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COVID-19 VACCINATION BASED ON THE USE OF BIOTECHNOLOGIES AND PATIENT COMPLIANCE: ETHICAL AND PHILOSOPHICAL ASPECTS

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Abstract

The chance to prevent undesirable medical conditions is one of the main advantages brought by the use of biotechnologies in current clinical practice. Despite the obvious and potential benefits, biotechnological based biomedical research and the market placement of these new medical products may raise several ethical issues unforeseen in the planning process for extensive implementation of this new medical field. On the one hand, there are still debates among the health professionals concerning the real impact of these medical products on the human body; on the other hand, we talk about the media communication about their effectiveness and risks. Thus, today – in the midst of a pandemic – we live an extremely tense social situation by the existence of two parties blaming each other for the gravity of the present context. Of course, responsible institutions and competent professionals should have ethical control over the development of these biomedical products. However, in addition to the research ethics and applied public health policies, we may also talk about the ethics of communication and information. Is the communication effective in the context of the present pandemic and based on solid ethical principles? What could be the correlation between violating the ethical principles of communication and practising an ineffective public health policy? This study, based on a short literature review, attempts to analyse the ethical and philosophical relationship between media discourse, public health policies and the compliance of the target population.

Keywords: covid-19 vaccination, information ethics, public health policies, pandemics management, patient compliance;

Background and Context

A large number of the media debates aim the potential side effects of the vaccination against Covid-19 with a product based on mRNA technology, presenting some touching cases. In the same time, official source of media come with strong arguments for the vaccination. This confused approach shakes the trust of population in authorities and medical institutions which lead to a low vaccination rate. In the present paper, we are not concerned with the utility of the vaccination, but with the impact of a confused discourse concerning an important medical decision. The ethical aspects of the present pandemic are complex issue that involve the aspects of production and introduction on the market of these vaccines, but also issues concerning communication and information ethics. At the information level, the first question that may be asked by the patients is: why were developed vaccines based on mRNA against Covid-19? The purpose was the reduction of the risks associated with the use of traditional vaccines. The production impact of the mRNA vaccine is analysed, from an ethical approach, by a SWOT table (*tab.1*):

Strengths	Weaknesses
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<ul style="list-style-type: none"> • Reducing the risks associated with the use of traditional vaccines 	<ul style="list-style-type: none"> • Ignorance concerning certain side effects on the body at the time of placing on the market • Short time to develop a viable vaccine and for placing it on the market at a large scale
Opportunities	Threats
<ul style="list-style-type: none"> • Cooperation of professionals in the field for efficient identification of the side effects and the real efficiency of the mRNA vaccine against Covid-19 	<ul style="list-style-type: none"> • Considering some hypotheses as verified facts • Inexistence of a careful verification of hypotheses concerning the new vaccine efficiency and side effects • Unprofessional communication and media appearances of the healthcare professionals

(tab.1)

Communication is highly related with media appearances – especially during the pandemic period when most of the public reunions were restricted. Most of the talks around the mRNA vaccine aim, at development and marketing introduction of it, public health policies to be used in vaccination campaigns and the patient compliance in the context of the recommendation of the vaccination against Covid-19. An important issue concerning the development of the new vaccine aim the partial overlap of test phases: Is the information of the previous phase necessary or not in the initiation of the next research stage? This question remains to be answered by the professionals in the field.

Introduction of the ethical issues

The medical decision of the patient to get the vaccine is rather based on medical information appeared in media (mass-media and social media). But what is exactly medical communication? Medical communication aims all forms of communication (regardless of medium) from an authorized person, adapting the information to evidence-based medicine that is processed for a competent / incompetent audience in the field. (Di Renzo, 2022) There is not a clear definition of the notion distinguishing in terms of intentions of the action; it is used in relationship with the medical knowledge. In this context we talk about the communication between the healthcare professionals, but also about the information of the common patient. Each of these two aspects involves some specific ethical issues.

