed is also high in the knowledge acquired. In fact, webinars are widely used tools,^[33] and hybrid proposals of OL and FTF are just used in some Universities during the second wave of the Covid-19 pandemic in Italy,^[34] but it can be an excess of these instruments.^[35] It is important to think that the Covid-19 situation can continue for many years: it is essential to create efficient protocols, and a hybrid system of education between OL and FTF, as like shown by Biddau *et al.*^[36] in residency training at the university hospital of Udine and Servadio *et al.*^[37], which describe the final exam of the course of Physiotherapy online. The solution is a blended education (OL and FTF at the same time) with clinical rotation: some courses like laboratory and practical lessons must be in FTF; in Italy practice in sanitary and medical courses during a pandemic is low, and a continuing situation can increase this gap. Theoretical lessons can be done

in blended mode, with a better situation for workers and pendular students, but clinical practice must be guaranteed.

Limitation

There aren't studies that compare a year in FTF and one in OL with similar matters in the same group: some comparative studies can give an effective output about OL. Furthermore, there is an important presence of qualitative studies in which there are sown author's impressions and not quantitative data.

Conclusion

It is important to think of blended lessons for the future in university, especially for theoretical matters. However, in future, it is indispensable to create a system that guarantees the efficacy of FTF lessons for practice, it is still low in sanitary and medical courses in Italy during the pandemic period.

Financial support and sponsorship

This research did not receive any form of funding.

Conflicts of interest

There are no conflicts of interest.

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