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COVID-19 Experiences of Diabetes Patients: A Qualitative Study

Diyabet Hastalarının COVID-19 Deneyimleri: Kalitatif Çalışma

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ABSTRACT Objective: Coronavirus disease-2019 (COVID-19) has become the most important pandemic affecting humanity in the last 100 years. Determining the experiences and needs of individuals with diabetes during the pandemic process and identifying the situations that prevent diabetes management will provide the basis for producing solutions in this and the following crisis periods. In this study, it was conducted to determine how the COVID-19 pandemic affects individuals with diabetes, their needs, and diabetes management. **Material and Methods:** The study is descriptive qualitative research. After data saturation, the final sample consisted of a total of 25 individuals with diabetes. Interviews were conducted under the guidance of standardized questions prepared by the researchers and voice recordings of the participants were taken. Results: In the analysis of the research, descriptive analysis was carried out by using the inductive method. The main themes and sub-themes obtained in the analysis of the data; emotions experienced by individuals with diabetes during the COVID-19 pandemic process (fear, anxiety et. al.), physical/psychosocial problems of individuals with diabetes (decreased physical activity, deterioration in sleep patterns, weight gain, mental stress et.al.), met/unmet physical and psychosocial needs/expectations of individuals with diabetes during the pandemic process (access to medical supplies, home health services, tele-health et.al.), diabetes management (glycemic variability, frequency of glucometer use et.al.). **Conclusion:** The study revealed that individuals with diabetes have physical, psychological, social problems and unmet needs during the pandemic process. It also shows the power of health services and the aspects that need to be structured.

Keywords: COVID-19; pandemic; diabetes management; qualitative; experience

ÖZET Amaç: Koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)], son 100 yılda insanlığı etkileyen en önemli pandemi hâline gelmiştir. Diyabetli bireylerin pandemi sürecindeki deneyimlerini, ihtiyaçlarını belirlemek ve diyabet yönetimine engel olan durumları saptamak, bu ve bundan sonraki kriz dönemlerinde çözüm üretilebilmesine temel sağlayacaktır. Bu çalışma, COVID-19 pandemisinin diyabetli bireyleri nasıl etkilediğini, ihtiyaçlarını, diyabet yönetimlerini belirlemek amacıyla yapılmıştır. **Gereç ve Yöntemler:** Çalışma, tanımlayıcı niteliksel bir araştırmadır. Veri doygunluğundan sonra son örneklemi toplam 25 diyabetli birey oluşturmuştur. Görüşmeler, araştırmacılar tarafından hazırlanan standardize sorular rehberliğinde yürütülmüş ve katılımcıların ses kayıtları alınmıştır. **Bulgular:** Araştırmanın analizinde, tümevarımsal yöntem kullanılarak betimsel analiz yapılmıştır. Verilerin analizinde elde edilen ana temalar ve alt temalar; COVID-19 pandemi sürecinde diyabetli bireylerin yaşadığı duygular (korku, endişe vb.), diyabetli bireylerin fiziksel/psikososyal sorunları (fiziksel aktivitede azalma, uyku düzeninde bozulma, kilo artışı, zihinsel stres vb.), diyabetli bireylerin pandemi sürecinde karşılanan/karşılanmayan fiziksel ve psi kososyal ihtiyaçları/beklentileri (tıbbi malzemeye erişim, evde sağlık hizmetleri, telesağlık vb.), diyabet yönetimi (glisemik dalgalanma, gli- kometre kullanım sıklığı vb.) olarak belirlenmiştir. **Sonuç:** Çalışma, diyabetli bireylerin pandemi sürecinde yaşadıkları fiziksel, psikolojik, sosyal sorunlarının ve karşılanmayan ihtiyaçlarının olduğunu ortaya çıkarmıştır. Ayrıca sağlık hizmetlerinin gücünün ve yapılandırılması gereken yönleri olduğunu göstermektedir.

