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## CULTURAL PERSPECTIVES ON VACCINATION - AN ETHICAL DILEMMA?

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### Abstract

Public opinions about vaccination are often the result of divergences between different cultural points of view and value systems. Some key cultural perspectives on vaccination are derived from (1) individual rights and positions of public health systems towards vaccination, (2) religious views and objections to vaccines, and (3) suspicion and distrust on vaccines between different cultures and communities worldwide.

Vaccine hesitancy, defined by the WHO as "delay in accepting or refusing vaccines, despite the availability of vaccination services" is a decision-making process, which depends mainly on trust in the vaccine as well as in the healthcare providers. The hesitancy about vaccination, even in people working in the healthcare field, or the reluctance of parents to vaccinate their children, is one of the reasons that have led to lower immunization coverage rates.

From this perspective, a precise understanding of vaccination by the population is partly the result of a broader cultural and psychological position and, as such, is unlikely to change only through appeals to reasoning or evidence. Developing interventions to address vaccine hesitancy in different communities may require a significantly different approach than they would be in fully assimilated groups, with the need to start by finding out about the culture, fears, values and priorities of that community.

**Keywords:** immunization, culture, vaccine hesitancy, herd immunity

### **Introduction**

Even before the development of the first vaccine in 1796 against smallpox by Edward Jenner, the world community of scientists and the medical area had fought a heroic battle not only to detect and define the transmissible illnesses, with the detailed definition of all the epidemiological circuits, but also to find the solutions for the limitation of extension of these diseases and protect subjects exposed to sources of viral or bacterial infections through procedural methods of epidemiologic control and especially through the development of vaccines as a protection method and immunity fight of a healthy subject or a virus/bacteria carrier at the contact with the source of infection (Rosselli, Martini & Bragazzi, 2016). Therefore, through the development of vaccines and mass vaccination it was possible over time to eliminate worldwide numerous contagious diseases, such as poliomyelitis, plague etc.

### **Vaccination and public health**

The design of all elements of monitoring and of public health management, applied worldwide through organizations like World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) and the establishment of protocols of fast reporting of illness cases, have essentially contributed to have a snapshot in real time regarding the number of the cases of infections, being possible in this way to create the readiness for a fast response at the endemic nidus (with clear, recent examples like the Ebola nidus cessation in Africa). In the same time the international registry has represented an undeniable evidence of the beneficial effects of vaccination in countries dealing with different levels of epidemic infectious diseases generated by different sources and causes of infection (for example, on 27<sup>th</sup> of March 2014, WHO has declared India a country free of polio) (Aylward, 2014). Such achievements with major beneficial impact on the public health, worldwide, would not have been possible without vaccination at a mass level.

Vaccination protects billions of people worldwide and, although WHO recommends vaccination as a routine in order to prevent illnesses, mortality, disabilities generated by diseases like diphtheria, pertussis, tetanus, polio, measles, hepatitis B, still exists a significant mismatch between the level of prevention that should have been achieved in the world and the fact that not all children are vaccinated according to the complete schemes in order to provide them the necessary protection and immunity.

For example in UK, where in the reported data at the end of 2012 the rate of vaccination coverage with the first dose MMR in children was 92.4% with an increase by the age of 5 years, of the vaccination to 94.1% (the highest historical rate). However, in the next years the number of cases of the patients with measles have started to go up (with an additional factor: an epidemic wave coming from France in 2011). Thus, for a half a year in 2013 the number of patients with measles increased to 1168 with a shift of affected age group to 10-14 years. The explanation of this phenomenon is based on the fact that this cohort of age group had originated before the vaccination coverage was implemented with success. To address this issue, UK medical authorities - NHS have conceived a vaccination plan targeting the age segment group of 10-16 years in parallel increasing on all communication channels

the awareness of the necessity of vaccination to parents and teenagers (Public Health England, 2018; Ramsay, 2013). In parallel with the ideas mentioned above one can state that cultural barriers or of other sources linked to the resistance or hesitancy of the acceptance of vaccination should be connected to the individual civic responsibility for the community (National Health Service, 2013).

In other EU states, if a vaccine against flu in active population is associated with studies of the impact (social and economic) of the infectious disease (taking into consideration productivity, economic impact of sick leaves, work incapacity) with the same importance is analyzed and managed the risk of spreading the disease into communities. For example, vaccination against flu in the UK saves costs generated by sick leaves and work incapacity of 28.9 million pounds, annually (Webber, 2018). The costs per human capital generated by flu are very high, 90-270 million pounds in UK (International Longevity Center, 2018). In this kind of countries, due to awareness campaigns on long-term, combined with the integrated aspect of population education through the support and advocacy from the medical community (from the family doctors under the coordination of Infectious Diseases specialists and epidemiologists and other healthcare service providers) in association with non – governmental organizations, patients associations etc., the culture of the spreading risk of the disease in the population is advanced and considered not only a form of self-health protection but also a protection of the community. An important aspect to mention is that a few contagious diseases which can be prevented through vaccination have a mild symptomatology (with cases when the patients are not even aware), this element representing a factor that contributes to a severe increase of disease spreading in population, especially in groups with risks, having as a consequence the increase of mortality. In the case of the flu, 77% of patients do not present symptoms, being however a disease spreading source (Carman et al., 2000).

