

# **Approximation for the theory of Convergent Ethics for bioethics training for research**

## **Aproximación a la teoría de la Ética Convergente para la formación en bioética para investigación**

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### **Abstract**

The purpose of this study was to obtain the bioethical capacities of the students after the application of a pedagogical intervention based on the Convergence Ethics theory, for bioethics training for research. A qualitative, descriptive, cross-sectional study was carried out, whose methodology consisted of interviewing the students to know and characterize the bioethical conferencing that came from their research practice, then implemented a pedagogical intervention and finally, by the students, contrasting with those found prior to it.

The main conclusions drawn from the study highlight the positive effect of the pedagogical intervention in the achievement of bioethical abilities, and the evidence of a need for cross-sectional,

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continuous, prolonged, dynamic and integral bioethics training, both in undergraduate and in health professionals who conduct research.

*Keywords:* Training, skills.

## 1. Introduction

Since 1970, the American biochemist Van Rensselaer Potter (1), speaks of the fundamental role of education in the bioethical formation of people, especially in the current highly changing world and technological advances in medicine. To this end, it states that a curricular and extracurricular transformation is required in the educational field, which provides students with an accurate assessment of that social reality. Affirms that the role of the university is not only to train in knowledge but also in judgments of values, later, it adds the reflection against the responsibility of our generation with the future of the new generations (2).

Potter (3), highlights the need to have highly trained people in science and humanities to protect human welfare. In the following years, it has been said that this requires a paradigm shift in education in the global world (4).

In the last decade, numerous researches have examined the phenomenon of bioethical training in higher education in health areas (5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19), evidencing the perspectives that have been inserted in the training of professionals in different countries, identifying their methodology, training objectives, approach from the different disciplines of health and how these allow the achievement of bioethical abilities in the student.

Training in bioethics to research in health areas requires the student to understand the sense of responsibility required in front of the person or phenomenon being researched, in front of the re-

search process, facing the environment that surrounds it. This is achieved through a pedagogy that allows the achievement of bioethical capabilities that prepare it to preserve respect for people, the environment and ecosystems in general.

The type of didactic strategy that favors the achievement of these bioethical capacities has been evidenced by several investigations (20, 21, 22, 23, 24, 25, 26). Regardless of what is used, it must be dynamic, integrative, interdisciplinary and immersed in an enriching, critical, transformative and inclusive pedagogical practice that prepares the student to resolve the bioethical conflicts that may arise from his acting as a researcher, preparing him with enough criteria to solve them, and to assess the bioethical consequences of his actions.

To prepare argumentatively and conceptually the student for the analysis of bioethical conflicts can help to avoid, solve and/or regulate these conflicts, and contribute to give an answer to the practical problems of bioethics in investigation, for it the theoretical approach that could give that Baggage and conceptual sufficiency, is through the theory of Convergent Ethics.

This theory has as its author and precursor the philosopher Ricardo Maliandi, who focused his precepts on the analysis of conflictivity, its natural imbalances and its forms of equilibrium. Getting into the analysis of the practice of bioethics through the analysis of the pure ethical principles, which he calls “cardinal principles” and the Anglo-Saxon principles of Beauchamp and Childress, which, according to Maliandi, are plural and may enter into controversy. He recognizes that it is essential to minimize them, and for this he proposes the “meta-principle of convergence «that serves as a mediator, allowing us to find points of equilibrium as well as convergence between them” (27).

Convergent Ethics theory has as its central theme conflict in moral issues, understood as the rational way of solving conflicts, and these considered opposition, clash or confrontation between

elements that are hindered or hinder each other; in the case of ethics, the main conflicts are between principles (28).

In order to achieve a closer approach to the phenomenon of conflictivity, the author proposed general conflictive structures deployed in two perspectives: the synchronic and the diachronic. The synchronic expresses the conflict that can arise between the universal and the particular. The diachronic expresses the conflict between permanence and change (27).