Anahtar Kelimeler: COVID-19; pandemi; diyabet yönetimi; kalitatif; deneyim

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Coronavirus disease-2019 (COVID-19), which has become one of the most important diseases affecting humanity in the last century, has affected almost all life.[1-3] The relationship between diabetes, a chronic, pandemic, non-communicable disease, and COVID-19, the evidence on how it affects individuals with diabetes are limited, but the evidence continues to emerge.[4] Diabetes can negatively change the natural course of COVID-19. It is stated in the literature that individuals with diabetes have an increased risk of hospitalization in the intensive care unit due to COVID- 19, the need for mechanical ventilators, and the risk of mortality. In addition, there are other also risk factors (advanced age, cardiovascular disease, obesity, etc.) that cause worsening of the clinical prognosis of COVID-19 in individuals with Type 2 diabetes. In terms of comorbidities and clinical factors, the number of hospitalizations for hypoglycemia, diabetic ketoacidosis, and other causes over the past 5 years is associated with fatal or intensive care unit-treated COVID-19. In addition, factors such as increased hemoglobin A1c (HbA1c) level, retinopathy, and smoking history are significantly associated with the development of fatal or intensive care unit-treated COVID-19. It has been reported that the more diabetes medication used in the last 3 years, the higher the risk of death. In particular, the group using insulin or sulfonylureas was associated with higher risk.[5]

In a study conducted in England, it was found that the mortality rate increased in individuals with Type 1 and Type 2 diabetes during the COVID-19 pandemic. The increased mortality associated with COVID-19 has not only been associated with cardiovascular and renal complications of diabetes but also independently with glycemic control and body mass index. Additionally, COVID-19-related mortality was increased in people with HbA1c of 86 mmol/mol (10.0%) and higher, compared with people with HbA1c of 48-53 mmol/mol (6.5%-7.0%).[6] These findings reveal the relationship between 2 pandemics (COVID-19 and Type 2 diabetes), and how important and priority it is to protect individuals with diabetes from COVID-19. Most importantly, all these findings emphasize the importance of keeping the metabolic parameters of individuals with diabetes at an optimal level during the COVID-19 process.[7] However, compliance with chronic care access, medication management, nutrition, and exercise guidelines has become even more difficult for individuals with diabetes during the pandemic. For this reason, protecting diabetic patients from COVID-19, helping them to provide effective diabetes management in this process, identifying their needs, and meeting their needs will play a key role in the good management of the process. Proper glycemic control is even more important during the COVID-19 outbreak, as it can reduce the severity of COVID-19 infection.[8-11]

Individuals with diabetes have daily concerns about diabetes management and glycemic control as well during the normal process. They fear the complications of diabetes, as well as hypoglycemia and hyperglycemia. These concerns in addition, along with the fear of contagion caused by COVID-19 during the pandemic, are predicted to have a negative impact on the self-management abilities of people with diabetes. In this process, individuals with diabetes did not leave the house, like other chronic patients, and could not have their routine and emergency check-ups. It is important to understand the impact of the epidemic on individuals with diabetes, identify their needs and problems, and reveal the reasons that prevent diabetes from being managed effectively to enable them to find solutions to the problems they have experienced during this difficult process.

MATERIAL AND METHODS

This study, it was determined the experiences and needs of diabetes patients in the COVID-19 epidemic. The study was descriptive qualitative research.

RESEARCH QUESTIONS

What are the emotions and experiences of individuals with diabetes in the COVID-19 pandemic?

What are the effects (physical, psychological, social) and needs of the COVID-19 epidemic on individuals with diabetes?

The population of the research consists of individuals with diabetes registered in the system of a hospital in İzmir. Diabetes individuals registered in the hospital were selected by the purposive sampling method, and 25 individuals with diabetes were included in the study. The data reached saturation in 22 individuals. Interviews were continued with 3 individuals to control for data saturation.

INCLUSION AND EXCLUSION CRITERIA FOR THE STUDY

Individuals with diabetes who have been diagnosed with Type 2 diabetes mellitus for at least 1 year, absence of visual and auditory problems, be over 20 years old, and must agree to participate in the study. Individuals outside this group were excluded from the study.

As a data collection tool in the research, a semi-structured interview questionnaire was used as it allows asking in-depth questions on a subject and asking questions again when the answer is not clear. The created questionnaire consists of 2 parts. The first part includes questions about demographic information and diabetes history, and the 2nd part includes questions specific to experiences and needs related to the COVID-19 process. The interview questions were prepared with care not to direct the participants. The interviews lasted an average of 20-30 minutes. During the interviews, standardized questions prepared by the researchers were asked and voice recordings of the participants were taken. The opinions of the participants were coded without giving their names, based on confidentiality. The individuals participating in the study were not infected with COVID-19 during the data collection process. Some individuals had reported being infected with COVID-19 before the data collection process.

