COVID-19 Phobia in Pregnant Women and its Effect on Vaccination Attitude

Gebelerde COVID-19 Fobisi ve Aşı Tutumuna Etkisi

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ABSTRACT

Objective: Coronavirus disease-2019 (COVID-19) vaccination rates among pregnant women are lower than the general population. This study aimed to determine the impact of COVID-19 phobia and vaccination attitudes among pregnant women.

Methods: This descriptive and cross-sectional study was conducted online with 254 pregnant women between May 2022 and December 2022; sociodemographic characteristics, COVID-19 vaccination data, Coronavirus Phobia Scale, and Anti-vaccine Scale of women with pregnancies older than 12 weeks of gestation were compared.

Results: Our study determined that 68.5% of pregnant women received COVID-19 vaccination before pregnancy and 4.7% during pregnancy. It was determined that 30% of pregnant women did not know about COVID-19 vaccines. It was determined that there was a significant positive correlation between COVID-19 phobia and anti-vaccination levels. COVID-19 phobia was higher in pregnant women with children and low economic income. It was determined that women who had never been vaccinated had higher levels of anti-vaccination.

Conclusion: Lack of information, having children, low economic income, the belief that the vaccine will have adverse side effects on the pregnant woman and her baby, and COVID-19 phobia were associated with low vaccination rates in pregnant women. These factors should be considered to raise public awareness and increase vaccination in pregnant women.

Keywords: COVID-19, COVID-19 phobia, vaccine attitude

ÖZ

Amaç: Gebe kadınlar arasında koronavirüs hastalığı-2019 (COVID-19) aşılama oranları, genel nüfusa göre daha düşüktür. Bu çalışmanın amacı gebelerde COVID-19 fobisi ve aşı tutumuna etkisini belirlemekti.

Yöntemler: Mayıs 2022-Aralık 2022 tarihleri arasında 254 gebe ile çevrimiçi olarak gerçekleştirilen, tanımlayıcı ve kesitsel tipte olan bu çalışmada 12. gebelik haftasından büyük gebeliğe sahip kadınların sosyodemografik özellikleri, COVID-19 aşısına ait verilerle Koronavirüs Fobisi Ölçeği ve Aşı Karşıtlığı Ölçeği karşılaştırıldı.

Bulgular: Çalışmamızda gebelerin %68,5'inin gebelikten önce, %4,7'sinin ise gebelikte COVID-19 aşısı yaptırdığı belirlendi. COVID-19 aşıları ile ilgili gebelerin %30'unun bilgisi olmadığı tespit edildi. COVID-19 fobisi ile aşı karşıtlığı düzeyleri arasında ileri düzeyde pozitif yönde bir ilişki olduğu tespit edildi. Çocuğu olan ve ekonomik geliri az olan gebelerde COVID-19 fobisi daha yüksek saptandı. Hiç aşı olmayan kadınların aşı karşıtlığının daha yüksek olduğu belirlendi.

Sonuç: Bilgi eksikliği, çocuk sahibi olma, ekonomik gelirin az olması ve aşının gebenin kendisi ve bebeği üzerinde olumsuz yan etkisi olacağına dair inanç ve COVID-19 fobisi gebelerde aşılanma oranının düşük olması ile ilişkilendirilmiştir. Bu faktörler toplumun bilinçlendirilmesi ve gebelerde aşılanmayı artırmaya yönelik çalışmalarda dikkate alınmalıdır.

Anahtar Sözcükler: COVID-19, COVID-19 fobisi, aşı tutumu

Introduction

The coronavirus disease-2019 (COVID-19), which emerged in late 2019, continued to have an impact worldwide and caused at least 6.3 million people to die in mid-2022 (1). Many variants of the COVID-19 virus have emerged especially Delta and Omicron. The COVID-19 virus affects individuals in some risk groups more and causes a severe disease course. Pregnant women are among these risk groups (2-4).

There are no different measures to be taken specifically for pregnant women to prevent disease transmission. Among the methods to prevent virus transmission, vaccination has been reported to reduce pregnancy deaths caused by COVID-19 (5). The Centers for Disease Control and Prevention vaccine safety monitoring program reported no data on complications such as gestational diabetes, preeclampsia, intrauterine growth retardation, miscarriage, stillbirth, or premature birth due to mRNA vaccines administered during pregnancy (6). On September 02, 2021, the Coronavirus Scientific Committee of the Ministry of Health in Türkiye recommended that pregnant women should be vaccinated starting from the 12th week of pregnancy to prevent adverse outcomes of the COVID-19 pandemic in the mother and baby (7).