The Cardinal principles proposed by the author (Conservation, Performance, Universality and Individuality), also correlate them with these perspectives. In the diachronic perspective are the Conservation and Performance, the first, establishes the obligation to enable the permanence of what is important to do; the second, to enable the Performance of something when there is an absence of certain value to perform. In the synchronic conflict, is the Universality and Individuality, the first, expresses the tendency to think about the rules and the human being in general, the second, meets the needs of man in particular and justifies exceptions to the rules and regulations (27).

Maliandi later joins with the doctor Oscar Thüer and in his work (29), they extend the theory by systematizing the cardinal principles, correlating them with the two-dimensionality of reason (foundation and criticism) and with what he calls the “conflicting structures”, and from there he obtains the four bio-techno-ethical principles: Caution, Exploration, Non-discrimination and Respect for Genetic Diversity.

In the precautionary principle, it is recommended to reduce the risks involved in new technologies. The Exploration principle has two expressible possibilities, one is the achievement of benefits, and the second, the elimination of obstacles to scientific research, and the intellectual right to investigate. The principle of No genetic discrimination, alludes to the demand for justice in the face of the current possibilities of predetermining the genetic code of an individual and all research around it. The principle of Respect for

Genetic Diversity expresses respect for the genetic autonomy of individuals and groups.

Another contribution of the convergent theory is related to the reflection facing the moral conflicts which arise from ethos, and there it is found a first level, the pre-reflexive, which corresponds to the exact adjustment to the standards in which the moral reflection emerges, when it is not known how to apply them. The second level is the reflexive, which corresponds to why it is necessary the application of these, that is to say the basis, the critics and the questioning of what is normative. The third level, is the one of the Meta-ethics, which analyzes the meaning and use of moral terminology. The fourth level, is the one of Descriptive Ethics, which takes care of to look at the feasibility of the standard, from the scientific explanation of human behavior point of view (30).

The impression about the meaning of this research was that the pedagogic practices for the teaching learning of the Research in Bioethics, starting with the analysis of the pointed conflicts in the theory of the Convergent Ethics. In addition, the correlation with the cardinal principles, with the Bioethical Principles, and with the bio-techno-ethical-principles, will favor in the student an integral approach of conflicts, by means of a practical learning of bio-ethics, allowing him to widen and extend his bioethical abilities in the research field.

This study objective is oriented to compare the bioethical capabilities reached in the students, before and after the application of a pedagogic intervention for the teaching learning of bioethics in research, in light of the theory of Convergent Ethics Theory, in a post graduated program in bioethics in Mexico City.

## **2. Materials and method**

A qualitative, descriptive, and transversal study was performed. The population included students of a post-degree program in

bioethics, of a private university in Mexico City, who voluntarily wanted to participate in one of the stages of the doctoral research, which is being performed around the teaching learning phenomenon of bioethics for research. This stage is considered as an immersion in the field.

For the selection criteria students were included who should be adults, which would have done research in health areas, and that they would had been taking post-graduate courses in bioethics at this University. There were three participants in total, two of which were physicians, and a third one, an Attorney at Law who works at a health institution; the three of them are students in the Masters in Bioethics Program, and members of the Committee on Ethics in research, at the institutions where they work professionally.

The interviews were aimed at analyzing the bioethical conflicts that arise in the student during his research and his bioethical abilities to carry out research, before and after the application of the pedagogical intervention.

After the students expressed their intention to participate in the study and their informed consent was obtained, the methodology included, at first, the construction of some guiding questions and the development of a semi-structured interview. In a second moment, it was carried out a session of the pedagogical intervention based on constructivist methodology and with the pedagogical strategy of the case study. There the students performed analysis of the bioethical aspects of a proposed research study, then the aspects of the theory of the Convergent Ethics and after that they carried out a new analysis of the research in the light of this theory; in a third moment, a new interview was applied.

The above, generated an information that was analyzed in light of the theory of Convergent Ethics in the Atlas Ti program. The semantic similarity of this analysis gave rise to a series of codes, and these, to subcategories and categories, whose results are presented below.

