

## VACCINATION ATTITUDES EXAMINATION SCALE AND ADHERENCE TO VACCINATION

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**Abstract:** *Introduction.* SARS\_CoV\_2 pandemic triggered international measures, from genomic sequencing, PCR tests and accelerated studies for vaccines and treatments approval, to extreme restriction of civil rights, through stringent measures as social distance, work and online education etc. The lack of population’s adherence to the authorities’ measures can compromise the success in limiting the pandemic.

*Material and method.* This cross-sectional study identified the opinions of vaccinated and unvaccinated participants regarding the severity of the pandemic, vaccination and stringency measures, the objective being to highlight the ethical and moral aspects on which these opinions are based. The responders (n = 412) declared their vaccinal status in a questionnaire, their opinions on disease, on the vaccine, their attitude towards the green certificate etc. The data analysis followed the internal consistency of the questionnaire through Cronbach’s alpha, correlations, inferential tests.

*Results.* Respondents are not worried about getting sick at work but are concerned about their families and friends safety; are not convinced of the quality of approved vaccines (for which regulators cannot guarantee the safety); are concerned about the lack of transparency in pharmacovigilance and vaccine efficacy studies; they think that vaccines do not stop the viruses transmission, do not provide lasting protection or eradicate the virus. They consider that both the virus and human immune response are insufficiently known and the green certificate does not limit the burden of disease, being discriminatory.

*Conclusions.* For the quality of life, already compromised in the pandemic, the absence of restrictions and voluntary vaccination are important.

**Keywords:** vaccine safety, green certificate, restrictions.

### INTRODUCTION

Epidemiological events, epidemics or pandemics, display three essential links, without which no event would take place: the source, the route of transmission and the receptive organisms. Measures to limit them are addressed equally to these three links, by identifying and isolating the source, interrupting transmission using protective barriers and transforming receptive organisms into resistant ones [1].

In pandemics, where the etiological agent has its first contact with the human species, the

severity of the problem increases, because there are no dedicated laboratory techniques to identify it, the route of transmission is unknown and the entire human population is receptive. The SARS\_CoV\_2 pandemic has triggered strong international actions, from genomic sequencing, PCR testing and accelerated studies for vaccine and treatment approvals, to the extreme restriction of civil rights, such as social distancing, work and online education, travel bans, etc. The lack of population’s adherence to these authorities’ measures can compromise the success in limiting the effects of the pandemic.

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To date, almost 60% of the world's population has received at least one dose of SARS\_CoV\_2 vaccines, with massive inequalities for poor countries, where less than 5% of population was inoculated, and, on the other hand, rich countries assured already 1-2 booster doses [2].

Universally, the attitude towards vaccination is variable. Vaccination has sometimes been accepted only to avoid social exclusion and the rejection of vaccination is complexly explained by emotional factors (fear of needles, conflicting medical opinions, vaccine manufacturer, "pandemic fatigue"), distrust of vaccination benefits or vaccine composition, anxiety about vaccine side effects, denial of the virus existence or pandemic reality, dependence on the opinions of others (avoidance of family conflicts, protection of vulnerable family members or entourage) but often the crisis of trust in government sources, health authorities and the pharmaceutical industry also concerned with commercial profit [3].

There are a lot of scales to validate vaccination confidence (Vaccination Confidence Scale [4], Attitudes Towards Vaccinations Scale ATVS [5], Vaccine Attitude Question Battery VAQB [6]) and we decide to use Vaccination Attitudes Examination Scale (VAX) to measuring the reasons behind refusal/hesitancy regarding Covid 19 vaccinations.

## OBJECTIVE

To identify the views of the majority of vaccinated and unvaccinated participants on the severity of the pandemic, vaccination measures and stringency, with an emphasis on the ethical and moral issues on which these views are based.

## AIM

To establish the vulnerabilities that lead to the vaccination's rejection, in relation to three levels: authorities, the pharmaceutical industry and the population.

## MATERIAL AND METHODS

All the persons included in the study (n = 412) specified, in a questionnaire, their vaccinal status, their perception regarding the profile of the disease, the presence or absence of their confidence in the vaccine as a preventive method, their attitude towards the green certificate, etc.

The VAX scale has 4 levels: lack of confidence in the benefit of vaccination, fear of long-term side effects, concerns about commercial benefit, and confidence in natural immunity [7]. Items were presented as statements, with responses on a 5-point Likert-type scale ranging from "strongly agree" to "strongly disagree." Higher scores reflect stronger antivaccination attitudes, 18 of the initial 165 items being coded. The design of the cross-sectional, observational, descriptive, non-randomized study used the vaccine attitude scale (VAX) and the data analysis was done for correlations by t-test, inferential tests, based on demographic data and direct responses on vaccine acceptance. The internal consistency of the questionnaire was checked by Cronbach's alpha.

