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Educational Needs During COVID-19: MOOCs Experiences Among Global Family Physicians

COVID-19 Sırasında Eğitim İhtiyaçları: Küresel Aile Hekimlerinin KAÇD Deneyimleri

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ABSTRACT

Objective: Family physicians (FPs) worldwide have rallied to minimize the indirect effects of the disease. FPs are always on the frontline, "first in- last out", and took the lead in fighting the virus-caused disease in the acute phase of the coronavirus disease-2019 (COVID-19) epidemic. They played a vital role in examining, informing, and monitoring patients in primary care health centers, as well as in centers set up specifically for COVID-19. However, due to poor knowledge of COVID-19, which changes rapidly, FPs had to update their practical and theoretical knowledge about this novel coronavirus on a daily. Massive open online courses (MOOCs) are courses that use an online application and can reach the entire world. In this study, we aimed to determine the opinions and suggestions of FPs in meeting their educational needs related to COVID-19 through MOOCs and to create solutions.

Methods: The study was planned to be held with FPs who completed MOOCs training and completed the questionnaire. Due to international participation, the survey was conducted in English. Ethical approval was obtained from the Ethics Committee of İzmir University of Economics. Participation was entirely voluntary.

Results: Our study revealed that as the age of FPs increases, their confidence in their ability to treat patients also increases. FPs showed a positive attitude toward MOOCs as sources of continuous medical education and group activity ($p<0.005$). For the qualitative part of the study, three themes were significant: "i) opinions about concerns about changes of primary care, ii) views and attitudes about the information need and access to information, iii) attitudes and beliefs about MOOCs".

ÖZ

Amaç: Aile hekimleri (AH) dünya genelinde hastalığın dolaylı etkilerini en aza indirmek için seferber olmuştur. AH'leri her zaman ön saflarda yer almakta, "ilk giren-son çıkan" olarak hareket etmektedir ve koronavirüs hastalığı-2019 (COVID-19) salgınının akut evresinde virüs kaynaklı hastalıkla mücadelede öncülük etmiştir. Birinci basamak sağlık merkezlerinde ve COVID-19 için özel olarak kurulmuş merkezlerde hastaları muayene etme, bilgilendirme ve izleme konusunda hayati bir rol oynadılar. Ancak hızla değişen COVID-19 konusundaki yetersiz bilgi nedeniyle, AH'leri bu yeni koronavirüs hakkında pratik ve teorik bilgilerini günlük olarak güncellemek zorunda kalmıştır. Kitlesel açık çevrimiçi dersler (KAÇD), çevrimiçi bir uygulama kullanarak dünya çapında erişim sağlayan kurslardır. Bu çalışmada, AH'lerinin COVID-19 ile ilgili eğitim ihtiyaçlarını KAÇD'ler aracılığıyla karşılama konusundaki görüş ve önerilerini belirlemeyi ve çözüm önerileri geliştirmeyi amaçladık.

Yöntemler: Çalışma, KAÇD eğitimini tamamlamış ve anketi doldurmuş AH'lerle gerçekleştirilmek üzere planlanmıştır. Uluslararası katılım nedeniyle anket İngilizce olarak yapılmıştır. Etik onay, İzmir Ekonomi Üniversitesi Etik Kurulu'ndan alınmıştır. Katılım tamamen gönüllülük esasına dayanmaktadır.

Bulgular: Çalışmamız, AH'lerin yaşı arttıkça hastaları tedavi etme konusundaki güvenlerinin de arttığını ortaya koymuştur. AH'ler, KAÇD'lere sürekli tıp eğitimi ve grup etkinliği olarak olumlu bir yaklaşım sergilemişlerdir ($p<0,005$). Çalışmanın nitel kısmında üç tema öne çıkmıştır: "i) birinci basamak sağlık hizmetlerindeki değişikliklere dair endişeler hakkında görüşler, ii) bilgi ihtiyacı ve bilgiye erişim konusundaki görüşler ve tutumlar, iii) KAÇD'ler hakkında tutumlar ve inançlar".

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ABSTRACT

Conclusion: By completion of this course, FPs broadened their knowledge about COVID-19 management. This gave them capacity to save and improve the lives of countless patients infected by the novel coronavirus worldwide. Sharing their experiences with COVID-19 could be a way to cope with stress.

