



Hugo Cardenas¹
 Alberto Leguina-Ruzzi¹
 Constanza Baquedano²
 Alejandra Ramirez²
 Fabián Santander²
 Ernesto Torres²
 Oscar Celis²
 Sebastián Archiles²
 Gabriel Arellano²
 Fabián Vergara²
 Valentina Romero²
 Pedro Gallardo²
 Robin Arbiter¹
 Pedro Orihuela¹

¹Department of Biology,
 Faculty of Chemistry and Biology,
 Universidad de Santiago, Chile.

²Undergraduate students,
 Licentiate in Biochemistry,
 Universidad de Santiago, Chile,
 when this article was written.
hugo.cardenas@usach.cl

Student View on Ethical Aspects of Undergraduate Research at a Chilean Public University

Puntos de vista de estudiantes sobre los aspectos éticos de la Investigación de Pregrado en una universidad pública chilena

Abstract

Most undergraduate and graduate students enrolled in Life Science colleges in Chile become involved in scientific experiments as subjects and as research assistants from the earliest stages of their studies. The complex hierarchical relationships between students and their professors are associated with particular ethical issues that are not fully covered in the universal guidelines that rule scientific research at Chilean universities. This paper reports the work of undergraduate and graduate students during an introductory Bioethics course and professors at a Chilean public university. The group observed a need for guidelines specifically addressing the ethical challenges of research performed with participation of students. Some ethical issues and proposals for such guidelines are outlined.

Keywords: Ethics, bioethics code, guidelines, student's research.

Resumen

La mayoría de los estudiantes universitarios matriculados en carreras biomédicas en Chile se involucran tempranamente en sus estudios en experimentos científicos, como sujetos de estudio y como ayudantes de investigación. Las complejas relaciones jerárquicas entre los estudiantes universitarios y sus profesores, involucran cuestiones éticas particulares que no están del todo contempladas en las pautas éticas generales que rigen para la investigación científica en las universidades públicas de Chile. Este documento presenta las conclusiones del trabajo de investigación y reflexión de estudiantes universitarios de pregrado durante un curso introductorio de bioética, junto con algunos profesores en una universidad pública chilena. El grupo concluyó que existe la necesidad de pautas que aborden específicamente los problemas éticos involucrados en la investigación llevada a cabo con la participación de estudiantes universitarios de pregrado.

Palabras claves: Ética, código de bioética, directrices, la investigación del estudiante.



Introducción

Scientific research at Chilean universities involves students as subjects of study and in expanding roles as researchers inside consolidated groups. The role of undergraduate students changes during their career, with an increase in their responsibilities as they advance in their studies (Cordingley *et al.*, 2007). The power differential between students and faculty members is both greatest when students enter their programs of study and yet most significant when they have advanced through their first degrees, for while the educational gulf is widest at the beginning of students' studies, there is increasingly more to gain or lose via their relationships with faculty as students become candidates for faculty positions. Moreover, as they advance in their degrees, students are expected to demonstrate increased creativity and independence that it is tempered by the need of faculty members to keep their students engaged in projects that contribute to the professors' productivity. Mentoring guides have been formulated by different universities such as Michigan University (Guillimore & Engelke, 2014), however, the complex issue of changing duties, rights, and responsibilities during the college

studies of future researchers has not been addressed in the universal ethical codes.

In Chile, most of scientific research is funded by the Ministry of Education through CONICYT (Comisión Nacional de Investigación Científica y Tecnológica) that enforces universal ethical guidelines for research under its sponsorship. However, CONICYT has not addressed the bioethical aspects of the involvement of undergraduate students in research.

Dissemination of universal bioethics principles in Chile is relatively recent compared with developed countries, and there is progressive interest in bioethical issues in the Chilean scientific community; we highlight the work done by Kottow (2008), Olivero (2008), Rosselot (2003) and Boccardo (2009). Universities in developed countries are designing new strategies to motivate their students in science and ethics, as was presented by Loike (2013) that might serve as models for Latin American institutions.

In terms of education and undergraduate teaching techniques, authors such as Villegas (2011), reviewed

the different trends in bioethics education identifying conflicts and ethical dilemmas that students face during their formative process, reinforcing the idea of an early bioethical formation from the undergraduate stage is important to provide the right tools to manage the ethical and even legal matters involved in academy. In Chile, Rodríguez and Lolas (2011) documented the experience of trainees on the ethics of biomedical and psychosocial research on the topic of research integrity in Latin America. This group identified and covered issues such as integrity of publication, reporting of scientific research misconduct, definitions of research integrity, proper composition of scientific ethical review committees, international multi-centric clinical trials monitoring and norms for scientific integrity and ethical oversight. Although infrequent, there was a case denounced in Chile of not submitting research protocols to evaluation by an Ethics Committee and not using informed consent. This case was a collaboration of the Universities of Glasgow (Scotland), Chile and Concepcion (Chile), and involved taking blood samples from indigenous people belonging to the Mapuche indians.



The main conclusion of Rodriguez and Lolas was that Latin America requires “not only ethical codes and guidelines, but mainly to respect subject’s rights and a true commitment in the research process by researchers, sponsors, subjects and scientific ethical review committees”.