STATISTICAL ANALYSIS

Qualitative content analysis method was used in data analysis. Researchers made content analysis independently and each researcher created a code list. The researchers discussed the codes and themes they created until they reached a consensus. The original form of the collected data was adhered to while the data were being dumped. The validity of the originality was increased by quoting the participant statements directly. In content analysis, the data were analyzed in 4 stages: (1) coding the data, (2) finding the codes, categories, and themes, (3) organizing the codes, categories, and themes, and (4) defining and interpreting the findings. Descriptive analysis will also consist of a 4-stage process.

Validity-Reliability of the Study

Kappa analysis was used to analyze whether the expressions of individuals with diabetes met the themes. After a few of the expressions under the themes were chosen randomly, they were sent to experts in their fields (academics, specialist nurses). The specialist was asked to match the patient's expressions with the themes. As a result of the Kappa analysis, it was determined that there was an excellent level of agreement ($k=1$, $p<0.001$).

Internal Validity (Credibility)

Prolonged involvement, deep-focused interviews, and member checking were used to reveal the internal validity of the findings. The duration of the research data collection varies between a mean of 30 minutes, and with long-term interviews, an environment of trust was created and more sincere/reliable answers were obtained from individuals with diabetes. Under the purpose of the study, the interviews were terminated when the data reached the saturation point. The researcher who conducted the interview took the participant's confirmation to verify the information he obtained during the data collection process. Two experts experienced in qualitative research were asked to examine all aspects of the study.

External Validity (Transferability)

The data were transferred without adding comments. Purposive sampling was used.

Internal Reliability (Consistency)

The semi-structured interview form was prepared in line with the literature. The researcher who collected

the data was consistent with all processes of the study. The researcher used the same interview form and voice recorder in all interviews.

External Reliability (Confirmability)

The researchers worked independently of each other in the creation of the data collection form and the analysis of the data. Afterward, a meeting was held and the themes were clarified. After the findings were finalized, the compatibility of categories and themes was examined by 2 experts. The article has been checked against the SRQR list.[12-14]

This study was conducted under the principles of the Declaration of Helsinki. Permission was obtained from the Ministry of Health Scientific Research Platform. Approval for this study was obtained from the Ethics Committee of Dokuz Eylül University (date: September 21, 2020, no: 2020/22-25). Informed consent was obtained from the individuals participating in the study.

RESULTS

In this study, the experiences, and needs of individuals with diabetes during the pandemic process were evaluated and 4 main themes were reached in this direction. The findings of the study are summarized under the headings of "Physical and psychosocial problems experienced by individuals with diabetes", "met/unmet physical and psychosocial needs", "emotions experienced by individuals with diabetes", and "diabetes management."

It was determined that 76% of the individuals who participated in the study were determined were women and 40% were between the ages of 50-59. It has been determined that 72% of individuals with diabetes are married, 44% live with their partner and children, 44% are primary school graduates and 48% do not work. It was determined that 76% of the individuals used oral antidiabetic drugs and insulin together for treating diabetes, and 48% of them had been diagnosed with diabetes for 11-20 years (Table 1).

Individuals with diabetes who participated in this study feared catching the virus like every individual in society during the pandemic process, and they said that they were worried that they would experience the COVID-19 disease more severely. They stated that the restrictions in the pandemic process also caused distress (Table 2).

Individuals with diabetes reported that their physical activities decreased during the pandemic process, that they experienced an increase in the number of meals, and that they had a weight gain problem due to this. Individuals who had to plan every moment of their lives for diabetes stated that in addition, they had to cope with the stress of the virus in their minds during the pandemic process. Elderly individuals reported that they experienced an increase in joint pain, especially with a decrease in physical activity. Individuals participating in the study reported that their sleep patterns changed due to both the stress experienced and the change in the dynamics of family members (Table 3).