☐ Communication ethics:

- It concerns the relationship build around the information: the relationship ego-information-alter ego;
- It includes ethical aspects regarding the established relationship between the individuals and issues concerning the information ethics;
- The individual becomes autonomous only through his dialogical relationship with other:

“Rather, the autonomous subject emerges only by growing into a social world that involves him or her in constant and constitutive linguistic and intersubjective relations that endow the individual with capacities and competencies for using language in social life.” (Morris, 2001, p. 97)

☐ Information ethics:

- Aims ethical issues related to the authenticity and security of information
- In the medical context we are talking about:
 - Evidence-based medicine information
 - Sensitive personal data

Because of the Covid-19 pandemic, we are demanded to develop new ways of communication. “In particular, this new dramatic scenario has imposed the need of developing effectiveness strategies to give updates, statistics, and scientific-medical

evidences and communicate policy decisions everywhere and in shorter time than before.” (Di Renzo, 2022, p. 159)

Media presents a large number of controversies and changing information on some topics related to Covid-19 disease and the new vaccine. Medicine and the vaccinology are sciences where the knowledge evolves with the time, but the common patient perceives the improvement of the medical knowledge as an uncertainty of this science. The questions in the media includes the following aspects: possible medium and long term side effects, recommendation for vaccination of pregnant women, recommendation for vaccination in certain medical conditions (considered only by some doctors contraindications), possible allergies to vaccination products, degree of vaccines effectiveness, doubts about the vaccinated being asymptomatic carriers of the virus, restrictions that should be observed by vaccinated / unvaccinated in public space.

Hypotheses

The discourse concerning the ethical issues of the communication and information will be analysed through a short literature review. What are the information with the highest impact on the patient’s decision to get or not vaccinated? Is there any concern about the management of medical information regarding the new vaccine, based on mRNA technology, against Covid-19? The present study is realised based on the following three hypotheses concerning the medical communication in media:

1. It transgress the ethical aspects of medical communication and information management;
2. There is no clear distinction made, in media, between the medical communication aimed to be strictly between health professionals and that one intended for the general public, at the conceptual level;
3. There is no a real solidarity between professionals concerning the message presented in media accessible for the common patient – this became confused because of divergent medical message.
- 4.

Methodology

The main objective of the present literature review is to analyse the relationship between media discourse, public health policies and the compliance of the target audience.

We decided to realise an integrative literature review (Torraco, 2005) on the topic, by searching the phrase „covid-19 vaccine information” on PubMed (<https://pubmed.ncbi.nlm.nih.gov/>) and Europe PCM (<https://europepmc.org/>). The purpose of realising an integrative literature review was to emerge the information of the papers included in the study in analysing the question about communication process in the pandemic context. We included in the present study just original papers, with open access.

Results

A number of 12 on PubMed and 118 on Europe PCM articles contenting the mentioned phrase were identified. By applying all the chosen criteria and selecting the relevant subjects, we included in the final study just 33 papers. We found information about the public concerns on the mRNA vaccine and proposals concerning ways of improvement of the information received by the patient through media.

Studying the articles we identified a few aspects presented as a concern in the area of the media content aiming the new vaccines. The medical staff was sensitive, in particular, to the information regarding the safety and efficacy of the vaccine, their side effects, the storage conditions, the novelty of the mRNA vaccine, the lack of adequate knowledge (AlKetbi et al, 2021; Al-Metwali et al., 2021; Browne et al., 2021; Do et al., 2021; Sajjadi et al., 2021).

