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Doctor perspectives on research ethics during the Covid-19 pandemic and anxiety levels

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Abstract

The COVID-19 pandemic emphasized the need to review our requirements for true guidance and reliability from science and individual, professional, and public health ethics. The aim of this study was to determine the ethical and scientific perspectives of doctors about performing research during the COVID-19 pandemic and to assess anxiety levels about this topic within the framework of the literature. Doctors completed a 'preliminary survey form' containing questions determining sociodemographic data and statements about research and ethics during the pandemic and the 'state and trait anxiety inventories' in the internet environment. In our study, the alpha value was 0.90 for the state anxiety inventory and 0.70 for the trait anxiety inventory. Of the 398 doctors participating in the study, 45.2% were women and 54.8% were men. Among doctors, 89.7% stated they read articles related to the COVID-19 pandemic. The group of doctors who fully disagreed with the view that it was inappropriate to perform research during the pandemic due to the nature of the disease and transmission risks and who had read more articles than the other groups were found to have statistically significantly higher state anxiety inventory points. The COVID-19 pandemic led to many problems for scientific and ethical concepts. New concerns were added to existing ethical concerns and national and international ethics committees need to work to resolve these concerns.

Keywords: COVID-19, ethics, state and anxiety inventory, research, writing papers

Introduction

Science based scientific methods should provide guidance and be reliable. These features are very important, especially in the field of health, and following ethical principles is mandatory. However, the COVID-19 pandemic emphasized the requirement to review our needs for proper guidance and reliability from science and individual, professional, and public health ethics. The process transformed into a very important test of ethical concerns about many topics like ethical requirements in patient management, treatment decisions, and patient privacy in the research stages.

COVID-19 being an important disease in transmission and public health caused further difficulty with these decisions. For example, regarding the participation of patients in research performed during the pandemic, an important patient right is to give detailed informed consent about the research content and to know that it is possible to withdraw consent at any stage of the research and treatment will not be affected [1]. It is necessary to unconditionally respect the patient's autonomy about the topic of participating in the study. But when the form of treatment requires quarantine or other measures for public health that conflict with the patient's autonomy, it is an important reality to consider public health without restricting the patient's right to receive individual treatment and care [1].

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In scientific research, scientific misconduct may be seen in the form of authorship rights problems (irresponsible authorship),

piracy (plagiarism), concoction (fabrication), multiple publications (duplication), divided publications (salami slicing), disrespect of human-animal ethics, biased choice of references, and biased publications (conflict of interest) [2]. Among the causes of these situations are receiving inadequate research training, ambitions to rise quickly and desire for recognition, pressure from superiors or over publication/feeling of prestige, and ambitions for material and spiritual gains [3].

When faced with previously unknown infectious diseases like COVID-19, the production of unique solutions to ethical dilemmas due to the nature of the disease may be required, sometimes on a public health basis and sometimes on a case basis. Additionally, communication problems due to the public health distance rules and quarantine caused by an epidemic disease make it more difficult to find solutions. For all these reasons, we believe the question of whether performing the rapid and intense research needed to learn the nature of the disease and find treatment and vaccines may cause an ethical dilemma is important.

The aim of this study was to determine the perspectives in ethical and scientific terms of doctors performing research during the COVID-19 pandemic and to assess anxiety levels about this topic within the framework of the literature.

Material and Methods

This study was conducted between October 2020 and November 2021 after the local ethics committee approved (Ordu University Clinical Research Ethics Committee; Decision no: 2020/91). Doctors completed a 13-question 'preliminary survey form' and a total of 40 questions on the state-trait anxiety inventory, with 20 questions in the state section and 20 questions in the trait section, in the internet environment.

Preliminary Survey Form: The first section of the preliminary survey form included sociodemographic data like age, sex, and branch, while the second section included questions about whether doctors read articles or not and the number of medical journal articles read. The last section of the preliminary survey form interrogated doctors about eight possible statements related to ethics and the COVID-19 pandemic.