Keywords: Primary care, education, MOOCs, family physician

ÖZ

Sonuç: Bu kursun tamamlanmasıyla birlikte AH'ler, COVID-19 yönetimi konusunda bilgilerini genişletmişlerdir. Bu, onlara dünya genelinde yeni koronavirüsle enfekte olmuş sayısız hastanın hayatını kurtarma ve iyileştirme kapasitesi sağlamıştır. COVID-19 ile ilgili deneyimlerini paylaşmak, stresle başa çıkmanın bir yolu olabilir.

Anahtar Sözcükler: Birinci basamak, eğitim, KAÇD, aile hekimi

INTRODUCTION

The appearance of the novel coronavirus, which was later named severe acute respiratory syndrome coronavirus 2, was the beginning of one of the most serious challenges that our world faces in our lifetime. The coronavirus disease-2019 (COVID-19) outbreak was declared on January 30, 2020, by the Director-General of the World Health Organization (WHO) as public health (A Joint Statement on Tourism and COVID-19-UNWTO and WHO Call for Responsibility and Coordination) (1). At the time of this writing, in late November 2020, the number of COVID-19 cases was 61.5 million worldwide, with almost 1.5 million deaths recorded in 220 countries, areas and territories (2). The COVID-19 pandemic continues to spread around the world with an overwhelming loss of life, forcing healthcare systems to their limits and forcing more than 3 billion people to follow orders to stay at home (3). Since there is still no adequate treatment at present, this disease increases the number of hospital admissions and the need for intensive care units. Many countries have sought solutions to health system-related equipment-related problems by increasing the number of health workers and the amount of respiratory equipment.

The appearance of COVID-19 pandemic was the beginning of one of the most serious challenges facing our world in our lifetime. Many people mourned their loved ones, and those who survived COVID-19 struggled with the long-term effects of the disease. Although the medical community now has COVID-19 vaccines to prevent deaths from different variants, countries are still struggling with the new waves of COVID-19. FPs are always on the frontline, "first in-last out", and took the lead in fighting the virus-caused disease in the acute phase of the COVID-19 epidemic. They played a vital role in examining, informing, and monitoring patients in primary care health centers, as well as in centers specifically set up for COVID-19. At the same time, they were trying to maintain the follow-up of chronic diseases, deal with the emotional side of medicine, and ease the escalation of the COVID-19 pandemic into a syndemic (4,5). At the beginning of the pandemic, FPs were poorly informed by policy makers about their new roles and how to perform their continuing responsibilities (6). Moreover, primary care had a duty to transform rapidly and protect healthcare workers and patients while at the same time remaining connected to patients (7). Family physicians (FPs) around the world continue to rally to minimize the indirect effects of the disease.

In the early stages of the COVID-19 pandemic, the roles of FPs were ill-defined, but as time went on, their responsibility areas and roles became clearer. FPs were assigned to the hospitals to help meet inpatient COVID-19 admissions, before the administration of COVID-19 prevention measures, isolation, and protective measures were structured. Later on, FPs took on different tasks in the management of outpatient COVID-19 patients in primary care (8). They performed this by monitoring those with close contact with patients with confirmed or probable COVID-19, treating outpatients, and providing information about the importance of isolation. In this way, FPs helped slow the spread of the epidemic (6,9). However, due to difficulties in keeping pace with rapidly changing knowledge about COVID-19, FPs had to update their practical and theoretical knowledge about this novel coronavirus daily. Massive open online courses (MOOCs) are courses that use an online application to reach the entire world (10). These courses aim to increase the quality of education, facilitate access to information, and at the same time enhance the collaboration between doctors and institutes for the benefit of patients and public health (11-13).

In this study, we aimed to determine FPs'opinions about and suggestions for meeting their educational needs related to COVID-19 through MOOCs and to create solutions accordingly.

MATERIALS AND METHODS

Many participants from different countries and different age groups participated in the "Fighting COVID-19 with epidemiology: A Johns Hopkins Teach-Out by Johns Hopkins University" program in 2020, which created a worldwide community of FPs [Fighting COVID-19 with Epidemiology: A Johns Hopkins Teach-Out | Coursera (cited 2020 Nov 29). Available from: https://www.coursera.org/learn/covid19-epidemiology].

