Vaccination: Between autonomy and solidarity. The balance of principles from a global bioethical perspective in the face of the COVID-19 pandemic

Vacunación: entre la autonomía y la solidaridad. El equilibrio de principios desde una perspectiva bioética global frente a la pandemia del COVID-19

Sabina Girotto*

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Abstract

In the past decades, vaccination has raised important ethical issues, above all bringing out the conflict between some fundamental interests, such as individual autonomy and common good. In the contemporary health crisis due to the pandemic, vaccines are again at the center of the debate. Although they are a fundamental «weapon» against pandemic, they cannot be inoculated to all individuals, both for voluntary reasons and for causes independent of the will of the subjects, thus preventing us to achieve the so called «herd immunity». On the one hand, vaccine hesitancy is widespread; on the other hand, at global level, millions of people living in middle, and low-income countries have no access to vac-

* Istituto Superiore di Scienze Religiose «Giovanni Paolo I», Treviso, Italy. Email: sabigir@libero.it https://orcid.org/0000-0003-1710-7579
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cines. Acknowledging the principle of solidarity, along with connected values of cooperation, responsibility, and respect of vulnerability as the «axis» of the ethical discernment according to the global bioethical perspective, would give a response to the COVID-19 health crisis.

Keywords: COVID-19, pandemic, vaccine refusal, solidarity, common good.

1. Introduction

Vaccination is a key element in the contemporary health crisis due to the pandemic, since vaccines are one of the major «weapons» against COVID-19. However, vaccination rate is not enough to protect from the spread of the disease, both for voluntary and non-voluntary reasons that prevent to achieve the so called «herd immunity». In this way, the problem of vaccination appears to have not only a medical, but also a deeply ethical dimension.

Indeed, on the one hand, some people are «anti-vaxxers» or «vaccine-hesitant», refusing to be inoculated; on the other hand, on a global level, entire populations of middle- and low- income countries (LMICs) cannot be vaccinated for reasons beyond their will, depending on economic, political and social factors. Actually, this is not a new problem, since vaccines have always faced similar challenges, but the contemporary health crisis has highlighted an unresolved problem on a global scale.

Starting from the analysis of the medical concept of herd immunity and obstacles to achieve it, the core assumption of this article is that the solution in response to the pandemic crisis ultimately lies in the acknowledgment and application of the principle of solidarity, both at an individual and at a national and international level. Moreover, the principle of solidarity implies the acknowledgment of the inherent relational nature of human beings, which grounds

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the dialectic between individual and common interest. Above all, it is evident the significance of the ethical perspective of Global Bioethics and the model on which it is based, namely the Universal Declaration on Bioethics and Human Rights (UDBHR), which challenges the mainstream approach.

2. The concept of herd immunity

The concept of *herd immunity* has a long history (1). It was first used by some veterinarians in 1910 in relation to an epidemic of spontaneous miscarriage that affected cattle and sheep. In the 1920s, the bacteriologist Topley managed experimental epidemics in mice, observing that the prevalence of immune animals stopped the epidemic, and described it as «herd immunity», making a parallel with infectious diseases in children. Later, in 1924, the physician Doudley, recognizing Topley's discoveries, applied the notion to humans, after having observed epidemics of diphtheria in a large group of students.

Nowadays, the concept is commonly used to indicate the *indirect protection from infection conferred to susceptible individuals when sufficiently large proportion of immune individuals exist in a population* (2). Indeed, in a naive population a pathogen propagates affecting susceptible hosts. However, if a large group of people is immunized, the possibility of contact between infected individuals and susceptible hosts decreases. Two main parameters define the «seriousness» of the pandemic, particularly R («the average number of secondary infections caused by a single infectious individual introduced into a completely susceptible population») and R («the average number of secondary cases generated by a single index case over an infectious period in a partially immune population»).

There are two ways to achieve immunization: naturally, if the majority of population is infected; medically, trough vaccination. Herd immunity, in case of serious and mortal diseases such as CO-

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VID-19, cannot not be reached naturally, since many people would get sick and die and costs in terms of human lives would be very high (1). Yet, immunity acquired through vaccines can last longer or shorter, conditioning the herd immunity threshold, which is «the point at which the portion of susceptible individuals falls below the threshold needed for transmission» (2).

