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Scientific Research, Ethics and Nursing in the COVID-19 Pandemic Process: A Traditional Review

COVID-19 Pandemi Sürecinde Bilimsel Araştırmalar, Etik Boyutu ve Hemşirelik: Geleneksel Derleme

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ABSTRACT Throughout history, science has enlightened us in overcoming the obstacles in our way and has tried to be a solution to our problems. Science has been the port where people took refuge while trying to cope with the problems they experienced. With the developing technology in recent years, human beings have been able to reach information faster in overcoming obstacles and have shaped their research in this direction. Especially recently, coronavirus disease-2019 (COVID-19) has been an important pandemic problem affecting people. People have sought to get faster information to solve their problems during the pandemic process. Because the reasons such as the fact that COVID-19 can be transmitted through the respiratory tract quickly, that it is a virus encountered for the first time and that there is no treatment yet, and that it causes the death of many individuals, have led to the acceleration of research in this process. Scientists have made efforts in a rapid scientific research process in order to be beneficial to the society, but in this process, they had to face a situation that could create many ethical problems and debates. Nursing profession, which is one of the important building blocks of the health field, was also affected in this process in terms of nursing research. Significant difficulties were encountered in the planning and conduct of the studies. Especially since the profession is an applied discipline by nature, the difficulties encountered in practice have also affected the structure of research and led to ethical debates.

Keywords: COVID-19; science; research; ethics; nursing

ÖZET Bilim, tarih boyunca yolumuza çıkan engelleri aşmada önümüzü aydınlatmış, sorunlarımıza çare olmaya çabalamıştır. Bilim, insanların yaşadığı sorunları ile baş etmeye çalışırken sığındığı limanı olmuştur. İnsanoğlu, son yıllarda gelişen teknoloji ile birlikte engelleri aşmada bilgiye daha hızlı ulaşabilmiş ve araştırmalarını bu doğrultuda şekillendirmiştir. Özellikle son zamanlarda yaşanılan koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)], insanları etkileyen önemli bir pandemik sorun olmuştur. İnsanlar, pandemi sürecinde sorunlarının çözümü için daha hızlı bir bilgi alma arayışına girmiştir. Çünkü COVID-19'un hızlı bir şekilde solunum yolu ile bulaşabiliyor olması, ilk kez karşılaşılan bir virüs olması ve tedavisinin henüz olmaması, çok sayıda bireyin ölümüne yol açması gibi nedenler bu süreçte araştırmaların hızlanmasına yol açmıştır. Bilim insanları, topluma faydalı olabilmek için hızlı bir bilimsel araştırma süreci içinde çabalar harcamış, ancak bu süreçte pek çok etik sorun ve tartışma oluşturabilecek durum ile yüzleşmek zorunda kalmıştır. Sağlık alanının önemli yapı taşlarından olan hemşirelik mesleği de bu süreçte hemşirelik araştırmaları anlamında etkilenmiştir. Araştırmaların planlanması ve yürütülmesinde önemli zorluklar yaşanmıştır. Özellikle mesleğin doğası gereği uygulamalı bir disiplin olması nedeniyle uygulamalarda karşılaşılan güçlükler, araştırmaların yapısını da etkilemiş ve etik tartışmalara yol açmıştır.

Anahtar Kelimeler: COVID-19; bilim; araştırma; etik; hemşirelik

Throughout history, people have always tried to find and research the unknown and have contributed to the production of knowledge. They saw this as a humanitarian debt and tried to produce accurate information. Especially in recent years, people who have lived a fast life with technological developments, have adapted to this process in the scientific sense and have begun to reach information more quickly. Of course, this situation has started to bring some ethical discussions with it.[1]

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Scientific research methods are an empirical method of acquiring knowledge that tries to find the most correct one by going through certain stages. The problem caused by different events and situations is noticed by the scientist and the problem is defined. Then, hypotheses are developed after a literature review on the subject, the method to be followed in the research is determined. Finally, the results of data collection, analysis, and reporting are shared with society.[2] Only then will a valuable point be reached. Coronavirus disease-2019 (COVID-19) has become an issue that needs to be addressed urgently by scientists, due to the fact that it is a virus encountered for the first time, is spreading rapidly, is fatal, lack of treatment and vaccine, and psychosocial problems it has created in individuals. Scientists have done lots of research since COVID-19 was first identified. With this study, it is thought that the structure of scientific research in the COVID-19 process and the ethical problems experienced will contribute to the field.

