CSE601 - Research Ethics

February 2020

1 Introduction

Research is a way in which humans interact with and better understand this world. Many concepts would not be known without people putting time and effort into the further exploration of topics less known about. Research is essential for further human development. However, there are many things to take into account to make sure that research is done in an ethical manner. This report will cover the usage of human subjects, data management, and instances of research misconduct.

2 Human Subjects

Not all research is done using human test subjects. Experiments that do must follow specific procedures to remain legally ethical. The definition of 'human subject' is slightly different depending on the type of research being done. However, the definition always includes "any living person who is involved in research either as an experimental subject or as a control" [3].

Three ethical principles guide human test studies. These are respect for persons, beneficence, and justice [1]. Respect for persons consists of two statements: "individuals should be treated as autonomous agents, and persons with diminished autonomy are entitled to protections" [1]. Diminished autonomy includes physical and mental disabilities, but also includes language barriers and other common obstacles. Beneficence also has two points: do not harm, and maximize possible benefits while minimizing possible harm [1]. Justice is the idea that all peoples are equal in receiving due benefits and that burdens are distributed equally [1].

Application of ethical principles consist of three requirements. These requirements are informed consent, a risk/benefit assessment, and the selection of research subjects [1]. Informed consent consists of research subjects being able to understand what will happen to them during a study, then accept or reject. Risk/benefit assessments are necessary to ensure the principle of beneficence.

They ensure no harm is to come to a research subject and any potential reasonable harm is not outweighed by the benefits [1]. The selection of research subjects ensures fair chance of benefit. This includes avoiding the usage of persons simply because it is convenient to use them [1].

3 Data Management

The way a researcher keeps data is just as important as the way they collect it. Data management is rarely regulated [2]. Making sure experimental data is kept accurate and secure is essential to ensuring valid experiments.

The importance of data retention duration depends on the type of data gathered. An experiment with little to no data remaining after publication is at risk of legal issues. Such issues include ownership/patent rights and allegations of misconduct [2]. A general rule for data retention is to keep as much that is required to replicate the original experiment [2]. Records should be kept in a way where they are both secure and easy for the researcher to access. Research data should be maintained for at least three years after the submission of a final report [5].

The sharing of research data also has benefits and disadvantages. Most pre-published research is advised to be kept on a limited open-data policy. This is due to the likelihood of collaboration, new insights to current findings, and the possibility of having data shared back to the original researcher [2]. This is kept limited due to the chance of pre-published shared data resulting in a loss of opportunity should someone else publish similar work before the original author. After publication, any data requests for data that are reasonable in nature and are done so for scientific inquiry should be followed through with [2].

4 Research Misconduct

Research misconduct can be narrowed down to three main concepts: fabrication, falsification, and plagiarism. These can occur at any point of the research process, including but not limited to proposal and publication [4]. Fabrication is producing results or data from nothing and publishing them as if they were observed through an experiment [4]. Falsification is taking data already collected and manipulating it before publication. This can be done to make the data support the researcher's stance or otherwise benefit the researcher. Plagiarism is the use of a person's ideas or words without citing them [4]. This can occur when using another person's content and the authors previous publication content in a report.

Not all questionable actions are classified as research misconduct. For an action to be labeled as such, it must be done "intentionally, knowingly, or recklessly"[4].

It must also fall outside of commonly accepted standards already established in the research field.

5 Conclusion

It is important to put ethics first in the case of any research experimentation. Doing so not only ensures the safety of the subjects observed, but also the credibility of the researcher. The points covered previously are all general guidelines to uphold when conducting scientific research. However, there is much more to take into account to conduct a fully ethical experiment. The hassle of preparation outweighs the potential consequences faced when attempting publication.

References

[1] Education Department of Health and Welfare. The belmont report, 1979.

[2] Michael Kalichman. Resources for research ethics education - data management, 2001.

[3] Michael Kalichman. Resources for research ethics education - human subjects, 2001.

[4] Michael Kalichman. Resources for research ethics education - research misconduct, 2001.

[5] NSF. Record retention and audit, 2005.