

THE ANTI COVID-19 VACCINATION INTENTION OF MEDICAL PERSONNEL FROM ROMANIA

Dr. Daniela Rajka,
Cluj-Napoca school medical office

Abstract

INTRODUCTION: Vaccination is the only way to achieve group immunity in the SARS CoV-2 pandemic. Efforts to create safe vaccines worldwide have led to 60 vaccines being clinically evaluated at the moment according to the WHO, and the European Medicines Agency has urgently authorized the BioNTech / Fosun Pharma / Pfizer vaccine, a vaccine based on the mRNA technique.

OBJECTIVES: The study looks at the acceptability and intent of COVID-19 vaccination among medical staff.

MATERIAL AND METHODS: The study was conducted between November 3rd and November 12th 2020, by distributing an anonymous questionnaire in online professional groups of medical staff regarding the acceptance of vaccination in general, and vaccination against COVID-19 in particular.

RESULTS: 612 persons answered to the survey, 164 nurses and 448 doctors.

207 doctors work in the hospitals, 103 in ambulatory care clinics, 76 in school medical offices and 62 in family doctors offices.

565 respondents (92,3%) support vaccination in general, while 47 (7,7%) do not.

43,3% of the medical staff that were a part of this study were vaccinated against influenza this season. 80% of the medical staff supports vaccination against COVID-19, in general, and 47% of the respondents state that they will get vaccinated against COVID-19.

CONCLUSIONS: The Romanian medical staff supports the vaccination against COVID-19, and the safe vaccination intention is 47%.

KEY WORDS: **vaccination intention, anti COVID-19 vaccination, medical personnel**

INTRODUCTION

The installation of group immunity in SARS-CoV-2 infection is estimated at 67%. There are two possibilities to achieve widespread immunity against SARS-CoV-2: (1) a mass vaccination campaign, with safe vaccines, or (2) the natural immunization of the population, over time. But the consequences of the latter are extremely serious, as it involves mass infection of the population and millions of deaths [1].

A study on survivors of SARS-CoV-2 infection, persons that needed hospital admission for their illness, showed that approximately 90% have protective antibodies and approximately 50% have a strong T lymphocyte response. Nevertheless, studies on outpatients are needed in order to assess the level of protective antibodies after mild infections [2].

In this context, the urgency of discovering a vaccine effective against COVID-19 is very high, and research for the production of a vaccine are numerous worldwide. However, the safety of citizens remains a key priority, so the European Commission considers that quality, safety and efficacy standards in the authorization of these vaccines must be strictly adhered to [3].

According to the World Health Organization, on 29.12.2020 there were 60 vaccines worldwide in the clinical evaluation stage and 172 vaccines in the pre-clinical evaluation stage [4]. The types of candidate vaccines in the clinical evaluation stage are presented in Table no. 1, and a classification according to the number of doses and the route of administration – in Table no. 2.

* Corresponding author: Daniela Rajka, Cluj-Napoca school medical office, e-mail: rajkadani07@yahoo.com

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Platform	Tip de vaccin	Candidate vaccines (no. and %)	
PS	Protein subunit	18	30%
VVnr	Viral Vector (non-replicating)	9	15%
DNA	DNA	8	13%
IV	Inactivated Virus	8	13%
RNA	RNA	7	12%
VVr	Viral Vector (replicating)	4	7%
VLP	Virus Like Particle	2	3%
VVr + APC	VVr + Antigen Presenting Cell	2	3%
LAV	Live Attenuated Virus	1	2%
VVnr + APC	VVnr + Antigen Presenting Cell	1	2%
		60	

Table no. 1 Candidate vaccines, in clinical evaluation stage, according to the WHO – 29.12.2020 [4]

Dosage & schedule		Candidate vaccines (no. and %)	
1 dose		10	17%
Day 0		10	
2 doses		37	62%
Day 0 + 14		5	
Day 0 + 21		14	
Day 0 + 28		18	
3 doses		1	2%
Day 0 + 28 + 56		1	
TBD / No Data (ND)		12	20%
		60	
Route of administration			
Oral		3	5%
Injectable		51	85%
SC	Sub cutaneous	2	3%
ID	Intra dermal	3	5%
IM	Intra muscular	46	77%
TBD / No Data (ND)		6	10%