SCIENCE AND ETHICS

Science is research that tries to reach the truth by using various methods by taking the lived events as the subject.[1,2] As a result of this research, it is aimed to obtain relevant information in the most reliable and valid information. That, in turn, is possible by producing science with ethical principles. Ethics also called "moral philosophy" and "philosophy of values" that it explores the reasons behind the behavior of individuals and helps find answers to problems and questions in individuals' relationships with a good-bad and morally right and wrong.[3] Scientific ethics deals with the production of its core values such as honesty, impartiality, and objectivity at every stage of research that scientists do, while publication ethics examines the conduct of scientific research in accordance with the ethical rules in the publication process.[4] Science and ethics should work hand in hand to assure scientific research, and only then can truth be reached in the right way. There are several reasons why unethical behavior occurs during scientific research. For instance, situations, such as lack of education and experience in ethics, publication anxiety can lead to ethical problems. "Research and publication ethics board" in the Scientific and Technological Research Council of Turkey and "Science Ethics Board" in the Turkish Academy of Sciences conduct assessments on ethical problems.[5]

SCIENTIFIC RESEARCH AND ETHICAL ISSUES DURING THE COVID-19 PANDEMIC

The COVID-19 pandemic has been a process that affects people physiologically, psychologically, socially, and economically in the world.[6-8] People tried to understand this virus they encountered for the first time and tried to make the unknown visible. Researchers needed to learn very quickly what this virus was and what the best ways to prevent illness and death were. For this reason, they began to investigate very quickly. The process of planning the research, collecting, and analyzing the data was done very quickly. Rapid scientific research to control COVID-19 has introduced some ethical debates.[2,8-11]

The onset of the pandemic presented many subjects related to COVID-19 research. In fact, research in this area has been supported in many countries. The number of reviews and research studies on COVID-19 has gradually increased. While some journals have postponed research other than COVID-19 for a certain period, the publication process of research related to COVID-19 has accelerated, and even additional issues have been published. Health professionals who followed some journals in this process had difficulty in distinguishing the correct information. Because there are no studies with the highest level of evidence, scientists have decided with moderate levels of evidence.[2,8,11,12] Director-General of the World Health Organization, Dr. Tedros also warned of the concept of "infodemic" in February 2020, which comes from the English words "information" and "pandemic". Dr. Tedros has tried to draw attention to outbreaks of false information by emphasizing that a large amount of information density will also lead to unsafe misinformation. He said, "We are fighting not only the pandemic but also the infodemia."[13,14] Campbell emphasized that hasty research produces wasteful and inadequately validated results.[15]

This rapid data flow caused by the pandemic has resulted in the lack of scientifically valid data or the

publication of large numbers of studies that do not meet clinical standards or without any peer review.[8,11] Serious attention has been paid to this issue. Five conditions of knowledge and social value that should be included in the research are emphasized. They are: 1) Importance, 2) Rigorous design, 3) Analytical integrity, 4) Complete, prompt and consistent reporting of trials, and 5) Feasibility. They emphasized the need to maintain study rigor even during pandemics.[8,16]

Informed consent and patient autonomy have been some of the issues that should be addressed in clinical research particularly during the COVID-19 pandemic. Informed consent is a key concept to ensure patient autonomy.[3]