According to the statements, doctors responded with one of five choices of an answer of 'fully agree', 'partly agree', 'it is a subject of debate', 'I don't think this is important', and 'definitely disagree'.

State and Trait Anxiety Inventory: This is a Likert-type scale comprising a total of 40 questions, with 20 questions in the state section and 20 questions in the trait section. There are ten inverse statements on the state anxiety inventory; these are items 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20. There are seven inverse statements on the trait anxiety inventory, and these are items 21, 26, 27, 30, 33, 36 and 39. Points obtained from the inventory vary from 20 to 80 theoretically. High points represent high anxiety levels, while low points indicate low anxiety levels.

The reliability study performed by Öner and Le Compte found values of 0.83-0.87 for the Trait Anxiety Inventory in various of implementations and 0.94-0.96 for the State Anxiety Inventory [4,5]. In our study, the alpha values were 0.90 for the State Anxiety Inventory and 0.70 for the Trait Anxiety Inventory.

Statistical Analysis: Statistical analysis was performed using a computer program. Data given as descriptive statistics had the chi-square test applied for categorization. Additionally, the slope chi-square test was applied to compare data with the numbers of articles read. The normality of distribution was examined with the Shapiro-Wilks test. Comparison of two groups used the independent t-test. Comparison of three or more groups used variance analysis if homogeneous and Kruskal-Wallis test if groups did not have homogeneous distribution. The Post-Hoc test for variance analysis in comparison of multiple groups used the Tukey test, while the Bonferroni-corrected Mann-Whitney U test was used with Kruskal-Wallis analysis. $P \leq 0.05$ was accepted as statistical significance.

Results

Of the 398 doctors participating in the study, 45.2% were women (n=175) and 54.8% were men (n=212). The mean age of doctors was 41.46 ± 9.60 years for women and 40.84 ± 9.80 years for men. Of doctors participating in the survey, 9.8% were general practitioners (n=38), with 66.7% specialist doctors employed in the internal science field (n=258), 18.7% in the surgical sciences field (n=70) and 5.4% in the basic sciences field (n=21). Among doctors, 89.7% had read articles related to the COVID-19 pandemic (n=346), while 10.6% stated they had not read articles (n=41). The number of articles read was 1-5 articles for 38% (n=147), 6-11 articles for 22% (n=85), more than 20 articles for 17.3% (n=67), and 12-10 articles for 12.1% (n=47). The distribution of sociodemographic data according to the number of articles read is presented in Table 1.

Table 1. Distribution of sociodemographic data according to numbers of articles read

	Did not read articles		Read 1-5 articles		Read 6-11 articles		Read 12-20 articles		Read more than 20 articles		X ²	P
	n	%	n	%	n	%	n	%	n	%		
Sex											8.97	p<0.01
Woman	11	2.84	68	17.57	37	9.56	26	6.71	33	8.52		
Man	30	7.75	79	20.41	48	12.40	21	5.42	34	8.78		
Age											6.12	p=0.02
24-30	9	2.32	35	9.04	11	2.84	5	1.29	7	1.80		
31-40	18	4.65	50	12.91	24	6.20	13	3.35	18	4.65		
41-50	6	1.55	33	8.52	30	7.75	18	4.65	29	7.49		
51 and older	8	2.06	29	7.49	20	5.16	11	2.84	13	3.35		
Branch											18.34	p=0.17
General practitioner	8	2.06	18	4.65	6	1.55	4	1.03	2	0.51		
Surgical sciences	20	5.16	32	8.26	8	2.06	8	2.06	12	3.10		
Internal sciences	20	5.16	93	24.03	64	16.53	33	8.52	48	12.40		
Basic sciences Doctor	3	0.77	4	1.03	7	1.80	2	0.51	5	1.29		

1. For the statement “I have ethical concerns as I consider that informed consent cannot be adequately given by subjects and/or patients due to the excessive transmission and severe

outcomes of disease for research performed during the COVID-19 pandemic”, 79 doctors completely agreed and 146 partly agreed (Table 2).