Table no. 2 – Dosage, schedule and route of administration for candidate vaccines in clinical evaluation stage, according to the WHO – 29.12.2020 [4]

Each country has established a vaccination strategy for the population, prioritizing groups of people that are at risk. Thus, in Germany, in the first group, with high priority, were included [5]:

1. People over the age of 80.
2. Care staff working in senior citizens centers, or who regularly deal with the elderly or the mentally ill.
3. Medical personnel at high risk of exposure to COVID-19, especially those working in intensive care units, emergency units and first-line health care providers.
4. Medical personnel treating patients at high risk of death with COVID-19.

OBJECTIVES: Given that medical staff is included in the priority vaccination group in Romania, the present study aimed to assess the acceptability of vaccination by medical staff, as well as the intention to vaccinate against SARS-CoV-2 among them.

MATERIAL AND METHOD: The study was conducted between November 3rd and 12th 2020 by distributing in medical personnel's online professional groups an anonymous questionnaire on the acceptance by the medical staff of vaccination in general and of COVID-19 vaccination in particular.

RESULTS AND DISCUSSION

612 people, 164 nurses and 448 doctors answered the questionnaire. 207 of the responding doctors work in the hospital, 103 in the outpatient department, 76 in school medical offices and 62 in family doctors offices.

92.32% of the participants in the study state that they support vaccination, in general (Table no. 3), with percentages ranging from 84.15% among nurses to 100% among family doctors who responded to this question.

	Yes	%
Family doctor	62	100,00%
School physician	73	96,05%
Hospital doctor	198	95,65%
Ambulatory care doctor	94	91,26%
Nurse	138	84,15%
Total	565	92,32%

Table no.3 – Do you support vaccination in general?

An Avangarde survey, conducted in December 2020 on a significant sample of the general population of Romania shows that 38% of respondents say they are pro-vaccination in general, 20% against vaccination, 25% say they do not have a clear position or are not interested and 17% do not know or do not answer. [7] The differences between the pro-vaccination attitude of the medical staff and of the general population are significantly increased and reflect the awareness of the medical staff of the importance immunization has for public health.

Seeing that there are studies that have shown a strong association between influenza vaccination and the intention to vaccinate against COVID-19 among the general population [8], we wanted to see if this association is also observed among medical workers in Romania.

Thus, 43.3% of the medical staff who participated in the study stated that they had been vaccinated against influenza this season; the percentage of nurses who were vaccinated was the lowest (23.17%), while the percentage of family doctors was the highest. (74.19%) (Table no. 4).

	Yes	%
Family doctor	46	74,19%
Ambulatory care doctor	59	57,28%
Hospital doctor	96	46,38%
School physician	26	34,21%
Nurse	38	23,17%
Total	265	43,30%

Table no. 4. – Have you been vaccinated against the flu this season?

		Will you get vaccinated against COVID-19?			Total
		no	yes	I don't know	
Have you been vaccinated against the flu this season?	yes	Count 19	Count 177	Count 69	Count 265
		% within „Have you been vaccinated against the flu this season?” 7.2%	% within „Have you been vaccinated against the flu this season?” 66.8%	% within „Have you been vaccinated against the flu this season?” 26.0%	% within „Have you been vaccinated against the flu this season?” 100.0%
Have you been vaccinated against the flu this season?	no	Count 98	Count 113	Count 136	Count 347
		% within „Have you been vaccinated against the flu this season?” 28.2%	% within „Have you been vaccinated against the flu this season?” 32.6%	% within „Have you been vaccinated against the flu this season?” 39.2%	% within „Have you been vaccinated against the flu this season?” 100.0%

		Will you get vaccinated against COVID-19?			Total
		no	yes	I don't know	
Total	Count	117	290	205	612
	% within „Have you been vaccinated against the flu this season?”	19.1%	47.4%	33.5%	100.0%

Table no. 5. Have you been vaccinated against the flu this season? X Will you get vaccinated against COVID-19? Cross tabulation

In the case of our study, there is also a close correlation between influenza vaccination and the intention to vaccinate against COVID-19 in medical staff: $\chi^2= 79.80, p< 0.001$ (Table no. 5).