In clinical studies, a detailed informed consent should be prepared for individuals, they should be told that they can leave the research at any time, and it should be ensured that they understand all these. In addition, it is a substantial patient's right to be told that their withdrawal from the study will not affect their treatment. Patient autonomy should be respected, not pressured to participate in research. However, if there are decisions to be taken in terms of the health of individuals in the society in infectious diseases, these should be made without hindering the individual's right to receive treatment and care. The individual should be protected from harm caused by scientific research, except for the problems caused by the disease.[3,8,11] Observational studies alone are not sufficient without treatment during infectious diseases. It is ethically appropriate to conduct research without risking the health of society.[3,17] It is ethically important that research is carried out in a short space of time and quickly. Many ethical problems are on the agenda, such as scientific merit, the number of participants in research, presence of studies in controlled environments, priority for high-risk people, neglect of vulnerable groups, risk and safety, voluntary participation, social values, and justice.[8]

Another aspect of the growing interest in information online during the COVID-19 pandemic is the reliability of information presented online. Online academic publications (e.g. case reports and letters) and the number of pre-print publications have increased significantly; pre-prints have become somewhat more common as a source of experimental but non-peer-reviewed findings.[18]

Because of the pressures caused by the need to quickly disseminate data, a scientific report is interpreted less robustly and critically evaluated. Results are usually presented without evaluating the entire context of the experiment. Many preprints have also ignored research reporting standards.[8,11,16,19] A recent preliminary report that ivermectin significantly reduces mortality in COVID-19 patients, a study of the importance of prevention and early detection of the novel corona virus in poor countries, and COVID and biologics were withdrawn in this process.[19-21] In a study, it is reported that 37 articles were withdrawn until October 2020.[8] In addition, the use of inconsistent and distorted data in studies and the addition of researchers outside their field of expertise are also considerable problems. At this point, the scientific environment was tried to be misled, especially with the production of non-scientific knowledge.[2,11] Especially in the pandemic process, many scientists have turned to online research due to altered research methodologies, restrictions, isolation rules, and fear of transmission.

Qualitative research data were collected with online interviews, photos, video, and audio data. Quantitative research was conducted with the help of online surveys.[22]

In addition, changing research structures due to pandemic-related constraints have also forced researchers to develop technological literacy and skills to use technology. Participants were required to develop these skills (Skype (Microsoft, America), zoom (Zoom Video Communications, California), Google meet (Alphabet and google, America), etc.) for online learning and research.[23,24] Online research methods, which have been on the agenda especially in recent years and whose use has increased with the pandemic, have advantages as well as disadvantages. Advantages of online research are as follows; it is economical, comfortable for the surveyed groups, and less time is spent, it provides convenience for the groups having difficulty in accessing, since the questions in the survey are controlled by the system, the loss of questions are prevented. The disadvantages are as follows; the internet may not be available to

everyone, the suitability of people who apply it to our criteria is unclear, it is not suitable for people who have difficulty using technology, and its ability to represent the universe is reduced. In addition, people who have difficulty in understanding the questions due to the structure of electronic questions do not have a chance to reach the researcher because they are not face-to-face.[25-28] Online methods raise significant ethical concerns about informed consent (competence, comprehension and especially the age of potential participants, etc.) and data privacy, relationships with other online users, dishonest responses, misrepresentations, language, and discourse in a computer environment.[29]

Choosing the sample with the right method, having the appropriate sample sizes and generalizability to the population are important points in the research. In online research, ethical problems especially regarding selection bias come to mind. Because individuals decide to participate in online research themselves and often volunteer on their problems or issues of interest. Especially if the individuals involved in the study cannot generalize to the universe in terms of their characteristics, it creates a bias.[28] In addition, the fact that online research is mostly conducted by young educated individuals and the sample of studies that do not include vulnerable groups, such as children and the elderly may create deficiencies in generalization to the population. A study has also found that older, lower education and income groups prefer traditional "paper and pencil" research methods rather than online research.[30] During the pandemic process, e-health applications have also been actively used and these applications have also been studied within the scope of research. Personal health data obtained from artificial intelligence supported electronic applications were used in research. In scientific research, it is important to explain the research in every detail to the researched individual and to obtain their consent. Did the individuals who came to receive treatment during the pandemic process have knowledge that their data was used in research, or were they aware that this information was collected retrospectively, or were the patients informed when it was possible to reach these patients? There are many question marks such as.[31] One of the problems we may encounter in studies using electronic health data is the protection of privacy and confidentiality.[32,33] Institutions and the state regarding the protection of personal data should carry out studies to prevent this data from falling into the hands of third parties.

