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Faculty Development in the COVID-19 Era: A Rapid Systematic Review

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Abstract

Background: The coronavirus-2019 (COVID-19) pandemic is a worldwide evolving situation that has resulted in rapid adaptations of faculty development interventions in medical education. The present rapid systematic review aims to provide a narrative synthesis of the evidence concerning focus, intervention type, instructional methods, duration, and the evaluations results of the faculty development interventions in the medical education area in response to the COVID-19 pandemic.

Methods: This was a systematic study conducted on 5 databases (Medline/PubMed, EMBASE, Web of Science, ERIC, and Scopus) from December 2019 to November 2021. We used specific keywords such as faculty development, COVID-19, and medical education on electronic databases. To find additional relevant studies, we conducted a forward and backward searching strategy by checking the reference lists and citations of the included articles. Studies reporting the educational faculty development interventions in medical education during the COVID-19 era and those articles published in English were included. Titles, abstracts, and full texts were screened and the data were extracted by 2 authors.

Results: Ten articles were included, most of which were focused on the improvement of online teaching and learning skills. The findings are organized into 2 main categories, including a description of the interventions, and the special aspects of the studies in response to the COVID-19 pandemic.

Conclusion: This review explores the evidence concerning faculty development programs in the medical education area in response to the COVID-19 pandemic. These interventions may develop individual abilities and organizational capacities of health professions educators to enable them to sustain academic vitality and cope with the pandemic crisis. Also a rapid movement to online faculty developments, which will likely continue after the pandemic, was argued and it is required to direct the adaptations and innovations of educational developments to an organized structure in the future.

Keywords: Faculty, Empowerment, Staff Development, Medical Education, Pandemic, Coronavirus

Conflicts of Interest: None declared
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Introduction

The COVID-19 pandemic and its subsequent lockdown have led to serious challenges in the teaching and learning process in medical education. Health professions educators have to employ adaptive instructional strategies to meet current challenges appropriately and perform their multiple roles effectively (1, 2). As a result, there is an urgent need

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↑What is "already known" in this topic:
There is no systematic review specifically focused on faculty development interventions during the COVID-19 pandemic and a rapid systematic review needs to provide a synthesis of the evidence concerning faculty development interventions in the medical education area in response to the COVID-19 pandemic.

→What this article adds:
A rapid movement to online faculty developments, which will likely continue after the pandemic, was argued and it is required to direct the adaptations and innovations of educational developments to an organized structure in the future.

for faculty development interventions to aid health profession educators. These programs enhance the capacities that are required for the different roles with an emphasis on the new skills and strategies for planning, and implementing teaching and learning to the new reality of distance learning (3).

The delivery of faculty development has, in turn, been affected by the pandemic seriously. Challenges of the recent pandemic in faculty development interventions were immediately addressed with solutions, including virtual workshops, virtual conferences, webinars, and uploaded resources on learning management systems (4). Given these growing adjustments, it is important to review faculty development interventions and identify best practices for further acceptance.

Several reviews have been published on medical education developments through the coronavirus disease-2019 (COVID-19) pandemic. Dedeilia et al (2020) identified the challenges forced on medical education by the COVID-19 pandemic and the revolutions enabling the continuance of medical training (5). Faculty development interventions were not explored in this review. Gordon et al (2020) conducted a rapid systematic review of developments in all domains of medical education in response to the pandemic. They found only 3 papers on the initiatives of faculty development and described the interventions and lessons learned. Given the little existing literature, they called for additional studies in this area (6). In a commentary, Zuo and Juvé (2020) evaluated studies published as part of the medical adaptations series in medical education and summarized the findings of 5 articles that used technology during the COVID-19 pandemic, including the details of interventions, advantages, and problems. They discussed recommendations for moving forward (7). Daniel et al (2021) investigated the literature on changes in medical education in response to COVID-19. This scoping review concluded that given the urgent need for faculty training in the changed condition, there was a complete paucity of articles on faculty development. They strongly encourage the reporting of developments in this area (8).