## RESULTS

The average age of the respondents is 34.36 years, Std.dev 12.92, extremes 18-69 years. The average age of vaccinated (n = 261, 63.34%) versus unvaccinated respondents (n = 151, 36.65%) is 34.90 versus 33.44, with no statistical differences. Gender ratio of respondents F (n = 285, 69.2%): M (n = 127, 30.8%) = 2.24. Gender ratio of vaccinated F (n = 175): M (n = 86) = 2.03, no significant differences.

Over 69.9% had no SARS\_CoV\_2 infection documented by testing, although 51 (12.4%) showed suggestive symptoms. Of the 124 with positive tests, 59 had mild symptoms (47.58%), 43 had moderate symptoms (34.67%), 18 showed no symptoms (14.51%), while 4 had severe symptoms of infection (3.22%).

Pre-existing diseases do not have a high prevalence in the case of respondents compared to the general population, except for autoimmune diseases, associations of two or more diseases being present in 5 cases. The odds ratio (OR) of those with higher education/university versus those with high school and college is 1.9864 (95% CI, 1.3214 to 2.9862, P = 0.0010), with no significant differences in the decision to vaccinate in case of pre-existing diseases. Less than 11% were affected by job loss or income loss due to the pandemic restrictions (Table 1).

They are not convinced of the quality of emergency approved and monitored vaccines (for which regulators do not guarantee its safety); are concerned about the lack of transparency in pharmacovigilance and vaccine efficacy studies; are convinced that vaccines do not stop the virus transmission, do not provide either lasting protection nor would eradicate the virus.

Confidence in the vaccine would increase if there was certainty that would protect against the disease, if it would cease the virus transmission, if it does not cause immediate or long-term side effects, or if the regulatory agencies would guarantee the safety of these vaccines; the level of education does not lead to

significant differences in vaccine confidence (Table 2). Almost ¾ of the respondents never refused a vaccine (n = 308, 74.8%), while the reasons given by those who refused vaccination on other occasions were related to lack of confidence in the vaccine products or lack of information.

**Table 1.** Demographic characteristics

Item	Frequency	Percent	Frequency unvaccinated	Percent unvaccinated	
Gender	F	285	69.17	110	38.59
	M	127	30.8	41	32.28
Education	high school	186	45.1	88	47.31
	college	18	4.4	3	16.66
	university	208	50.5	60	28.84
Working condition	employed	218	52.9	69	31.65
	not employed	194	47.1	82	42.26
	remote job	102	24.8	37	36.27
Living condition	office job	310	75.2	114	36.77
	relative over 70 years old	113	27.4	44	38.93
	relative under 70 years old	299	72.6	107	35.78
	rheumatic disease	17	4.12	7	41.17
Existing disease	allergies	27	6.55	15	55.55
	autoimmune disease	18	4.36	4	22.22
	other	9	2.18	3	33.33
	COPD	2	0.485	1	50
	CV	8	1.941	3	37.5
	cancer	3	0.72	2	66.66
	diabetes	11	2.66	5	45.45
	obesity	15	3.64	4	26.66
Ex Covid patient	none	302	73.30	107	35.43
	yes	124	30.09	47	37.90
	no	288	69.10	104	36.11
	I lost my job	18	4.4	5	1.21
Pandemic restrictions	reduced salary	27	6.6	7	6.55
	no	355	86.2	133	32.28
	fairly compensated	5	1.2	1	0.24
	I worked at home	7	1.7	5	1.21

Legend: F=female, M=male, COPD= Chronic obstructive pulmonary disease, CV=cardiovascular disease.

**Table 2.**

Facts	Item	Frequency	Percent
Have you ever refused a vaccine recommended by your doctor?	yes- I'm worried about side effects	17	4.1
	Yes- I have had unpleasant experiences with other vaccines	9	2.2
	Yes- I don't think the vaccine is safe	16	3.9
	Yes- I did not have access to the vaccine	3	0.7
	Yes- I did not have enough information about the vaccine	27	6.6
	Yes- I didn't think the vaccine was necessary	26	6.3
	Yes- I didn't think it was effective	6	1.5
	No_ never	308	74.8
	the vaccine protects against Covid-19	158	38.34
	stops human-to-human transmission	158	38.34
Vaccine acceptance/ confidence conditions	without immediate or long-term side effects	110	26.69
	the safety of vaccines is guaranteed	75	18.2
	the vaccine does not induce the disease	73	17.71
	I don't need any other information	67	16.26
	the risk of disease is higher than the risk of side effects	52	12.62
	its rapid production does not harm its safety	43	10.43
	strict approval rules	41	9.951