The pandemic process has also affected the ongoing clinical research. According to a research result, 69% of the researchers participating in the study said that their work was affected by the COVID-19 process.[34] Another point is that the scientific research that was planned before the pandemic and the preparations started, stopped in this process. However, research on many important chronic diseases is also important and science covers all fields. It has been observed that there is a decrease of 48% in studies on cancer diseases and 80% in the field of endocrine diseases.[34,35] In addition, the lack of observation in the research has been an important factor affecting the quality of the research due to the fact that the researched individuals cannot go to health institutions because of the risk of contamination.[36]

ETHICAL DIMENSION OF SCIENTIFIC RESEARCH AND NURSING IN THE COVID-19 PROCESS

Nurses have been at the forefront of managing this process since the first days of the pandemic. Nurses tried to provide the best care and tried to protect the psychological and physiological health of the patients. At the same time, they have been involved in many types of research that will contribute to science and have been the director of research.[37] But according to the rules of isolation, they have difficulty communicating in a therapeutic sense. They have tried to give the most effective care without using eye communication and body language in protective clothing.[38] This communication problem is also reflected in nursing research. More descriptive research was focused on and these researches were conducted online without face-to-face communication. Quantitative research was carried out using online surveys or qualitative research was carried out via mobile applications, albeit in a minority.[38] However, nursing is an applied field by its nature, and the contribution of experimental research, which has high evidence value, to care is great. In this process, experimental studies

could not be carried out due to the restrictions developed due to the course of the pandemic, or the studies that had started had to be abandoned. In addition, many master's and doctoral theses were tried to be selected in accordance with the process or tried to make changes in their methodology.

CONCLUSION

While the world has been tested for a disease such as COVID-19 that spreads rapidly and has a high risk of death, many studies have been conducted to understand this disease, find a cure and vaccine, and improve community health. The COVID-19 pandemic has been a process in which information develops very rapidly. In this process, scientists have passed important stages in reaching real information and making ethically correct decisions. The following recommendations should be considered in this process. Conducting planned and ongoing research without sacrificing quality, conducting necessary inspections, especially informed consent, the safety of research participants, and the methodological validity of the study should be examined. Attention should be paid to publication processes that comply with publication review principles, are transparent, and undergo peer review. As a result of all these efforts and awareness, it is believed that this problem will also be overcome thanks to real science. It is recommended to draw the attention of researchers, students, healthcare professionals, and society on research ethics and pandemic, and increase their knowledge.

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Conflict of Interest

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

Idea/Concept: *Esma Özmaya, Aygül Kıssal;* ***Design:*** *Esma Özmaya, Aygül Kıssal;* ***Control/Supervision:*** *Esma Özmaya, Aygül Kıssal;* ***Data Collection and/or Processing:*** *Esma Özmaya, Aygül Kıssal;* ***Analysis and/or Interpretation:*** *Esma Özmaya, Aygül Kıssal;* ***Literature Review:*** *Esma Özmaya;* ***Writing the Article:*** *Esma Özmaya, Aygül Kıssal;* ***Critical Review:*** *Esma Özmaya, Aygül Kıssal.*