Table 2. Percentage distribution of responses given to statements on the preliminary survey form

	S1(%)	S2(%)	S3(%)	S4(%)	S5(%)	S6(%)	S7(%)	S8(%)
Fully agree	20.4	6.5	6.5	17.1	28.4	64.6	10.9	13.7
Partly agree	37.7	17.1	30.0	37.0	41.6	24.8	38.5	48.6
It is a subject of debate	30.0	29.5	33.9	24.5	21.7	7.0	34.4	27.6
I don't think this is important	6.7	15.8	16.3	9.8	2.3	1.8	5.4	3.1
Definitely disagree	5.2	31.3	13.4	11.6	5.9	1.8	10.9	7.0

2. For the statement “Due to the high speed of transmission from patients to doctors during patient treatment and follow-up during an epidemic like the COVID-19 pandemic, I do not think it is correct to perform these types of research during this type of epidemic as it will cause doctors performing the research to spend more time with patients”, most doctors (n=121) stated they disagreed while 114 doctors stated it was a subject of debate. As the number of the articles read increased, the ‘definitely disagree’ selection was marked more often by a statistically significant degree ($\chi^2=11.31$, $p<0.01$).

3. For the statement “I am concerned that, though unwanted, the patient-doctor relationship may slip toward a paternalist approach during research about new treatment methods during the COVID-19 pandemic and that performing these types of studies may cause the development of elements that harm patients”, most doctors (n=131) assessed this as a subject of debate.

4. For the statement “I have concerns about the data, thoughts or works of others being used without permission and notice due to the very heavy load on the health system, communication problems caused by the nature of the disease and other possible causes during the COVID-19 pandemic”, most doctors (n=143) stated they partly agreed with this opinion. As the number of the articles read increased, a statistically significant increase in the response ‘I partly agree’ was observed ($\chi^2=5.86$, $p=0.01$).

5. For the statement “I believe research cannot be performed healthily in this context as I do not believe that honest records are being kept due to the political structure of countries and international policies in terms of obtaining and recording data during the COVID-19 pandemic”, 161 doctors responded that they partly agreed.

6. For the statement “I think there’s a very high possibility of research being biased in situations involving support of drug and vaccine studies by sponsor firms due to the deep economic crisis caused around the world linked to quarantine restrictions during the pandemic. For this reason, I think every state should allocate financial resources for drug and vaccine studies”, most doctors completely agreed with this view (n=250).

7. For the statement “I think that due to the high mortality rates of patients requiring intensive care during the COVID-19 pandemic, especially, it is appropriate to perform research with this group of patients”, 149 doctors stated they partly agreed, while a similar number emphasized that this was a subject of debate (n=133). As the number of articles read by doctors increased, there was a statistically significant increase observed in the rates

marking the ‘subject of debate’ choice ($\chi^2=5.52$, $p=0.01$).

8. For the statement “I think many scientific misconduct forms will be used due to individual academic concerns as I don’t believe that researchers will make unbiased publications due to concerns about personal, public health or national interests during the COVID-19 pandemic”, 188 doctors marked the partly agree choice. Statistically, as the number of articles read increased, there was a significant increase observed in the number marking the ‘partly agree’ choice ($\chi^2=9.01$, $p<0.01$).

When examined in terms of sex, there was no statistically significant difference for the trait anxiety inventory, while male doctors were found to have statistically significantly higher mean points for the state anxiety inventory compared to female doctors ($p<0.01$). In terms of age, there was no statistically significant difference observed for the state anxiety inventory, while younger doctors were identified to have statistically significantly higher points on the trait anxiety inventory compared to doctors aged 50 years and older ($p=0.03$). When assessed in terms of branches, reading of articles and the number of articles read, there were no statistically significant differences observed for mean points on both trait and state anxiety inventories (Table 3).