### 3. Results

#### 1. Analysis made to the interviews prior to the application of the session of the pedagogical intervention:

A total of 15 base codes, 8 general codes, 5 subcategories and 2 categories emerged, described in the following table:

**Table 1:** Analysis performed prior to the application of the pedagogical intervention

Category	Subcategory	General Code	Base Code
Pedagogical aspects		Needs of ethical training for research	
		Basic conceptual training	
Aspects related to Convergent Ethics	Cardinal Principles	Synchronous Conflict (Conflict of Universality and Individuality)	
		Diachronic Conflict (Conflict of Performance and conservation)	Recognition of the conflict in the health research process
	Problems arising from conflict		Conflict of truth
			Vulnerability conflict
			Conflict of opportunity
			Conflict of application of principles in investigations
	Ethos conflict	Pre-reflexive Level	Values and morality as forms of equilibrium in the face of conflict
			Values and morals as determining factors
	Reflexive Level	Responsibility in the application of ethics	
		Ethics as a requirement of a document	
	Aspects of principlism	General Aspects	Conceptualization of principles
			Stage of the investigation in which the principles are applied
		Ethical principles guide the researcher's actions	
	Of the conflictivity in general	Conflicts related to the principles	Conflict of autonomy
			Conceptualization of the conflict
	Perception of experiencing the conflict		

**Source:** Own elaboration of the researcher.

*Category 1: Pedagogical aspects*

This category contains two codes: “Knowledge of Bioethics” and “Recognition of the need for bioethical training to investigate”.

In the code “Knowledge of Bioethics”, the student states that knowing about the theories related to ethics allows them not only to expand their knowledge, but also to reason more broadly about the importance of ethics in research and get closer to the ethical and bioethical problems that arise in such process. However, they make clear that this knowledge must be accompanied by a greater practical exposure to several investigations to improve their bioethical capacity to investigate.

Regarding the “Recognition of the need for bioethical training to investigate” code, it can be observed that there is an explicit manifestation of the need for specific knowledge around ethics for research. Even though the student values new knowledge in ethics, it is still important for him first, to master the Anglo-Saxon principles, and to be able to move towards the application of other types of principles. He considers that bioethical abilities are achieved through practice, when he applies the principles to real investigations.

*Category 2: Aspects related to Convergent Ethics*

The second category is called «Aspects related to Convergent Ethics», so named since it emerged from the precepts of this theory. Here 5 subcategories were found:

1. Cardinal principles.
2. Problems that arise from conflict.
3. Conflicts of *ethos*.
4. Aspects of principlism.
5. Conflict in general.

Each of these sub-categories has immersed some codes that will be analyzed in an independent manner.

*Subcategory 1: Cardinal Principles*

According to the types of conflict, that this theory handles, data could be divided into two general codes: «synchronic conflict», and «diachronic conflict».

Regarding synchronic conflict, conflict evidence was only found between the Universality and Individuality, for the students declare that it is not easy to determine in research, when it should be considered individual benefit more than the collective related to the application of the investigation results.

Regarding the diachronic conflict, the students express Performance Conservation Conflicts, due to the fact that there is an acknowledgement that the research process in health leads to a conflict, because generally because sufficient information is not given to the person under investigation, enough time to clear his doubts is not given to him, and the health personnel does not have sufficient knowledge in ethics and bioethics, which generates that many times the patients dignity is harmed. Nevertheless, and in a contradictory form, by exploring around the presence of conflicts and research, they consider that not every investigation is carried with them, and that their presence is specially related to the type of methodology being used. They express that not only there can be a conflict, when there are investigations in which the patient intervenes directly, for example beginning with the application of a medication.

*Subcategory 2: Problems that derive from conflict*

This subcategory arises when exploring the type of conflicts that students have experienced in conducting research. There are 4 conflicts: truth, vulnerability, opportunity and the application of principles in research.

The conflict of truth is related to the scant follow-up that is made to the investigations and their results, after they are approved by the ethics committee, it seems that the ethical aspects were only considered to meet the requirements of a document and not be-

cause in reality they are applied in the different stages of the investigation.

Conflict of vulnerability worries students for the per se vulnerability of the patient when it arrives at a hospital institution, which would be joined to which it is exposed when it does not have enough information to make decisions regarding its participation in an investigation.

The conflict of opportunity refers to it when the student researcher finds in the patient the means through which he can meet a degree requirement, which is his research, but it is not observed that the research is the answer to a need felt by the patients or for his\her benefit.