REFERENCES

1. Doğan O. Makale, Tez, Proje Yazmak. 1. Baskı. Ankara: Detay Yayıncılık; 2017.
2. Kasapçopur Ö. Science and pseudoscience during the COVID-19 pandemic. Turk Pediatri Ars. 2020;55(4):335-6. [Crossref]
3. Çobanoğlu N. Bireysel, profesyonel, toplumsal, bilimsel ve siyasal etiği yeniden sorgulatan COVID-19 pandemisi [Ethics of individual, professional, social, scientific and politic is questioned by COVID-19 pandemi]. Anadolu Kliniği Tıp Bilimleri Dergisi. 2020;25(1):36-42. [Crossref]
4. Köksal MF. Bilim dünyamızın kanayan yarasında yeni icatlar veya adı konulmamış yayın etiği ihlalleri [New contrivancein the bleaching wound of our science world or non-named publication ethics violations]. Anadolu Üniversitesi Sosyal Bilimler Dergisi. 2020;20(1):209-18. [Crossref]
5. Özenç Uçak N, Birinci HG. Bilimsel etik ve intihal [Scientific ethics and plagiarism]. Türk Kütüphaneciliği. 2008;22(2):187-204. [Link]
6. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. Can J Psychiatry. 2009;54(5): 302-11. [Crossref] [PubMed] [PMC]
7. Aşkın R, Bozkurt Y, Zeybek Z. COVID-19 pandemisi: psikolojik etkileri ve terapötik müdahaleler [COVID-19 pandemic: psychological effects and therapeutic interventions]. İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi Covid-19 Sosyal Bilimler Özel Sayısı. 2020;19(37):304-18. [Link]
8. Solbakk JH, Bentzen HB, Holm S, Heggestad AKT, Hofmann B, Robertsen A, et al. Back to WHAT? The role of research ethics in pandemic times. Med Health Care Philos. 2021; 24(1):3-20. [Crossref] [PubMed] [PMC]
9. Kreps SE, Kriner DL. Model uncertainty, political contestation, and public trust in science: Evidence from the COVID-19 pandemic. Sci Adv. 2020;6(43):eabd4563. [Crossref] [PubMed] [PMC]
10. Soltani P, Patini R. Retracted COVID-19 articles: a side-effect of the hot race to publication. Scientometrics. 2020:1-4. [Crossref] [PubMed] [PMC]
11. Besançon L, Peiffer-Smadja N, Segalas C, Jiang H, Masuzzo P, Smout C, et al. Open science saves lives: lessons from the COVID-19 pandemic. BMC Med Res Methodol. 2021; 21(1):117. [Crossref] [PubMed] [PMC]
12. Bayram H, Akgün M, Altın S, Karadoğan D, Gürkan CG, Yüksel A, et al. COVID-19 süre cinde bilimsel yayınlara erişim, işbirliği olanakları ve derneklerin adaptasyonu. Her Yönüyle COVID-19, Türk Toraks Derneği COVID-19 E-Kitapları Serisi. 2020. p.85-90. [Link]