The distribution of state and trait anxiety scale scores according to the evaluation of eight possible situations in the pre-questionnaire is shown in Table 4. Those responding with ‘fully agree’ to the second statement on the preliminary survey form were found to have statistically significantly lower mean points for the state anxiety inventory compared to those responding with ‘definitely disagree’ ($p=0.01$).

On the preliminary survey form, those responding with ‘fully agree’ to the fifth statement were found to have statistically significantly lower mean points for the state anxiety inventory compared to those responding with ‘definitely disagree’ ($p=0.02$). For the trait anxiety inventory, those responding with ‘I don’t think this is important’ were observed to have statistically significantly lower points compared to those responding with ‘fully agree’, ‘partly agree’ and ‘a subject of debate’ ($p=0.04$).

For the sixth statement on the preliminary survey form, those responding ‘definitely disagree’ were found to have statistically significantly higher mean points for the state anxiety inventory compared to those responding, ‘I don’t think this is important’ ($p=0.03$) and ‘it is a subject of debate’ ($p<0.01$). For the trait anxiety inventory, those responding with ‘definitely disagree’ were found to have statistically significantly lower mean points compared to those responding with ‘a subject of debate’ ($p=0.04$).

Table 3. Distribution of sociodemographic data according to state and trait anxiety inventory points

	State anxiety inventory points		Trait anxiety inventory points		p value for state anxiety inventory	p value for trait anxiety inventory
	Mean	S.D	Mean	S.D		
Sex						
Woman	37.37	4.41	44.18	8.41	p<0.01	p=0.66
Man	38.59	3.37	41.42	7.72		
Age						
24-30	37.85	3.53	44.07	7.57	p=0.86	p=0.03
31-40	38.08	4.08	43.17	7.99		
41-50	37.90	4.13	42.90	8.13		
51 and above	38.32	3.67	40.45	8.59		
Branch						
General practitioner	37.10	4.15	42.52	8.84	p=0.09	p=0.48
Surgical sciences	38.97	4.17	41.52	8.11		
Internal sciences	37.92	3.80	43.10	7.87		
Basic sciences	38.04	3.65	41.57	10.29		
Reading articles						
Reads	37.95	3.93	42.85	7.91	p=0.22	p=0.20
Does not read	38.75	3.77	41.12	9.96		
Number of articles read						
None	38.63	3.79	41.26	9.88	p=0.54	p=0.36
1-5	37.55	4.01	43.42	7.67		
6-11	38.16	3.15	43.27	8.52		
12-20	37.36	4.01	42.06	6.64		
More than 20	38.34	4.56	41.59	8.46		

Table 4. Distribution of state and trait anxiety inventory points according to assessment of eight statements on the preliminary survey form