The next question in our survey, „Do you think that COVID-19 vaccination should be mandatory?”, generated the following answers: 31.2% of the respondents answered in the affirmative while 68.8% of the medical staff in the study considered that COVID-19 vaccination should not be mandatory (Table no. 6).

	Da	Nu
Nurses	45	119
Doctors	146	302
Total	191	421

Table no. 6. – Do you think COVID-19 vaccination should be mandatory?

Regarding the groups of people who should be vaccinated as a priority, the medical staff participating in the study considered that medical staff, people with risk factors and those in residential centers should be vaccinated as a priority (Table 7).

Who do you think should be vaccinated against COVID-19 first?	nr.	%
Medical staff	438	71,6%
Immunosuppressed persons / with risk factors	409	66,8%
Senior care centers residents	235	38,4%
Elders	16	2,6%
Others (politicians, police force, teachers, retail workers)	42	6,8%

Table no. 7 – Priority groups for COVID vaccination (as indicated by respondents)

80% of the medical staff supports the vaccination against COVID-19, in general (Table no. 8).

	Yes	%
Family doctor	56	90,32%
School physician	66	86,84%
Hospital doctor	169	81,64%
Ambulatory care doctor	83	80,58%
Nurse	115	70,12%
Total	489	79,90%

Table no. 8 – Do you support COVID-19 vaccination in general?

There is a statistically significant difference between the acceptance of vaccination by doctors and nurses, $\chi^2= 13.34, p< 0.001$ (Table no. 9), but there is no statistically significant difference between the acceptance of vaccination, in general, between doctors

in hospitals, outpatient clinics, family medicine offices / schools medical offices., $\chi^2= 3.86, p= 0.277$ (Table no. 10).

			Do you support COVID-19 vaccination in general?		Total
			no	yes	
You are:	Nurses	Count % within:	49 29.9%	115 70.1%	164 100.0%
	Doctors	Count % within:	74 16.5%	374 83.5%	448 100.0%
Total		Count % within:	123 20.1%	489 79.9%	612 100.0%

Table no. 9 – Do you support COVID-19 vaccination in general? Nurses / doctors correlation

			Do you support COVID-19 vaccination in general?		Total
			no	yes	
Doctor working in:	Ambulatory care	Count % within:	20 19.4%	83 80.6%	103 100.0%
	Family medicine office	Count % within:	6 9.7%	56 90.3%	62 100.0%
	School medical office	Count % within:	10 13.2%	66 86.8%	76 100.0%
	Hospital	Count % within:	38 18.4%	169 81.6%	207 100.0%
	Total	Count % within:	74 16.5%	374 83.5%	448 100.0%

Table no. 10. Do you support COVID-19 vaccination in general? Correlation for doctors

The intention of vaccination against COVID-19 of the medical staff who participated in the study is 47.39%. A proportion of 33.5% of respondents are

undecided, while 19.12% say they will not get vaccinated against COVID-19 (Table no. 11).

	Yes	Nu	I don't know
Ambulatory care doctor	59 (57,28%)	18 (17,48%)	26 (25,24%)
Hospital doctor	112 (54,11%)	42 (20,29%)	53 (25,60%)
Family doctor	32 (51,61%)	6 (9,68%)	24 (38,71%)
School physician	36 (47,37%)	10 (13,16%)	30 (39,47%)
Nurse	51 (31,10%)	41 (25,00%)	72 (43,90%)
Total	290 (47,39%)	117 (19,12%)	205 (33,50%)

Tabelul nr. 11. Intenția de vaccinare anti-COVID-19

Compared to the Avangarde study from December 2020, in which 30% of the general population of Romania declares that they are determined to get vaccinated against COVID-19, 29% are undecided and 29% refuse vaccination [7], it is observed that even in the case of vaccination intention against COVID-19 the percentage of medical staff who want to get vaccinated is much higher than in the general population.