It has been reported that COVID-19 in pregnancy causes various psychological problems such as fear, panic, or phobia due to being associated with maternal and neonatal morbidity and mortality, complete control of the virus, and increasing need for intensive care (8). A high level of fear or phobia is a condition that reveals avoidance behaviors in individuals and significantly restricts life. Karkın et al. (9) found that pregnant women had a higher level of COVID-19 phobia than non-pregnant women. Fear of coronavirus causes more protection behavior (10). One of the protective behaviors against coronavirus is vaccination. However, pregnant women refuse to be vaccinated due to the desire to protect themselves and the fetus, mistrust of global vaccines, and some sociocultural factors (11,12). Therefore, evaluating the data on COVID-19 vaccine refusal in pregnant women in different countries is essential. World Health Organization reported in 2019 that vaccine refusal had become a significant threat to global health (13). Because the success of a vaccine depends not only on its effectiveness but also on its acceptance. Little is known about the relationship between COVID-19 phobia and vaccine refusal in pregnant women. To the best of our knowledge, no study in the literature evaluates phobias and vaccine refusal in pregnant women with a validated and reliable tool. Determining the relationship between this phobia and vaccine refusal in pregnant women with reliable tools may explain why or how fear can lead to increased depressive symptoms and help target interventions for vaccine refusal, which has become a global problem. This study was conducted to determine the impact of COVID-19 phobia and vaccine attitudes in pregnant women.

Methods

This descriptive and cross-sectional study was conducted between May 2022 and December 2022. The study population consisted of women with pregnancies older than 12 weeks of gestation in Türkiye. The sample size was 196, calculated with a 95% confidence level and a sensitivity level of 0.03, based on a population of 1152859 using the birth statistics (14) of Turkish Statistical Institute for 2021 and the prevalence of COVID-19 among pregnant women in the literature (4). Considering the possibility of missing data, the study was completed with 254 pregnant women. Since maximum diversity was aimed in this study, the data were collected online. Pregnant women who were literate, in their 12th or higher gestational week, and who did not have a psychiatric disorder were included in the study. Ethical approval for the study was obtained from İstanbul Arel University Ethic Committee (decision no: 07, date: 18.07.2022). Also, the study was conducted under the principles of the Declaration of Helsinki.

The Introductory Information Form, Coronavirus Phobia Scale, and Vaccine Opposition Scale (long form) prepared in line with the literature were used as data collection tools. Research data were collected through an online form (Google form). Participants were invited to the study electronically. After clicking on the link to the study, they were directed to a section providing brief information about the study and confirming their willingness to participate voluntarily. After confirming this section, they filled out the Turkish forms.

The descriptive information form consisted of 31 questions developed by the researchers to determine women's sociodemographics, general health status, pregnancy, and coronavirus history.

The coronavirus phobia scale is a 5-point Likert-type self-assessment scale developed by Arpaci et al. (15) to measure the phobia that may develop against the coronavirus. Scale items are evaluated between 1 "strongly disagree" and 5 "strongly agree"; items 1, 5, 9, 13, 17, and 20 measure the psychological sub-dimension; items 2, 6, 10, 14, and 18 measure the somatic sub-dimension; items 3, 7, 11, 15, and 19 measure the social sub-dimension; and items 4, 8, 12 and 16 measure the economic sub-dimension. Scores ranging from 20 to 100 points indicate higher scores in the sub-dimensions and general corona phobia. In a study in which the C19P-S scale used in our study was compared with another scale in Türkiye, the factorial structure of the C19P-S scale consisted of psychological, somatic, social, and economic dimensions, and the Cronbach's alpha value was found to be 0.92 (15). In our study, the Cronbach's alpha coefficient for the scale in terms of reliability was found to be 0.939.