All individuals with diabetes who participated in the study reported that they had no difficulties accessing medical supplies. With the extension of the period of the prescribed drugs, they could obtain the drugs directly from the pharmacy without going to the hospital. They stated that online meetings with family and friends during the pandemic made it comfortable and felt good, and it was good for the distress of the pandemic process. Individuals stated that they expected to receive online consultancy services from health professionals during the pandemic and to receive laboratory services at home without going to the hospital. During the pandemic, individuals with diabetes reported that they had difficulty in achieving glycemic control, increased the frequency of acute complications, and had difficulties complying with the nutritional recommendations of health professionals. In addition, individuals with diabetes stated that they experienced a decrease in the frequency of blood glucose measurement and the only positive effect of this pandemic process was a decrease in the frequency of infection due to paying greater attention to hygiene (Table 4).

TABLE 1: Descriptive characteristics of individuals with diabetes.

Variable		n=25	%
Gender	Female	19	76%
	Male	6	24%
Age	30-39	1	4%
	40-49	4	16%
	50-59	10	40%
	60-69	7	28%
	70 and above	3	12%
Marital status	Married	18	72%
	Single	7	28%
People living with	Partner	7	28%
	Partner+children	11	44%
	Alone	5	20%
	Other (friend…)	2	8%
Educational status	Literate	1	4%
	Primary school	11	44%
	Middle School	1	4%
	High school	6	24%
	University	6	24%
Working status	Working	3	12%
	Not working	12	48%
	Retired	10	40%
Diabetes treatment	Oral antidiabetic	2	8%
	Insulin	4	16%
	Oral antidiabetic+insulin	19	76%
Diabetes diagnosis year	1-10 years	8	32%
	11-20 years	12	48%
	21-30 years	4	16%
	31 years and above	1	4%

TABLE 2: Emotions experienced.

Theme	Subtheme	Quotations
Emotions experienced	Fear	"We, as individuals with diabetes, were very afraid of being infected with a virus during this process, like everyone else." (D5) "I can't go out because I'm afraid of getting a virus." (D17)
	Worry/anxiety	"My anxiety has increased since I learned that individuals with diabetes are more severely ill." (D8) "I feel bad about the possibility that a member of my family will have this disease and his condition will worsen" (D21) "No matter how much I try not to leave the house, someone in my family can carry the virus to me." (D14)
	Feeling of boredom/ depression	"We are going through a difficult time and sometimes I feel overwhelmed." (D6) "I miss our old life so much, how much has changed… I hope the pandemic will end as soon as possible, my soul is bored." (D10)
	Mental stress	"There is a virus at the center of our lives, we had to plan everything accordingly… We think about being protected from it at every moment… It is a very tiring situation."(D24)

TABLE 3: Physical and social problems experienced.

Theme	Subtheme	Quotations
Physical and social problems experienced	Decreased physical activity/immobility	"The thing that affected me the most in this process is the decrease in my physical activity. I have difficulties in balancing my blood sugar due to inactivity" (D22
	Joint pains	"I hardly ever go out because I am afraid of catching a virus. I am experiencing stiffness and pain in my joints and especially in my legs. As my pain increases, I experience increases in my blood sugar."(D25)
	Disruption in sleep patterns	"My sleeping pattern has changed a lot. I can't sleep at night and, I wake up late because I go to bed in the morning, this caused my insulin and main meal times to change."(D1)
	Increase in number of meals	"Since I am always at home, I tend to eat when I get bored" "Since all family members are at home, there has been an increase in the consumption of pastry/ snacks at home. While I used to not consume these foods in the past, I could not help myself in this process."(D3)
	Weight gain	"I used to go for a walk, now I reduced my activities a lot because I was afraid of the virus, and I gained weight because I couldn't follow my diet."(D7)
	Decreased social activity and social interaction	"I think it was the decrease in social activity that impressed me the most… We would often meet and talk to our friends. We were talking to them, chatting, feeling good… Unfortunately, we were far away from all our loved ones…" "We had to have limited contact with our children and family. We were supporting them, taking care of our grandchildren, but our routines have changed due to the virus."(D2)

DISCUSSION

The study provides an awareness of the experiences, expectations, and needs of individuals with diabetes during the pandemic process. It also reveals the power of health services and the aspects that need to be structured. Additionally, this study provides an idea for planning (e.g., telemedicine) that needs to be transformed/improved in healthcare. When we examined the literature on this subject, it was reported in a study conducted by European Diabetes Specialist nurses that diabetes patients experienced an increase in hyperglycemia, hospitalization, foot complications, depression, anxiety, and diabetes distress during the pandemic process. They also reported a severe disruption to diabetes services during the COVID-19 pandemic.[15] They reported that the frequency of hyperglycemia increased in the individuals participating in this study in parallel with the study of the European Diabetes Nurses.

