

Socio-group Agents Promoting Vaccination against Covid-19: A Comparative Analysis of the Positions of Medical Workers and Blood Plasma Donors

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ABSTRACT

The paper concerns the issue of perception of various aspects of vaccination against COVID-19 by representatives of two social groups - employees of medical institutions and blood plasma donors. Since both of these groups are institutionally and / or practically connected with the healthcare industry, the authors of the article consider them as potential agents of influence on the mass consciousness in the context of the formation of the immunization discourse. Based on the research (a mass survey of representatives of target groups) in Kharkiv region (Ukraine), an analysis of the perception of such aspects of vaccination as safety, compulsory, effectiveness and no alternative is carried out. The data is used to build a cluster model dividing groups with different attitudes towards vaccination - Skeptics, Conformists, Loyalists and Supporters. The study was carried out within the framework of the research theme No. 0121U109814 "Sociological and Mathematical Modeling of the Effectiveness of Managing Social and Epidemic Processes to Ensure the National Security of Ukraine." The research was carried out in two parallel stages and was based on the use of quantitative methods - face-to-face interview.

Keywords: COVID-19, vaccination, clustering, donors, medical workers, pandemic, opinion leaders.

1. INTRODUCTION AND RELEVANCE

The COVID-19 pandemic has significantly affected the work of social institutions and health care institutions. Misinformation about the virus is spreading as rapidly as COVID-19 itself. This is also due to the social tension that has been recorded in society since the outbreak of the coronavirus; and lack of effective treatment protocols; and, of course, it is connected with the issue of immunization, which is only gaining momentum [1]. This topic is devoted to vaccination issues, since at the moment it is immunization (and its effectiveness) that is the most controversial [2]. The scientific analysis associated with the increase in the incidence and spread of the virus is engaged in medical analysis. However, important social transformations that are inextricably linked to the new social practices involved in the pandemic are escaping the field of science. Along with refining treatment protocols and improving the medical system to combat COVID-19, use parallel tasks related to defining public sentiment and identifying social problems that will escalate in a pandemic. Sociology

cannot stop the disease, but the goal of sociologists is to prevent a "pandemic of fear" and misinformation. Thus, social survey is an integral part of the formation (clarification) of information policy. The scale of the pandemic and the forced response to it has spawned many forms of managed hard drives. For example, covid dissidence, mass protests against lockdowns and anti-vaccination activities has exacerbated information work with the mass consciousness. Without using the output signal from the pandemic, it is difficult to overcome the negative attitude towards the anti-pandemic measures; this function is an important aspect in the work of a sociologist. In this article, we examine the significant research potential of (post) covid research.

The relevance is due to the fact that in different societies, the individual behavioral response to the danger of COVID-19 infection can be very different: it can depend on individual attitudes, belonging to specific social groups, situational context, etc. These features are pointed out by Mimi Lam, a researcher at the Center for Research in Natural Sciences and Humanities at the

University of Bergen (Norway), who attempts to typify behavioral models in a society living during a pandemic [3]. But we are more interested not in possible behavioral patterns that arise as a response to a pandemic, but in models directly related to immunization. And despite the fact that specialists in the development and production of vaccines against a new coronavirus infection, as well as in the health sector, indicate that the risk of adverse reactions after their introduction is disproportionately lower than when a corresponding infection occurs, the attitude towards vaccines against COVID-19 around the world remains ambiguous: from wariness and rejection to the spread of disinformation and propaganda of anti-vaccination. According to 290 surveys conducted between September 2015 and December 2019 in 149 countries, covering 284,381 people, there was a downward trend in confidence in the importance, safety and efficacy of vaccines in a number of countries. For example, confidence in vaccines plummeted in the Philippines due to fears and negative attitudes towards the Dengvaxia vaccine when the manufacturer Sanofi announced it was dangerous. In general, support for vaccination is seen in countries where people have more trust in health care providers than family, friends, or other non-medical sources of medical advice [4].

