

Animal and Human Chronobiology Study: Ethical Considerations, Guidelines, and Methods

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ABSTRACT: The bulk of Chronobiology International research articles describe results from studies on laboratory animals and humans. The editors and readers of the journal expect writers to have made significant contributions to biological rhythm and related research via ethical research and honest reporting of results. Scientific authors must declare any possible conflicts of interest. The journal exclusively accepts original articles that have not been published elsewhere, save as short abstracts. The journal and its editors encourage investigators to follow the principles of the World Medical Association's Declaration of Helsinki and the Institute for Laboratory Animal Research's Guide for the Care and Use of Laboratory Animals. Chronobiology International judges whether or not the research techniques used in a publication meet the criteria of good research practice. This article updates Chronobiology International's ethical principles, standards, and processes for submissions including human and animal biological rhythm research, both in terms of quality chronobiology research and compassionate and ethical study on humans and animals.

KEYWORD: Biological Rhythm, Chronobiology, Chronobiology International, Conflict, Ethical.

I. INTRODUCTION

Biological Rhythms International is the official journal for members of the Many more scientists operating in science and related topics across the globe, including the National Organization of Medical Chronobiology and Chronotherapeutics, the Association for Light Therapy and Physiological Melodic, and the Operating Time Organization, as well as several others[1]. The journal's contributions address all aspects of applied chronobiology, including sleep, shift employment, and therapeutic and therapeutic chronobiology, which cover a wide range of topics in chronology. For articles incorporating natural rhythms studies in humans or animals, this article summarizes the standards and procedures that editors, editorial board members, and readers of Chronobiology International expect from the perspective of quality Chrono-biology investigative criteria as well as humane and ethical research methods[2].

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A. Practices and Procedures in Publishing a Journal

a. Authorship

They want each contributor, according to the journal's editors, must have contributed a lot to science and to be well on the underlying data. Authors are also expected to have complete influence over the publication process, including whether or not their work is accepted for publication[3]. It is the duty of each author to ensure that the manuscript is error- and fraud-free, and to know that if any part of the work is discovered to be flawed or fraudulent, then the whole paper must be retracted. Only the author may add or remove his/her name from a submitted article; Before any modification in ownership is effected, all fellow researchers must sign a transfer of authorship agreements [4].

b. Publication in Two Places at Once

The journal only accepts articles that are completely unique and have not previously been published anywhere else, even as abstracts[5]. Prior publication applies when the author has already published anything before submitting their work and:

1. There is information in an article that has already been reported elsewhere.
2. Articles, chapters, and extensive summaries that have already been released, like conference outcomes, include the original data in the form of figures and/or tables.
3. In addition, the results have been extensively disseminated as archive reports, copyrighted, or otherwise protected from unauthorized use[5].
4. Presentations from meetings have been copied and disseminated beyond the scope of the original audience.
5. Questions about whether a submission fits into one of these categories should be directed to the journal editors, who will make the final determination[6].

c. Potential Conflict of Interest

Authors must declare any possible conflicts of interest at the time of article submission. While the work is being reviewed, all information supplied will be kept strictly confidential[7]. In case the article is approved for publication, the title page will include information about the possible conflict of interest, such as the fact that the author had no say in the decision to publish[8].

d. Plagiarism and Deception

Falsification is defined as fabricating a study report or concealing or changing facts to support one's intended

findings. Plagiarism is when someone uses someone else's words or ideas without giving credit where credit is due.

e. Guidelines for Ethical Business Practices

When reviewing a manuscript, it is the reviewer's duty to alert the editors to any issues they may have, including allegations of plagiarism, fraud, or other infringements on the ethical norms of animal or human research[9]. A reader or an author may notice their own published work being plagiarized and report it as plagiarism. For each and every instance, the journal editor will write a letter to the author asking for an explanation in a non-judgmental way. Unless the author can provide an acceptable explanation, if unethical behavior seems to have happened, the problem will be examined by the editorial, who would determine if the situation is severe sufficient to justify a restriction on future contributions from the offending author(s) and/or when the accusing author's university would be contacted. The author has a right of appeal to the Publications Committee, where he or she may submit his or her case. The editor may write a note of reprimand to the lead author, reminding him/her of the journal's publishing rules, if the violation is small[10]. It is the editor's right to compel authors who have had their work published to issue an apology in the journal to make things right. It is the senior editor of Chronobiology International who is responsible for notifying other journals if the journal's copyright has been infringed by the journal's author(s). In the event of severe fraud, Chronobiology International will issue a retraction notice[11].