13. Harmancı Karagülle D, Uygun ZO, Girgin Sağın F. COVID-19'un araştırmaya ve bilim dünyasına etkileri. Yücel D, editör. COVID-19 Pandemisinde Tıbbi Biyokimyanın Artan Rolü. 1. Baskı. Ankara: Türkiye Klinikleri; 2021. p.94-9. [Link]
14. World Health Organization [Internet]. © 2021 WHO. Munich Security Conference; 15 February 2020. Available from: [Link]
15. Campbell M. Is research quality being compromised during the COVID-19 pandemic? 2020. Cited: 12.5.2021. Available from: [Link]
16. London AJ, Kimmelman J. Against pandemic research exceptionalism. Science. 2020; 368(6490):476-7. [Crossref] [PubMed]
17. Porter JDH, Ogden JA. Ethics of directly observed therapy for the control of infectious diseases. Bulletin de l'Institut Pasteur. 1997; 95(3):117-27. [Crossref]
18. Gianola S, Jesus TS, Bargeri S, Castellini G. Characteristics of academic publications, preprints, and registered clinical trials on the COVID-19 pandemic. PLoS One. 2020; 15(10):e0240123. [Crossref] [PubMed] [PMC]
19. Piller C, Servick K. Two elite medical journals retract coronavirus papers over data integrity questions. Science. 2020. [Crossref]
20. Acharya KP. WITHDRAWN: Resource poor countries ought to focus on early detection and containment of novel corona virus at the point of entry. Clinical Epidemiology and Global Health. 2020. [Crossref] [PubMed] [PMC]
21. Elston DM. WITHDRAWN: COVID and Biologics. Journal of the American Academy of Dermatology. 2020. [Crossref]
22. University of Technology Sydney (UTS); Nippon Foundation Ocean Nexus Center. Adaptıng Research Methodologıes In The Covıd-19 Pandemıc [Link]
23. Shehata MHK, Abouzeid E, Wasfy NF, Abdelaziz A, Wells RL, Ahmed SA. Medical education adaptations post COVID-19: an Egyptian reflection. Journal of Medical Education and Curricular Development. 2020;7:1-9. [Crossref] [PubMed] [PMC]
24. Archibald MM, Ambagtsheer RC, Casey MG, Lawless M. Using zoom videoconferencing for qualitative data collection: perceptions and experiences of researchers and participants. International Journal of Qualitative Methods. 2019;18:1-8. [Crossref]
25. Eysenbach G, Wyatt J. Using the Internet for surveys and health research. J Med Internet Res. 2002;4(2):E13. [Crossref] [PubMed] [PMC]
26. Shah KN, Hofmann MR, Schwarzkopf R, Pourmand D, Bhatia NN, Rafijah G, et al. Patient-reported outcome measures: how do digital tablets stack up to paper forms? A randomized, controlled study. Am J Orthop (Belle Mead NJ). 2016;45(7):E451-7. [PubMed]
27. Fitzgerald D, Hockey R, Jones M, Mishra G, Waller M, Dobson A. Use of online or paper surveys by Australian women: longitudinal study of users, devices, and cohort retention. J Med Internet Res. 2019;21(3):e10672. [Crossref] [PubMed] [PMC]
28. Doğan O. Çevrimiçi araştırmalar bilimsel midir [Are online researches scientific]. Anatolian Journal of Psychiatry. 2020;21(6):656-61. [Link]
29. Orton-Johnson K. Ethics in online research; evaluating the ESRC framework for research ethics categorisation of risk. Sociological Research Online. 2010;15(4):126-30. [Crossref]
30. Hagan TL, Belcher SM, Donovan HS. Mind the mode: differences in paper vs. web-based survey modes among women with cancer. J Pain Symptom Manage. 2017;54(3):368-75. [Crossref] [PubMed] [PMC]
31. Güner MD, Ekmekci PE. Klinik araştırmalarda yapay zekâ kullanımı ve olası etik konular. Ekmekci PE, editör. Yapay Zekâ ve Tıp Etiği. 1. Baskı. Ankara: Türkiye Klinikleri; 2020. p.29-34.
32. Walther JB. Research ethics in Internet-enabled research: human subjects issues and methodological myopia. Ethics Inf Technol. 2002;4:205-16. [PubMed]
33. Toplu M. Bilim etiği: internetin bilim etiği üzerine etkileri [Science ethics: the effect of internet on the science ethics]. Türk Kütüpha neciliği. 2012;26(4):654-98. [Link]
34. Medidata. COVID-19 and Clinical Trials: The Medidata Perspective Release 5.0. 2020. Cited: 12.5.2021. Available from: [Link]
35. Upadhaya S, Yu JX, Oliva C, Hooton M, Hodge J, Hubbard-Lucey VM. Impact of COVID-19 on oncology clinical trials. Nat Rev Drug Discov. 2020;19(6):376-377. [Crossref] [PubMed]
36. Naycı S, Göksel T, Gemicioğlu B. COVID-19 pandemi sürecinde klinik araştırmaların durumu ve geleceğe bakış: araştırmacı perspektifi. Her Yönüyle COVID-19, Türk Toraks Derneği COVID-19 E-Kitapları Serisi. 2020. p.91-8. [Link]
37. Seyran F. COVID-19 pandemisinde hemşirelik mesleğine ilişkin çalışmaların bibliyometrik profili [Bibliometric profile of studies on nursing profession in COVID-19 pandemic]. INCOMES. 2020:245-55. [Link]
38. Hiçdurmaz D, Üzar Özçetin YS. COVID-19 pandemisinde ön safta çalışan hemşirelerin ruhsal sağlığının korunması ve ruhsal travmanın önlenmesi [Protection of COVID-19 frontline nurses' mental health and prevention of psychological trauma]. HUHEMFAD-JOHUFON. 2020;7(Özel Sayı):1-7. [Crossref]