To the best of our knowledge, there is no systematic review specifically focused on faculty development interventions during the pandemic. This rapid systematic review aimed to provide a narrative synthesis of the evidence concerning focus, intervention type, instructional methods, duration, and the evaluations results of the faculty development interventions in the medical education area in response to the COVID-19 pandemic.

Methods

This rapid systematic review was performed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement to answer some questions about faculty development intervention in the COVID-19 area (9). This rapid systematic review can be useful for making health policy decisions because it allows for the exploration of evidence while also confirming that data are adjusted as quickly as possible given past work (10). We synthesized and described the reported pattern of the faculty development interventions in the COVID-19 area.

Search Strategies

A systematic literature search was conducted on November 11, 2021, using the following terms and their combinations: (faculty development OR teacher development OR staff development OR faculty training OR teacher training OR staff training OR in-service training OR faculty continuous professional development OR teacher continuous professional development OR staff continuous professional development) AND (COVID-19 OR COVID19 OR pandemic OR corona OR coronavirus OR 2019-nCoV OR SARS-Cov-2) AND (medical education OR health professions education OR higher education) in five databases (Medline, EMBASE, Web of Science, ERIC and Scopus) for a period from December 2019 to November 2021. (A copy of the search strategy is included in Appendix 1). To find additional relevant studies, we conducted *a* forward and backward searching strategy by checking the reference lists and citations of the included articles.

Inclusion and Exclusion Criteria

Studies reporting the faculty development interventions in medical education during the COVID-19 era and published in English were included. Given the scarcity of published studies upon the initial screening of the literature, we included short reports and short communications—in addition to original articles. We excluded commentaries, editorials, opinion pieces, perspectives, reviews, calls for change, needs assessments, and other studies in which no real interventions had been employed. Studies that focused on faculty development in other pandemics and those that described faculty development interventions during the COVID-19 era in nonmedical education areas, such as clinical science, were also excluded (Table 1).

Study Identification

After removing the duplicates, each study potentially meeting the inclusion criteria was independently screened by the 2 authors (M.S. and E.M.). Then, the full texts of relevant papers were assessed independently by the 2 authors for relevance and inclusion. Disagreements at either step were resolved through discussion with the third author (R.G.) when needed until consensus was reached. There were 5 studies that needed discussion on inclusion; 2 were included after reaching a consensus.

Quality Assessment of the Studies

We used the BEME checklist (11), consisting of 11 indicators, to assess the quality of studies. Each indicator was rated as “met,” “unmet,” or “unclear.” To be deemed of high quality, articles should meet at least 7 indicators. The quality of the full text of potentially relevant studies was assessed by 1 author and checked by the second authors (M.S. and E.M.). Disagreements were resolved through discussion. No study was removed based on the results of quality assessment.

Data Extraction and Synthesis

To extract the data from the studies, a data extraction

Table 1. Inclusion and exclusion criteria

Review Question Elements	Inclusion Criteria	Exclusion Criteria
Population	Studies on faculty development programs in medical education	Studies on faculty development programs in clinical research, management and leadership and non-medical education
Activity	Studies on faculty development interventions in medical education during the COVID-19 era	Studies on non-medical education, no real interventions and during the other pandemics except the COVID-19 era
Study language	Studies on English languages	Other languages
Study type	Studies on short reports, short communications, and original articles.	Studies on editorials, opinion pieces, commentaries, perspectives, reviews, calls for change, and needs assessments.

form was designed based on the results of the entered studies. A narrative synthesis was applied as a method for comparing, contrasting, synthesizing, and interpreting the results of the selected papers. All outcomes relevant to the review question were reported.

The first author (M.S.) reviewed and coded each included study using the data extraction form. This coding described 2 broad categories, including the description of the studies and their particular aspects in response to the COVID-19 pandemic. The data extraction form was then given to another research member (E.M.) for data extraction and reporting. When necessary, the third reviewer (R.G.) assisted to resolve disagreements.

