Medicine of improvement, challenge to the purposes of Medicine?

Medicina del mejoramiento, ¿reto a los fines de la Medicina?

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https://doi.org/10.36105/mye.2020v31n3.03

Abstract

Improvement medicine challenges the traditional goals of the medical act based on therapeutics, and approaches transhumanist thinking. Nowadays, several modalities of improvement medicine are practiced with scientific endorsement, but their extremes apply in healthy subjects through enhancement must be reflected in order to not lose the true meaning of Medicine and the care in beneficence of the patient.

Keywords: improvement medicine, enhancement, transhumanism, goals of medicine, medical act, bioethics.

Introduction

Human bio improvement (enhancement) is no longer a matter of science fiction to be a reality in medicine. Contemporary medical

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Reception: March 20, 2020. Acceptance: May 15, 2020.

practice includes various practices whose objective is not to cure diseases, but rather to improve the individual. Some of these practices, although not therapeutic in themselves, have shown a direct impact on the quality of life of the subjects, such as preventive medicine, palliative care, obstetrics, sports medicine, plastic surgery, contraception, fertility treatment, and cosmetic procedures among others. These practices are considered standard in current medicine and act under a different framework from that of curative medicine; they do not propose extreme changes in the organism or in human behavior, but rather optimized functions or previous non-existent functions such as contraception and techniques for assisted reproduction.

Currently this collection of practices has increasingly diversified towards the practice of enhancement or improvement in healthy people. It is about the use of drugs, surgery and biotechnology, in some cases with extreme results.

The following article was made through analysis, thoughts and a proposal of the scientific and representative literature on the subject of human improvement medicine.

1. Improvement medicine

For improvement medicine we accept Nick Bostrom's definition: *Improvement is typically opposed to therapy. In layman's terms, therapy aims to fix something that is wrong, curing specific illnesses or wounds, while enhancement intervention aims to impel the state of an organism to become better than that considered to be a normal state of health.*[1]

There are a lot of daily examples of the medicine of improvement, but a clear example of this is the use of *Sildenafil* (Viagra) in healthy young people, to enhance their sexual performance. Many people, some young women, want to have sexual experiences to the limit. These people are not satisfied with a normal function,

they want to maximize their functions, regardless of possible risks, as long as there are quick and obvious results in their functions, in this case, the sexual one.

Another example is the rise in the use of cognitive pharmacological enhancers (CPEs) such as modafinil, methylphenidate, and acetylcholinesterase inhibitors. This non-therapeutic consumption has occurred mainly in academic and work contexts, and the interest of the general public has increased significantly, as several authors point out.[2]

One of the relevant points is also found in the prescription of antidepressant drugs such as fluoxetine (Prozac), also used without a specific therapeutic reason, but as a mood enhancer in a large population apparently healthy or with mild psychological disorders that rather than requiring pharmacotherapy, they would be candidates for psychotherapy. Many people without serious psychological problems, experience setbacks in their lives that could be resolved through positive attitudes and endogenous endorphin-releasing activities; instead, they take antidepressants and make no effort to re-educate the emotions. Célis points out that only *the Mexican market for these treatments is equivalent to about 180 million dollars a year*.[3]

The abuse of this drug is already scientifically recognized,[4] as well as the need for its use to respond to specific therapeutic reasons.

Cosmetic surgery is another relatively new application in the health field and has established itself as a global business.

In the United States, it is estimated that this industry generates between 15 and 20 billion dollars a year, being close to cosmetology with 25 billion annually and more than 30 billion annually from the diet industry. Already in 2017, for example, the American Society of Plastic Surgeons announced that in the last year more than fifteen million plastic surgeries had been carried out and the number increased annually by more than 10%.[5]

Thus, the International Society for Aesthetic and Plastic Surgery[6] pointed out that breast augmentation is a frequent procedure, 13%, but, far below abdominoplasties in 19%, vaginal reconstruction in 30% and pectoral implants in 50%, surgeries every time are increasingly aimed at personal subjective purposes that move away not only from therapeutic indications, but from recommendations towards patient safety, while continuing to consider universal aesthetic guidelines.