By early July 2021, about 3.8% of the world's population had been vaccinated, however, to defeat the pandemic the level of herd immunity to the SARS-CoV-2 coronavirus should be about 67% of the world's population. Achievement of population immunity by natural means will cause an unprecedented pressure on health resources and can lead to the death of up to 30 million people worldwide [5]. According to various estimates, it can take from six months to several years to achieve herd immunity. One of the most optimistic forecasts about the timing of when this will be achieved is the beginning of 2022 [6]. Despite the fact that the importance of immunization is recognized by the global medical community, the vaccination process in the world is very heterogeneous, and 75% of all vaccinated are residents of only eight countries: the USA, China, India, Great Britain, Brazil, Turkey, Israel and Germany. In the highly developed countries of North America and Western Europe, the proportion of the vaccinated population on average exceeded the threshold of 30-40%. In the overwhelming majority of Asian and African states, no more than 10% of the population could receive the vaccine [7]. In Ukraine, by mid-October 2021, slightly more than 16% of the population was vaccinated, and the demonstrated rates cannot be called satisfactory. This situation actualizes the need to identify factors that hypothetically can slow down the vaccination process. It is proposed to consider the attitude to vaccination on the example of two significant groups - blood plasma donors and medical workers. These groups can act as potential opinion leaders and have the ability to exert a broad

influence on public opinion through their authority or active life position. We consider healthcare workers and blood plasma donors as such opinion leaders in the context of the pandemic in general and immunization issues in particular.

2. RESEARCH METHODOLOGY

Within the framework of the research theme No. 0121U109814 "Sociological and Mathematical Modeling of the Effectiveness of Managing Socio-Epidemic Processes to Ensure the National Security of Ukraine", quantitative survey methods were used - face-to-face interviews with plasma donors (437 donors were interviewed) and medical staff (797 health workers were interviewed) in Kharkiv region. An empirical study of the discourse struggle process was carried out by measuring the effectiveness of argumentation strategies for the introduction of mass vaccination: respondents were offered a number of statements about vaccination, which they could rate on a scale from "1 - strongly disagree" to "5 - strongly agree" (for each strategy argumentation, one or two direct or reverse statements were used, which concerned: 1) the safety of vaccination; 2) compulsory vaccination; 3) efficiency; 4) alternative vaccination. Comparison of the mentioned groups according to the above criteria makes it possible to draw conclusions about the compatibility of the positions of the two groups, which we consider as potential opinion leaders. In this case, doctors are studied as representatives of the professional community, which, on the one hand, is more likely than others to encounter SARS-CoV-2, and, accordingly, is more involved in immunization processes. On the other hand, they act as representatives of evidence-based ("official") medicine, have a certain authority (which has grown significantly since the beginning of the pandemic) and thus can form specific beliefs and positions on certain aspects of the pandemic, in this case, doctors are an influential agent the formation of certain attitudes in the mass consciousness about vaccination. The nature of these attitudes is what we have to determine, and also to find out whether there are differences between the perception of vaccination by medical workers and those who are not involved in the health care system at a professional level, but who are quite active and can have potential social influence. Plasma donors were identified by us as such a group. Despite the variability of motivation, plasma donors are included in pandemic processes in a position that a priori increases social responsibility, and, as a consequence, have a higher potential for social impact [8].

3. RESEARCH RESULTS

Now in Ukraine, four manufacturers of vaccines against COVID-19 are officially represented: Moderna, Oxford / AstraZeneca, Pfizer / BioNTech, Sinovac. According to the system for monitoring the spread of the coronavirus epidemic of the NSDC apparatus, the most

common vaccine is Pfizer (40.5%), followed by Sinovac (27.9%), AstraZeneca (17.4%), Moderna (14.1%) [9]. In the future, it is advisable to clarify the relationship to each of the vaccines; this will allow more detailed conclusions to be drawn regarding the motivation for refusing immunization, or concerns about the safety of vaccination.

As part of the study, the attitude towards vaccination of plasma donors and medical workers was revealed. The focus of research attention is the assessment of individual aspects of the immunization process by physicians. In addition, it is necessary to determine how close the positions of the considered groups are, which potential social group agents are. The results of the analysis of the survey of plasma donors in more detail can be found in the following works: A. Litovchenko, D. Boiko, O. Nekhaienko, D. Yashkina, E. Muradyan "Plasma donors in the social information field in a pandemic" [8]; D. Boiko, O. Nekhaienko "Discourse of Vaccination against COVID-19: Modeling of Discursive Practices (on the Example of Blood Plasma Donors)" [10].