The majority of vaccines gives a time-limited immunization and needs to be repeated (2). Since COVID-19 vaccines currently used produce a short duration of the protection and they do not seem to be transmission-blocking, almost all population should be vaccinated in order to guarantee the interruption of the transmission of the virus, thus protecting the most vulnerable individuals and the ones who cannot be inoculated for medical reasons (3, 4). For example, a level of herd immunity between 60 and 72% would be enough only if the vaccine provided life-long protection, otherwise the rate of vaccination should be higher (3, 4). Moreover, if vaccination is distributed irregularly, dangerous groups of susceptible hosts remain (2).

Starting from the above medical considerations, there are two ethically relevant obstacles to overcome in order to achieve herd immunity in the contemporary COVID-19 pandemic: the consistent number of people who voluntarily decide to refuse vaccines and entire populations of low- and middle-income countries that cannot access vaccines. Both issues need to be deepened.

2.1 Vaccine hesitancy

Vaccine hesitancy is defined as the «delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place and vaccines. It is influenced by factors such as complacency, convenience and confidence» (5).

Since vaccines have faced some level of opposition from the beginning in the 1800s, it can be useful identifying reasons condi-

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tioning the individual's choice to refuse them in general and specifically in the case of COVID-19 vaccination policies.

Among major general factors determining vaccine hesitancy, there is the so called «heuristic thinking», which is a hasty mental procedure causing «shortcuts» that build up generic ideas or conclusions on a topic. Paradoxically, also the success of vaccination causes hesitation because, reducing the incidence of the disease, people think that they no longer need vaccination. Another recurring thought among anti-vaxxers, is that vaccination is unnatural, including incipients and other adjuvants, thus contracting the disease seems to be healthier in their view. Moreover, there is a wide skepticism against science since people perceive scientific uncertainty as problematic, forgetting that medicine is not an exact science by its very nature and a minimum percentage of risk always remains. Furthermore, the loss of public confidence affects vaccination campaigns (6). Other elements that may negatively condition vaccine compliance are a strong affirmation of the principle of autonomy, and religious beliefs (7).

These general considerations underlined above apply to COVID-19 vaccination too. An interesting study has also tried to identify the psychological features of anti-vaxxers associated with COVID-19 vaccine hesitancy, discovering that these are self-interest, distrusting of authority, strong religious beliefs, conspirational or paranoid beliefs, self-control, preference for hierarchical societies, intolerance against migrants, impulsivity, disagreeable personality, emotional instability, and low awareness (8). Besides psychological elements, other factors influence COVID-19 vaccine compliance, such as ethnicity (black people are more hesitant), working status (unemployed people have a lower compliance and healthcare workers have a higher acceptance), political affiliation (with less refusal among democrats), gender (more compliance among men), education (people with a higher education have also a higher acceptance), age (lower age stands for lower willingness), income (people with low income are more hesitant) (9).

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2.2 Unequal distribution of vaccines at global level

In the opening remarks at the World Health Assembly on 24 May 2021, Tedros A. Ghebreyesus (10) affirmed that *the ongoing vaccine crisis is a scandalous inequity that is perpetuating the pandemic,* since *more than 75% of all vaccines have been administered in just 10 countries.*

It is clear that extending vaccination to the entire world population, the majority of whom live in low- and middle-income countries, is of fundamental importance not only for reasons of justice and equity, but also for health reasons. Indeed, there is no other way to exit the pandemic than allowing the poorest to access the vaccine since all people are connected (11).

As the philosopher Giubilini rightly points out: *With people travelling and moving from one region, state, or continent to the other at an unprecedented rate, it becomes increasingly difficult to identify the relevant community within which herd immunity should be achieved: in one sense, the world has become one big community in a way in which it was not until relatively recently* (12). Likewise, an opinion of the Italian Committee for Bioethics (13) *Vaccines and Covid-19: ethical aspects on research, cost and distribution* (27 November 2020), emphasizes that *at international level, coordination must also be provided for the deployment of vaccines, in the awareness that no country will be completely protected if the world is not protected. In this sense it will also be necessary to reflect on the duty of each country to donate doses and in what proportion to low income countries*.