The conflict in application of principles in the investigations is evidenced when the principles are not contemplated expressly and completely in the documents, which generates doubts in the application of the same in the course of the investigation.

*Subcategory 3: conflicts of the ethos*

This subcategory is made up of two codes: «reflective level» and «pre-reflective» level, each of which is composed of other codes.

At the pre-reflective level, students state that the lack of knowledge in the undergraduate level compensates for it by applying their own values and morals in research, which they also apply when they participate in ethics committees.

At the reflective level, the students express that the ethics applied by the researchers seems to be irresponsible, since it is based mainly on the fulfillment of a requirement in the document that is passed on to the ethics committees. Although in some way the evaluation is done in these committees they serve to correct those deficiencies found in those documents. The ethical deficiencies explain them because in the academy and in the health institutions the relevance is not given to the subject, for that reason the researchers seem not to be prepared to apply it. They consider that their research practice has been responsible despite their lack of

knowledge in bioethics for research and they state that their ethical decisions are based on their knowledge, on their professional experience, and on finding deficiencies in other researchers, as this stimulates their interest in the proper application of ethics.

*Subcategory 4: aspects of principlism*

This subcategory is made up of two codes «general aspects» and «conflicts related to the principles».

In the code «general aspects», it can be observed that although there is no clear conceptualization regarding ethical principles, they do name them and consider that their application helps maintain respect for the patient's dignity. They believe that the principles guide their actions as researchers and that they must be applied from the moment the investigation is initiated.

In relation to the code «conflicts related to the principles», the principle of beneficence is the one that most worries the students. They feel that they are violated more frequently in the investigations, is violated as a consequence of the lack of information to the patient about the research, when the information in the informed consent is incomplete and when there is delegation of that autonomy in vulnerable patients.

*Subcategory 5: of conflict in general*

This subcategory is made up of two general codes: «perception of the experience of the conflict» and «conceptualization of the conflict».

In relation to the code «perception of experience of conflict», it can be observed that students do not realize that they experience any type of conflict during their research experience. However, it is striking that in their stories they manifest various types of conflicts and that when these are presented, the guidance of an expert is useful to be able to settle in front of them.

Regarding the «conceptualization of conflict» code, although there is no conceptual clarity of the students against their defini-

tion or against the difference with the concept of dilemma. They consider them synonymous, they do show that they occur, when there is no clarity in the application of one principle to another and evidence that a certain type of conflict is perceived at the time they have evaluated research.

**2. Analysis made to the interviews after the application of the session of the pedagogical proposal:**

A total of 9 base codes, 3 subcategories and 2 categories emerged, described in the following table:

**Table 2.** Analysis performed after the pedagogical intervention.

Category	Subcategory	Base Code
Pedagogical aspects		Knowledge of ethics
		Recognition of the need for bioethical training to investigate
Aspects related to Convergent Ethics	Conflicts of the <i>ethos</i>	Bioethical reflection
	Aspects of the principles	Conceptualization of the principles
		Perception of limitation of ethical principles
		Stage of the investigation in which the principles are applied
	Of the conflictivity in general	Conceptualization of conflict
		Recognition of the conflict in the health research process
		Knowledge as a form of equilibrium in the face of conflict

**Source:** Own elaboration of the researcher.

*Category 1: Pedagogical aspects*

This category contains two codes: «Knowledge of Bioethics» and «Recognition of the need for bioethical training to investigate».

In the code «Knowledge of Bioethics», the student states that knowing about the theories related to ethics allows them not only

to expand their knowledge, but also to reason more broadly about the importance of ethics in research and get closer to the ethical and bioethical problems that arise in such process. However, they make clear that this knowledge must be accompanied by a greater practical exposure to several investigations to improve their bioethical capacity to investigate.

Regarding the «Recognition of the need for bioethical training to investigate» code, it can be observed that there is an explicit manifestation of the need for specific knowledge around ethics for research. Even though the student values new knowledge in ethics, it is still important for him first, to master the Anglo-Saxon principles, and to be able to move towards the application of other types of principles. He considers that bioethical abilities are achieved through practice, when he applies the principles to real investigations.