Method

During an introductory course in bioethics at the University of Santiago, Chile, Biochemistry students in the last year of their Licentiate program evaluated the ethical guidelines of the academic research in which they were currently involved. They had weekly sessions where they reflected on their own experience, and that of their fellow students, in scientific experiments performed during their previous years during which they had participated first as assistant researchers and many times as laboratory technicians and progressively gaining roles in design of experiments and preparation of communications to congresses and in some cases manuscript writing. Their work encompasses the first semester of 2012 and extended during the next year in part because most of them engaged in postgraduate programs and preparation of the final version was finally the primary responsibility of the professor of the course in Bioethics. This paper reviews the group’s conclusions and perspectives regarding the need for a code addressing the rights and duties of undergraduate students both as subjects of study and researchers during their college studies.

Results

The reflections and conclusions are presented under thematic headlines for clarity.

The roles of undergraduate students in scientific research during their college studies.

College students in general have two roles in research at their institutions: (i) as research subjects, and (ii) as researchers, under supervision by faculty members. This second role constitutes an important part of their training as future scientists. It has been well documented that the integration of students into research groups in the early stages of their studies improves their academic performance in terms of grades and thesis development.

Students as subjects of study

The use of human subjects in research is essential for biomedical and social sciences. Abuses against vulnerable groups, extensively covered in the bioethics literature, led to the establishment of universal ethical codes that regulate the relationship between researchers and subjects of study.

Due to their low position in the academic hierarchy, students as subjects of study are at risk of abuse by faculty members who may have the dual role of researchers using students as subjects and as teachers of the same students during coursework. This dual subordination of students constitutes an ethical risk that requires analysis.

The main justification for recruitment of college students as subjects of research is the need to examine situations that primarily affect them, such as the possible impact of new teaching strategies in their courses. However, their hierarchical dependency is not equivalent to the higher degree of risk associated with socio-economic disadvantage and physical or neurological disability, so they may also properly be recruited for studies that may benefit the general population or people in their age group. The risks associated with their recruitment in this last case are covered in the Council for International Organizations of Medical Sciences (CIOMS)’s International

Guidelines for Biomedical Research Involving Human Subjects (2002), but require some adjustments, as explained below.

Student Ethics Committee

Traditionally, university students in Chile have not been asked permission on ethical grounds when recruited as subjects of study, and this reflects the rather paternalistic fashion they have been dealt with by most researchers in most colleges. There have been cases of research involving recruitment of students as study subjects where the absence of informed consent was a requisite for valid results, and this kind of methodological constraint needs to be examined by members of the same group exposed to such potential abuse. There is no logical, legal or ethical reason not to submit this and all kind of protocols to ethical evaluation by members of the same social group or community as the protocols would affect. The authors contend that all research involving students as subjects of study should be reviewed and approved by Student Ethics Committees (SECs) composed of graduate and undergraduate students, notwithstanding the role of other institutional ethical review boards. The development of these SECs may be aided by Chilean universities’ existing student unions. These unions have been very active in Chilean politics, and their work, which in the past included such goals as overthrowing the Pinochet dictatorship, has turned more recently to mass demonstrations against the high cost and increasing commodification of education. Their bioethical agenda today is exclusively concerned with animal cruelty at research laboratories, but they may have the clout, commitment, and organizational experience necessary to assume responsibility for the ethical evaluation of research projects enrolling college students as study subjects.



Informed Consent

Informed consent procedures are universally accepted and implemented today, but there are circumstances that may constrain the freedom to choose of individuals within cohort groups of college students. For example, the recruitment of all students in particular classes for testing of innovative teaching methodologies is not unusual, and it severely limits the possibility of refusal to participate. If new teaching methods are going to be tested, care should be taken to offer simultaneously the traditional and known options of teaching thus allowing students to freely choose whether or not to participate in the experiment. Additionally, some research projects have been submitted to the Research Ethics Committee of the University of Santiago by instructors and teachers asking for permission to submit entire classes of students to games designed to examine the tendency of students to exhibit undesirable behavioral traits in a simulated context, without providing information to those students in advance about the games' main objectives. Researchers based their requests to waive consent upon the Need to Know principle, forgetting that in the past this principle justified horrendous abuses of human dignity that today serve as examples of ethical misconduct in bioethics textbooks. To discuss extensively the pitfalls of the Need to Know principle is beyond the scope of this manuscript, but there are solid and well-founded ethical arguments against waiving the respect for human dignity in research, such as those made in the Ethics of Responsibility developed by Hans Jonas (1984) and later by Jonathan Sacks (2005). However understandable on the grounds of logic that some kinds of research require "blind" recruitment of study subjects, this paper's student authors contend unanimously that there is no justification for research that does not respect the autonomy

of students and that exposing their potential weaknesses in simulated games has the potential to produce more harm than good to the study subjects. Thus, they conclude, in these cases, the basic requirements for experimental protocols involving human subjects are not met. Additionally, there is at least one college group that may need special protection: first-year students, whose lack of experience and social support network on campus at the beginning of their college life make them less aware of the complexities associated with research at a university. Deliberate care must be taken to ensure enrollment of first-year students as study subjects respects their rights and dignity.