A rational and necessary performance in fields such as plastic surgery complies with the principles of professional ethics, but the exercise dedicated only to carrying out patient fantasies, or extreme surgery (such as performing interventions to resemble an imaginary or cinematographic screen character...) exceeds the medicine's own purposes.

Associated psychiatric problems are seldom mentioned or studied by surgeons themselves.[7] A number of studies have consistently suggested an increased risk of suicide among women who have undergone cosmetic breast augmentation surgery; Rohrich[8] notes that there is a slightly higher risk (slightly more than double the one found in the general population) of suicide among women with breast implants.

According to the Diagnostic and Statistical Manual of Mental Disorders, Body Dysmorphic Disorder (BDD) is designated as an Axis I disorder characterized by the intense concern of an individual with an imaginary defect in appearance. As with many other disorders, in Axis I, the individual must experience significant distress and/or functional decline. BDD occurs in up to one percent of the general population, but it increases markedly in people who compulsively go to plastic surgery.[9]

The fact is that the use of medicines and surgeries in healthy people, especially young people, draws much attention in the field of bioethics, since it is doctors who provide the prescriptions and the technology for their administration on many occasions outside the therapeutic indication.

These are only a few examples of the medicine of improvement or *enhancement*, acts performed by doctors, which are related more to the medicine of desire than of own health needs.[10]

The fact is that biotechnology has enabled a new purpose of medicine, that of performing possible improvements in addition to the therapeutic tradition.

It is therefore evident that these type of interventions are positioned both in the social and professional sectors and constitute a new way of acting within the field of medicine.

This search for perfective changes, as well as the expansion of functions and the creation of new skills lead to a reconsideration of the aims of medicine and a new doctor/patient relationship based on the acceptance by doctors of the subjective wishes of their clients.

Although these are only a few brief examples, it is clearly appreciated that medical practice has expanded and that it now considers acts that were recently not within the scope of its practice. Technology has broadened the field of the medical act, but more importantly, it has also varied, for many professionals, the proper purpose of medicine, passing from the field of therapeutic need to the medicine of people's desire, which, since they are not patients, for they are in a state of good health.

In order to differentiate a medical act from that of a desire, it is necessary to define the field of the first.

2. The current purposes of medicine

For more than twenty-five centuries, medicine had been viewed as the goal and foundation of disease cure, restoration of health, and more recently, disease prevention and rehabilitation. Scientific and biotechnological advances, as well as the incidence of social and legal factors in the world of health, have led, especially medicine, to

reconsider its epistemology and praxis, since the emerging expectations exceed the classic objectives of medical care. The unilateral model of therapeutic decision has been forced to change due to the incidence of multidisciplinarity in health areas; Biotechnology, economics, politics, law, philosophy,[11] among many other fields of knowledge supplement the understanding of problems, but also make them difficult for decision making due to their complexity.

The challenge of reformulating which in today's society, could be the new ends of medicine, was taken up in 1993 by the Hastings Center in New York under the direction of Daniel Callahan under the international project entitled The Goals of Medicine.[12]

Experts from 14 countries participated in the project. The working group defined the following four purposes:

a) Disease prevention and health promotion. Included in this phrase, we can break down its meaning. Prevention is not only less expensive than cure, but maintaining health is the main goal of practicing medicine. This intention does not exclude the fact that we are vulnerable and imperfect beings and, therefore, disease and death are not denied, so this objective is not the sole focus of medicine.

b) Relief from pain and suffering caused by illness. Traditionally fighting against pain and suffering has been an incentive for the development of medicine, humanistic care, contact among people, it is part of the art of the practice of medicine.

c) The care and healing of those who suffer from disease, and the care of those who cannot be cured. The traditional purpose of medicine has now been extended to palliative actions, by focusing on this important field that meets both science and the human sense of it.

d) Prevent premature death and enable a peaceful death. Reason and reality show us the impossibility of avoiding death, since it is the destiny of every living being. The goal is not that, but rather, to help face that reality in the absence of catastrophic symptoms that prevent the person from having a quiet death. These actions

do not mean euthanasia, but control of physical and psychological symptoms that cause extreme suffering to the person. Palliative medicine is currently one of the most valued medical actions in the health sciences.