B. New Individuals and Animal Studies in Chronobiology

Chronobiology International publishes articles that are mostly based on research done on humans and laboratory animals[12]. When publishing a paper in a peer-reviewed journal, authors and editors agree that researchers should adhere to the World Medical Association's Helsinki Declaration, which lays out policies and criteria for ethical human subjects research, as well as the Guide for the Care and Use of Laboratory Animals, which lays out guidelines for ethical animal subjects research. Because of this, all papers submitted to Chronobiology International must comply with the Declaration of Helsinki and the Guide for Research Using Laboratory Animals. Manuscript peer review thus includes a judgement on the suitability, ethics, and compliance with good research practice criteria of the research techniques used[13].

For human and animal biological rhythm studies, the following sections outline the journal's expectations from the perspectives of quality chronobiology research criteria and humane and ethical treatment of laboratory and other animals, both of which are critical to high-quality chronobiology research[14].

C. Research in Animal Chronobiology

a. Norms of Morality

Principles of good practice must be adhered to. Animals, unlike humans, are unable to provide their informed permission, yet they nevertheless deserve to be handled and treated with compassion[15]. Only in the pursuit of new information should animals be used in studies. The suitability of the experimental methods, the choice of species, and the number of animals used should all be

taken into account. Animals utilized in laboratory research must be obtained legally. Local, state, and federal regulations must be followed when it comes to the storage and usage of laboratory and other study animals. Furthermore, the rules set by the Guide for the Care and Use of Laboratory Animals must be followed while caring for and using the animals used in research. It is required that researchers doing chronobiologic research on laboratory animals and other creatures adhere to the following minimum criteria. This includes providing appropriate housing and food, and maintaining a hygienic environment for animals employed in research. Safe, pleasant, and conducive to the animals' well-being are required, with consideration for the species' unique needs. If you're a social species, you'll need to live in couples or groups with others who are also sociable. A clean cage and fresh bedding should be provided to animals on a daily, weekly, and monthly basis by trained staff throughout the week, weekend, and holiday seasons. Fresh bedding should be used to replace any that has become soiled. Keep and check records of fluid and food consumption to prevent dehydration and weight loss as a consequence of fluid and food restriction. Animal research must be conducted by competent investigators and personnel who adhere to all applicable legal laws and regulations, and animals must be handled properly at all times. It's best to avoid using physical constraint for an extended period of time. Every experiment should have a clear understanding of the total amount of blood that will be extracted and how much of that volume will be used. Anaesthetized animals should not be subjected to unpleasant surgical or other treatments; pain, discomfort, and suffering must be reduced by using suitable sedation, analgesia/anesthesia, or other techniques that are considerate of the animals' welfare. Animals must be euthanized in a painless manner, in a separate room, and away from other animals if the research protocol calls for it[16].

b. Criteria of Chronobiology

To conduct biological rhythm study with laboratory and other animals, the researcher must pay close attention to a number of details. All animals used in research must have their circadian rhythms synced to those specified in the protocol both before and during the experiment. A synchronizer schedule, such as a light-dark cycle and/or a rest-activity routine based on artificial or natural light (L)-dark (D) cycles, must be included in the Methods section, as well as information on light intensity and wavelength spectra. The temperature, humidity, noise level, and routine and food of the animals should also be mentioned, as should the surrounding environment. It is necessary to eat food that is sufficiently nourishing. Pay attention to the possibility of synchronizing the animals by using a trained staff's periodic maintenance plan. For example, feeding timing may synchronize laboratory animals' rest-activity and other circadian cycles. Biological temporal structure of the animals is affected by special animal research procedures that include tight feeding schedules, consistent ambient conditions, or unusual light-dark cycles. The research animals' age, gender, strain, and history of breeding and genetic modification must also be specified. Various species' inbred strains have been created for specialized scientific purposes. Inbred animals should have their genetic homozygosity checked on a regular

basis. When it comes to transgenic animals, at the very least, one gene has been transmitted. Studies on the biological impacts and responses to physical, pharmacological, and other treatments must justify the chosen circadian time(s) of application/exposure in order to collect valid data[17].