Cases with a negative emotional impact presented by medical staff in media had a major impact on the decision to refuse the vaccine (Baines et al., 2021). Although YouTube may be great educational resource, many of the existing materials are of poor quality with uncertain information (Chan et al, 2021; Tan et al., 2021). The degree of vaccination acceptance is directly proportional with the trust in the official sources of information (AlKetbi et al, 2021). „The efficacy of the vaccine is critical to controlling the epidemic and has caused widespread concern.” (Hong et al., 2022) In most of the cases, those who are vaccinated have a higher level of knowledge about the vaccine itself (Abu Hammour et al., 2022; Turhan et al., 2021). The target population has a poor understanding of the mRNA vaccine information presented by the official sources of information (Bothun et al., 2021). The common patient is reluctant to politicize medical issues, unethical conduct studies, unclear and uncertain information (Carson et al, 2021). Distrust in the medical system and medical illiteracy are also a relevant issue on the topic (Turhan et al., 2021). The population with a lower education was more susceptible to refusal of vaccination (Hawllader et al, 2022). Rumours and conspiracy theories influenced negatively the willingness to get the vaccine: the population hesitant and resistant showed significantly higher conspiracy beliefs, negative attitudes toward vaccination campaigns (Islam et al, 2021; Salerno et al., 2021; Saling et al., 2021). In this context, the social media had a huge impact on the attitude toward the vaccination (Karami et al., 2021).

In our study, the focus is not just to identify the concerns in the media, but also to find ways to ameliorate the medical communication through media by ethical conduct enhancement. Development of dedicated websites and applications for learning and combating misinformation is one way with huge impact in helping the patient, but also the health professionals to get evidence-based information about the mRNA vaccine against Covid-19 on time (Allee et al., 2021; Chew, 2021). The trust of the patient may be improved if this person gets clear information on vaccine efficacy and safety (Kelkar, et al., 2021; Zhao et al., 2021), as well as information about the side effects (Davis et al., 2021; Kerr et al., 2021). In this context, the traditional media has to play an important role determining the patient to accept the vaccination (Piltch-Loeb et al., 2021). The target population is rather interested on information concerning personal benefits, and less about the benefice for the society in general (Ashworth et al., 2021; Freeman et al., 2021). The media should also provide specific information for risk groups (Kumari et al., 2021). Infographics may be beneficial, but they have uncertain conversion rates for vaccination (Rotolo et al., 2022). Media sources of information considered to be of trust are not all the time one and the same with the official sources of information for the patient: the trust is difficult to be obtained, but easy to be lost (Latkin et al., 2021). Confidence associated with official media source of information increase the acceptance of the vaccination (Qiao et al., 2020; Reno et al., 2021).

Discussions

Public health management of a pandemic may include: prophylactic actions, hygienic-sanitary and treatment measures; obligations and recommendations by laws. In the context of a vaccination campaign, resources management may involve the following ones: human, medical-pharmaceutical products, time, computerised resources and others.

In a pandemic, the medical communication through media has a huge impact on the patient's trust. In many cases, there is no clear distinction between the information provided to healthcare providers or professionals and that one which is for the common patient. Moreover, the papers present that even some healthcare professionals have difficulties to understand how mRNA vaccines work in the human body. Therefore, the pandemic management should begin with the training and education of medical staff. And here we talk about theoretical and practical training, simulations for understanding how the products based

on mRNA technologies work in the human body. The second issue, but not less important, is about the medical communication between the health professionals: medical debate on medical opinions and on ethical issues, clinical cases, reporting of the side effects. The common patient may be informed by adapting the information to his level of understanding and promoting an empathetic attitude in communication.

The improper management of the vaccination campaigns with mRNA product against Covid-19 caused the apparition of conspiracy theories. These may have three causes at communication level. The first issue is a failure to inform correctly the patients through media. Secondly, we should talk about the population's predilection for the extraordinary or "hidden truths". Thirdly, a certain number of the patients have developed a mistrust in their physicians and authorities, based on their own past experiences, of the close ones, or stories from the internet.