However, these interesting conclusions, barely issued in the year 2000, in very few years have been questioned by the medicine of improvement.

For the traditional view, indeed, the purposes of medicine, in the XXI century, should be more than the cure of disease and the lengthening of life, but keeping in mind that the power of medicine is not absolute, for that, we must limit the trend, evident in developed societies to medicalize all human problems.

Today's medicine dedicates many of its efforts to prevention; they reduce the probability of illness and death through vaccination and preventive medicine, through processes that decrease aging or interventions to decrease the risk of disease or disability.

All this remains therapeutic, since it accepts the human condition of vulnerability and, without losing sight of the reality of death and disease, tries to avoid the natural shortening of life or the emergence of diseases. An example of this type of action could be the use of lasers to avoid blindness or intraocular lenses, as well as, various prosthesis that are intended to restore normal functions, but are not intended to lead these patients to extraordinary abilities.

In light of its possibilities and contemporary problems, what should be the future priorities of the practice of medicine? Since the human condition is inseparable from disease, pain, suffering and, finally death, a medical practice appropriate to these conditions must begin by accepting human finitude and teaching or helping to live in it for the benefit of the patient and not being carried away by unstoppable technological development.[13]

Having reflected on the current aims of medicine, what can we propose in relation to the medicine of improvement?

3. Medicine of improvement?

What is human improvement? Is more always the best? The use of drugs and biotechnologies that enhance functions, as it was stated earlier at the beginning of this article, it is a current reality in medicine, but there are extremes that bring us closer to dilemmas that must be analyzed by Bioethics, as it happens in the following cases:

Neil Harbisson presented at the events of Technology, Entertainment and Design[14] (TED), is a 32-year-old young Englishman, who suffers from achromatopsia, a congenital disease that only allows him to see gray scale. Through biotechnology, an antenna, connected to a chip, which translates color into sound, was implanted in his skull in the occipital region. With this fact, medically assisted, Harbisson has acquired unnatural functions in the human being. In fact, it is considered a *cyborg*. In light of the aims of modern medicine, how could this fact be classified? Does any technological application in humans constitute a medical act?

In this case, an attempt was made to supply a missing function in the patient, by a different one, but it was not in any way a restorative action, since the primary function was never installed. Therefore, it was a matter of the person having a quality not perceived in humans (correlating color waves with different sounds). From the bioethical perspective, patient autonomy was the key decision point to obtain a trans human function that, until now, no practical application for this is known.

A more radical case is found in extreme surgeries such as the case of *Kalaca Skull*, widely known in the mass media. This is a Colombian man, Eric Yeiner Hincapié Ramírez, who underwent several surgeries in which his nose and ears were mutilated, his sclera was pigmented black and his tongue was cut forked to look like a skull.[15] Actions taken by a doctor. Is it ethical to consider the autonomy of patients a priority, even if they want mutilation? Is it one of the purposes of medicine to consider all people's fantasies as rational requests?

Again, the autonomy and subjective wishes of this person were the point to be considered by the professionals who carried out these acts of mutilation. From an ethical perspective, damaging healthy organs or functions is opposite to charity, but professionals in this case valued the client's autonomy more strongly.

Taking into account the definition of medicine of improvement, we could consider one of the cases, that of Harbisson, but in that of Eric Yeiner, it is very doubtful to justify it, from the practical reason and less from the therapeutic one. But, the fact is that these cases exist and they are not the only ones, for which a deep reflection of where current medicine is headed is required.

4. About the patient's requests

The considerations of any improvement towards non-health functions start from a vision based on a positivist utopia, where everything that can be done must be done. This way of thinking was precisely one of the reflective arguments of Bioethics since its inception, precisely postulating that science should be applied with conscience.[16]

Doctors, at the service of clients, not of patients, will accept and support the changes proposed by them, even those furthest from medical purposes and thus these health professionals will become, not a prestigious authority for their advice based in scientific evidence and in ethics, but in highly qualified employees, at the service of whoever buys their services.