Anti-vaccination scale (long form); The form developed by Kılınçarslan et al. (16) to measure anti-vaccination is a 5-point Likert-type scale. Scale items are evaluated between 1 "strongly disagree" and 5 "strongly agree". The 21 items are grouped into four sub-dimensions. Of these, 1, 2, 3, 5, and 8 constitute the first sub-dimension. These items are related to "vaccine benefit and protective value". Items 10, 14, 16, 17, 18, and 19 constitute the second sub-dimension of "vaccine opposition". Items 27, 28, 30, 32, and 33 constitute the third-factor solutions for not getting vaccinated. Items 6, 7, 13, 15, and 21 form the

fourth factor with the sub-dimension "legitimization of vaccine hesitancy". The higher the score, the greater the opposition/hesitancy to vaccination (section A items are reverse scored because they consist of statements in favor of vaccination). The Cronbach's alpha value of the scale is found to be 0.905 (16). In our study, the Cronbach's alpha coefficient for the scale in terms of reliability was found to be 0.711.

Findings

The mean age of the pregnant women was 29.73±5.122 years, and the mean age of the spouses was 32.73±5.633 years. It was found that 70.5% of the pregnant women were university graduates, 52% were not employed, 73.2% lived with their spouses and children, 90.9% had social security, and 61% had moderate income.

The mean gestational week of the women who participated in the study was 25.88±9.113. In addition, 51.6% of the pregnant women did not have children, and 49.1% of those who had children had a previously expected delivery. The risk status and attitudes of pregnant women regarding coronavirus were analyzed in Table 1.

Figure 1 shows the total scale scores of the pregnant women who participated in our study. The mean score on the Coronavirus Phobia Scale was 44.18, and the mean score on the Opposition to Vaccination Scale was 55.17. The comparison of pregnant women with the Coronavirus Phobia Scale and the Anti-vaccination Scale according to some variables was analyzed in Table 2.

It was determined that the scores obtained by pregnant women from the Coronavirus Phobia Scale differed statistically according

to having children and income status (p<0.05). In addition, it was determined that the scores obtained by women from the Vaccine Opposition Scale differed statistically according to the status of receiving coronavirus vaccination before pregnancy and receiving information from health personnel (p<0.05). The regression model (Table 3) established to examine the effect of coronavirus phobia on vaccine opposition was statistically significant (F=10.254, p<0.05). Coronavirus phobia had a positive effect on vaccine opposition (=0.198) was determined. Coronavirus phobia explained 0.039 of the change in vaccine opposition (Table 4).

Statistical Analysis

Data were analyzed with SPSS 26.0. In the study, the scores for the coronavirus phobia scale and the anti-vaccination scale were calculated, and the kurtosis and skewness coefficients were examined to determine the suitability of the scores for normal distribution. According to this result, it was concluded that the scores were normally distributed. Since the scores showed normal distribution, parametric test techniques were used in the study. The t-test and ANOVA test were used to analyze whether the scale score differed according to demographic characteristics. Pearson correlation analysis was used to examine the direction and severity of the relationship between the coronavirus phobia scale and the anti-vaccination scale, and linear regression analysis was used to examine the effect of coronavirus phobia on anti-vaccination.

Discussion

This study determined that COVID-19 phobia and vaccine opposition in pregnant women were at moderate levels. There was a significant positive correlation between COVID-19 phobia
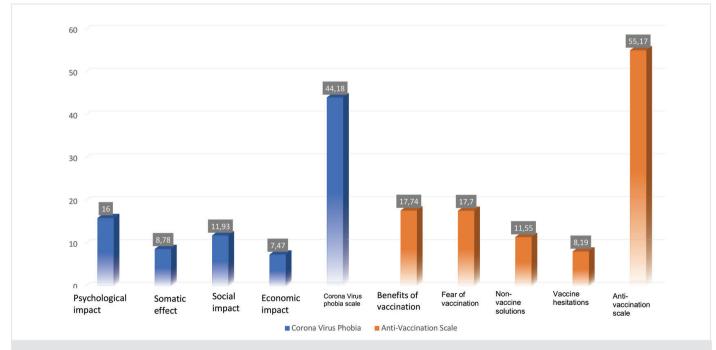

Figure 1. Pregnant women's scores on the coronavirus phobia scale and anti-vaccination scale (n=254)