Results

A total of 305 titles were found, with a further 10 titles identified through the hand searching of reference lists of all reviewed articles, and experts' opinion papers. After removing the duplicate references, 221 references remained. After title and abstract screening, 115 studies were considered for full-text screening, and 106 studies were excluded. Ten studies were included in the final analysis. The 2020 PRISMA diagram for included studies is shown in Figure 1 (9).

Description of the Studies

The description of the studies included the details of pub-

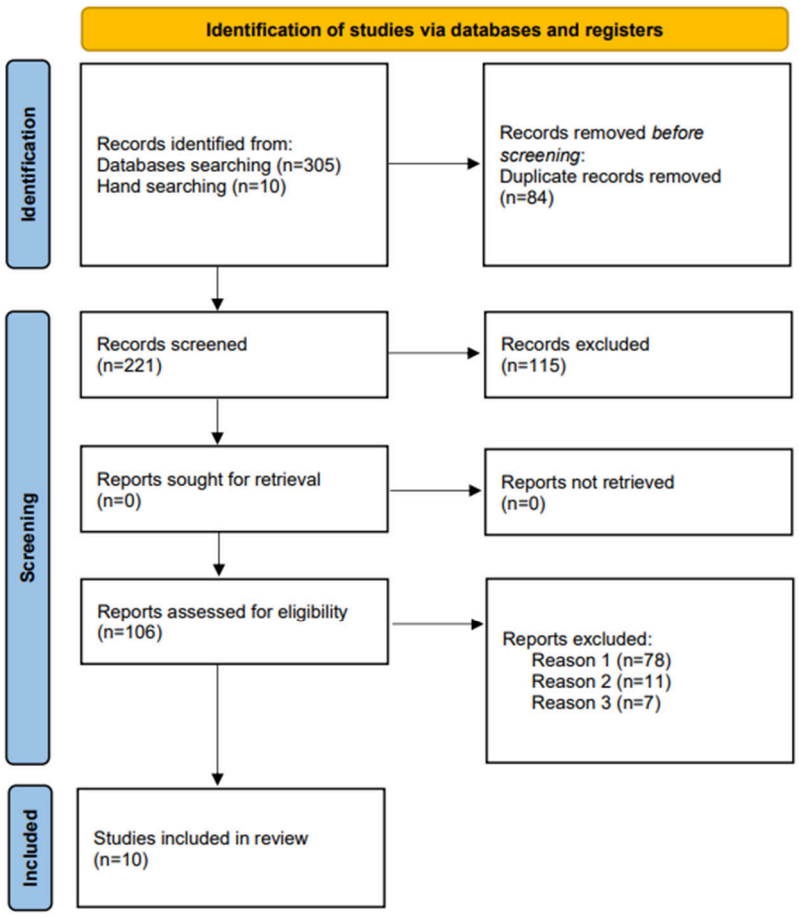

Fig. 1. PRISMA flow diagram for included studies

Table 2. Summary of Faculty Development Interventions During COVID-19 Pandemic

First Author	Publication	Journal/ Conference	Setting	The focus of the Intervention	Intervention Type	Instructional Methods	Duration	Conceptual or Theoretical Framework	Level of Evaluation
Gabrielle M. Finn	16 May 2020	Medical Education	United Kingdom	Research skills	Synchronous and asynchronous	Videos and live chats	-	-	Reaction and results level
David A. Keegan	11 May 2020	Medical Education	Canada	Curate medical education resources	Asynchronous	Open-access resources	-	-	Behavior level
Heather Buckley	20 May 2020	Medical Education	Canada	Online teaching skills	Synchronously	Online webinars	-	Social network theory	Reaction, learning, and results level
Hanan M Al-Kadri	01 September 2020	Annals of Thoracic Medicine	Saudi Arabia	Online teaching skills	Synchronously	Online webinars	Two-hour program	-	
Ayat Nabil Eltayar	23 April 2020	Medical education	Egypt	Online teaching skills	Synchronous and asynchronous	Videos and workshop	-	Cognitive apprenticeship	Reaction level
Sharonda Lipscomb	23 June 2020	EdMedia + Innovate Learning	United States	Online teaching skills	Synchronously	Online webinars	Two-day (2-hours for each day)	-	
Kiran Veerapen	04 May 2020	Medical education	Canada	Online teaching skills	Synchronously	Online workshop	-	Constructivist framework	Results level
Zuber D. Mulla	13 May 2020	Journal of Perinatal Medicine	United States	Online teaching skills	Asynchronous	Videos	-	-	Results level
Jennifer Paetsch	02 November 2021	Frontiers in Psychology	Germany	Online teaching skills	Synchronously	Online webinars	-	-	Reaction level
Jonathan P. Heldt	17 February 2021	Academic Psychiatry	United States	Online teaching skills	Synchronously	Online webinars	One-hour program		Reaction level

lications and geographical location of the interventions, focus of intervention, intervention type, instructional methods, duration, conceptual or theoretical framework, and level of evaluation. Table 2 displays a summary of these features.

Special Aspects of the Studies in Response to the COVID-19 Pandemic

The special aspects of the studies in response to the COVID-19 pandemic included the adaptations considered in the interventions, the challenges of interventions, and the educational outcomes.

Adaptations

The adaptations considered to improve the efficacy of the faculty development in response to the pandemic were classified into 3 categories based on the time they were employed.