The fact is that in humans every change in biological improvement becomes a moral problem, especially if it is extreme, as E. Pellegrino points out in his book Biotechnology and the Human Good.[17]

5. The role of autonomy in the current health relationship

In modern medicine, respect for autonomy has been a historical achievement in the exercise of a more participatory and fair medi-

cine, but taken to the extreme, it has contributed to the emergence of a powerful movement[18] that considers as a right all desire, rational or not, of individuals.

Many doctors in favor of this extreme movement consider those who come to them as only clients and themselves as service providers, therefore this is just one more commercial activity.

The reasons why some clients request extreme services have their origin in subjective evaluations, because they consider themselves and/or the society to be in a disadvantage condition. As E. Pellegrino rightly points out, *These people cannot be considered patients because they do not have any lack regarding the norm or some disabling disease or condition and considering them as such, it would medicalize every facet of normal human existence, so it is preferable to consider them consumers , that is to say clients.*[19]

Trade is the main value of this type of relationship and is affected by advertising. One of the purposes of advertising is the sale of products, suggesting to consumers the search for happiness and their wishes, even the most subjective and irrational. For the client /provider relationship, this is the case, but medicine does not have these objectives.

A goal of medicine is not to achieve the happiness of people by attending to their desires, because these frequently exceed realistic expectations and no improvement will be sufficient to contain them and because for the achievement of the good of people, specially patients, many actions medically indicated would not be desired by the patient, but are carried out because they are obviously beneficial from the perspective of scientific reality, even if they cause some pain or suffering calculated through an appropriate weighting of the risk/benefit balance.

Pellegrino points out again that *it is a fact that the satisfaction of personal desires, freedom of choice and «quality of life» have become, for many, rights in a democratic society.*[20] But this must always have reality and not fantasy as a measure.

Currently, market forces prevail and, together with extreme autonomy, the medicine of improvement and *enhancement,* have a wide field of development and it is possible that many doctors accept it, some for self-conviction, for convenience or for taking safe actions in patients who otherwise would go underground. Little by little, all this will change to a great extent, the traditional aims of medicine and ethically many will find themselves in a serious conflict of interest.

As L. Kass points out, *doctors will have the incentive of having a solvent and satisfied clientele, since a solution has been found to an apparent subjective problem. All this, accepted by the medical union, would make those who think otherwise, find themselves violating a new social contract between doctor and patient. In light of all this, the possibility of a serious conflict of interest on the part of the doctor cannot be ignored.*[21]

Under this new vision, the fact that the doctor refused certain interventions considered by him as outside of medical practice, would be interpreted as a breach of the obligation to respect the autonomy of the patients.

In this regard, Ottois also comments: *One of the problems is that the improvement is included in the medical sphere, reason why the improvement must appear under the appearance of therapy, which produces unfortunate consequences. Due to the medicalization of life and the need to protect possible malpractice, doctors should change the indications of drugs or procedures towards a wellness medicine in healthy people. So, can the medicine of improvement be considered a new medical specialty?* [22]

Thus, to justify perfective interventions, non-pathological states would have to be considered disorders or causes of distress, in order to be medicalized.

The Report of the European Parliament on Transhumanism indicates that a university and official structure of transhumanism with a political vocation begins to take hold and in this way this type of practice begins to be consolidated in the medical field.

6. Improvement medicine, transhumanism and post-humanism?

Improvement medicine is linked to the idea of transhumanism. Transhumanism is a cultural movement and a philosophy of life that defends the possibility, the right and/or the duty to continue and accelerate the evolution of human life, beyond its limitations, through science and technology.[23]

Quite simply, as Bostrom notes, *Enhancement is typically the opposite of therapy*.[24] To achieve its objective, transhumanist thought requires legitimizing itself, possessing a moral heritage that supports it and justifies its objectives.

The Transhumanist H+ Manifesto,[25] not only indicates an option, but an obligation: the posture focused on human change through biotechnology applied to all spheres of life, especially the natural ones as stated in the Transhumanist H+ Manifesto, since its intention is that the transformative effect of society be assumed from biotechnology applied to the right of biological self-determination, from the medicine of improvement, *enhancement* and acceleration of human evolution.