*Category 2: Aspects related to Convergent Ethics*

This category is made up of three subcategories:

1. Conflict of *ethos*.
2. Aspects of principlism.
3. Conflict in general.

*Subcategory 1: Conflict of the ethos*

This subcategory shows the bioethical reflection that the student makes of his own knowledge, the contributions of new knowledge and his interpretation of the benefit he would achieve from the combination of both in future research contexts. In addition, on the need that the ethical knowledge would not be reductionist, for it is required a great background given the complexity of the research, and for the human being himself, requires a wide background of the researcher in this topic.

*Subcategory 2: Aspects of principlism*

This category is made up of 3 codes:

1. Conceptualization of the principles.
2. Research stage in which the principles are applied.
3. Perception of limitation in the principles.

In the “aspect of principlism” code, it can be observed that the student values the applicability of the Anglo-Saxon principles and in turn, the Convergent Ethics ones, without excluding none of them, but making them supplementary.

In relation to the code “Phase of the research in which the principles are applied”, all students consider it important that the principles be considered and applied transversally in the research and from the moment of the planning itself.

With regard to the code “Perception of limitation of ethical principles”, students perceive insufficient Anglo-Saxon principles to assess the ethical aspects in research, especially in relation to application in research that have to do with technological advances.

*Subcategory 3: Conflict in general*

The third subcategory is made up of the following codes:

1. Conceptualization of the conflict.
2. Recognition of the conflict in the health research process.
3. Knowledge as a form of balance in the face of conflict.

In the code “Conceptualization of the conflict”, it can be observed that the conflict is perceived as a problem to which response is required causing the least possible harm to the person and happens when two principles come into opposition. In some cases the student can extrapolate to specific examples of an investigation.

Regarding the code “Recognition of the conflict in the research process in health”, there is no uniformity in the response, because while for some students the conflict is related to the type of research, for others, conflict is always present in all investigations.

Regarding the code “Knowledge as a form of equilibrium in the face of conflict”, the student states that a clear and particular

knowledge of the principles is necessary, because these are a useful tool in the resolution of conflicts that are generated in research. They also call attention to the need to train all the actors involved in an investigation and the members of the research ethics committees.

#### **4. Discussion**

Comparing the data obtained before and after the pedagogical intervention, we found the same two general categories “Pedagogical aspects” and “Aspects related to Convergent Ethics”. However, some subcategories and codes vary or disappear after the pedagogical intervention; the main reason is that there is evidence of greater achievement and application of knowledge in relation to bioethics.

Although it is true that a greater reflection is observed regarding the importance of bioethics for research, for this pedagogical intervention to show stronger results, it must be more lasting, continuous and practical during its bioethical and research training, given that the duration of the application of this study and the number of participating students could constitute a limitation of it.

The pre-reflective level, that is to say, the one considered as spontaneous, natural and daily reflection (30), does not appear after the intervention; but the reflective yes, the one of voluntary and intellectually deliberate, systematic and orderly reflection (30), since its answers are contained of greater knowledge, ethical and bioethical reasoning.

After the intervention, the student continues assigning a clear relevance to the Anglo-Saxon principles, they consider that they prevail when applying ethical aspects in research and that they must be contemplated from the planning of all investigative process, but they recognize that they must be mastered in order to advance to another kind of principles. However, they state that they are meager if the researcher is to have the bioethical capacities to be able to resolve the appearance of the conflict during the investigative process.

However, it is worth remembering the theory applied in this study, it deals with the same four Anglo-Saxon principles only adapted to different bioethical fields and making a current extension of bioethical domains (31), therefore, the discussion does not focus on forming the student moving towards a complexity of the Anglo-Saxon principles but from the depth of knowledge of each one of them and in their reflection without relativizing them, whose contribution is provided by the application of the Convergent Ethics theory (32).

After the pedagogical intervention, there is no significant change in relation to the conceptualization of the students about the conflict, they perceive it as a problem that arises during the investigation and in front of which a response must be given. They state that the way to resolve a conflict is with ethical knowledge, and this is achieved with specific training for both theoretical and practical research from the undergraduate level, and at the same time directed to all researchers and research ethics committees.