On the one hand, this inequity depends on bilateral agreements signed by high-income countries with pharmaceutical companies to develop COVID-19 vaccines, that allowed them to receive more doses at a lower price than LMICs, although thousands of people of LMICs participated in the experimentation process for COVID-19 vaccine development (14, 15). Indeed, for research conducted in a developing country to be ethical, participants and communities should enjoy benefits deriving from it (16).

On the other hand, it is caused by vaccine nationalism which is *the process whereby countries secure vaccines and medicines to supply their own*

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population before they become available to less wealthy nations (15). As a result, a high-income country like Canada has bought so many doses of vaccines that it has the possibility to vaccinate every citizen 5 times (14). The UN Secretary General Antonio Guterres (17) has openly criticized the growing vaccine nationalism, since it damages global health, emphasizing the need for a coordinated global vaccination plan. However, some scholars like Ferguson and Caplan (18) argue that a moderate nationalism is not an obstacle to the fair distribution of vaccines, since the state has a special duty towards citizens without rejecting the moral obligation to support non-citizens of the poorest nations. Particularly, they criticize that the nationalistic view is simplistically considered an evil, without distinguishing its different forms. First, «good vaccine nationalism», which is the one they claim, recognizes the equal worth of individuals along with global general obligations towards them: *this means that there are moral reasons both to allocate the vaccine in a nationally self-interested way and to pursue its global distribution.* Second, «blind vaccine nationalism», acknowledges that persons have equal worth, without admitting the existence of duties or responsibilities towards non-citizens. Third, «ugly vaccine nationalism» does not recognize the equal worth of individuals, endorsing that only citizens' interests are valuable. Rejecting blind or ugly forms, Ferguson and Caplan support the need to balance different responsibilities recognizing competing claims. Otherwise, cosmopolitanism does not give any relevance to national borders, on the one hand, endorsing that individuals are global citizens (19), thus *justice demands that vaccine allocation schemes disregard potential recipients' national identities and associative ties* (18); on the other hand, supporting that arguments in favor of prioritization of citizens are weak and not respectful of human rights (20).

Finally, low-income countries suffer the effects of the insufficiency of international cooperation (21), although some initiatives have been promoted such as COVAX, which is a program co-led by more international organizations: WHO (World Health Organiza-

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tion), CEPI (Coalition for Epidemic Preparedness Innovations'), GAVI (Global Alliance for Vaccines and Immunisation) and UNICEF (United Nations International Children's Emergency Fund). The goal of the alliance is producing COVID-19 vaccines and providing to LMICs an equitable access to them (22). Particularly, COVAX aims to coordinate the development and the distribution of vaccines (23): each country pays into a central fund, which is used to finance vaccine candidates, for a number of doses sufficient to cover up to 20% of its population, giving in advance half of the total sum and the remaining part only if an effective vaccine is developed. Thus, on the one hand, the individual country has no losses if the vaccine is ineffective since it does not support a specific one; on the other hand, this system allows a fair distribution, since the vaccine will be given to participants irrespective of the place of production. Moreover, high-income countries can finance vaccine candidates for distribution to low- and middle-income countries that cannot pay the full sum, covering high-priority individuals up to a maximum of 20% of their population. Finally, individual countries can fund additional vaccine candidates and sign agreements with companies to obtain more dosages. Therefore, the COVAX partnership balances national and global responsibilities, linking interests of high-income countries and the ones of LMICs, thus creating a system responding to some extent to «good vaccine nationalism». Indeed, according to Lie and Miller, *rather than insisting on an unworkable global allocation scheme, a more sensible alternative would be a middle-ground approach that utilizes the existing national commitments to vaccine development but insists that a portion of the national commitments be distributed through an international framework like COVAX* (23).

3. The ethical perspective: autonomy *vs.* solidarity

Both vaccine hesitancy and the unfair distribution of vaccines on a global level call into question some ethical principles, emphasizing

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the opposition between individual liberty and collective benefit (24). This conflict arises because the relational nature of the human being is not sufficiently recognized, especially in Western culture where individualism is the prevailing ideology and the individual is conceived as independent and autonomous from others, condemning any interference with the private sphere (11).