3.1. Safety of vaccination

The safety argument splits the plasma donor audience into three equal parts: those who partially or completely disagree that vaccination is safe (about 37%); those who partially or completely agree that vaccination is safe (about 31%); and those who were undecided about the mode of response (about 33%). At the same time, the positions of medical personnel regarding the safety of vaccination differ significantly, the absolute majority of the surveyed physicians (60%) assess vaccination as a safe process; slightly less than a third of physicians (31%) have not decided on their position regarding safety and only 8% disagree with the statement that vaccination is safe. A similar distribution remains in the assessments of the safety of different vaccines: the majority of physicians admit that not all vaccines are equally safe (60%), a third of the respondents do not have a clear position, and the same 8% do not agree that not all vaccines are equally safe. Among donors, the situation is somewhat different, there is a great consolidation when articulating the position that not all vaccines are equally safe: the majority of respondents agree with this (55%), do not have a pronounced position - 27%, disagree - 18% (Table 1). We can conclude that medical workers recognize that not all vaccines are safe, but in general, immunization is viewed by them as a predominantly safe process, which is significantly different from the opinion of blood plasma donors, who are more inclined to doubt not only vaccines, but the immunization process in general.

3.2. Mandatory / compulsory vaccination

When asked whether vaccination against coronavirus should be mandatory, most donors responded negatively. In Table 2 we observe that more than 66% said that the

decision to vaccinate should not be imposed or promoted. At the same time, a little less than a third of the respondents (28%) consider vaccination to be mandatory; almost as many (27.5%) noted that they completely disagree with the statement about the compulsory vaccination, and the overall percentage of those who disagree is 44%; slightly more than a quarter say that in some aspects they support the compulsory vaccination, and in some they do not. The positions of health workers on this issue differ significantly. Doctors unanimously note the need for compulsory vaccination (almost 68% of respondents agree with the statement that vaccination should be made mandatory), only 11% disagreed with this statement, and almost every fifth was undecided. At the same time, donors and healthcare workers demonstrate relative unanimity in the issue of imposing and promoting immunization: 60% of healthcare workers agree that vaccination should not be imposed; 20% do not agree that vaccination does not need propaganda, and at the same time, almost the same number of respondents were undecided in this regard.

3.3. The effectiveness of vaccination

As per Table 3 44% of surveyed plasma donors are inclined to believe that vaccination is not a solution to the pandemic problem; 27% cannot decide on this; 29% of those surveyed agree that any vaccines should be used if they are effective. The results of the medical survey reflect the mirror image of the situation - 72% of respondents believe that it is necessary to use any vaccines if they are effective; 9% of surveyed health workers rather or completely disagree with the statement about the need to use any effective vaccines; 18% were undecided. The unanimity of medics in this case may indicate that the medical community regards vaccination as the only possible way to combat a pandemic and the danger of vaccination in this case is disproportionately small, this is also illustrated by Table 4, where health workers evaluate the alternatives to vaccination.

3.4. Vaccination alternatives

38% of plasma donors surveyed fully or partially disagree that the pandemic can only be controlled with a vaccine. A third (33%) do not have a clear position on the lack of alternatives to vaccination. And only 29% of those surveyed admit that vaccination can be considered as the main (or only) tool in the fight against SARS-CoV-2. At the same time, health workers see immunization as the main way to defeat a pandemic (73%); only 6% disagree with the statement that vaccination is the only way to fight SARS-CoV-2 and almost every fifth does not have a clear position on this issue (Table 4).

The data analyzed above formed the basis for multivariate analysis (cluster analysis by the Ward method), with the help of which the medical audience was divided into 4 clusters depending on the attitude towards vaccination (Table 5, Figure 1) Before

proceeding to the analysis of the results, we note that a similar procedure was used to analyze a group of donors (for more details see D. Boiko, O. Nekhaienko "Discourse of Vaccination Against COVID-19:

Modeling Discursive Practices (on the Example of Blood Plasma Donors" [10]), however, only 3 clusters were singled out there (the fourth - Supporters - turned out to be significant only for the medical group).