Preprogram Adaptations: Three papers (38%) described the advertising of their events through social media and their university websites (12, 13, 14). In one of them, a specific hashtag was developed to help the participants to keep a view of the content developed. In addition, because some events occurred outside of business hours in this study, the called moderators were sent an electronic calendar invitation to keep events on their radar (12). In one study (12%), intervention designers focused on the attributes of those platforms that improved educational outcomes. These qualities included easy user navigation, compatibility with desktops, tablets, and mobile devices, and a platform name and URL that were easily remembered (13). There were 2 reports (25%) of holding a practice session with full instructions on how to use the platform (15, 16).

Through Program Adaptations: Half of the papers considered the use of facilitators for several reasons. One paper invited moderators from international institutes to simplify a discussion and inspire a wider range of participation (12). Another study reported the benefit of collaboration of multiple people in their project to ensure the high quality of medical education resources created within a narrow time frame (13). One paper described the invitation of different sources of expertise, including faculty development, information technology (IT), et cetera to bond the potential knowledge gaps in the intervention. They suggested that it is useful to arrange for a cofacilitator to help maintain the track of comments and questions (17). A study used facilitators to coach the groups of participants who worked together and provide tips for correcting poor performance (15).

Providing participants with multiple and different opportunities for hands-on activities can support their learning and improve the outcomes of faculty development activities. One paper designed and used smaller break-out rooms to provide opportunities for practice with constructive feedback (15). Other adaptations were having some drafted messages ready to send to help as discussion stimuli, having teachers logged in on several devices to keep up with the speed of responses (12), using hashtags, tweets, posts,

and emails to build awareness (13), and organizing informal questions and answers to encourage discussions (17).

One intervention, which created online medical education resources to support medical educators to pivot curricula online, paid attention to the open accessibility of the resources, lack of evident bias in the resources, lack of (or minimal) personal data gathering, and the relevance of online medical education resources to the needs of learners and medical educators (13).

Postprogram Adaptations: Two papers (25%) focused on the follow-up communication by sharing the debriefs of the training interventions, including the summary of the educational content, experiences, questions, and answers, and suggestions, to sustain conversations (15, 16). Veerapen et al (2020) reported a sense of community and peer support by applying a follow-up intervention. They also shared a summary of the intervention with teachers (16). As another adaptation, one study acknowledged all moderators publicly for their contributions (12).