It was stated that the quarantine implemented during the COVID-19 epidemic in northern India also affected the lifestyle and medical problems of individuals with Type 2 diabetes. It was reported that after 45 days after the start of quarantine, carbohydrate consumption and snacking frequency of individuals with diabetes (n=150) increased by 21% and 23%, respectively, and 27% of patients had an increase in fruit consumption. It was determined that exercise time was shortened in 42% of the patients and weight gain occurred in 19%. The frequency of self-monitoring of blood glucose decreased in 23% of the patients. Mental stress was detected in

TABLE 4: Physical and psychosocial needs/expectations and diabetes management.

Theme	Subtheme	Quotations
Physical and psychosocial needs/expectations	Access to medical supplies	"During the pandemic, I did not have any difficulties in accessing drugs and materials such as diabetes medications, blood glucose meter sticks" (D11)
	Health check	"I avoided having a health check because I was afraid of catching a virus during the pandemic process." (D16)
	Home health services	"I want home health care for diabetics." (D20)
	Tele health	"When I had questions, I was able to consult my doctor by texting without going to the hospital. It was helpful to get counseling in this way." "I could be called to get detailed information about health services. I would like to be given directions to regulate my sugar." (D18)
	Online communication	"It felt good to see my loved ones with video calls during this difficult process." (D23)
	Expectation of psychosocial support	"I think I can manage the pandemic process psychosocially with the support of my family for now." (D23)
Diabetes management	Glycemic variability	"Compared to the pre-pandemic period, I have a hard time keeping my blood sugar under control. Within the same day, my blood sugar drops 24 mg/dL and rises above 300 mg/dL."(9)
	Increase in the frequency of acute complications	"I am experiencing an increase in the frequency of hyperglycemia and hypoglycemia during the pandemic process."(D13)
	Diet compliance	"During our stay at home, I had difficulty following nutritional recommendations." "With the change in the daily routines of family members, our meal times have changed, and my routine has also been disrupted." "During the pandemic process, my frequency of snacking increased and I experienced weight gain." (D4)
	Change in blood glucose measurement frequency	"During the pandemic process, I reduced my blood glucose measurement frequency." "I think I reduced my blood glucose measurement frequency because everyone was at home and I could notice the symptoms that occur when my blood sugar rises and falls." "I haven't checked my blood sugar in a long time." (D19)
	Reduction in infection frequency	"I think the only positive effect of the pandemic process is that I don't have an upper respiratory tract infection due to my careful attention to mask and hygiene rules. I had difficulty in controlling my blood sugar due to the infections I had in previous years." (D7)

87% of the patients. In 91% of the patients, there was no problem in the supply of drugs and insulin. Information about telemedicine was available in 69% of patients, and the majority (92%) of these patients preferred video consultation.[16] The individuals participating in this study also reported that they experienced an increase in the frequency of nutrition and junk food consumption during the pandemic process. It was determined that their physical activities decrease in because they were worried about virus transmission. In addition, it was determined that they reduced the frequency of blood glucose measurement and did not have any problems with drug supply. The findings of this study are quite in line with the study conducted in North India. According to a study examining the change in blood sugar levels of individuals with Type 2 diabetes and those greater than 65 years of age during the COVID-19 epidemic, it was determined that individuals had increased fasting blood glucose levels.[17] It was detected that the individuals participating in this study also experienced glycemic fluctuations. The individuals participating in this study did not report any finding that they had problems with food supply, but they reported changes in their eating habits due to the deterioration in their sleep patterns and the stress they experienced. Additionally, due to the fear of contamination, the rate of benefiting from health services decreased and they continued their diabetes management with the same treatment protocol. This situation made the glycemic control of individuals in need of change in treatment even made it more difficult. Additionally, individuals reported that they were worried because they could not have a health check-up.