The course consisted of three hours of visual and written material. The program shared epidemiological information on epidemic identification, evaluation, epidemic investigation, and epidemic control. Participants followed the course material at their own pace in any time zone, and the discussion environment and information exchange were supported by administrators on the community-created information exchange platform. Calls to join the course were made on various social media platforms (Facebook, WhatsApp, Twitter) and 208 FPs participated. First, we applied the questionnaire, following which a qualitative research design was used to determine motivation for participation in the course, educational achievements, and views and suggestions, as well as training needs. The participants in this study were FPs who completed the MOOCs training and completed the questionnaire. Each participant followed the course material in their time zone. After the completion of the course, the survey was sent via email and WhatsApp messages. The questions were created by the researchers using both open-ended and multiple-choice questions.

Statistical Analysis

The SPSS 21.0 package was used to analyze the data. Parametric or nonparametric analysis methods were preferred for testing number and percentage values, normal distribution, and co-variance fit

for sociodemographic characteristics. The data analysis involved frequency and percentage distributions, chi-square analysis, and t-test in independent groups. In this study, p <0.05 was considered statistically significant, and the results were evaluated accordingly. The "thematic analysis" method developed by Braun and Clarke (14) in 2006 was used as the assessment method for the qualitative study. With the "investigator triangulation" method, it was planned to prevent possible side stiffness (15).

Ethical approval was given from the Ethics Committee of İzmir University of Economics to conduct the study (approval number: B.30.2.İEÜSB.0.05.05-20-073, date: 06.07.2020). FPs who participated were advised in the information provided that by completing and submitting the survey, they were indicating their consent to participate in the study.

RESULTS

Out of 208-FPs in the course, 51 participated in the online survey during the pandemic. Of the 51 participants, 28 were male (54.9%). The mean age of the participants was 37.12±7.557 (Table 1). Among the participants, 31 (60.8%) worked in a dedicated COVID clinic. The largest group of FPs, 21 (41.2%) had 6-10 years of work experience. Nineteen (37.3%) of our participants worked less than 48 hours/week. During their working hours, 13 (25.5%) attended 1-10 patients. We found that the countries most represented were India (27 (52.9%), followed by Türkiye 11 (21.6%), Spain 2 (2%), Mexico, 2 (2%) and the rest, 9 (18%) were from other countries (Table 2). The main way of hearing about the course was through colleagues 17 (33.3%), followed by social media 13 (25.5%), the WhatsApp group of the previous MOOCs 13 (25.5%), and coursera website 7 (13.7%). Most, 35 (68.6%) participants had never attended any MOOCs

Table 1. Descriptive characteristics of the FPs

Descriptive statistics					
	n	**Minimum**	**Maximum**	**Mean**	**SD**
Age	51	20	57	37.12	7.557
How do you feel about MOOC courses as part of continuous medical education?	51	4	10	8.02	1.667
How do you feel about MOOC courses as group activities?	51	4	10	8.06	1.593
Overall confidence	51	3.77	9.62	7.0415	1.22927

SD: Standard deviation, FPs: Family physicians, MOOC: Massive open online courses.

Table 2. Descriptive characteristics of FPs about workplaces

		Frequency	**Adjustedmean**	**95% CI**	**p-value**
Are you working at a dedicated COVID-19 clinic?	Yes	31 (60.8%)	7.096	(6.662, 7.530)	0.689721
	No	20 (39.2%)	6.957	(6.417, 7.498)	
Country	Angola	1 (2.0%)	8.918	(6.763, 11.073)	0.009001
	Bangladesh	1 (2.0%)	5.242	(3.012, 7.472)	
	France	1 (2.0%)	7.796	(5.770, 9.822)	
	India	27 (52.9%)	7.277	(6.881, 7.673)	
	Italy	1 (2.0%)	6.813	(4.797, 8.829)	
	Mexico	2 (3.9%)	8.948	(7.513, 10.383)	
	Nigeria	1 (2.0%)	6.417	(4.399, 8.436)	
	Pakistan	1 (2.0%)	5.907	(3.824, 7.989)	
	Peru	1 (2.0%)	8.346	(6.329, 10.363)	
	Spain	2 (2.0%)	7.153	(5.722, 8.585)	
	Türkiye	11 (21.6%)	5.994	(5.383, 6.604)	
	UAE	1 (2.0%)	6.972	(4.955, 8.989)	
	USA	1 (2.0%)	8.088	(5.979, 10.197)	
How did you hear about the course?	Colleagues	17 (33.3%)	6.684	(6.089, 7.279)	0.666168
	Coursera website	7 (13.7%)	7.322	(6.392, 8.253)	
	I don't know	1 (2.0%)	6.812	(4.376, 9.249)	
	Social media	13 (25.5%)	7.146	(6.468, 7.824)	
	WhatsApp group of the last MOOCs	13 (25.5%)	7.270	(6.591, 7.950)	