Human being tries to find meanings behind the received information, making unexpected connections between unrelated events. Baines et al. (2021) write about the origin of conspiracy theories in social media, specifically about the new platform *Parler*. Even if, historically, vaccines produced rumours from their beginning, today „conspiracy theories can spread much faster on social media compared to mainstream media and these conspiracy theories have influenced the way people think about vaccinations leading the public to question the need for immunization”. (Baines et al., 2021, p. 3)

No one of the papers makes any distinction between medical communication in the field and information of the common patient through media. Even if we cannot avoid talking about the negative side of the media involvement in the vaccination campaigns, our focus is to understand what are the interests of the common patient and how may be improved his knowledge through media. Reviewing the papers included in our short study, the personal benefits of the vaccination is the first and foremost information that a patient needs in order to be able making an informed decision in the present context. Other information that should be offered may include (in the following order as importance): specific information provided to risk groups, contraindications, possible side effects, possible procedural errors, the political implications of the vaccination. The last one refers to the necessity to hit a certain percentage of the vaccination in a group to have herd immunity and all the geopolitical implications of this fact.

Allee et al. (2021) suggest to be very important to have one platform in order to offer all the evidence-based information on the topic of vaccination with a product based on mRNA technology: „a single searchable resource during the pandemic, called the COVID-19 Best Evidence Front Door, with a primary goal of providing direct access to high-quality meta-analyses, literature syntheses, and clinical guidelines from a variety of trusted sources.” (Allee et al., 2021, p. 680) The mentioned platform appear to be for the professionals and researchers in the field, not for the common patient, uneducated in the medical field: „A multipart search capability was also deployed, allowing users to search the document base by keyword, publication date, source organization, and document type.” (Allee et al., 2021, p. 681) What decision will the common patient make searching for information on this *Best Evidence Front Door* platform?

Based on the information offered by the articles included in the present paper, the medical communicator appearing in the media should care about the following ethical principles: informed consent (Engelhardt, 1996, p. 288-340), autonomy, beneficence, nonmaleficence (Beauchamp & Childress, 2013). The information provided should be given at the level of understanding of the common patient, trying to avoid medical terms that describe the technical aspects of the field: each target group of population should receive an adapted message (Sasaki et al., 2022).

The philosophical dimension of the ethical issues

A philosophical approach may be seen as a method (Bunnin & Yu, 2004, p. 520) of finding connections and meanings behind a phenomenon, an object, a concept, giving a structured view of it. Our concern is to find ways for ethical enhancement concerning the information offered to the common patient through media. The purpose of gaining trust in healthcare providers and authorities is the reduction of irresponsible behaviours. Therefore, from a philosophical point of view, we have two important questions to answer: Why is it important to clarify the terminology and the language used? How can ethical management of medical information be achieved?

As we mentioned before, in many cases, it is not clear if a message presented in media is for another healthcare professional or for the common patient who does not have a good education in the field. (Ubel, 2012, p. 60-61) Our presumption is that we have this situation because the medical communication, as concept, includes both actions. Therefore, we propose to make a clear terminological distinction of the debate between healthcare professionals or debate from the information offered to the common patient. Medical debate is a process with a bidirectional flow of information and will always include at least two persons with advanced knowledge in the medical field. In our context, the medical debate describes the discussions between healthcare professionals regarding the vaccination with an mRNA product against Covid-19. The purpose is to achieve a better understanding about how this vaccine will work in the human body in different contexts. In contrast with the medical debate, public information of the common patient is a process that goes just in one direction. This one supposes a communication relationship between an expert and a novice in the medical field. Public information through media describes the efforts done to help the patient giving his informed consent.

The novelty of the use of the mRNA technologies for the vaccines against Covid-19 triggered a lot of divergent opinions and debates between the healthcare professionals. This aspect exposed in media was followed by the emergence of conspiracy theories. The common patient was confused by these divergent arguments. The following table include a SWOT analysis (*tab.2*) of the medical debates, based on divergent views, around this new vaccine:

Strengths	Weaknesses
<ul style="list-style-type: none"> • Possible improvement of vaccine products; • Close attention to possible side effects and contraindications; • Medical progress is based on: <ul style="list-style-type: none"> ➢ Acceptance of the divergent views or the Christian idea <i>all things work together for good</i> (Atkinson et al., 1995, p. 712): divergent hypotheses may be verified by researchers achieving a better knowledge on the topic; 	<ul style="list-style-type: none"> • Reluctance of the public in front of professionals and researchers in the field; • Inability to effectively guide patients to make the right decision for themselves; • Media exposure of the divergent medical hypotheses generates: <ul style="list-style-type: none"> ➢ Distrust in physicians and in medical system in general ➢ Opposition to public health policies;
Opportunities	Threats
<ul style="list-style-type: none"> • Open communication in forums or channels created with the purpose to have debates between healthcare professionals and researchers; • Training (including simulations and ethical issues) for medical staff; • Pandemic management by taking into account divergent medical opinions: to implement the public health policies 	<ul style="list-style-type: none"> • Lack of open communication between professionals and researchers in the field; • To communicate with other professionals, sharing controversial information, by using mainstream media; • Trying to suppress any divergent views of the healthcare professionals;

promoted by the majority of the professionals in the healthcare field;	
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(*tab.2*)

Media exposure of a large number of divergent opinions of the healthcare professionals may lead to an ineffective prophylactic public health policy. Divergent opinions should be considered in science for a real progress of the knowledge. On the other side, the common patient receiving unclear data and divergent views on the mRNA vaccine is inclined to believe in conspiracy theories. As Allee et al. (2021) write, it is a real opportunity to create platforms for the professionals in the field. The healthcare institutions and organizations may also develop communication channels and forums to allow the healthcare professionals and researchers debate about their personal findings on the topic.

The papers included in our study suggest being a better idea to not offer to the patient all the unverified hypotheses or debates on the topic. A contrary behaviour may transgress the nonmaleficence principle (Beauchamp & Childress, 2013, p. 150-201). The healthcare professionals have the duty to not deceive the patient: they will present clear information on the mRNA vaccine concerning the benefices and the possible risks. The patient should receive information focused on: the positive impact of the vaccine on his personal health, the positive impact of the vaccine on the health of the close ones, the positive impact of the vaccination on the local or national economy (Ashworth et al., 2021). All the information provided to the patient should be well proved by statistics.

The medical jargon (Engelhardt, 1996, p. 189-238) should be reduced; the medical terms will be translated in the patient's language. Where it is not possible to justify some medical concepts or phenomenon, the healthcare professionals may appeal at accessible metaphors and analogies. There are three aspects that may be explained by analogies or metaphors in the present vaccination campaigns against Covid-19. Patient compliance with vaccination is compared with the seatbelt that protects the passenger from life-threatening injuries. The medical compliance in this context can also be compared with the military training in the context of a threatening armed conflict (Atkinson et al., 1995, p. 322) because of, at least, three characteristics: shared responsibility, the availability for a possible personal sacrifice in favour of other, better chances of survival for the entire group by cooperation. By this metaphor, we don't ignore either the fact that a small number of individuals will suffer from the side effects of the vaccination. The short term for the introduction on the market of the mRNA vaccine and the production of vaccines based on a pre-existing viable biotechnology rise also a lot of questions. Having a prototype for the mRNA vaccine can be compared with a cake recipe which can have different flavours by using the same basic ingredients.

The third metaphor that we will mention appear usually with a negative connotation in media: it is about the comparison of the medicine with a religion that you have to believe without evidence. But this analogy between medicine and religion is not a new approach – Engelhardt (1996, p. 190) writes about the medial rituals that are imposed to the patient with “a force and character comparable to those of a religion”. Moral and medical rules are imposed to the patient without explaining in his language why he should take a certain decision. He is confronted with too much contradicting information in a rigid medical language.

Many times is overlooked the following fact: the knowledge grows with the time. The difference between the religion and medicine – and science in general – is about the modality to achieve a better knowledge, but also concerning the control over its growth. In medicine, we can have hypotheses that will be validated or not through certain research. In religion, the expansion of knowledge takes place, slowly, through the study of sacred texts and revelation.

The religion relies on arguments - where possible - and keeps the quiet, accepting the unknown, if something is not clear enough. This is an attitude that may silent some controversies.