Table 1. Risk status and attitudes of pregnant women regarding coronavirus

		n	%
Having a chronic disease	Yes	53	20.9
	No	201	79.1
Cigarette smoking	Yes	32	12.6
	No	222	87.4
The problem in current pregnancy*	No problems	189	74.4
	Preeclampsia	4	1.6
	Gestational diabetes	19	7.5
	Threat of miscarriage	18	7.1
	The threat of premature birth	12	4.7
	Placental problems	5	2.0
	Other	7	2.8
Having coronavirus before pregnancy	Yes	117	46.1
	No	137	53.9
Having a coronavirus disease during pregnancy	Yes	37	14.6
	No	217	85.4
Vaccinations during pregnancy*	Tetanus	135	53.1
	Hepatitis (A-B)	11	4.4
	Flu vaccine	4	1.6
	Coronavirus	12	4.7
	No vaccination	92	36.2
Coronavirus vaccination before pregnancy	Yes	174	68.5
	No	80	31.5
Persons from whom she/he received information or counseling on vaccination during pregnancy*	Family	21	8.3
	School	2	0.8
	Friends	16	6.3
	Online	41	16.1
	From TV	17	6.7
	From books/magazines/newspaper	10	3.9
	From the physician	121	47.6
	From the nurse	79	31.1
	No information	76	29.9
Reasons for not getting vaccinated against coronavirus*	I do not believe there is a coronavirus disease	3	1.2
	I do not believe the vaccine protects against coronavirus	23	9.1
	I think the vaccine will have side effects on my health	41	16.1
	I think the vaccine will have side effects on my baby	42	16.5
	My spouse/partner does not want me to get vaccinated	4	1.6
	I do not know enough about vaccination	7	2.8
	No reason	9	3.5

*Question with more than one marking

Table 2. Distribution of pregnant women's coronavirus phobia and opposition to vaccination by variables

Variables		n	Coronavirus phobia scale Avg	SD			Anti-vaccination scale Avg	SD	
Education Status	Literate/primary school	15	48.13	11.46	F=2.153	p=0.094	57.13	7.68	F= 2.493 p=0.061
	Middle school	17	50.06	16.38			59.24	7.74	
	High school	43	45.72	13.88			56.05	7.40	
	University and above	179	42.92	13.54			54.40	8.17	
Having children	Yes	123	46.37	13.23	t=2.478	p=0.014*	123 55.80		t=1.236 p=0.218
	No	131	42.12	14.02			131 54.56		
Income Status	Low	56	49.21	17.04	F=7.400 p=0.001*		56.20	8.72	F=1.125 p=0.326
	Middle	155	43.85	11.74			54.56	7.56	
	High	43	38.81	13.94			56.00	8.88	
Previous birth history	Normal birth	57	44.12	11.19	t=-1.059 p=0.292		56.23	6.29	t= 0.517 p=0.606
	Cesarean section	52	46.81	14.82			55.54	7.62	
Having coronavirus before pregnancy	Yes	117	43.87	14.05	t=-0.326 p=0.745		55.06	7.66	t= -0.192 p=0.848
	No	137	44.44	13.59			55.26	8.41	
Having a coronavirus disease during pregnancy	Yes	37	45.46	15.65	t=0.612 p=0.541		53.46	7.92	t=-1.396 p=0.164
	No	217	43.96	13.46			55.46	8.07	
Coronavirus vaccination before pregnancy	Yes	174	43.22	13.62	t =1.641 p=0.102		53.20	7.83	t=-6.149 p=0.000*
	No	80	46.26	13.97			59.45	6.84	
Receiving information from health personnel	No	133	44.26	13.63	t=0.104 p=0.917		56.17	8.16	t= 2.087 p=0.038*
	Yes	121	44.08	13.99			54.07	7.84	

*p<0.05, SD: Standard deviation, Avg: Average

Table 3. The Effect of coronavirus phobia on vaccine opposition

Dependent variable	Independent variable	Unstandardized coefficients B	Standard error	Standardized coefficients Beta	t	p-value	R²
Anti-Vaccination scale	Fixed	50.056	1.671		29.955	0.000	0.039
	Coronavirus phobia scale	0.116	0.036	0.198	3.202	0.002	

Model: F=10.254, p=0.000

Table 4. The relationship between Coronavirus Phobia Scale and Anti-vaccine Scale