Once acknowledged the concept of herd immunity and the need to increase vaccination rates, on an ethical level, despite psychological, cultural or religious constraints, the choice not to be inoculated reveals the preminence in the personal hierarchy of values of self-determination, although none of major ethical perspectives considers individual liberty an absolute value.

Indeed, according to the deontological approach, which is based on principles of universalizability, humanity and autonomy, personal beliefs can be disregarded in order to pursue common good.

The liberal perspective, although there are more views so that liberalism *seems to fracture into a range of related but sometimes competing visions* (25), recognizes that the individual has a primary role being holder of civil liberties, and that the state should respect subject's freedom with a limited interference. Thus, even if it acknowledges more than any other philosophical perspective the principle of self-determination, liberalism also entails the need to restrict autonomy if it causes harms to other people. Therefore, some scholars, like Jason Brennan (26), argue that even mandatory vaccination can be justified within the libertarian approach: *Libertarians, and liberals in general, do not hold that all morally wrong actions may be coercively prohibited. Instead, they hold that we sometimes have the right to do wrong (...). However, libertarians (and liberals in general) hold that some moral duties are enforceable. The state cannot use coercion to make me let my parents visit their grandchildren, but it can coerce me into feeding my kids (...). Without here offering a full theory of why some duties are coercively enforceable and others not, I expect libertarians would hold that the state can use coercion to stop someone from actively spreading a dangerous disease.* On this

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basis, Brennan endorses that, if a collective causes dangerous activities, the individual has the duty not to participate to them or withdraw, and he calls this obligation the «clean hands principle». Also principlism, that emphasizes four *prima facie* principles (beneficence, nonmaleficence, justice and autonomy), endorses that autonomy can be overcome if some specific conditions protecting competing principles are met (24).

In addition, many contemporary authors, such as the Italian philosopher Alberto Giubilini, acknowledge the priority of social interest and common good over individual liberty in case of vaccination against communicable infectious diseases. In the book *The ethics of vaccination*, Giubilini supports that vaccination is an individual moral obligation –except in case of medical contraindications– and that the state has the moral responsibility to guarantee public health even trough obligatory vaccination. Indeed, *ethics is, among other things, about whether and under what circumstances we should make choices that are not (only) in our self-interest but also or even primarily in the interest of other people* (12). As it has already been highlighted, in case of vaccines, especially the ones that induce relatively short-lived immunity like COVID-19 vaccination, the core question is achieving herd immunity, which holds both a medical and an ethical relevance rooted in the balance between individual and public interest. Thus, it requires the individual *to make a choice for the sake of the public good, rather than exclusively for the sake of their own individual benefit* (12), calling for the contribution of every individual moral agent. However, the obligation to achieve herd immunity is not purely individual, since it also depends on collective, even if organized groups cannot be considered in the same way as individual agents from the moral point of view, being difficult to justify a collective responsibility (12). The solution is affirming the existence of an *aggregate moral obligation*, in which *the collective have an obligation to realize herd immunity in the sense that the collective obligation is fulfilled trough the aggregate actions of collective members* (12). Indeed, a shared obliga-

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tion generates individual obligations, since fairness requires the individual belonging to the community to take his or her own part of the weight of the total «burden» of vaccination (12).

Actually, individual interest conflicts with common good because of the adoption of an individualistic conception of autonomy. Yet, this is not the only possible interpretation. As Henk Ten Have (11) wisely emphasizes, the opposition appears false when assuming the approach of global bioethics, since *the first type of interests must be reinterpreted, while the last should be taken seriously*. In other words, personal autonomy is ultimately a relational notion, because it originates and grows in an interpersonal and social context. Moreover, values are not simply individual but they are communicated into the society, being transmitted from generation to generation, thus human conduct is based on social rationality. Finally, autonomy and responsibility are linked, since individual actions affect other people life.