FPs: Family physicians, MOOC: Massive open online courses, COVID-19: Coronavirus disease-2019, CI: Confidence interval.

before the pandemic. More than half, 27 (52.9%), attended other MOOCs during the pandemic.

The majority, 38 (74.5%) considered that MOOCs has contributed to their primary care services during the pandemic by increasing their knowledge. The majority 28 (54.9%) of our participants reported never using antidepressants or anxiolytic drugs during the pandemic. Of the 51 participants, 11 (21.6%) had a history of psychiatry consultation. The 11 participants had used antidepressant/anxiolytic drugs at some time and, interestingly, 5 (9.8%) of them started taking them during the pandemic. We calculated the overall confidence as the cumulated mean score of all 26 questions on confidence. To test whether any statistical difference was present in the cumulated mean score among the different categories after controlling for the effect of age on overall confidence, we applied the one-way Analysis of covariance (ANCOVA) statistical test. Age can affect the overall confidence; thus, it is important to control for its effects. In this analysis, age was now considered a covariate in ANCOVA. In the next step, the 95% confidence interval of this adjusted mean and p-value were also calculated to test for any statistically significant difference in the adjusted mean score among different categories of independent variables (Table 3). We found that the p-value was greater than 0.05 for gender, implying no statistical difference in the

Table 3. Univariate ANCOVA (age adjusted)

		Frequency	Adjusted mean	95% CI	p-value
Gender	Female	23 (45.1%)	6.909	(6.403, 7.414)	0.482563
	Male	28 (54.9%)	7.151	(6.693, 7.608)	
Have you ever attended any MOOC events before?	No	35 (68.6%)	6.960	(6.553, 7.366)	0.475516
	Yes	16 (31.4%)	7.220	(6.618, 7.822)	
Did you attend more MOOCs during the pandemic?	No	24 (47.1%)	6.517	(6.068, 6.965)	0.002277
	Yes	27 (52.9%)	7.508	(7.085, 7.931)	
Is this course contributed to your primary care services during the pandemic?	No	13 (25.5%)	6.173	(5.570, 6.776)	0.001564
	Yes	38 (74.5%)	7.339	(6.986, 7.692)	
How many years do you have worked as a FP or general practitioner?	0-5 years	18 (35.3%)	6.369	(5.784, 6.955)	0.006481
	6-10 years	21 (41.2%)	6.836	(6.368, 7.303)	
	11-15 years	6 (11.8%)	7.800	(6.882, 8.718)	
	16-20 years	4 (7.8%)	8.718	(7.492, 9.943)	
	>21 years	2 (3.9%)	9.622	(7.897, 11.348)	
How many working hours have you been doing during COVID-19?	Less than 48 hours/ week	19 (37.3%)	7.452	(6.920, 7.984)	0.040066
	48 hours/week	15 (29.4%)	7.189	(6.600, 7.778)	
	More than 48 hours/ week	17 (33.3%)	6.452	(5.889, 7.015)	
How many patients are examined per day?	0	2 (3.9%)	7.972	(6.342, 9.601)	0.040275
	1-10	13 (25.5%)	7.481	(6.864, 8.098)	
	11-20	9 (17.6%)	6.712	(5.974, 7.450)	
	21-30	11 (21.6%)	7.415	(6.740, 8.089)	
	31-40	7 (13.7%)	7.112	(6.271, 7.954)	
	41-50	3 (5.9%)	6.591	(5.284, 7.897)	
	More than 50	6 (11.8%)	5.732	(4.823, 6.642)	
Did you ever use antidepressants or anxiolytic drugs?	I have used before COVID-19	11 (21.6%)	6.129	(5.462, 6.796)	0.023232
	I used it before COVID-19 and still use it	4 (7.8%)	7.135	(6.024, 8.246)	
	I have 5 (9.8%)	5 (9.8%)	7.942	(6.948, 8.937)	
	I haven't used any drugs	28 (54.9%)	7.268	(6.849, 7.686)	
	I don't want to answer	3 (5.9%)	6.650	(5.330, 7.971)	
Do you have any previous psychiatric treatment history?	No	40 (78.4%)	7.304	(6.958, 7.650)	0.001957
	Yes	11 (21.6%)	6.087	(5.426, 6.748)	