	State anxiety inventory points		Trait anxiety inventory points		p value for state anxiety inventory	p value for trait anxiety inventory
	Mean	S.D	Mean	S.D		
S1						
Fully agree	37.15	4.37	43.72	8.83	p=0.15	p=0.21
Partly agree	38.38	3.36	42.94	7.24		
It is a subject of debate	38.01	4.13	45.50	7.41		
I don't think this is important	38.11	4.04	41.88	11.87		
Definitely disagree	39.10	4.07	38.65	9.42		
S2						
Fully agree	35.80	4.63	44.72	10.72	p=0.03	p=0.03
Partly agree	38.12	3.51	43.57	6.47		
It is a subject of debate	37.89	3.84	43.74	8.36		
I don't think this is important	38.21	3.45	42.14	6.28		
Definitely disagree	38.51	4.15	40.85	5.73		
S3						
Fully agree	37.52	4.92	41.52	10.02	p=0.44	p=0.06
Partly agree	38.15	3.84	42.97	7.22		
It is a subject of debate	37.64	4.00	44.04	8.71		
I don't think this is important	38.69	2.99	40.65	6.38		
Definitely disagree	38.23	4.32	41.73	9.13		
S4						
Fully agree	37.52	4.92	37.95	3.51	p=0.44	p=0.13
Partly agree	38.15	3.84	37.97	3.56		
It is a subject of debate	37.64	4.00	37.53	4.34		
I don't think this is important	38.69	2.99	38.10	4.76		
Definitely disagree	38.23	4.32	39.40	3.71		
S5						
Fully agree	37.60	3.48	43.90	8.25	p=0.02	p=0.05
Partly agree	37.93	3.68	42.93	7.66		
It is a subject of debate	38.00	4.73	43.04	8.32		
I don't think this is important	40.11	2.61	35.22	12.04		
Definitely disagree	40.21	3.98	40.86	7.75		
S6						
Fully agree	37.97	3.95	42.58	8.16	p=0.01	p=0.03
Partly agree	38.54	3.19	42.25	7.26		
It is a subject of debate	37.25	5.25	45.81	9.72		
I don't think this is important	35.14	4.74	46.28	6.04		
Definitely disagree	42.00	1.73	36.14	10.63		
S7						
Fully agree	37.28	4.88	42.92	9.62	p=0.34	p<0.01
Partly agree	38.23	3.78	42.70	7.64		
It is a subject of debate	37.94	3.44	43.06	7.32		
I don't think this is important	39.33	3.36	36.61	6.93		
Definitely disagree	37.76	4.87	44.16	1.51		
S8						
Fully agree	38.67	3.85	41.32	8.73	p=0.09	p=0.25
Partly agree	37.67	3.99	43.56	8.16		
It is a subject of debate	37.87	3.81	42.36	7.38		
I don't think this is important	39.16	3.12	42.00	6.61		
Definitely disagree	39.48	3.89	40.77	10.05		

In relation to the seventh statement on the preliminary survey form, there was no statistical significance on the state anxiety inventory, while on the trait anxiety inventory, those marking 'I do not think this is important' were observed to have statistically significantly lower anxiety levels compared to those marking 'I definitely disagree with this statement' and 'this is a subject of debate' ($p < 0.01$).

Discussion

At present, it is stated that each year more than one million articles are published in more than twenty thousand scientific and peer-reviewed journals with electronic forms available [6]. The number of articles about COVID-19 began to rapidly increase around 9 March, equivalent to the time when coronavirus cases increased in the USA and fluctuations occurred on a global scale because in other countries like Italy. On 18 March, 131% more articles were published compared to 9 March. At the same time, COVID-19 articles comprised nearly one-third of full-page views compared to before the first week of March with a 44% increase compared to the previous week [7]. Since January, the number of articles related to the topic in the national medical library has exceeded ninety thousand. It is stated that annually more than one million articles are published in more than twenty thousand scientific and peer-reviewed journals with electronic form available [6]. In our survey, 89.7% of doctors stated they read articles and the proportion of participants reading 6 or more articles daily was 57.5%. Most lecturers in all disciplines stated they attached importance to the purpose of benefitting themselves, promotion reports and writing articles when reading and citing articles [6]. Our study is important at this point, while curiosity about an unknown disease may be another factor in increasing reading. The lack of detailed investigation of the reasons for reading articles is a limitation of our research.

In our study, there was no statistically significant differences in state and trait anxiety inventory points according to the opinions of doctors about the statement related to the effects of the excessive transmissivity and severe outcomes of disease on informed consent in research performed during the COVID-19 pandemic. The COVID-19 pandemic is a topic requiring research be performed when considered in both the short and the long term. Ethics committees in many countries began urgent interventions for these types of projects. These committees normally have the authority to make data collected in healthcare available for research without consent. However, consent is a very basic value and there are many reasons to continue applying this main rule even though society is in crisis now. When we look back, it is in everyone's interest that research be performed properly [8]. When the reasons for waiving informed consent in clinical research are examined, they are that the research must cause minimum risk and that obtaining informed consent is not practical. Though a subject of debate for retrospective studies, it should be obtained for even randomized clinical studies [9]. In the study, 20.5% of doctors stated they fully agreed with concerns about this topic, while 37.6% partly agreed. Surprisingly, 6.7% of doctors believed this topic was not important.