Likewise, the Italian Jesuit and professor of Moral Theology Father Carlo Casalone (27) underlines a corresponding conception of autonomy. He supports that it is commonly conceived in a defensive way, as a means to protect the individual from the intrusion of political, religious or medical power, thus self-determination means full disposition of one's life. However, the human person is crossed and constituted by relationships, receiving life from someone else and experiencing from the beginning to be placed in a context of relationships. Thus, Casalone concludes that this does not mean returning to paternalism but to introduce *a not absolute, but relational and responsible, interpretation of autonomy*.

The acknowledgment of the inherent relational nature of the human being is the foundation of the principle of solidarity, which is intrinsically connected to the principles of cooperation, responsibility and respect of vulnerability, not only because vulnerable individuals need solidarity, but also because the condition of vulnerability ontologically belongs to every human being (28).

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3.1 The principle of solidarity

The concept of solidarity refers to a behavior opposing to individualism, and it has antique roots. At the time of the ancient Egyptians there were precise moral codes that provided for care and responsibility towards the weakest, thus establishing special bonds. However, solidarity should not be confused with other concepts that express similar meanings. Indeed, it is not charity neither compassion, nor fraternity, or philanthropy (15). Finding a unique definition of solidarity is not easy. We can distinguish three different major forms: first, voluntary-action solidarity, which does not aim to transform the beneficiary's life but is intended to resolve a temporary need; second, critical solidarity, that involves the individual in need in the process and has the goal to avoid any paternalism, helping the beneficiary to be an active agent; finally, radical solidarity, which underlines individual responsibilities, endorsing that each individual should share his excess wealth with the poorest (29).

During COVID-19 pandemic, the insufficiency of international cooperation and the lack of solidarity on global level clearly emerged, showing that this principle has been weakened in recent years because of the prevalence of neoliberal policies (11). For example, the World Health Organization (WHO), which is the major international agency responsible for international public health, has revealed the need to be reformed and strengthened in order to respond to global health crises. Indeed, the problem of underfunding due to the dependence on voluntary donations, which are not sufficient, the limited compliance by states, and the political dependence, have prevented the WHO from being a more supportive and efficient agency in responding to challenges of global health (30).

In the face of this absence, more institutions, religious and not, appealed for solidarity.

The Pontifical Academy for Life of the Roman Catholic Church, has pointed out the relationship between the principle of solidarity and Covid-19 pandemic. The document *Humana communitas in the*

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age of pandemic: untimely meditations on life's rebirth (31), highlights the moral meaning of solidarity which is connected to responsibility towards individuals in need, and to the acknowledgment of human dignity. Thus, it emphasizes that *everyone is called to do their part* and that *a responsible community is one in which burdens of caution and reciprocal support are shared proactively with an eye to the well-being of all* (n. 2. 3).

Particularly, with reference to the specific problem of COVID-19 vaccination, Vatican COVID-19 Commission in collaboration with the Pontifical Academy for Life (32) arranged the document *Vaccine for all. 20 points for a fairer and healthier world* which affirms, on the basis of the principle of solidarity, the moral responsibility of undergoing vaccination (n. 13) and it calls on states, institutions and pharmaceutical companies to encourage a fair and equal distribution of vaccines overcoming nationalism. Regarding the problem of vaccine hesitancy, the document highlights the relationship between public and individual health, emphasizing that refusing vaccination can cause harms to other people. Indeed, *on the one hand, those categories of people who cannot be vaccinated (e.g. immunosuppressed) and who can thus only rely on other people's vaccination coverage (and herd immunity) to avoid the risk of infection, would be more exposed. On the other hand, becoming ill leads to an increase in hospitalizations, with subsequent overload for health systems, up to a possible collapse, as has happened in various countries during this pandemic.* As to vaccine nationalism and to policies of pharmaceutical companies, the document underlines that the vaccine is a common good, thus international cooperation is needed in order to guarantee the equitable access to vaccination to the poorest countries, especially trough the management of patents.