Science and religion have different approaches to controversies. Medical sciences engage themselves in debates and controversies trying to prove the truth and the right knowledge, disproving conspiracy theories and wrong opinions. Unfortunately, not all the time the last discovery was done on a certain topic and the future may disprove some information that was considered to be the truth in the past. Because of the common medical approach to the concerns about the Covid-19 vaccination, nowadays there are so many useless debates on media about it. In this tensioned context, religion could be seen as a positive source for an approaching model to controversies.

Why is it so difficult for the patient to accept that, at a certain moment, the medicine does not have all the answers concerning a certain vaccine? How can this fact explained to the common patient who approaches the medicine similar to a religion? If the medical communicators talk more about the evolutionary process of the medical knowledge, will this make the patient have more or less confidence in official sources of information? Our approach to the medical debates and public information is based on the good intention of the healthcare professionals and researchers to accomplish the Hippocratic Oath.

In religion, some disputes are clarified in councils which are sometimes closed to the general public with the purposes to avoid misunderstandings, but presented with arguments in media or written papers. The oppression of divergent opinions tends to be less in organized religions; the same space should be given to the physicians to express their views on dedicated platforms. The clergyman may also have personal opinions and doubts that he tries to clarify, but this is not what he preaches. The clergyman does not present to the parishioners his personal opinions, but the teaching of his church. The physician has to present to the patient verified information on the topic, not his own doubts. The clergyman maintains his professional status even outside the religious space: everything he does and says can have a religious impact. (Atkinson et al., 1995) In the same manner, the physician appearing in the media still remains a physician and he has the duty to inform rightly the patient. This attitude will promote medical decisions based on informed consent. The medical field still should be trusted even when we don't have yet enough verified information on a new topic. There are a lot of other medical areas were the patients use experimental treatments hoping for healing – we can mention, at least, the oncology. Similar to the clergyman, the physician maintains his professional status even after his working hours and his personal opinions may became a medical declaration making the patient to take some decisions with a huge impact on his own health.

The accessibility to expose information in media came with the need of personal awareness about its possible impact on the audience:

„Clearly the information age has taken us by surprise: standards of personal privacy that had become enshrined in law and tradition are seen to be inadequate to meet the challenges that technological change is forcing upon us. Everyone who is involved with processing personal data has a responsibility to become involved in shaping the way that data can be used. It is not enough simply to leave the setting of limits to our legislators.” (Atkinson et al., 1995, p. 314)

Any mainstream media appearance of a physician should be focused on the common patient as the audience and to keep the deontological duties throughout the discourse. Media speeches concerning Covid-19 vaccine should offer to the patients enough information in order to be able making an informed decision. Moreover, the information should be translated at their level of understanding, explaining the medical terms and phenomena.

Conclusions

Analysing the reluctant attitude of the population toward some public policies uses in the context of the Covid-19 pandemic crisis and all the rumours from media, there appear to exist some ethical problems in the management of this context. In our paper we tried to observe, by a short literature review, the main causes of this situation and to identify a few ways of amelioration of the medical communication through media, enhancing the ethical conduct.

There should be made a distinction of the debate between healthcare professionals or researchers in the field from the public information of the common patient through the media. Even if in both cases we talk about medical communication, the language used is not the same because the patient, probably, will not understand the medical jargon or will not be aware about the fact that some words are used with another meaning. (Ubel, 2012, p. 61) The medical staff should use a language accessible to the patient and when it is necessary, to try finding the right metaphors and analogies to explain a medical concept, treatment, procedure, or phenomenon.

Divergent medical opinions and hypotheses should be accepted on the medical platforms, but also tested as far as possible. The patient should only be provided with data verified by statistics: evidence-based information. In the context of the medical debates, it is important to create communication channels – forums, social media groups and platforms – for professionals and researchers in the field in order to be able to put all the information together, even the controversies, to arrive as soon as possible at the final scientific answers on this topic. The transmission of a balanced, unitary, message through media is an imperative in order to gain the trust of the patient for the healthcare providers and authorities.

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