There is a risk due to not giving patients the opportunity to understand the aim of the procedures and to fully assess or discuss the risks and benefits. Additionally, the gold standard is two-stage

consent. Firstly, there should be 'face-to-face interview' and then a 'cooling off' period. In the cooling off period, it is probable the person may change their mind. There is a risk that doctors may not fully pay attention to these types of precautions and an attitude inappropriate to the guidelines will be seen; this involves a burden for many despite being required for good practice [9]. Informed consent is the basic pillar of research and should be centered when COVID-19 research is performed [10]. Again, a range of factors like physical distance requirements, exposure and infection risk of research personnel and multiple pressures in the health services environment were added to the layers of difficulty of the traditional consent process for COVID-19 patients [11]. Internationally, development of recommendations is required apart from traditional consent to ensure acknowledgment that consent for COVID-19 research may be flawed or that the research remains ethical.

The group of doctors who fully disagreed with the statement that performing research was inappropriate in the pandemic due to the nature of the disease and transmission risk and who read higher numbers of articles compared to other groups were found to have statistically high state anxiety inventory points. Universities in every place in the world closed due to COVID-19. Increasing numbers of researchers were forced to work and learn from home. The only exceptions were health workers and academics. In addition to health services, urgent research was required related to this unknown virus. Scientists performing clinical experiments to offer lifesaving vaccinations and treatments for the novel coronavirus, especially, could not stop going to their laboratories. The contagiousness and mortality of the virus was the biggest personal obstacle. This situation led to the need to design studies with less intense labor [12]. From the perspective of health employees, whether included in the active research process or not reading articles was important to follow the process. Despite the effect of anxiety and reduced attention control, threatening stimuli increase attention. When compensating strategies are used (for example, increased effort, increased use of process resources), efficiency of performance (performance quality) may not be disrupted [13]. Based on this theory, the conclusion may be reached that the group with high anxiety levels had higher tendency to read and follow developments.

Nearly half of the doctors participating in the study assessed the statement that performing these types of studies may lead to the development of elements that harm the patient linked to the tendency, though unwanted, of the patient-doctor relationship to slide toward a paternalist approach under COVID-19 pandemic conditions as 'debatable'. No statistically significant differences could be obtained between state and trait anxiety inventory points for doctors expressing different opinions about this topic. The paternalist patient-doctor relationship since the start of the 20th century changed with the elevation of the patient rights movement and bioethics from the 1960s. The paternalism doctrine means that the doctor knows best and that the most appropriate method is for patients to follow all doctor orders and advice related to diagnostic studies and therapeutic interventions. In 1972, the Board of Trustees of the American Hospital Association affirmed a Patient's Bill of Rights [14]. This declaration stated that the patient has the right to receive reasonably complete up-to-date information about diagnosis, treatment, and prognosis from their doctor [15]. Bioethicists emphasized the need to respect patient autonomy

for full disclosure [16]. The ethical guidelines of the American College of Physicians state that explaining to patients is a basic ethical requirement [17]. The patient autonomy period ended the traditional information-hiding model of the paternalist period. However, this disclosure should be communicated to the patient in the most positive way with optimism and compassion. This topic, which is difficult to manage on its own and involves many aspects (treatment rights, religious beliefs, family wishes, patient wishes, not knowing definite treatment, difficulties reaching treatment or costs, etc.), was encountered once again during the COVID-19 pandemic. The reason for the high number of doctors in favor of opening discussions about the topic in our study may include elements like not knowing the nature of the disease, different clinical tableau with variations due to variants of the disease over time, trouble determining attitudes about patient rights when faced with the unknown, and current increase in defensive medicine practiced among doctors against malpractice accusations. It is considered there is a need for studies researching larger samples and doctor attitudes to explain this topic.