D. Chronobiology Research in Human

a. Norms of Morality

Human research procedures must be designed and carried out in accordance with the World Medical Association's 1964 Declaration of Helsinki and its revisions in 1975, 1983, 1989, 1996, and 2000. Subjects' wellbeing and rights, as well as their cultural, religious, and social traditions, must be respected in research methods. This kind of research must have a valid purpose and be authorized by the ethics committee of the institution(s) where it will be performed, as well as by any other institutions that will be involved in the collaboration. Written and/or oral description of the experimental methods and their hazards must be acquired from each participant to guarantee full comprehension of the informed consent. It is necessary to get the permission of parents, guardians, or other groups before doing research with particular populations. Any study participant has the right to withdraw their permission at any moment without fear of retaliation or discrimination. A student's involvement in research as a pre-requisite for earning a passing or better grade should always be optional, not forced. To participate, students must provide informed permission and have the option to withdraw at any time without fear of being penalized. In order to perform research on humans, facilities and experienced/skilled people are required to support the investigative procedure and, if necessary, to offer immediate medical assistance. Participants in study must be kept as comfortable and safe as possible. Whenever blood sample is part of a study protocol, researchers must specify the total volume of blood that will be extracted throughout the trial; this should not exceed the quantity of blood that is typically given for transfusions. In order to reduce participant pain, blood collection should be done in the middle of the night using methods that prevent using lengthy catheters or disturbing participants while they sleep, as well as using strong light, which may alter the biological time structure and variables under investigation. When collecting blood, the subject's position must be indicated, and information on the assay's analytical variability and accuracy must be given[18].

The confidentiality and identity of the subjects must always be protected while and after the study is completed when collecting, storing, and reporting human data. Biological samples may only be used for the purposes stated in the study proposal for which permission was given, and subjects have the right to limit their usage. A placebo may be used in some human research studies since it is the most effective and efficient way to test novel medical therapies. Before giving informed permission, participants must be made aware that they may receive a placebo in lieu of an active therapy. Patients and other study participants should be informed of medically relevant results by trained and qualified health

professionals. Human genetics is the study of genes and their variations, or alleles. Subjects should only be given the findings of genetic testing performed for research by doctors who are trained in genetic counselling. Manuscripts must also disclose where the money for the study came from. There must also be a note to the editor that accompanies the article submission that explicitly states the authors' connection with the sponsor(s) and any potential conflicts of interest with the sponsor(s) and investigator(s)[19].

II. DISCUSSION

The study of biological rhythms in humans requires a focus on Chrono biological research techniques and ideas. All human Chrono biological research cannot be specified precisely, but Every manuscript's Methodology sections could at the very minimum explain the age, gender, and health condition of the participants, as well as the temporal characteristics of sleep-wake or any relevant physiological time structural synchronizers. Studies including shift employment must also explicitly describe the schedule of work and the responsibilities of the employees. It is important that patient studies include the presence and barring standards for subjects and the diagnostic tests, questionnaires, and/or other methods utilized. Subjects used as controls must be healthy and not be on any medicines. Ideally, they shouldn't have flown over Meridan in the two months leading up to the trial. Tobacco, caffeine, and alcoholic beverage usage must be documented before and throughout the study. Patient studies should also include information on the typical therapies, such as kind, time, and dose/intensity. Studies in Chrono pharmacology—the study of how drug kinetics and effects vary depending on when it is administered—are required to explain why certain treatment periods were selected. The time spent doing the study should be specified in the category "Methodologies" The volume and frequency range of light exposures, as well as the study location, should be described in the Methods section. Forcing desynchrony, constant-routine, or temporal isolation techniques may be used in certain studies; they should be documented in sufficient depth[20].

III. CONCLUSION

In order to be effective, the numerical examination of period sequence information must be well specified and compatible with its intended goal, the hypotheses to be evaluated, and the number of people or animals participating in the research. It is necessary for studies to be adequately powered; they must include a significant number of people or animals, and biological sampling must be performed on a regular basis in order to evaluate the biological periodicity in issue, among other requirements. Ultradian rhythms are a common phenomenon that may last anywhere from a few milliseconds to many hours. Their investigation necessitates the development of a novel investigative procedure that involves the collection of very frequent biological samples. Infradian rhythms are best assessed on a circadian basis (i.e., investigations conducted around the clock for 24 hours) over a period of many days, weeks,

and/or months to determine their frequency. Indeed, a change of the amplitude or acrophase of a particular infradian rhythm may be linked to a modulation of the circadian rhythm of the variable under consideration, as previously stated. When analyzing data acquired from large samples of individuals, a number of complimentary statistical techniques may be employed. The analysis of data from small samples is much more challenging. With very few measurements, and particularly with a relatively limited number of participants, the goal of data processing is to reduce inter-individual biological variability to the point where traditional techniques may be used for evaluation. In certain cases, non-parametric tests are appropriate since they guarantee that the absolute numbers do not have an impact on the findings.

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