Table 1. Evaluation by plasma donors and medics of the safety of SARS-CoV-2 vaccination (in % to respondents)

	Group	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Vaccination is generally safe	Donors	17,6	19,0	32,7	16,7	14,0
	Medics	3,3	5,1	31,3	39,5	20,7
Not all vaccines are equally safe	Donors	7,8	10,1	26,8	18,3	37,1
	Medics	3,6	7,4	28,8	38,0	22,3

Table 2. Evaluation of the compulsory vaccination against SARS-CoV-2 by plasma donors and medics (in % to respondents)

	Group	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Vaccination must be made mandatory	Donors	27,5	16,7	26,1	16,2	13,5
	Medics	5,0	5,9	21,7	32,1	35,4
Vaccination should not be imposed or promoted	Donors	10,3	7,6	15,8	12,1	54,2
	Medics	10,6	9,5	19,7	25,7	34,6

Table 3. Evaluation by plasma donors and medics of the effectiveness of vaccination against SARS-CoV-2 (in% of respondents)

	Group	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Any effective vaccine should be used	Donors	25,9	18,1	27,0	15,1	14,0
	Medics	4,2	4,8	18,1	34,7	38,1

Table 4. Plasma donor and medics of alternatives to SARS-CoV-2 vaccination (in % of respondents)

	Group	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Vaccination is the only way to defeat the virus	Donors	22,7	15,3	32,7	14,2	15,1
	Medics	2,8	2,9	21,3	27,6	45,4

Table 5 Coefficient of agreement with statements in each of the clusters

	Skeptics	Conformists	Loyalists	Supporters
Vaccination is generally safe	2,4	3,3	4,3	4,0
Not all vaccines are equally safe	3,3	3,7	3,8	3,4
Vaccination must be made mandatory	2,1	3,3	4,6	4,6
Vaccination should not be imposed or promoted	4,2	3,9	4,1	1,6
Any effective vaccine should be used	2,2	3,8	4,4	4,3
Vaccination is the only way to defeat the virus	2,4	3,7	4,8	4,4
* Coefficient of consent (min=1, max=5)				
Cluster size among donors	40-43%	29-32%	26-29%	-
Cluster size among medics	10-13%	32-35%	37-40%	15-18%

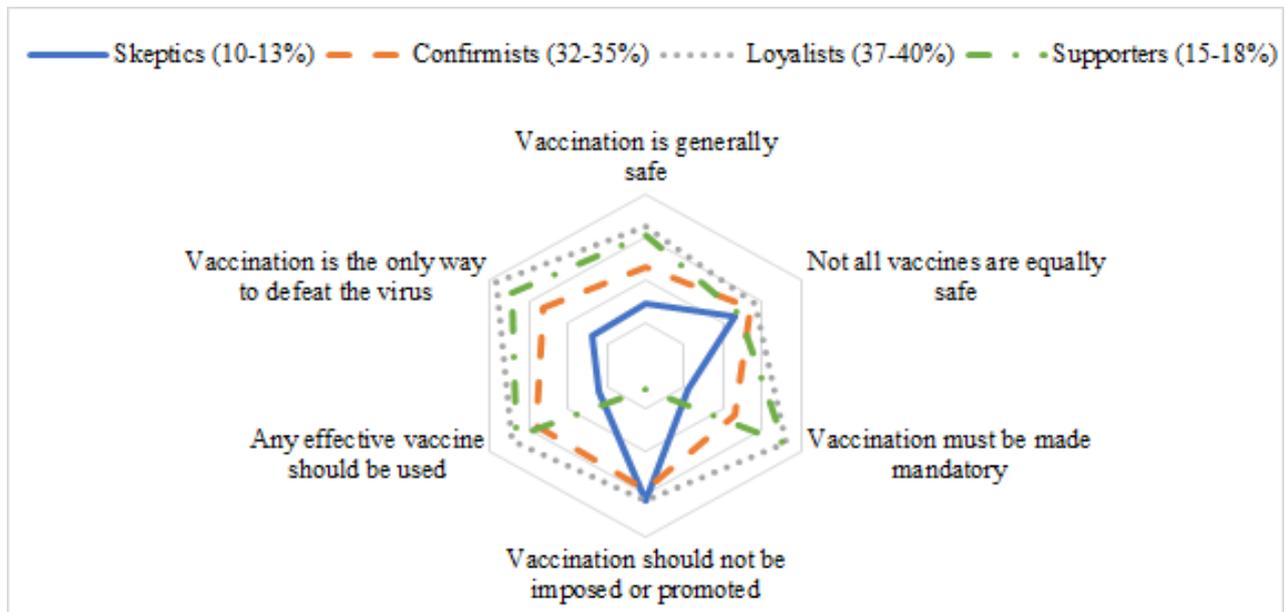


Figure 1 Results of cluster analysis of attitudes towards vaccination

Comparison of the size of the Skeptics cluster in the group of donors and health workers is very indicative: if the former had 40-43%, then among the latter they were only 10-13%. The obvious professional attitude (or professional deformation?) of medics significantly reduces the number of those who doubt the importance / necessity of vaccination. But still, even among healthcare workers, there remains a fairly large, statistically significant subgroup that is skeptical about vaccination.