Challenges

Despite valuable adaptations, several challenges were reported. One paper discussed the problems raised because of not orienting participants to video-conferencing platforms (16). The timing was a barrier for international audiences to participate. In one study, a repeated event was offered for the faculty in a particular time zone (12). Another important challenge was multiple and various responsibilities of the faculty including a range of activities as follows: preparation of educational content and assessments for online education, overwhelming clinical demands on previously overstretched faculty, and the increased requirement to emphasize on personal health and safety during the pandemic. To maintain best practices and further advance faculty development beyond crisis conditions, it is vital to create realistic expectations for the event, participants, and teachers (17, 18).

Educational Outcomes

Eight studies reported positive outcomes classified by the Kirkpatrick's model of evaluation (19). Five papers stated the results obtained at the reaction level and reported by participants, such as increased motivation, boosted the morale of the participants (12, 20, 21), and development of a shared perception of the changes to their roles (17). Other positive reactions were less interference and better involvement in performing the workshop online (15). One study reported that moderators gave their opinions and their feedback was overwhelmingly positive (12).

One study (12%) described the results at the level of learning, for example, developing assurance and confidence to accept new challenges, such as teaching in a virtual environment and paying attention to student well-being (17). One paper (12%) discussed the effects of the intervention on behavior level, including the high rate of utilization of online medical education resources in virtual teaching, which was reported by faculty (13).

Based on the comments and reports of the participants, 4 studies (50%) stated the outcomes at the level of results, such as sharing and creating collective knowledge, establishing new collaborations (12), improving cooperative capacity (22), and providing a sense of community and peer support during physical isolation (12, 16). The participants of Buckley's intervention indicated that connecting was highly valued (17).

Discussion

Faculty development involves all of the interventions that are designed to help health profession educators to improve the competencies that are required for their different roles, both as an individual and organizational settings (23). The COVID-19 pandemic is a worldwide evolving situation that has resulted in rapid adaptations of faculty development interventions in medical education. The present rapid systematic review aims to provide a narrative synthesis of the evidence concerning faculty development interventions in the medical education area in response to the COVID-19 pandemic.

In this rapid systematic review, which used numerous techniques and rapidly evolving evidence, the goal was to assess the many features of 10 studies connected to the experiences of educational interventions for faculty members during the Covid-19 era. According to our findings, after the onset of the epidemic and the limitation of holding face-to-face programs, faculty development programs moved toward virtualization. These educational interventions were synchronously and asynchronously performed in various forms, such as webinars, workshops, and video presentations (6). In general, these interventions can be divided into 2 groups. Most of these programs are developed to enhance faculty members' online teaching and learning skills (14, 15, 17). After the change of usual conditions, the faculty members faced the challenge of how to best hold their classes online for students. Therefore, due to this need, educational interventions were formed virtually to develop faculty members in this regard. Because faculty development cannot be stopped, a new collection of educational interventions has emerged to teach other capacities that were previously taught in the form of face-to-face faculty development programs before the emergence of COVID-19 (12). However, it seems that at the beginning of the COVID-19 epidemic, given the need of the faculty, the focus of most educational interventions was on how to hold online classes. However, as we move forward, the focus of these programs should be also on developing other roles of faculty as well.

Faculty development programs were largely face-to-face before the COVID-19 outbreak, while few were effectively held both face-to-face and online (24) or simply face-to-face form (25) At this time, these experiences are very valuable. These interventions can develop individual and organizational capacities of health professions educators to enable them to sustain academic vitality and cope with the environmental changes (26).