Abhorrent practices within research groups witnessed by undergraduate students

The students according to their experience identified three situations, representing ethical problems in the inter-personal and professional relationships within research groups:

i) Resume falsification.

A not-uncommon practice is over-inflation of curricula vitae by means of including among the authors friends and colleagues who have not contributed to specific papers, in exchange for reciprocal inclusion as co-authors in the papers of those colleagues. This practice in Chile was indeed already denounced by a member of the review boards of CONICYT in the web page of a university (visited on 26/07/16 <http://www.uai.cl/columnas-de-opinion/malas-conductas-cientificas>). Internationally, the most important documented case of fraud and "promiscuous" authorship is that of Robert Slutsky, a clinical investigator at the University of California at San Diego (UCSD). From 1983 to 1984, it was estimated that Slutsky published on average one paper every ten days

as reported by Locke (1986). An investigating committee concluded that as many as 68 of Slutsky's publications were likely to be fraudulent or of "questionable validity". Gift authorships were a common feature of Slutsky's publications. The UCSD report states that knowing acceptance of coauthorship by investigators who had made no significant contribution to the work made, in Marshall (1986) words, "a mockery of authorship of scientific manuscripts, and in this case may have contributed to the perpetuation of research fraud". This practice affects the whole system of science in which grant allocation is based upon productivity measured by the number of published papers.

ii) Inclusion of the name of recognized scientists in the list of authors despite them having had no role in the research.

The practice of including the names of recognized researchers in the list of authors as means of expressing gratitude for old professors and mentors despite them having no role in the paper has not been uncommon in Chile. To identify these cases based on the profile of expertise of the authors of published papers would not be difficult. Important researchers often are included as authors in papers to improve the chances of grant approval from local sources and subsequent publication. Strange in 2008 reviewed several situations based on his experience during his 32 years of career and emphasized in the consequence of authorship abuses, particularly the "Coercive authorship", defined by Claxton (2005) as authorship conferred to individuals in response to their exertion of seniority or supervisory status over subordinates and junior investigators. Authors such as Ritter (2005) have documented the "economics" of authorship in the English literature field where the "student versus real authors" issue



bring a series of complex situations that are trespassing to the scientific area that require a proper management though universal guidelines.

iii) Lack of recognition for student authorship.

Undergraduate students report a widespread sense that their contribution to scientific research is not properly recognized in papers originating in the laboratories where they train. In Chilean universities, undergraduate and graduate students often serve as technicians carrying out most laboratory experiments. This is important work, and in most cases the role of the student evolves quickly from performing simple technical procedures to a growing involvement in academic life including design of experiments, data analysis and contribution to the first draft of papers. It is understandable that this changing role of students of scientific disciplines in many cases makes it difficult to ascertain in a particular publication whether a student has made a contribution that reaches the degree of involvement in the whole process of research that merits his/her recognition as a true co-author of a paper. However, recognition of authorship is a right in the world of science, and it is necessary that codes and regulations dealing with ethics in the scientific endeavor be widened to help the scientific community at universities better cope with this important issue.

Discussion

The analysis of ethical aspects of their experiences in research laboratories during their undergraduate studies, performed by a group of biochemistry students at a Chilean public university and reported here, does not appear to have precedent in the specialized literature of bioethics. The high motivation of the students co-authoring this paper to write about and publish their views reflects their witnessing of and concern about eventual exploitation of undergraduate researchers and their optimism that this kind of ethical misconduct in their field can be addressed. The timing is right: academic research in Chile today is more exposed than ever before to public scrutiny because of widespread use of communication technologies and devices, including search engines and social media like Google and Facebook. The chance to search, process, and share information and experiences via the internet makes it easier now to collectively think and build a common cause. Undergraduate students have greater access to deeper knowledge of every aspect of research activity at university laboratories, and this has exposed traditional practices that collide with their ethical values and their sense of belonging to academic groups.

After return of formal democracy to the country in 1990, Chilean universities began a slow process of reco-

very from dictatorial practices. This process has yet to fully impact the undergraduate students that constitute the lowest rank and therefore the more vulnerable academic group. However, social support for positive change is indicated in the general, non-academic climate, demonstrated through UN support for development programs in Chile to strengthen vulnerable communities, and in the empowerment of subdued groups in democracies around the world in the past decade as mentioned in the report UNDEF (2012)

Among the recommendations made in this paper, two are deemed by the student authors as priorities, essential to their ethical autonomy. First, they need to have their own Student Ethics Committees in charge of the ethical surveillance of their own community and without whose approval no project using students as study subjects ought to be conducted. This is an extension of WHO recommendations regarding local communities subjected to protocols sponsored by international and external organizations, which have not yet been internalized at Chilean universities regarding their own undergraduate students. And, second, it is time to do away with the Need-to-Know principle that allows professors and researchers to use students as subjects without obtaining explicit consent. This long-standing practice violates today's universally accepted fundamental guidelines and is due for change.



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