FPs: Family physicians, ANCOVA: Analysis of covariance, CI: Confidence interval, COVID-19: Coronavirus disease-2019.

adjusted mean scores. There was no statistically significant difference in whether the participant had attended any MOOCs before (p>0.05). However, there was a statistically significant difference (p=0.0022) in the participants' overall confidence regarding whether they had attended other MOOCs during the pandemic. In other words, the overall confidence of FPs increased after attending multiple MOOCs. Overall, this course boosted the confidence of FPs who provided primary care services during the pandemic (p=0.001). We also found that FPs' overall confidence had been significantly low for those attending 11-20 patients, increased for those attending 21-30 patients, and then started declining with increasing number of patients. We found that overall confidence was positively correlated with other variables (Table 4). This indicates that as the age increases, confidence about treating patients increases, and they have a more positive attitude toward MOOCs as sources of continuous medical education, as well as group activity (p<0.005). This can be explained by the theory of Kern et al. (16); "Significant personal growth was preceded by powerful experiences, supportive relationships, and introspection. These findings are in line with the theoretical and empirical research on adult learning and may have implications for medical education and practice. They need to be replicated in other physician groups." Self-assessment is also required to improve knowledge and behavior (17). As quantitative research is insufficient to discover deep meanings, the second part of the study was conducted as a qualitative phenomenology study. Phenomenology aims at gaining an in-depth understanding of the meaning or nature of our daily experiences, which, although familiar, may not be fully grasped (18,19).

Participants

The qualitative part of the research was conducted with 8 FPs who completed the course and agreed to participate. All participants worked in primary healthcare during the research period. Attention was paid to ensuring that the interview questions gave the same meaning after translation and were comprehensible. Interviews were conducted online with participants due to the different locations and pandemic conditions. Interviews were recorded with the participants' permissions.

Data Collection Process

Online face-to-face interviews were planned as a data collection tool to obtain the desired information in depth and to adapt to different and instantly changeable conditions (18,19).

After the literature review, the following five research questions were created within the framework of the study:

1. How do you think COVID-19 affects family medicine practice?

2. How has access to essential, reliable, and up-to-date information developed during the pandemic's changing conditions?

3. How did you decide to attend the MOOC?

4. What was your motivation to take the course offered by John Hopkins?

5. If you need regular information on topics other than COVID, how can an international organization like World Organization of Family Doctors (WONCA) help?

The interviews followed a semi-structured interview protocol, and the questions were related to the research questions of this study. Two researchers were present at the interviews: one asked the questions, and the other observed and took notes. The interviews were conducted between November and December 2020 and took between 20 and 30 minutes. The researchers asked questions, but no restrictions were placed on the participants' freedom to express themselves.

Data Analysis

The interview audio recordings were decoded verbatim. After the interviews were transcribed, codings were done by 3 researchers independently, then open codes agreed. Similar codes were divided into groups. The interconnected open codes were collected under "Sub-Themes". More comprehensive common titles, "Themes", were created by evaluating the sub-themes among themselves.

Table 4. Effect of age on MOOC perception

Spearman's correlations				
		Age	**How do you feel about MOOC courses as part of continuous medical education?**	**How do you feel about MOOC courses as group activities?**
Overall confidence	Correlation coefficient	0.367	0.530	0.409
	Sig. (2-tailed)	0.008087	0.000064	0.002910
	n	51	51	51

MOOC: Massive open online courses.

Table 5. Themes determined by the investigation

Theme 1	Opinions and concerns regarding changes in primary care
Theme 2	Views and attitudes about information needs and access to information
Theme 3	Attitudes and beliefs about MOOCs

MOOC: Massive open online courses.

Thematic analysis was used to analyze the data. Synonyms were used for anonymity. Analyses were performed manually rather than through a software. The evaluation of the results was carried out within the framework of the themes.