According to our findings, the unfamiliarity of faculty members with how to use virtual learning platforms is one of the challenges of holding virtual programs that may reduce their success (13, 15, 16). Therefore, to ensure program efficiency, it may be necessary to embed these cases

in the main educational program before performing it. Another finding was the significant role of active teaching strategies and active participant engagement in the success of the faculty development program. The most important strategies mentioned in the reviewed studies are small-group discussions, interactive exercises, films, and videotape reviews of performance (12, 15, 21). To promote participant engagement, it is required to both enhance the awareness of the importance of involvement and to fill educators' toolboxes with adaptations to teaching strategies, including synchronous, asynchronous, or combined approaches (27). Using different platforms, making recordings of past lectures, making extra learning resources available, using online chat features, electronic 'hand-raising' for comments and questions, online polling, and using breakout rooms for small group learning are some ways to facilitate faculty engagement— in addition to the above-mentioned strategies used in the reviewed studies to increase participant engagement. (6). Providing a structure for faculty members to apply and practice what they have learned both during and after the intervention, as well as receiving feedback, results in active learning, transformation, and better teaching performance (26). Considering some smaller break-out rooms, dividing participants into groups with each group having an online facilitator provides opportunities for practice, and systematic and constructive feedback. According to our findings, some reviewed articles have reported the holding of follow-up or reinforcement sessions after the end of the program. It is useful to use some strategies such as providing a summary of the content and the possibility to asking questions. These strategies help to deep understanding of the content and allow faculty to interact with each other (15, 16, 17).

Evaluation of faculty development programs can assist in determining how effective the programs are for participants, as well as promoting the holding of programs (24). Therefore, it is critical to evaluate faculty development programs (24, 25). According to the findings of this study, in the programs performed during the COVID-19 period, the program evaluation has not been comprehensively performed at various levels. Most studies have been satisfied with reporting the evaluation of the system or learners, in which the relevant tools used for the evaluation have not been usually reported (12, 15, 17). Despite the importance of evaluating the implementation method, program content, and learners' learning level and performance after participating in faculty development programs, it appears that the content preparation and management of holding virtual programs in a short period has not provided the organizers of these programs with enough time for evaluation. Given the amount of time that has passed since the epidemic began and virtual programs have become common, it is expected that program assessment will receive a lot of attention. According to this review, just a few programs appear to be based on a theoretical or conceptual framework. In reality, adhering to the frameworks' principles promotes more effective learning and teaching, aids in the interpretation of outcomes, and helps in understanding how communities learn collectively (22).

Strengths and Limitations

This review has several strengths, including a detailed search strategy, an extensive literature search led by a skilled librarian, the use of a data extraction form, and the timeliness of the review, to inform other researchers in the pandemic.

The following limitations are intrinsic in this review. First, we focused on studies describing faculty developments, especially in health professions education. Important innovations may have been missed in the field of higher education. Many reports did not present adequate details. They included lack of outcomes achieved, underpinning theory, content taught, the teaching methods employed, duration of the intervention, professional discipline, and the number of faculties p in the programs. This basic background information is vital to understanding the context of the intervention and promoting the replicability of future work. In addition, all of the reviewed studies were found in the English language, which may reflect a publication bias that prevents a wide view of faculty development during the COVID-19 pandemic from an international perspective. None of the studies in this review focused on a robust evaluation of the effectiveness of novel faculty developments. However, given the importance of obtaining evidence of the potential stable impacts of faculty development programs at both the individual and organizational levels, further research of this sort is urgently needed. We did not conduct a risk of bias analysis because the majority of the included articles were short reports that did not cover all parts of the full studies. Due to the possibility of publishing more studies on faculty development in the COVID-19 pandemic in the future, the next reviews should consider the risk of bias evaluation.

Conclusion

This review explores the evidence concerning faculty development programs in the medical education area in response to the COVID-19 pandemic. Based on the findings, there is a rapid shift to online faculty development, which will likely continue after the pandemic. This analysis has brought to light several points that policymakers considering future faculty development programs that use online platforms for program design, implementation, and evaluation should consider.

Ethics Approval

This study was approved by the Research Ethics Committee of Kerman University of Medical Sciences (No. IR.KMU.REC.1399.557).