Equally, the Italian Committee for Bioethics (13), which carried out a remarkable ethical reflection during the pandemic producing many documents, in the opinion *Vaccines and Covid-19: ethical aspects on research, cost and distribution* (ICB, 2020) stresses both the individual and the national and international responsibility towards vaccination. Indeed, the Committee recognizes that *vaccines constitute one of the most effective preventive measures, having a risk/benefit ratio which is*

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among the highest with regard to drugs currently available, as well as underlining how vaccination is of value not only to health but it also has an extremely important intrinsic ethical value. Moreover, it *considers it ethically necessary for all efforts to be made to achieve and maintain optimal vaccination coverage through conscious adhesion,* without excluding the possibility of mandatory inoculation in case of necessity (n. 4). On a national and international level, the Committee considers the vaccine a common good, suggesting to waive vaccine patents and to strengthen international agreements, in order to allow every country and every individual, especially the poorest ones, to be vaccinated. Thus, the committee strongly believes in the opportunity *to build international solidarity in order to end to the serious limitations in the protection of health that still exist in many Countries* (n. 3).

Finally, a joint statement by the IBC (International Bioethics Committee) and the COMEST (UNESCO World commission on the Ethics of Scientific Knowledge Technology), calls for global vaccines equity and solidarity (33). The document focuses on vulnerable individuals and fair distribution of vaccines. It rejects vaccine nationalism, recommending the regulation of patenting and ownership rights, recognizing vaccines and global health as «common goods», underlying the role of transparent information and education in order to favor a free participation to vaccination campaigns, and recalling that limitation of human rights on behalf of public health should be necessary, proportionate and respectful of the principle of legality.

4. Solidarity and law

The most important legal document acknowledging the principle of solidarity is the UDBHR, which is the Magna Charta of global bioethics and of the bioethical approach based on human rights (24). Although it is not a binding legal text, the Declaration clearly endorses the principle of solidarity, which is affirmed together

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with the principle of cooperation: *Solidarity among human beings and international cooperation towards that end are to be encouraged* (article 13). Particularly, it is the first document that formally included the principle of cooperation in bioethics, establishing a link with the concept of solidarity. Actually, this connection is extremely interesting, since it emphasizes that solidarity is not simply an individual action or a personal virtue, but it requires a social commitment (29).

Even if it is not explicitly mentioned, also article 21 indirectly highlights the importance of solidarity and cooperation, especially when it affirms that *transnational health research should be responsive to the needs of host countries, and the importance of research contributing to the alleviation of urgent global health problems should be recognized.*

Likewise, article 24 recognizes both solidarity and cooperation. Indeed, first, it affirms that *states should foster international dissemination of scientific information and encourage the free flow and sharing of scientific and technological knowledge;* second they *should promote cultural and scientific cooperation and enter into bilateral and multilateral agreements enabling developing countries to build up their capacity to participate in generating and sharing scientific knowledge, the related know-how and the benefits thereof*; third, they *should respect and promote solidarity between and among States, as well as individuals, families, groups and communities, with special regard for those rendered vulnerable by disease or disability or other personal, societal or environmental conditions and those with the most limited resources* (29).

Moreover, as a corollary of the principle of solidarity, the UDBHR states the need to protect vulnerable people: *In applying and advancing scientific knowledge, medical practice and associated technologies, human vulnerability should be taken into account. Individuals and groups of special vulnerability should be protected and the personal integrity of such individuals respected* (article 8).

On a national level, the Italian working group *Un diritto gentile* (34), wrote a noteworthy document that recalls fundamental rights at stake in COVID-19 vaccination. It focuses on vaccination policies, and specifies conditions for COVID-19 compulsory vaccination. After having highlighted fundamental values of human coexistence

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rooted in every democratic system (dignity, freedom, equality, individual and public health, solidarity), the group acknowledges the need to balance individual and collective rights. In some circumstances, limiting individual freedom in the name of public health is possible, if and only if the sacrifice is proportionated, according to the Italian Constitution, which states that *the Republic safeguards health as a fundamental right of the individual and as a collective interest* (article 32). Thus, the imposition of compulsory vaccination is legitimate –with the exception of individuals with medical contraindications–, if and in so far as it is proposed as a measure proportionate in front of the seriousness of risks arising from the development of the pandemic in the global context. Moreover, the document recalls the need for international solidarity especially giving low-income countries the access to vaccines by distributing them according to compulsory licenses. Indeed, article 31 of the TRIPS agreement (Agreement on Trade-related Aspects of Intellectual Property Rights), which was specified by article 31 *bis*, identifies conditions required for obliging the holder of the monopoly to grant non-exclusive use to the state or other entities *in the case of a national emergency or other circumstances of extreme urgency or in cases of public non-commercial use* (article 31, b).