According to global health alliance GAVI, only 7% in the last 73 poorest countries are immunized completely (meaning that they received all necessary vaccines on complete schedule). The effort of the international management of transmitted infectious diseases which can take benefit through vaccination is complex and requires an alliance not only of the medical fields but also of synergic health policies of countries, participation of non – governmental organizations and resources allocation (a recent analysis conducted by the WHO stated that the funding for the development of vaccines necessary against 11 diseases included by the WHO on a priority list, with regard to research and development, in 2015 would cost between 2.8 – 3.7 billion dollars) (Bloom & Cadarette, 2019).

An important additional factor that adds value is the contribution of public health governmental policies. Making vaccination mandatory by law in some countries (in general population and risk groups) and taking into consideration aspects of ethics and human rights have represented a form to secure the control of infectious diseases spreading for the benefit and well-being of the whole community (Bayer, 2007; Pugh & Douglas, 2016).

### **Vaccination and herd immunity**

In addition to individual protection, vaccination significantly limits the spread of a pathogen through herd immunity. For more clarity we repeat the definition of herd immunity: form of indirect protection of individuals who do not have specific immunity against a virus or bacteria, as a result of immunization of a large percentage of population who developed immunity in the case of an infectious disease. Herd immunity is applicable in the case of infectious diseases transmitted directly among individuals (contagious diseases). In case of tetanus, for example, herd immunization is not present with any such effect (Oxford Vaccine Group, 2016). For example, immunization against smallpox virus of more than 80% of people worldwide significantly reduced the transmission rates to uninfected individuals

achieving the virus eradication. However, duration and degree of herd immunity is dependent of pathogen and host factors. Immune senescence, immunosuppression and immaturity are obstacles in achieving herd immunity (Mallory, Lindesmith & Baric, 2018). Therefore, the impact of target groups' vaccination in community can be exemplified also by the vaccination against pneumococcus.

Studies have demonstrated the beneficial effect of vaccination with conjugated pneumococcal vaccine in children population, not only for disease prevention but also for the limitation of the risk of spreading of pneumococcus through patients who are carriers to risk groups. The introduction of this vaccine in national immunization schedules (mandatory in a few countries, in Romania being recently introduced as optional) has brought, according to studies, a positive impact in communities especially in groups at risk (for both children and adults) limiting bacteria spreading. Many studies are focused on this conclusion and on herd immunity. In the case of invasive pneumococcal disease, the trend in population that is not the target of vaccination demonstrated a decline of disease appearance comparing the period previously of the introduction of the vaccine with that post vaccination of the target group (Haber et al., 2007).

### Vaccine hesitancy

Vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of vaccination services. The concepts of indecision, uncertainty, delay and reluctance vary across place, time and vaccines and are considered by the WHO as a major threat in the world which needs a continuous monitoring (WHO, 2019)

The compliance to vaccination is needed to achieve optimal herd immunity. In order to increase this compliance within the general population, special efforts have been made to understand the determinant factors. As a consequence, the determinants for vaccination compliance were classified into two models, namely: 5A (Access, Affordability, Awareness, Acceptance, and Activation) and 3C (Complacency, Convenience and Confidence) (Thomson, Robinson & Vallée-Tourangeau, 2016; MacDonald & SAGE Working Group on Vaccine Hesitancy, 2015) (Table 1).

Table 1. Vaccination compliance models – definitions

<b>5A model (Thomson et al., 2016)</b>		<b>3C model (MacDonald et al., 2015)</b>	
Access	ability of individuals to be reached by, or to reach recommended vaccines	Complacency	perceived risks of vaccine-preventable diseases are low and vaccination is not deemed a necessary preventive action.
Affordability	ability of individuals to afford vaccination, both in terms of financial and non-financial costs	Convenience	physical availability, affordability and willingness-to-pay, geographical accessibility, ability to understand (language and health literacy) and appeal of immunization service
Awareness	degree to which individuals have knowledge of the need for, and availability of, recommended vaccines and their objective benefits and risks		
Acceptance	degree to which individuals accept, question or refuse vaccination	Confidence	trust in the effectiveness and safety of vaccines and in the system that delivers them.
Activation	degree to which individuals are nudged towards vaccination uptake		

The 3C model was developed by WHO advisory body named Strategic Advisory Group of Experts on Immunization (SAGE) as a validated tool to assess vaccine hesitancy or compliance. Based on the 3C model, SAGE group described the determinant factors responsible for vaccine hesitancy grouped in three categories: contextual, individual and group and vaccine/vaccination-specific influences (Table 2).