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Conflict of Interests

The authors declare that they have no competing interests.

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Appendix 1

Scopus search strategy

History	Search Terms	Results
7	((TITLE-ABS-KEY ("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR cpd)) AND (TITLE-ABS-KEY ("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR coronavirus))) AND (TITLE-ABS-KEY ("medical education" OR "health professions education" OR "higher education")) AND (LIMIT-TO (PUBYEAR , 2020)) View Less	25
5	((TITLE-ABS-KEY ("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR cpd)) AND (TITLE-ABS-KEY ("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR coronavirus))) AND (TITLE-ABS-KEY ("medical education" OR "health professions education" OR "higher education")) View Less	37
4	TITLE-ABS-KEY ("medical education" OR "health professions education" OR "higher education")	422,792
3	(TITLE-ABS-KEY ("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR cpd)) AND (TITLE-ABS-KEY ("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR coronavirus)) View Less	326
2	TITLE-ABS-KEY ("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR coronavirus)	181,466
1	TITLE-ABS-KEY ("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR cpd)	85,531

Web of Science

Set	Results	Save History / Create AlertOpen Saved History
# 5	4	#4 AND #3 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years
# 4	161,747	TS=("medical education" OR "health professions education" OR "higher education") Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years
# 3	78	#2 AND #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years
# 2	141,108	TS=("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR Coronavirus) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years
# 1	34,890	TS=("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR CPD) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years

Pubmed				
Search	Actions	Details	Query	Results
#17			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("higher education"[Title/Abstract]) OR ("Education, Graduate"[Mesh])) Filters: from 2020 - 3000/12/12	5
#16			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("higher education"[Title/Abstract]) OR ("Education, Graduate"[Mesh]))	6
#15			Search: ("higher education"[Title/Abstract]) OR ("Education, Graduate"[Mesh])	99,250
#14			Search: "Education, Graduate"[Mesh] Sort by: Most Recent	86,449
#13			Search: ("health professions education"[Title/Abstract]) AND ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("in-service training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("inservice training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh])))	0

Pubmed				
Search	Actions	Details	Query	Results
#12			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("medical education"[Title/Abstract]) OR ("Education, Medical"[Mesh])) Filters: from 2020 - 3000/12/12 ("staff development"[MeSH Terms] OR "teacher training"[MeSH Terms] OR "in-service training"[MeSH Terms] OR "faculty development"[Title/Abstract] OR "teacher development"[Title/Abstract] OR "staff development"[Title/Abstract] OR "faculty training"[Title/Abstract] OR "teacher training"[Title/Abstract] OR "staff training"[Title/Abstract] OR "inservice training"[Title/Abstract] OR "in service training"[Title/Abstract] OR "cpd"[Title/Abstract]) AND ("COVID-19"[Title/Abstract] OR "COVID-19"[Title/Abstract] OR "pandemic"[Title/Abstract] OR "corona"[Title/Abstract] OR "2019 ncov"[Title/Abstract] OR "Coronavirus"[Title/Abstract] OR "COVID-19"[Supplementary Concept] OR "Pandemics"[MeSH Terms] OR "Coronavirus"[MeSH Terms]) AND ("medical education"[Title/Abstract] OR "education, medical"[MeSH Terms]) Warnings ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("inservice training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("medical education"[Title/Abstract]) OR ("Education, Medical"[Mesh])) Quoted phrases not found: faculty continuous professional development, teacher continuous professional development, staff continuous professional development	12
#10			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("medical education"[Title/Abstract]) OR ("Education, Medical"[Mesh]))	13
#11			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))) AND (("medical education"[Title/Abstract]) OR ("Education, Medical"[Mesh])) Filters: from 2017 - 2017	1