Correlation analysis shows that most often these are people with secondary specialized education, occupying low positions, and their average age is 4-5 years lower than that of the rest.

The second cluster - Conformists - practically coincides in relative numbers both among medics and among donors (about 29-35%). Representatives of this cluster have an expressionless position, it is difficult for them to determine their attitude; in fact, this group is

passive in its position, therefore, it will focus on external influence (institutional coercion, the example of opinion leaders, etc.), without independently influencing public opinion.

But the Loyalists cluster, to which the supporters of vaccination, but who do not support propaganda, were attributed, can potentially replenish the active core of immunization advocacy: in general, they recognize the importance / necessity of vaccination, but consider it important to leave the decision about it to an individual. Among donors, this cluster was in the range of 26-29%, but among doctors it reaches 37-40%, being the largest. Probably, the version of imposition and promotion of vaccination, which is being implemented now, does not suit the representatives of this cluster, and when the information strategy changes, some of them will agree with the usefulness of this kind of propaganda (but this, of course, requires a separate study by qualitative methods).

And the most specific and most important cluster is Supporters. As mentioned above, in the sample of donors this cluster turned out to be statistically insignificant, therefore we did not single out it, but in the sample of health workers it is quite large: these are people who fully support vaccination (even admitting that not all vaccines are equally safe), while advocate for the need for a mass communication policy to support immunization. It is they who constitute the active core of the introduction of mass vaccination, having both the opportunity and the desire to popularize it. As expected, these are people with the highest level of education among all clusters, mainly in the interval of 35-45 years; also in this cluster the proportionally largest proportion of men.

4. CONCLUSIONS

The effectiveness of vaccination in the fight against epidemics is historically confirmed, successful examples include the eradication of smallpox, poliomyelitis and a significant reduction in the death rate from measles: according to the WHO, from 2000 to 2017, the death rate from measles in the world decreased by 80% [11]. For a cardinal positive solution to the issue of the incidence of coronavirus, population immunity is required. The

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formation of immunity at the population level is possible either through mass vaccination, or through a mass illness, in which case 40-60% of the population should get coronavirus. The world community of immunologists recognizes vaccination as a leading tool capable of overcoming epidemics and pandemics [12]. But despite all the recognized successes of vaccination, the population of Ukraine is mostly skeptical, which is partly demonstrated by the survey of blood plasma donors. The situation for healthcare workers is somewhat different.

On the one hand, the cluster of active supporters of vaccination that has emerged among medics indicates the real potential of the professional medical environment in the Kharkiv region to generate agents of influence and opinion leaders who promote vaccination through informal channels. On the other hand, the number of active supporters (15-18%) is comparable to the number of skeptics (10-13%), which is more likely to cause concern. Therefore, measures are required not so much to combat skeptics, but to campaign for a loyal, but passive audience, which constitutes a relative majority among medical workers. Effective work to convince healthcare providers of the need to promote vaccination can qualitatively and quantitatively strengthen the position of supporters, thereby launching referral channels of persuasion. The fact that a significant part of doctors support vaccination, but refuse to propagate it, is probably generated by the tendencies of (neo)liberalization and the agenda of the client approach to medicine (based on the freedom of patient choice), which is actively being introduced in Ukraine; however, given the current situation with the pandemic, it would be more appropriate to use an authoritative / authoritarian model of relations, where the health worker, from the standpoint of knowledge and authority, independently makes decisions and guides the patient. But whether the health care system of Ukraine, which has embarked on the tracks of neoliberal reforms, is ready to move away from the new doctrine, even if for the sake of the effective performance of its functions, is more a political question than an institutional one. And in this paradigm of doctor-patient relations (more precisely, doctor-client), the potential of health workers as vehicles for the ideas of mass vaccination is significantly limited.

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