The COVID-19 pandemic is recognized as an important risk factor for the psychological health of all individuals in society. It has been reported that the anxiety of constantly catching the virus, the stress of being locked at home, and the condition of not being able to meet their relatives and loved ones, affect the psychological health of the masses significantly. Additionally, it was stated that the sudden and almost continuous flow of news about the epidemic causes everyone to worry. With the addition of the COVID-19 stressor to the lives of individuals living with an important stressor such as diabetes, the situations they should manage have increased.[18] In addition to factors such as the fear of contamination experienced by almost all individuals in society, individuals in this study reported that they were worried about having a severe illness if they were infected due to diabetes. In addition to the effect of the stress and worries experienced on the glucose level, the sadness caused by being away from family and friends because of the fear of contagion from the close environment has a negative effect on the coping processes.

In a study conducted in Denmark, it was determined that more than half of the individuals with diabetes were worried about being overly affected if they were infected with COVID-19.[19] In a study among individuals with Type 2 diabetes in the Dutch, 47% reported that their physical activity did not change during the social lockdown, 27% reported that they were less active, and 26% increased their activity.[20] In a study to determine the support needs of people with diabetes during the COVID-19 pandemic in England, it was determined that there was a decrease in the confidence of individuals in their self-management of diabetes. In particular, the areas of decrease were found to be mental well-being (37.0%) and compliance with physical activity recommendations (32.0%), and a healthy diet (29.6%).[21] The majority of the individuals participating in this study reported that their physical activity decreased, and they experienced joint problems, pain, and weight gain due to this. It was determined that most also individuals participating in this study did not want to be in the hospital environment due to the pandemic and were worried about the virus. Some individuals who participated in this study suggested that they come home to the healthcare team or provide online diabetes support without going to the hospital environment.

Grabowski et al., in a qualitative study conducted by him, it was examined how individuals with diabetes manage their disease during the pandemic process. In the study, it was determined that there were individuals whose daily life routines changed and who reported deterioration in diabetes management, as well as individuals who were not affected

by the restriction. In the study, it was stated that blood sugar levels fluctuated more than normal due to the high stress and frustrations caused by the pandemic.[22] Although this findings are quite similar in general to the study of Grabowski et al., it was determined that all individuals participating in this study were affected in any part of their lives during the pandemic process.[22]

Sujan et al., in the study, it was determined that there was a negative correlation between COVID-19 specific diabetes concerns of individuals and social support (from family/friends/relatives, colleagues, diabetes care teams, neighbors, and other people with diabetes). Additionally, COVID-19-related behavioral changes (i.e., checking blood sugar more often than usual, exercising less than usual, eating less than usual, and eating more than usual) were positively associated with COVID-19-specific diabetes concerns.[23] Some individuals participating in this study also stated that they could manage their diabetes better with the psychosocial support of their families during the pandemic process.

CONCLUSION

Protecting patients with diabetes from COVID-19, helping them provide effective diabetes management in this process, and determining their needs play key roles in the good management of the process. During the epidemic process, the risks increase, and it has become vital to manage the disease well. During this process, individuals with diabetes could not leave the house, as in other chronic diseases, and could not perform their routine or emergency check-ups. For this process, it is important to determine the anxiety/fear levels of themselves and their partners and the coping methods they use to manage these negative emotions. The awareness of this group, which is in the risk group, about basic prevention methods and their compliance with the rules must be evaluated by health professionals. Since this process requires more attention and self-management in diabetes management, individuals need counseling and guidance from health professionals, even if they have received basic diabetes education. The content of the counseling subjects required, the most common problems (decrease in activity due to COVID-19, increase in blood glucose level due to increased stress level, fluctuations in blood glucose level due to disruption in sleep patterns and feeding timing, postponing hospital controls due to the risk of COVID-19, etc.) have become clear. It has been observed that if individuals with diabetes cannot be followed closely and their needs cannot be met, the risk of mortality and morbidity may increase due to the increase in the risk of complications independent of COVID-19.

In this context, the fact that healthcare professionals know the experiences and needs of these patients during the pandemic will guide the planning of services to patients. In this period when artificial intelligence technology such as telemedicine, information technologies, and digital education in the management of diabetes gained momentum, without involving individuals with diabetes in the hospital environment; controls, training, follow-up, etc. planned for the solution of the problems they experienced during the COVID-19 process. It is thought that health professionals will guide the planning of the technology to be integrated for care problems during the implementation of the initiatives.

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No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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