		Psychological impact	Somatic impact	Social impact	Economic impact	Coronavirus phobia scale	Benefits of vaccination	Fear of vaccines	Non-vaccine Solutions	Vaccine hesitation	Anti-vaccination scale
Psychological impact	r	1									
	p										
	n										
Somatic impact	r	0.648**	1								
	p	0.000									
	n	254	254								
Social impact	r	0.797**	0.712**	1							
	p	0.000	0.000								
	n	254	254	254							
Economic impact	r	0.628**	0.761**	0.662**	1						
	P	0.000	0.000	0.000							
	n	254	254	254	254						
Coronavirus Phobia Scale	r	0.907**	0.860**	0.914**	0.828**	1					
	p	0.000	0.000	0.000	0.000						
	n	254	254	254	254	254					
Benefits of vaccination	r	0.220**	0.067	0.256**	0.090	0.196**	1				
	p	0.000	0.288	0.000	0.152	0.002					
	n	254	254	254	254	254	254				
Fear of vaccines	r	0.120	0.066	0.059	0.120	0.104	-0.511**	1			
	p	0.057	0.293	0.348	0.056	0.099	0.000				
	n	254	254	254	254	254	254	254			
Non-vaccine solutions	r	-0.082	0.045	-0.082	0.039	-0.037	-0.694**	0.684**	1		
	p	0.191	0.474	0.193	0.535	0.554	0.000	0.000			
	n	254	254	254	254	254	254	254	254		
Vaccine hesitation	r	-0.034	0.237**	0.030	0.229**	0.100	-0.488**	0.432**	0.612**	1	
	p	0.592	0.000	0.633	0.000	0.111	0.000	0.000	0.000		
	n	254	254	254	254	254	254	254	254	254	
Anti-Vaccination Scale	r	0.150*	0.190**	0.156*	0.231**	0.198**	-0.269**	0.839**	0.759**	0.661**	1
	p	0.016	0.002	0.013	0.000	0.002	0.000	0.000	0.000	0.000	
	n	254	254	254	254	254	254	254	254	254	254

*p<0,0, **p<0,01

and anti-vaccination levels. COVID-19 phobia was higher in pregnant women with children and low economic income. Women who had never been vaccinated had higher levels of vaccine hesitancy. However, this study shows that the level of vaccine hesitancy prevents and affects vaccination.

In Türkiye, the tetanus vaccine, one of the vaccination policies commonly administered to women, is closely followed; primarily, women receive this vaccine. The fact that the tetanus vaccine has been administered for many years and there are no reported severe side effects increases the applicability of the vaccine (17,18). In this study, it was determined that pregnant women had high rates of tetanus vaccination but were reluctant to receive new vaccines such as COVID-19 and influenza. The increasing knowledge about COVID-19, the lack of certainty about its effects on pregnancy, or the negative discourses of society about the vaccine suggests that this result is effective on this result. This result underlines that the prevalence of vertical transmission and the effects of the COVID-19 and influenza vaccine on the fetus are still unclear. This information does not reach pregnant women even if there are available data. In addition, it suggests that the pandemic has not impacted pregnant women's attitudes toward routine pregnancy vaccinations. Severe acute respiratory syndrome coronavirus-2 vaccines are reported safe in pregnant women and recommended (19,20). Current data further support the safety of COVID-19 vaccine administration during pregnancy. In a retrospective study by Kharbanda and Vazquez-Benitez (21) with more than 40,000 pregnant women, it was reported that the COVID-19 vaccine administered during pregnancy was not associated with preterm delivery or low birth weight. Despite reliable data in the literature, it is known that pregnant women are reluctant to be vaccinated. It is seen that women need more information about vaccines and their effects. Health professionals should include COVID-19 and prevention methods in preconception care, pregnancy, delivery, and postnatal counseling. There is also a need for social studies to increase trust in vaccines.

Our study determined that 4.7% of pregnant women received the coronavirus vaccine and had moderate vaccine opposition. A study conducted with pregnant and breastfeeding women in Saudi Arabia reported that 93.1% of women received two doses of the coronavirus vaccine (22). A prospective study conducted in Türkiye found that 37% of pregnant women were willing to receive the COVID-19 vaccine. Low vaccine acceptance is associated with concerns about the vaccine's safety and insufficient knowledge about its potential harm to the fetus (23). It could be said that the negative attitudes of the pregnant women who participated in our study towards the vaccine were related to the feeling that the pandemic was under control and the decrease in vaccine information.