For the statement that the data, thoughts or works of others could be used without permission or notice in pandemic conditions, most doctors (n=143) stated they partly agreed. As the number of articles read increased, the 'partly agree' response was observed to increase statistically significantly ($\chi^2=5.86$, $p=0.01$). "Our work isn't about academic credit right now — it's about what we can do for our country and the world" [18]. The pandemic led to a severe workload for health personnel and academics working in this field. Many health specialists among us were fighting on the front lines of this pandemic, seeing patients, and assisting in the development of treatment and research protocols in real time. Scientists from different fields were redirected toward research to assist in developing diagnosis, treatment, and vaccines. Even if doctors found time to write about the work they were already doing, the data they planned to collect may have been uncertain and many would require additional experiments to be performed. For this reason, the need for time for doctors to perform research was born. However, it is clear this is a time when the speed of scientific advances is more important than ever. We did not encounter documentation related to ethical violations in data use and publication. In our study, the low rate of doctors partly or fully agreeing with this statement shows their concerns about this topic. These concerns may be less in countries with robust scientific infrastructure. Analyses with reliable data by Müller et al. published that the publication productivity outside of COVID-19 did not reduce as expected.

Just as performing research with the aim of observing disease progression without providing any treatment in infectious diseases is not an appropriate form of research, performing research that may endanger public health during research through only direct observation of disease is not an appropriate method [19]. We believe that studies performed with study teams created by combining working skills and desire along with a sense of justice, based on ethical principles, and academic production with qualitative and quantitative characteristics will be sustainable in pandemic situations.

For the statement, 'I believe research cannot be performed healthily in this context as I do not believe that honest records

are being kept due to the political structure of countries and international policies in terms of obtaining and recording data during the COVID-19 pandemic', most survey participants partly or fully agreed. Humanity is passing through a period that creates the suspicion that science is being severely suppressed for political and material gains [20]. Many factors are effective in creating this suspicion like the lack of data transparency, governments being forced to make explanations with public pressure, and permission for use granted for drugs with inadequate testing and unproven efficacy due to political pressure [21]. The COVID-19 pandemic clearly and openly expresses to the whole of humanity how a disease is globalized. This situation also showed humanity that some governments, which prioritize civilian citizens, avoided collaborative stances to control the pandemic. For effective cooperation, it was reported that the true efforts of governments need to be transparent, brave, and cooperative with clear definitions of difficult ethical issues such as distribution, access, and procurement for global public benefit [22].

In our study, the group of doctors interpreting the statement about states allocating resources to drug and vaccine studies as a subject of the debate were found to have statistically significantly higher state and trait anxiety inventory points compared to other groups. Mostly, global pandemics reduce global economic production by a significant degree and increase unemployment. In the COVID-19 pandemic, precautions are taken by governments to prevent the spread of the disease and death rates significantly reduced employment, and economic activities on a global scale [23]. The global capitalist economy has previously unseen production capacity. As a result, vaccine and drug studies remain limited to a variety of countries and firms. Positive data obtained or vaccinations were provided as a priority to countries with this power and the people of these countries. State capacity, including control of health service systems, is important for all elements of the intervention. Investment in the capacity of states to offer services and enforce rules is important, even though it mostly occurs in ways that defy advice from external sources.

Conclusion

The COVID-19 pandemic led to many problems with scientific and ethical concepts. The presence of many state policies, financing, political and public health factors within the work of both individual and global research led all of us to experience feelings of "being stuck between" or "shaken trust" between science and ethical values to varying degrees. We believe that concerns developing in doctors due to these reasons and ethical problems encountered during the pandemic will reduce the production of new solutions not by individuals but by national and international ethics committees.

Conflict of interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

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Ethical approval

This study was conducted between October 2020 and November 2021 after the local ethics committee approved (Ordu University Clinical Research Ethics Committee; Decision no: 2020/91).

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