The meta-principle of the Convergence theory (33) is confirmed because the conflict is present in the students in all-investigative process, but it is also recognized that it is essential to minimize them for the benefit of all the people involved in the research. After the intervention there are fewer manifestations around the conflicts that arise during the investigation, greater understanding of the presence of ethical conflicts and greater criteria about the way in which these can be resolved or addressed. In some the idea persists that the conflict is only related to a certain type of research, but it is evident that the equilibrium point that this requires to achieve convergence (27) can be achieved through the ethical training of researchers, since this would prepare them to face them.

Although not all the Anglo-Saxon principles or those proposed by the convergence theory were evidenced, there is a greater achievement of students' abilities to assess ethical aspects in the investigations. However, it is necessary to broaden the exposure to the application of the ethics and bioethics through the Perfor-

mance of practical exercises with the research, through the case study methodology or another type of intervention that is dynamic, constructivist and resulting positive, by generating significant learning in the student, so that he can extrapolate this knowledge in future research.

In case of making protocols within the health institutions, it is required that the time spaces that the researcher uses for these tasks are independent of their care work, in order to ensure greater dedication to the person subject of research, decrease the risk of vulnerability for him, and at the same time ensure compliance with requirements by the ethics committees of the institutions.

In order to verify the fulfillment of ethical aspects, after the approval of the investigations, the ethics committees must establish as a procedure, a follow up and evaluation, periodic and frequent of these.

The problems in the research carried out by students should arise from the real needs of the subjects of research and not simply from compliance with requirements in an academic program.

There is a need to train students in the identification of ethical conflicts in research and in their management, beyond the simple teaching of ethical principles.

All these issues reflect that the application of this theory in the practice of bioethics in research serves as a basis or support for a responsible practice, as mentioned by Salerno (34) and that provides useful elements for analysis related to bioethics and biotechnology, coinciding with Lariguet (35).

## **5. Conclusions**

The application of the pedagogical intervention was part of one of the stages of a doctoral research around the teaching learning of bioethics for research, as such, it provided enough tools for the construction of a more integral pedagogical proposal.

The impression of the meaning of this research is corroborated because the Convergent Ethics theory served as a useful tool for teaching-learning of Bioethics in Research, in relation especially to the analysis of conflicts, which being present in the student during the process research is necessary to address them.

This study also revealed information related to cardinal principles and bio-techno-ethical principles, which is why teaching from the theory of Convergent Ethics allowed expanding the bioethical abilities of students to carry out research, thus broadening the principlist perspective in their training.

The teaching of bioethics should be encouraged in research from the undergraduate level and at all other levels of education, to all persons who carry out research in health institutions and to members of ethics committees.

The pedagogical strategy of the case study proved to be a pertinent, relevant and meaningful tool for training in bioethics, it is convenient to use this or another dynamic methodology for the teaching of bioethics, but beyond that, it should be exposed in a continuous and prolonged way to the students and researchers to the bioethical analysis of investigations, contributing significant experiences so that in the future they can extrapolate that knowledge to their own or others' investigative problems.

The group of students showed a great willingness to learn about bioethics for research because they perceived that it was their own learning need, which together with their professional experience, research and current academic training, allowed them to quickly advance to the achievement of bioethical abilities.

Having the experience of applying a pedagogical intervention in a cultural and academic context different from their own, allowed as a teacher from different contexts, to ratify the implications of training in the bioethical performance of students during undergraduate and later during their professional performance.

The recommendation that is most visible when carrying out the data analysis is that a curricular revision of the programs and subjects

is necessary in areas of health, which may make viable during the career, the continuous and transversal training in bioethics for the investigation; congruent with society's requirement to train researchers with high bioethical abilities.

Continuous education in this subject is necessary for researchers who work or perform research work in health institutions that carry out research studies.

Despite having been a short intervention, significant changes in students' bioethical abilities could be observed, which leads us to believe that broader and more comprehensive interventions could demonstrate greater results. This invites to do more extensive studies where this phenomenon is more widely reviewed, in order to be able to contribute to the training of future researchers.

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