A striking feature of this study was that more than half of the participants had been vaccinated before pregnancy. Despite the high vaccination prevalence, there was a high level of opposition to vaccination. We found that few participants thought the vaccine would adversely affect their baby and health. In the study by Hosokawa et al., (24) it was reported that the rate of COVID-19 vaccination among pregnant women was 13.4%. Low vaccination rates were associated with distrust towards those who recommended the vaccine (24). The study determined that 30% of pregnant women did not know about COVID-19 vaccines. Refusal rates against all vaccines are increasing in our country (25). This distrust of international pharmaceutical companies and health organizations result in the result. The vaccine's side effects, the idea that it contains a live virus, and the belief that COVID-19 does not exist are also effective in the prevalence of the COVID-19 vaccine. In a study on the acceptance of the COVID-19 vaccine among pregnant women in Türkiye, approximately half of the participants believed it would harm their baby's health (26). Although the consequences of the pandemic have diminished, it continues to have an impact. Therefore, reliable health organizations and professionals must update and represent information on COVID-19 vaccines in pregnancy.

During the pandemic, the risk of contracting COVID-19 caused pregnant women to fear being unable to protect their own and their baby's health. Long hours spent at home, restrictions on going out, and the inability to contact their loved ones contributed to COVID-19 phobia in pregnant women. A study conducted in Türkiye reported that pregnant women had higher COVID-19 phobia compared to other women (9). Although the official authorities state that COVID-19 vaccines are available and can be applied to pregnant women, pregnant women have remained in the background of vaccination. Studies conducted in Türkiye have also indicated that pregnant women are hesitant about COVID-19 vaccines (26,27). The phobia of contracting the COVID-19 virus may increase the vaccine response by creating avoidance behaviors in pregnant women. In studies conducted at different times, it was observed that pregnant women were reluctant to receive the COVID-19 vaccine (26,27). Therefore, it could be concluded that the phobia of pregnant women about being infected with COVID-19 was not limited to the period when the pandemic was most effective and continued.

In this study, women who were parents had more COVID-19 phobia. Mothers who are parents may feel higher anxiety and fear about the risk of transmission of the virus to family members. However, low-income women also have higher levels of coronavirus phobia. In studies conducted with women living in low-income countries such as Vietnam, China, and Indonesia, it was observed that women were most willing to be vaccinated (28-30). This result may be attributed to countries such as Vietnam, China, and Indonesia being more affected by the pandemic, and the measures are more stringent.

It was determined that the women who participated in the study had a moderate coronavirus phobia and opposition to vaccination. A similar study in Poland reported positive attitudes toward vaccines and moderate coronavirus phobia (31). During the COVID-19 pandemic, women in the perinatal period experienced mental distress such as anxiety, fear, and depression due to isolation, quarantine, and lack of social support, regardless of their psychiatric history. This led to an increase in vaccine

hesitancy. In the study by Gencer et al., (32) it was reported that the decrease in virus cases effectively decreased the vaccine hesitancy of pregnant women.

Study Limitations

We used an online questionnaire, which may lead to non-response, but the potential for bias was reduced as the questionnaires took approximately seven months to complete. Conducting the study with web-based data collection might be associated with some bias. In addition, since this study reflected a period when the impact of the pandemic was waning, and most of the population was vaccinated, most participants were vaccinated before pregnancy. The results were limited by the number of participants who participated in the study and did not represent the views of all pregnant women regarding COVID-19 phobia-vaccine opposition.

The fact that the participants had different sociodemographic characteristics and included women with previous pregnancies suggested that the study might reduce the effect of the limitation and be generalizable.

Conclusion

Identifying factors related to women's opposition to vaccination in possible future pandemics or increased infectious infections worldwide is essential. Lack of knowledge, having children, low economic income, belief that the vaccine will have adverse side effects on the pregnant woman and her baby, and COVID-19 phobia have been associated with low vaccination rates in pregnant women. These factors should be considered to raise public awareness and increase vaccination in pregnant women.

Ethics

Ethics Committee Approval: Ethical approval for the study was obtained from İstanbul Arel University Ethic Committee (decision no: 07, date: 18.07.2022).

Informed Consent: Retrospective study.

Authorship Contributions

Concept: E.Y.A., Design: A.A., Data Collection or Processing: A.A., Ö.T., Analysis or Interpretation: A.A., E.Y.A., Ö.T., Ü.O., Literature Search: A.A., E.Y.A., Ö.T., Writing: A.A.

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