Comparing with the data published in November 2020, by different County Public Health Directorates, regarding a first estimate of the intention to vaccinate of the medical staff, we find that these

figures are comparable to those in our study, and are even higher than the intention to vaccinate among the general population. Thus, in Alba county, 60% of the medical staff said that they accept the vaccination: hospital doctors – 70%, family doctors – 88%, nurses – 45.8%, orderly – 45.45%. In Iași county, 60 % of doctors, 47% of nurses, 43% of orderly and 46% of caregivers said they want to be vaccinated, and at Colentina Hospital in Bucharest, out of 1390 employees, 890 opted for anti-Covid vaccination, ie a percentage of **63.57%** [9].

Even regarding the intention to vaccinate against COVID-19, there is a statistically significant

difference between physicians and nurses participating in the study, $\chi^2= 23.84$, $p< 0.001$, the percentage of doctors who state they will get vaccinated being significantly higher than that of nurses (Table no. 12), while among doctors working in hospitals, outpatient

clinics, family medicine offices, school medical offices, there is no statistically significant difference in the intention to vaccinate, $\chi^2= 10.82$, $p= 0.094$ (Table no. 13).

			Will you get vaccinated against COVID-19?			Total
			no	yes	I don't know	
You are:	Nurses	Count	41	51	72	164
		% within:	25.0%	31.1%	43.9%	100.0%
	Doctors	Count	76	239	133	448
		% within:	17.0%	53.3%	29.7%	100.0%
Total		Count	117	290	205	612
		% within:	19.1%	47.4%	33.5%	100.0%

Table no. 12 – Will you get vaccinated against COVID-19? Nurses / doctors correlation

			Will you get vaccinated against COVID-19?			Total
			no	yes	I don't know	
Doctor working in:	Ambulatory care	Count	18	59	26	103
		% within:	17.5%	57.3%	25.2%	100.0%
	Family medicine office	Count	6	32	24	62
		% within:	9.7%	51.6%	38.7%	100.0%
	School medical office	Count	10	36	30	76
		% within:	13.2%	47.4%	39.5%	100.0%
	Hospital	Count	42	112	53	207
		% within:	20.3%	54.1%	25.6%	100.0%
Total		Count	76	239	133	448
		% within:	17.0%	53.3%	29.7%	100.0%

Table no. 13 – Will you get vaccinated against COVID-19? Correlation for doctors

The findings of a study on the intention to get vaccinated against COVID-19 in 13,426 respondents in 19 countries show that 31.9% (4,286 of 13,426) would totally agree, and 17.9% (2,411 of 13,426) would totally disagree with the acceptance of a safe and effective vaccine provided by the governments of those countries. [10].

In the United Kingdom, 64% of study participants said they would get vaccinated against COVID-19, 27% were unsure and 9% said they did not want to be vaccinated [11]. The reasons for which the medical staff in the study state that they would not get vaccinated against COVID-19 / do not know if they would get vaccinated are:

They don't think there is enough scientific data on the efficacy and safety of the vaccine	221
Because of the potential side effects of the vaccine	64
They have already been confirmed with COVID-19	26
They don't trust vaccines in general	6
Other	5
Total	322

Hesitation on vaccination is generally a growing problem in recent years, and studies have tried unsuccessfully to find predictable indicators of hesitation in vaccination [12].

It is important to distinguish between those who oppose vaccination and those who have relevant concerns and questions about a particular vaccine, its safety and efficacy [13], as transparency in communication can change uncertainties and increase vaccination intentions.

CONCLUSIONS

The medical staff participating in the study accept the vaccination, in general, and the anti-COVID-19 vaccination, in particular.

It is considered that anti-COVID-19 vaccination in Romania should not be mandatory, and priority groups for vaccination should be represented by: medical staff, people with risk factors and people in residential centers.

The intention of vaccination against COVID-19 of the medical staff is close to 50%, being superior to that of the general population. An important percentage of the medical staff, 33.5%, was not decided, at the beginning of November 2020, whether to get vaccinated or not.

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