Table 2. Determinants Matrix for vaccine hesitancy (MacDonald et al., 2015)

<b>Contextual influences</b>	<ol style="list-style-type: none"> <li>1. Communication and media environment</li> <li>2. Influential leaders, immunization programs</li> <li>3. Historical influences</li> <li>4. Religion/culture/gender/socio-economic</li> <li>5. Politics/policies</li> <li>6. Geographical barriers</li> <li>7. Perception of pharmaceutical industry</li> </ol>
<b>Individual and group influences</b>	<ol style="list-style-type: none"> <li>8. Personal, family, and/or community member experience with vaccination</li> <li>9. Beliefs, attitudes about prevention and health</li> <li>10. Knowledge/awareness</li> <li>11. Health system and providers-trust and personal experience</li> <li>12. Risk/benefits (epidemiological and scientific evidence)</li> <li>13. Immunization as a social norm</li> </ol>
<b>Vaccine/vaccination specific issues</b>	<ol style="list-style-type: none"> <li>14. Risk/benefits (epidemiological and scientific evidence)</li> <li>15. Introduction of a new vaccine</li> <li>16. Mode of administration</li> <li>17. Design of vaccination program</li> <li>18. Reliability and/or source of vaccine</li> <li>19. Vaccination schedule</li> <li>20. Costs</li> <li>21. Strength of recommendation</li> </ol>

Regarding the hesitancy against vaccination acceptance and even the attitude of totally refusing vaccination, these are not new, being generated historically in the same time with vaccines development and introduction, based on explanations related to side effects (which realistically are medically manageable) and nonfactual statements and correlations with other illnesses (such as autism). First organization against vaccination showed up in UK in 1866 as a response to the introduction of smallpox vaccine (Agostoni, 2011). In 1998 a study, withdrawn afterwards and the author losing his credentials (study considered a fraud) was making a connection between MMR vaccine and autism (Godlee, Smith & Marcovitch, 2011; Eggertson, 2010).

A barrier to the understanding and assimilation of vaccination concept at the population level may be represented by grouping all the vaccines in a common general context without taking into consideration or having the necessary knowledge on each disease (as a stand-alone) that may require a vaccine and the link of a disease (and its possible evolution and sometimes major risks of each disease without vaccination) with its particular vaccine.

This lack of understanding can have regrettable consequences: as we see the increase of mortality in measles cases reported in our country in the last period of time. Not only has our country had to face the results of vaccination refusal. The hesitancy against the concept of vaccination of the individual and the necessity of community protection is still a subject largely discussed. For this reason, the 3C model developed by SAGE was modified by other authors in order to include other parameters, such as collective responsibility (defined as willingness to protect others) in order to explain the attitude towards vaccination (Betsch et al., 2018). In the recent report of the Romanian Public Health Institute is presented a decline in vaccination rate with declared motif: patient non-adherent- absence of the patients for the vaccination schemes continuation (Romanian National Institute of Public Health, 2019).

It has been also noted that the idea of hesitancy to vaccination is present including medical profession, medical staff and other professional groups that offer healthcare services (in 2010 - 2011 according to CDC, in USA, 36.5% individuals of the group of medical profession did not get the vaccine against flu, being non-immunized). In this situation the possible cause, mentioned in studies is so-called positive bias, risk compensation with an unrealistic optimism, with the idea that a negative event is more probable to happen to someone else and not to the subject who makes the reasoning. In addition, being in contact on daily basis with patients with affected health status, the medical staff can have a self-induced idea that their own health is over the limit comparing to what they encounter in their work environment as a benchmark. In this case, the medical staff loses the awareness for self-protection needed through vaccination and do not perceive the risk of spreading of the disease outside of medical environment, to their own families and other social communities with who they have contacts (Dash et al., 2004).

Such elements that can induce controversies, from lack of trust in vaccines safety, side effects, to aspects of ethics and human rights, need an enlarged approach, synergic from the medical area, doctors, scientists in research area, health policies, patients associations, parents and civil society in general. In Romania, we notice a positive trend with regard to vaccination, despite the measles cases or isolated epidemic niduses of viral meningitis. According to a sociological study conducted in 2019 by a Romanian social and marketing research company for the Romanian Society of Family Medicine, 62.7% from population agrees with the idea of mandatory vaccination in children, 81.1% of the participants in the study consider vaccination in children as necessary. Half of the study respondents consider the benefits of vaccination greater and more important than the risks. As sources of information regarding vaccination and vaccines, family doctors are noted in 66.4%, followed by media resources and community (figure 1) (Ro-SRM, 2019). In other observational study performed in Romania, an insufficiently encouraging attitude of doctors towards vaccination was reported by some participants. Miko, Costache, Colosi, Neculicioiu and Colosi (2019) have found vaccine hesitancy of 30.3% and refusal of children vaccination of 11.7% of parents. In their study, the most frequent contextual parameter was “media”, while individual and group determinants were “beliefs,” “knowledge,” and “risk/benefits (perceived).”