5. Conclusion

The standing point of this work is the medical analysis of the concept of herd immunity, which has not only a scientific value but also a moral dimension. Indeed, obstacles that prevent to achieve the herd immunity and thus to stop pandemic trough vaccines, both on an individual and on an international level eventually reveal the lack of solidarity and cooperation, along with the misconception of the principle of the respect of vulnerability.

However, the pandemic is teaching us that getting out of bonds of solidarity means not only harming other people but also self-

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destruction, since the relational nature is a fundamental anthropological dimension, implying the true correspondence between humanity and relationality, although mutual dependency also means being exposed to vulnerability (11). As the Pontifical Academy for Life (35) rightly highlights: *Never have we been called on to become aware of the reciprocity that is at the basis of our life as much as we have during this terrible emergency. Realizing that every life is a life in common, together we make up life, and life comes from «the other».* Above all, on a global level, we need to be conscious that *the risk of a global epidemic requires, in the context of responsibility, the introduction of global coordination in health care systems», acknowledging that «the strength of the process is determined by its weakest link.*

At the same time, the voluntary refusal of vaccination by people having the opportunity to be inoculated is a «luxury» that does not find justification on any ethical approach, not even the most liberal one that recognizes the duty not to harm other individuals (12). If many inner and outer conditioning can influence choices of a subject, it is essential to recognize that the one who acts morally is called to discern what is good from what is evil having as his horizon the good for himself as well as for others, overcoming its conditioning in the name of a greater goal. Indeed, especially in case of public health crises such as pandemics, the goal of vaccination is the protection of society as a whole, so that *appeals to self-interest cannot be separated from concerns with the interests of others* (11).

This rejection is even more morally serious considering that millions of people are deprived *a priori* of this possibility just for the lack of resources, due to unfair political, social and economic systems, along with the deficiency of solidarity and cooperation by wealthier states (12). To be honest, even in low-income countries such as Africa there has been vaccine hesitancy in some small parts of the population, as a result of misinformation and manipulation led by international anti-vaxxers groups risen in Western countries and penetrated in urban areas where there is a greater possibility to

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use social media (36). Despite these limited exceptions due to globalization, considering the understandable hesitation of people long exploited, living in environmental and cultural systems far from the Western ones, and accustomed to seek answers in nature rather than in science, it seems evident that the major evil to fight is vaccine nationalism, at least in «blind» and «ugly» forms.

The contemporary ethical perspective most acknowledging the need for solidarity, along with principles of cooperation, responsibility and respect of vulnerability, is Global Bioethics, which is rooted in principles recognized by the Universal Declaration of Bioethics and Human Rights. As Henk Ten Have (28) wrote in the fundamental book *Global Bioethics. An introduction*, solidarity is an essential moral and legal principle since «each individual person is powerless in the face of global problems; but together they can have an impact». Thus, the notion *demonstrates that human beings are primarily social beings. They (thus we) can only live and flourish among other people with whom they (we) are connected. Solidarity cannot be explained in the language of self-interest.*

To understand how the principle of solidarity is foundational, just think that it can be read in a «biocentric» key, which refers to being in solidarity with all life and all forms of life, in tune with Jahr's thought (37).

Therefore, it should become an indispensable element of ethical discernment determining a different balance of interests at stake, together with the ones recognized by the mainstream bioethics such as beneficence, non-maleficence, justice and autonomy. Particularly, the acknowledgment of the principle of solidarity, becoming an «axis» of a constellation of other principles such as cooperation, responsibility, and respect of vulnerable people, would make it possible to overcome a reductionist and partial ethical view, which often sees the triumph of self-sufficiency (38).

As the Pontifical Academy for Life (35) has masterfully affirmed: *We are part of humanity and humanity is part of us. We must accept*

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this dependency and appreciate the responsibility that makes us participants and protagonists in it. There is no right that does not have a resultant corresponding duty: the coexistence of those who are free and equal is an exquisitely ethical question, not a technical one.

Disclosure

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