Results

In the qualitative part of the study, eight participants (who agreed to participate and could spare time) were interviewed. From the created codes, the themes represented were reached. These are listed in the Table 5:

The feeling of loneliness was included as an open code. It was mentioned separately in all themes by most participants. Loneliness was repeatedly expressed in different contexts, such as in a struggle with an unknown situation, accessing information, and communication with colleagues.

Theme 1: Opinions and concerns about changes in primary care:

The sub-headings comprising this theme can be listed as follows:

1. Primary care applications and differences in implementation

2. Disruptions due to contamination anxiety

a. Vaccination

b. Chronic disease follow-up

c. Scans

3. Anxiety associated with an unknown disease: confidence

All FPs stated that there were changes in the content of health services they generally offered. They described the changes in the number of outpatient clinics in the context of patient avoidance due to concerns about contamination and the variability in information and practices.

> I2: There have been constant changes in department by department; the number of patients first decreased and then increased.
>
> I3: .. it has a profound effect on outpatient services.
>
> I4: There was a new process every time, there were sudden changes. It is a period of confusion, and we cannot sit still.

Participants stated that some of their patients hesitated to visit the clinic due to contamination concerns and that they experienced problems during routine healthy child follow-up and vaccination, cancer screening, and chronic disease follow-up.

> I1: "They come with suspicion during pregnancy and during infant and child follow-ups. Will I get COVID from inside?"
>
> I2: "The problem with early diagnostic tests, especially cancer screening, seems to persist."
>
> I2: "… they especially refused to come for vaccines, especially to follow-up on chronic diseases."
>
> I3: "We had to completely postpone or cancel our activities for preventive medicine"
>
> I7: "Where did the other diseases go? What were we doing before COVID-19?"

In some interviews, statements were made about the anxiety of making mistakes in the differential diagnosis, treatment, and management of a new and unknown disease. At the same time, statements indicating malpractise concerns and a lack of confidence were encountered due to the changing 1st level operation, new job descriptions, and additional jobs. There are reports of inadequacies in self-confidence due to uncertainty caused by the lack of clear information.

> I1: "...we had serious difficulties in diagnosis and treatment. We're afraid of malpractise. I wonder if it was COVID or not, and I was worried if I gave another treatment".
>
> I2: "I needed to look over and over for drug interactions to see if I was skipping something."
>
> I3: "…who to refer and who to test remains unclear." We were dealing with more complex cases."
>
> I7: "…this is totally different from the way we understood primary care at the first days… but now it became usual …"

It was found that there were changes in the patient-physician relationship and communication due to the arrangements made in the polyclinics due to the preventive measures for the disease and the changes in the duration and content of the interviews with patients.

> I2: "Unfortunately, it was not possible to carry out that standard meeting… so it was not possible to continue our old communication."
>
> I3: "We work in an unfamiliar environment, not specific to our own discipline."
>
> I7: "…the position of the table and the patients, etc, everything has changed."
>
> I8: "I'm now working in a new place and so I need to see my patients' faces to know them and also the patients…but we all have masks"

Theme 2: Views and attitudes about the need for and access to information

The sub-themes listed below were used in the formation of this theme:

1. Lack/need for information

2. Variability in knowledge

3. Accumulation of knowledge

4. Methods to access information

In the interviews, participants generally expressed negative beliefs about their sense of competence. It was found that respondents did not feel sufficiently informed about disease prevention when answering questions from patients and treatment schemes.

I1: "I questioned my own suggestions, I was hesitant to say something to the patients, because the disease was completely unknown."

I2: "What are the symptoms that will alert us, what should we do for protection, how should we strengthen immunity?"

I3: "I followed the ministry's updates, but they did not meet the needs in the field. Conditions are so dynamic!"

I4: "When it first started in China, I was experiencing anxiety even before we had a single case because there was an object approaching."

I6: "…the ministry and associations had informed us first… now everything is changing quickly, chaotic"

All participants stated in their interviews that no specific training was given, especially to primary healthcare workers.

I1: "the ministry of health did not have a training for us"

I2: "no guide was published directly for the primary level; no direct training was provided to us."

I3: "published studies with a relatively high level of evidence were not primary care studies. It was the 2nd and 3rd step studies; there isn't an adequate, satisfactory answer in the primary care literature yet."

I4: "We did not receive any special training for FPs, except for the nationwide published guidelines."