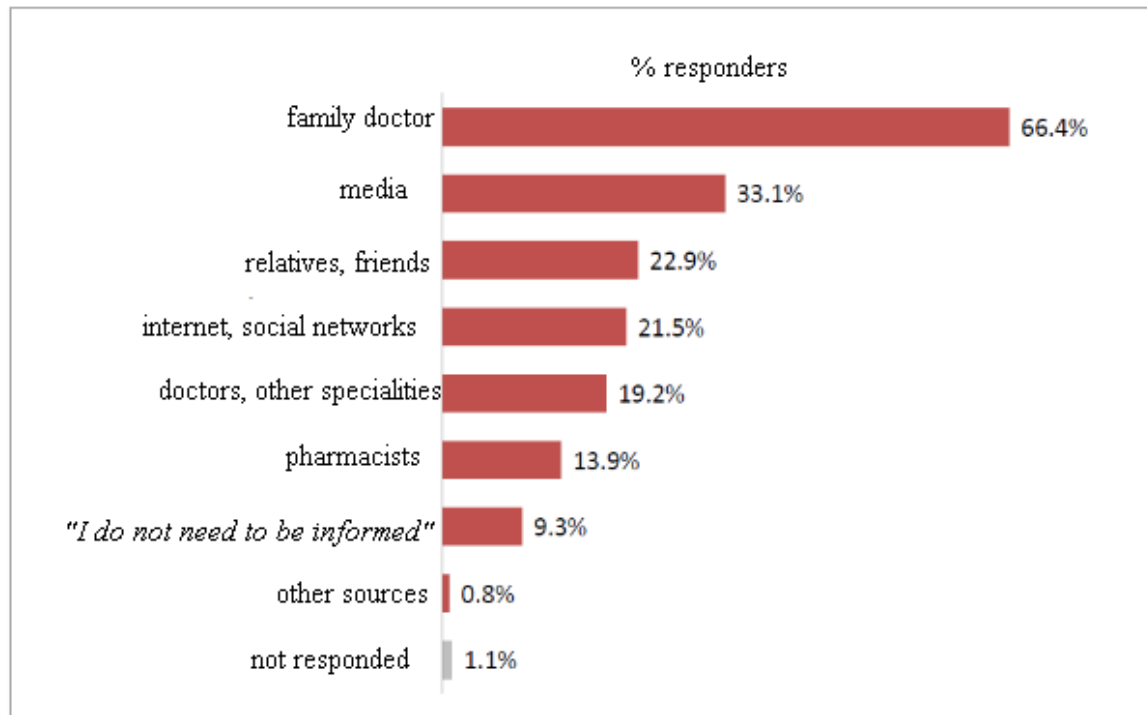


Figure 1. Sources of information about vaccination (Ro-SRM, 2019)

In this context, one can claim, from cultural perspective, that in areas and critical cases of extended epidemic, where even if the population did not have neither knowledge and awareness about the safety of vaccines nor awareness of the necessity of vaccination, the assimilation of the approval and acceptance of vaccination have been directly correlated with positive visible effect at the level of the overall health in the social groups. The cooperation and the acceptance of vaccination in population contributed as an essential factor to the success of epidemic management. A larger coverage on the communication channels of the event with the emphasis of the efficiency and effectiveness of the whole process of management interdisciplinary in vaccination (specialists in infectious diseases, epidemiology, pediatrics, public health departments, patients and community) would have been an opportunity to contribute to the building, for a long term, of the base for the acceptance, awareness and understanding of the benefits of the vaccination and reduce the hesitancy and objection to vaccination in general population (Hajj Hussein et al., 2015).

## Conclusion

As we may conclude, in Romania it is essential to apply a multidisciplinary approach in order to create the trust in the benefits of vaccination both for individual and society, with a coordination from Infectious Diseases specialty which through channels of medical services in cascade, primary medicine, epidemiology, microbiology, public health, also with other segments that offer medical services will increase the knowledge and awareness regarding infectious diseases that can be prevented through vaccination, the mechanism of actions of the vaccines and their safety profile. In collaboration with partners from other areas of activity and using proper and multiple communication channels with impact, from social media to television: sociologists, journalists, influencers like celebrities, vloggers, bloggers, non-governmental organizations, patients organizations, policy makers, Romania can accelerate the steps to reach a high acceptance of vaccination and the increase of the positive impact of immunization in general population.

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