Pubmed				
Search	Actions	Details	Query	Results
#9			Search: ("medical education"[Title/Abstract]) OR ("Education, Medical"[Mesh])	184,934
#8			Search: "Education, Medical"[Mesh] Sort by: Most Recent	167,052
#7			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh])) Filters: from 2020 - 3000/12/12	91
#6			Search: ((((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])) AND (((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh]))	131
#5			Search: ((((((("covid 19"[Title/Abstract]) OR ("COVID-19"[Title/Abstract])) OR ("pandemic"[Title/Abstract])) OR ("corona"[Title/Abstract])) OR ("2019 ncov"[Title/Abstract])) OR ("coronavirus"[Title/Abstract])) OR ("COVID-19" [Supplementary Concept])) OR ("Pandemics"[Mesh])) OR ("Coronavirus"[Mesh])	115,998
#4			Search: "Coronavirus"[Mesh] Sort by: Most Recent	41,322
#3			Search: "Pandemics"[Mesh] Sort by: Most Recent	39,463
#2			Search: "COVID-19" [Supplementary Concept] Sort by: Most Recent	34,605
#1			Search: ((((((((((((("staff development"[MeSH Terms]) OR ("teacher training"[MeSH Terms])) OR ("inservice training"[MeSH Terms])) OR ("faculty development"[Title/Abstract])) OR ("teacher development"[Title/Abstract])) OR ("staff development"[Title/Abstract])) OR ("faculty training"[Title/Abstract])) OR ("teacher training"[Title/Abstract])) OR ("staff training"[Title/Abstract])) OR ("in-service training"[Title/Abstract])) OR ("in service training"[Title/Abstract])) OR ("faculty continuous professional development"[Title/Abstract])) OR ("teacher continuous professional development"[Title/Abstract])) OR ("staff continuous professional development"[Title/Abstract])) OR ("cpd"[Title/Abstract])	

Embase

#35	
#34 AND (2020:py OR 2021:py)	64
#34	
#32 AND #33	75
#33	
#16 AND #26	662
#32	
#27 OR #28 OR #29 OR #30 OR #31	372,012
#31	
'higher education':ab,ti	17,088
#30	
'health professions education':ab,ti	990
#29	
'medical education':ab,ti	49,536
#28	
'higher education'/exp	15
#27	
'medical education'/exp	346,763
#26	
#17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25	130,421
#25	
'coronavirus':ab,ti	35,155
#24	
'2019-ncov':ab,ti	984
#23	
'corona':ab,ti	9,455
#22	
'pandemic':ab,ti	54,610
#21	
'covid-19':ab,ti	58,021
#20	
'covid 19':ab,ti	58,021
#19	
'coronavirinae'/exp	42,290
#18	
'pandemic'/exp	42,089
#17	
'coronavirus disease 2019'/exp	61,153
#16	
#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15	124,992
#15	
'cpd':ab,ti	7,891
#14	
'staff continuous professional development':ab,ti	0
#13	
'teacher continuous professional development':ab,ti	0
#12	
'faculty continuous professional development':ab,ti	0
#11	
'in service training':ab,ti	1,560
#10	
'inservice training':ab,ti	406
#9	
'staff training':ab,ti	4,812
#8	
'teacher training':ab,ti	977
#7	
'faculty training':ab,ti	256
#6	
'staff development':ab,ti	1,845
#5	
'teacher development':ab,ti	49
#4	
'faculty development':ab,ti	3,153
#3	
'in service training'/exp	16,306
#2	
'teacher training'/exp	490
#1	
'personnel management'/exp	92,331

Eric

("faculty development" OR "teacher development" OR "staff development" OR "faculty training" OR "teacher training" OR "staff training" OR "inservice training" OR "in service training" OR "faculty continuous professional development" OR "teacher continuous professional development" OR "staff continuous professional development" OR CPD) AND ("COVID 19" OR "COVID-19" OR "pandemic" OR corona OR "2019-nCoV" OR Coronavirus) AND ("medical education" OR "health professions education" OR "higher education")