Transhumanist thinking leads post-humanism by the hand. Little by little, the human being will be perfected beyond what is considered *normal* to later be constituted through genetic interventions, implants, chips and various biomechanical interventions in a being of another species, more perfect than that of the human being and thus defined by Bostrom, *a new species, the post-human*.[26]

The strategy of transhumanism is based on the technological imperative.[27] It is a moral obligation where the only limit is what is physically impossible.

One argument of why not all of society is in favor of human *enhancement,* is that it could alter our understanding of human excellence or our social practices, as Austriaco points out.[28]

Another argument limiting *enhancement,* is that human nature is a complex reality, and the excellence of the whole cannot be deter-

mined by modifying parts. This can be seen in genetic manipulation, where the beneficial allelic variant in one environment may not be beneficial in another, with the proportion of the variant increasing or decreasing in each case over the course of generations, as has already been verified in current research.[29]

For the transhumanist vision, human nature is reduced to manipulable biophysical qualities, reducing the human being to biological quality, from which intellectual and spiritual qualities are expected to develop and this way Bostrom points it out:[30] *technology will improve our ability to appreciate good literature, of being able to better understand other people, to be creative...*

7. New objectives of medicine?

Improving is also a purpose of medicine and the progress of this science is also desirable and ethical, but it will be necessary to seriously reflect on the limitations of the use of biotechnological advances, especially in healthy people. Indeed, as Bostrom points out,[31] the line between improvement and therapy is increasingly narrow, but Medicine is precisely focused on preventing disease, maintaining health or rehabilitating it, without exceeding the limits of normality. In some cases, such as cosmetic surgery, vaccines, assisted reproduction, sports medicine or behavior modulating drugs, we are dealing with socially and medically accepted medicine of improvement, but this is not intended to radically change the human being nor the future generations.

By medicine of improvement, we refer to medical actions, endorsed by the scientific community, as safe and indicated at this historical moment, being then the enhancement, the search for non-existent functions in humans or to such a degree that there is a very important difference in quantity or quality thereof with reference to normal functions.

Improvement medicine has been accepted by a large part of the medical profession and is practiced without limits of consideration of adequate risk/benefit nor does it respond to real health problems of patients. This philosophy approaches the acceptance of transhumanist and post-humanist thought to which it is linked in an important way.

It is imperative to think about the aims of medicine and not neglect the abuse that medical knowledge may have on the physical and mental health of patients and consumers. Medicine practiced without a rudder can lose its individuality and become only one more tool for the subjectivity of clients and market forces, losing its universal vocation for health care.

The physician should refrain from participating in acts that only comply with the subjective preferences of his patients without a realistic basis of beneficence. Already the Hasting Center pointed it out in *it would be a mistake to consider autonomy as a fundamental purpose of Medicine due to its excessive individualism.*[32]

There are non-instrumental moral values that must be preserved, because they represent the essence of man, as is precisely his altruistic and self-shaping attitude towards need, pain, suffering and death. The perfect life is still a utopia, which distances the human being from the exercise of fundamental values.

Under the premises of the practice of improvement medicine and *enhancement* linked to transhumanist thinking, the doctor-patient relationship is restricted to a commercial contract between clients and service providers, often devoid of the traditional quality of the doctor/patient relationship. Therefore, there is a great risk in commercializing medical acts, mainly because they are carried out in private health services.

Erik Malmqvist rightly points out that diseases disable people, do not allow them to be happy and reduce their autonomy, making their attention in the sense of distributive justice a priority goal and, therefore, the first objective would be to cure and prevent diseases rather than expand capabilities through *enhancement.*[33]

Conclusion

The medicine of improvement and enhancement are increasingly common practices in the medical community. Cognitive and sexual enhancers, extreme cosmetic surgery and other interventions in healthy subjects lead to the exercise of the so-called «medicine of desire».

This search for perfective changes through the practice of medicine, as well as the expansion of functions and the creation of new human aptitudes lead us to reconsider the aims of medicine and a new doctor/patient relationship.

We have discussed the misuse of a large number of therapeutically designed drugs used by non-therapeutic populations for improvement for reasons that are often subjective and far removed from good medical practice.