I6: "No guideline or education was made during the early times for the primary care"

I8. "No education was carried out for the primary care associations and some universities performed how to use PPE, etc, but not more than this"

Participants expressed a variety of feelings and thoughts about their experience of a constant change in the information published throughout the process. Because of this variability, they felt pressure to seek out reliable information and stay up-to-date.

I1: "The resources were frequently updated; it was difficult to follow. The content of the treatment, the scheme of application, the reports to be given to the patients, and the number of filiations were constantly changing."

I2: "There was probably a lot of information pollution".

I3: "Gaps remain constantly in the process of monitoring patients."

I4: "It has transformed, from the thought of reading what I find relevant, to a selection period of thinking about which is correct information, and which one I will trust."

I7: "There were lots of information and I was trying to listen to them all but now I'm only looking for what I need to learn"

Participants were looking for alternative ways to meet their perceived need for information to manage a new disease process. They stated that they encountered many different trainings and sources of information and that they made choices by determining their needs. Among the ways to access information in interviews. they mentioned many different sources, such as online training sessions of professional organizations, webinars, and university messaging groups. Messaging groups of universities and professional organizations, where colleagues share information, were the most frequently used means of access to information.

I1: "…current articles, article sharing on social media by infection teachers I trust"

I2: "I was attending the zoom meetings and google meetings when we were locked down for the first time. There were webinars supported by pharmaceutical companies. Our trade associations had their training."

I3: "Online training is very popular in this period. ...associations and professional organizations have publications."

I4: "I followed the teachers I trusted, participated in sharing groups of different professions, from pulmonology and virology."

I8: "Colleague groups are more effective and quicker"

Theme 3: Attitudes and beliefs about MOOCs:

The following subthemes were used to create this theme:

1. Determination of needs
2. Motivation to join the MOOCs
3. Time
4. Post-MOOCs evaluations
5. International interaction

This study examines the course, "Fighting COVID-19 with Epidemiology: A Johns Hopkins Teach-Out by Johns Hopkins University", and the reasons for participants' enrollment, including a trusted colleague's recommendation, and testing their own limits.

I1: "I also trust her/his medical knowledge on this subject and because it is a doctor's recommendation that I like. I agreed with the priorities of the proposer and whether she/he knew me or not, thinking that the training he offered me would be useful."

I3: "I learned through the communication network of the university where I specialized. I currently have a field of activity in rural medicine. I am now at the center of the organization, in a position at its core. So, I thought it might be useful to me."

I4: "After a little bit of quarantine, we saw that everything worked online. I also joined in to feel closer to such new methods."

I7: "Now working online is a choice, so is education, too. Epidemiology is also a topic of interest to learn together."

I8: "I have learned from my colleagues and thought could be useful."

The interviewees stated that in the process of deciding to enroll in MOOCs training, they mostly considered their current information needs. They stated that they would consider the effect of the language of instruction as a constraint if not in their native language or in English, or if it was difficult to understand. At the end of these training sessions, there were statements that certification was not expected while working in the field, but perhaps for academic

studies or at the end of the training, and if the certificate gives the chance to become with more improved skills, it could make sense. They stated that they did not decide based on salary alone and that they could pay if they needed education, unless it involved very high amounts.

I1: "I determine my needs. If there is something that I am looking for and I need to improve, I do not hesitate to pay, but if not, I prefer the free one. I may be more motivated to attend and finish a paid course; "like registering to the gym and giving money to do sports."

I2: "Do I need training on this topic? Is there a need for my patients? The certificate is not very important; it is more important to be informed."

I3: "My decision to participate is not limited only by the fee; it is important to improve myself, whether or not I will use it in my clinical activities. Certification is effective in my decision-making, and the promise of certification makes us think that the course will be more serious and will yield meaningful results."

I4: "If it's a language I don't know at all, it affects my decision."

I6: "Most of the courses are in English, so there is no problem for me. If it was in another, then maybe a problem. The knowledge that I could use is more important than certificate."

I8: "I can speak in many languages you know, so the language is not a problem for me. A certificate is important and to learn is important too."

One of the main points that the participants paid attention to while deciding on all other trainings and MOOCs trainings was "time."

I1: "There is too much training, I have difficulty keeping up with them."

I2: "Do I need this training; do I have free time?"

I3: "I participate according to my daily practice needs and personal agenda."