The medicine of improvement is undoubtedly a first phase of the acceptance of transhumanism, so I propose that greater care be taken to distinguish the slippery slope arguments used in emotional exhortations to arrive at a more judicious perspective on the technologically driven agenda for biomedical improvement. A form of «slippery slope» is one in which a particular act with a morally or medically negative charge, may appear as an individual application, as harmless, but giving rise to a series of those acts, would constitute moral or scientific damage, evident. The case of decriminalization of abortion and euthanasia cases are classic for slippery slopes in public discussion and policy making, but the use of drugs to increase functions quantitatively and qualitatively in healthy subjects is undoubtedly a step towards promoting increasingly drastic and invasive changes in subjects, leading them to search for experiences and functions outside of human nature.

The medicine of improvement, taken to the extreme, links its thinking to transhumanism and post-post-humanism, whose position proposes in the future to reconstruct the human species through genetic interventions, chemical substances, implants, chips

and various biomechanical interventions in one being of another species, more perfect than the human and thus, as it was indicated previously, it is defined by Bostrom, *a new species, the post human.*

As scientists and ethical subjects, we are not against biotechnological progress, nor its application for the rational goods of humanity, but the subjective justifications for extreme changes, often with significant adverse effects, are not proper functions of medicine, which must act on a realistic basis attached to the purposes of this science.

Medicine is not intended to «make people happy», but to promote health.

Reflection is necessary in order for doctors to refuse fantasy based interventions or may go against good medical practice, in order to safeguard the true aims of this profession, whose fidelity is indispensable in the future of humanity.

Bibliographic notes

[1] Bostrom, Nick, Roache, Rebecca. Ethical Issues in Human Enhancement. In: New Waves in Applied Ethics. Eds. Jesper, Ryberg; Thomas, Petersen & Clark, Wolf. Pelgrave Macmillan: England; 2008, pp. 120-152.

[2] Teter Smith, M. E., & Farah, M. J. Are prescription stimulants «smart pills»? The epidemiology and cognitive neuroscience of prescription stimulant use by normal healthy individuals. Psychol. Bull.; 2011; 137(5): 717-741. https://doi.org/10.1037/a0023825

[3] Célis, D. Sale of antidepressants in Mexico exceeds $180 million annually in 2015. Excelsior. Consulted March 9, 2019. Available at: https://www.excelsior.com.mx/opinion/2011/12/08/dario-celis/7927943

[4] Kirsch, I. and Sapirstein, G. Lisent Prozac, but listen to placebo: a meta-analysis of antidepressants drugs. In: Kirsch I. (ed.) How expectancies shape experience. 1999; pp. 303-320. https://doi.org/10.1037/10332-012

[5] Elliot, Anthony. Anagrams. Medellín, Colombia. Volume 9, No. 18, pp. 145-164.

[6] American Society of Plastic Surgery. News. Accessed March 18, 2020. Available at: 1https: //www.plasticsurgery.org/

[7] Sansone, R. A., Sansone, L. A. Aesthetic surgery and psychological problems. Psychiatry (Edgmont). December 2007; 4(12): 65-68. pmid: 20436768; pmid: pmc2861519.

[8] Rohrich, R. J., Adams, W. P., Potter, J. K. A review of psychological outcomes and suicide in cosmetic breast augmentation. Plast. Reconstr. Surg. 2017; 119: 401-408.
[9] Krebs, Georgina *et al.* Recent advances in understanding and managing body dysmorphic disorder. Evid Based Mental Health. August 2017; 20(3): 71-72. https:/ /doi.org/10.1136/eb-2017-102702
[10] Schleim, S., Quednow, B. B. How realistic are the scientific assumptions of the debate on neurological improvement? Evaluation of hypotheses of neuro-stimulation prevalence and pharmacological optimism. Front. Pharmacol. 2018; 9(3). https://doi.org/10.3389 / fphar.2018.00003
[11] Nancarrow, S. A., Stand, A., Ariss, S., Smith, T., Enderby, P., Roots, A. Ten principles of good interdisciplinary team work. Hum. Resour, Health. May 10, 2013, pp. 11-19. pmid: 23663329; pmid: pmc3662612. https://doi.org/10.1186/1478-4491-11-19
[12] Hanson, M., Callahan, D. The objectives of Medicine. Forgotten Problems in Health Care Reform. Hastings Center Studies. In: Ethics series. United States; 2000. https://doi.org/10.4067/s0034-98872003000900016
[13] Casas, María de la Luz. Bioethical bases for decision making. Ed. Trillas: México; 2010, p. 32.
[14] ted. The rebirth of our species. Consulted March 28, 2018. Available at: https: // www.youtube.com/results?Search_query=ted+talks+neil+harbissononMarch28, 2018.
[15] Gutiérrez, L. Kalaca Skull in 2018. Consulted March 25, 2019. Available at: https://www.youtube.com/watch?v=gUmBxFGhUfk&t=5s
[16] Polaino-Lorente, Aquilino. The dignity of the person. In Polaino-Lorente, Aquilino. Some issues around the Bioethics basis. 1997; 3rd ed.; p. 27. https://doi. org/10.5585/prismaj.v9i2.2398
[17] Pellegrino, Edmund. Biotechnology and the Human Good. Georgetown University Press: United States; 2007.
[18] Thomas Andreoli, E. The undermining of academic medicine. ProQuest: Washington; Nov / Dec 1999; 85(6): 32-37.
[19] Pellegrino, E. Biotechnology, enhancement and goals of Medicine. Dignity. 2004; 10(4). Consulted March 2, 2019. Available at: https://cbhd.org/content/biotechnology-human-enhancement-and-ends-medicine
[20] *Op. cit.*
[21] Kass, Leon R. Regarding the end of medicine and the pursuit for health. United States: Public interest; 1995; 40: ll. pmid: 11662217
[22] Ottois, Gilbert. Humanism, Transhumanism, Post humanism. Rev. Col. Bioet. 2013; 8(2): 7. https://doi.org/10.18270/rcb.v8i2.797
[23] Bostrom, Nick. A history of transhumanist thought. In: Academic Writing across the Disciplines. Eds. Michael Rectenwald & Lisa Carl; New York: Pearson Longman; 2011; p. 15.

[24] BOSTROM, NICK. Why I want to be a Post human When I Grow Up. Medical Enhancement and Post humanity. Eds. BERT GORDIJN AND RUTH CHADWICK. Uses Springer; 2008; p. 107. https://doi.org/10.1007/978-1-4020-8852-0_8
[25] HUMANITY + BOARD. Transhumanist Declaration. Accessed March 18, 2020. Available at: https://humanityplus.org/philosophy/transhumanist-declaration/
[26] BOSTROM, N. In defense of post human dignity. Bioethics. 2005; 19 (3): 202-214. https://doi.org/10.1111/j.1467-8519.2005.00437.x
[27] JONAS, H. The Principle of Responsibility: test of an ethics for the technological civilization. Barcelona: Herder; 1995. https://doi.org/10.2307/j.ctvt9k2sz
[28] AUSTRIACO, N. Human nature as normative concept: relevance for health care. In: Handbook of the philosophy of medicine: Dordrecht, Springer Science + Business Media. 2015; pp. 1-10.
[29] HERRERA-PAZ, EDWIN FRANCISCO. Population genetics and the origin of human diversity. 2013; 81(1).
[30] BOSTROM, NICK, REBECCA, ROACHE. Ethical Issues in Human Enhancement. New Waves in Applied Ethics. Eds. JESPER RYBERG, THOMAS PETERSEN &. CLARK WOLF. 2008, p. 137.
[31] BOSTROM, NICK, ROACHE, REBECCA. Ethical issues in human enhancement. In: J. RYBERG, T. PETERSEN AND C. WOLF (eds.). New Waves in Applied Ethics. Palgrave-Macmillan. 2008; pp. 120-152.
[32] HASTING CENTER. The purposes of Medicine. Ed. Notebooks of the Fundación Víctor Grífols i Lucas: Barcelona; 2005.
[33] MALMQVIST, E. Reproductive choice, enhancement, and the moral continuum argument. J. Med. Philos. 2014; 39(1): 41-54. PMID: 24334271. https://doi.org/10.1093/jmp/ jht058