I7: "If I had time, I would attend the training programs."

When John Hopkins evaluated the education, after participants' epidemiology training, feedback statements stated that it formed a knowledge base, but participants could not fully benefit from it in the daily practice of family medicine, or that it was very useful in jobs such as filiation.

I1: "I can say that it is more useful in terms of general knowledge development than practice." It laid the foundation."

I2: "I attended this training because I had not participated in this type of training before, because I was directed to attend the course, and it was a period when I was thinking of preparing myself during a febrile period of my illness."

I3: "I found it largely able to meet my expectations regarding its content. In particular, it created data that provide new perspectives. The ideas that the course provided in planning quarantine decisions where I worked enabled me to recover quickly."

I4: "The information you get from here does not immediately come to mind in daily practice. There are seated molds."

I8: "Of course, I used the knowledge that I learnt from the course, but not all of it."

The physicians interviewed expressed positive feelings and thoughts about international interactions in many primary care practices, in which no cultural differences were observed. This was believed to have a positive effect on dealing with feelings of loneliness. Their views revealed that the pandemic was an international situation and that interaction facilitated knowledge and struggle. They expressed that they expect continuous, up-to-date, and beneficial trainings at the primary level from international organizations.

I1: "For those who do not have the opportunity to participate in the trainings, the importance of international institutions increases even more, they can support them in providing a participatory environment and sharing international experiences."

I2: "We expect organizations such as WONCA to meet our needs for information and continue to publish updated information, even if we do not request it. We can sometimes feel lonely constantly, both in the field and for active disease."

I3: "Not a specific area in primary care, I have to somehow accept anyone who enters the door. In particular, the activities of the sub-working groups are important for producing more practical guides.

I4: "Our problems are very dynamic, changeable and urgent. Postgraduate training is very important for our discipline".

I5: "We need regular information on issues that we encounter constantly and rarely come across in practice. I think WONCA can lay the groundwork for a more international platform for a common learning network."

I6: "It's up to my daily practice needs.... now time is limited so summaries, algorithms could be more useful"

I7: "WONCA has more opportunities to reach FPs all over the world… sub working groups are useful too, webinars are made…"

DISCUSSION

The feeling of loneliness was remarkably common while analysing the interviews. For this reason, more in-depth information on this subject can be obtained by designing separate qualitative studies that deal with the relationship between loneliness and pandemics, education, or changing situations. Physicians were working outside the conditions they are accustomed to and in areas where it takes time for knowledge to accumulate. It was thought that this might have caused them a feeling of inadequacy. It is interesting that FPs who are working with 21-30 patients were more likely to attend the course. Appropriate workload could be a factor in attending courses; therefore, it is important to define educational needs and attain essential knowledge. Our research revealed that pandemics had a positive effect on attending online courses, similar to other studies (20,21).

Although countries have diverse strategies, the need for well-structured primary care has been revealed among not only undeveloped countries but also developed countries. The "lockdowns" may reduce the health burden of direct morbidity and mortality from COVID-19, but the new burden "economic status" has added and syndemy has begun (22). Apart from the topics discussed under these headings, G3 drew attention to a different aspect of the disease: COVID-19 causes stigma, and therefore, patients

are hesitant to apply for a diagnosis, which becomes difficult. By completion of this course, FPs broadened their knowledge about COVID-19 management. This enabled them to save and improve the lives of countless patients infected by the novel coronavirus worldwide. Sharing their experiences with COVID-19 could be a way to cope with stress.

Ethics

Ethics Committee Approval: Ethical approval was given from the Ethics Committee of İzmir University of Economics to conduct the study (approval number: B.30.2.İEÜSB.0.05.05-20-073, date: 06.07.2020).

Informed Consent: FPs who participated were advised in the information provided that by completing and submitting the survey, they were indicating their consent to participate in the study.

Authorship Contributions

Concept: Ö.G., H.S.K., S.B., M.B., M.I.S., Design: Ö.G., H.S.K., S.B., M.B., M.I.S., Data Collection or Processing: Ö.G., H.S.K., S.B., M.B., M.I.S., Analysis or Interpretation: Ö.G., H.S.K., S.B., M.B., M.I.S., Literature Search: Ö.G., H.S.K., S.B., M.B., M.I.S., Writing: Ö.G., H.S.K., S.B., M.B., M.I.S.

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