**Table 3.**

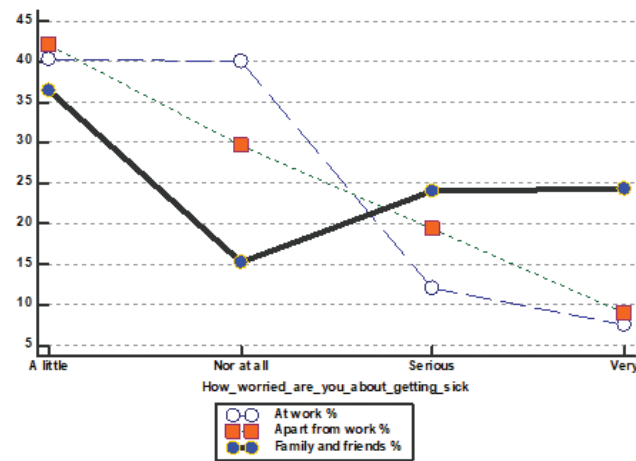
Item	Odds Ratio	95% CI	z statistic	Sig. level
Side effects vaccinated <i>versus</i> unvaccinated	6.0525	1.9365 to 18.9174	3.097	P = 0.0020
Safety concerns unvaccinated <i>versus</i> vaccinated	3.0142	1.073 to 8.4669	2.094	P = 0.0363
Ineffective vaccine unvaccinated <i>versus</i> vaccinated	8.9041	1.0303 to 76.9482	1.987	P = 0.0469

**Table 4.** Worried about getting sick

How worried are you about getting sick/percent	At work	Apart from work	Family and friends
A little	40.3	42	36.4
Nor at all	40	29.6	15.3
Serious	12.1	19.4	24
Very	7.5	9	24.3

**Table 5.** The likelihood of future vaccination

Would you get Covid-19 vaccine	Frequency	Percent
surely	19	4.6
no - never	34	8.3
not now, maybe later	51	12.4
I'm not sure	19	4.6
probably	14	3.4
unlikely	14	3.4
I'm already vaccinated	261	63.3
Total	412	100.0



**Figure 1.** Worried about getting sick.

**Table 6.** Reason to be Covid 19 vaccinated

What would be your reasons to be vaccinated against Covid-19	percent
to provide lasting protection	20.55
if vaccination would eradicate the virus	15.62
to live without restrictions	14.93
to decide whether or not to get vaccinated without consequences	13.01
if the vaccine has no side effects	10.82
pharmaceutical companies to publish pharmacovigilance and vaccine efficacy studies	6.85
if there are no other methods of prevention	4.79
vaccine concerns should be publicly discussed	3.56
everybody to have access to the vaccine	3.42
if it were a disease with an increased fatality	2.61
if there is no treatment	1.92
the disease doesn't protect me for life	1.37
if it were not for self-limiting disease	0.41
if the agencies that approved the vaccines followed strict rules	0.14

Paradoxically, the OR of vaccinated who are worried about the vaccines side effects is 6,0525 compared to unvaccinated people who have the same concern. Unvaccinated OR for safety concerns regarding vaccines is 3.0142 compared to vaccinated ones.

The vaccine is considered unnecessary and vaccine information is insufficient, are equal answered in both categories. Unvaccinated consider that the vaccine is ineffective (OR 8.9041) in a higher OR compared to vaccinated responders (Table 3).

Respondents are not worried about getting sick at work but they are concerned about the safety of their family and friends (Table 4, Fig. 1).

Vaccination is not attractive to 32.1% of respondents (Table 5).

The vaccinations would be accepted if their efficiency and safety would have been demonstrated, conditions which are not met by any products (Table 6). About SARS\_CoV\_2 and Covid-19 the opinions were: anyone can develop the disease 48.41%; the virus is not well known 27.63% and the severity of the disease depends on individual immune system 18.83%. Comorbidities, disease in unvaccinated people, non-

**Table 7.** Opinion on SARS\_CoV\_2 and Covid-19

Facts	Item	Percent
SARS_CoV_2 and Covid-19	disease occurs in anyone	48.41
	virus is not well known	27.63
	disease is due to everyone's immune system	18.83
	disease occurs only in unvaccinated people	1.96
	disease occurs only in immune defects	1.22
	disease does not occur in vaccinated people	0.73
	virus does not exist	0.73
	disease occurs only in those with comorbidities	0.49
	mild	69.03
	none	9.93
Covid-19 severity	the severity of the disease is exaggerated by doctors	8.04
	fatality is exceptional	6.62
	can be severe	4.26
	without sequelae	2.13

**Table 8.** Green certificate

Green certificate	Percent
abusive	22.3
necessary	26.9
discriminatory	15.3
questionable	20.9
useless	2.4
not scientifically validated	1
does not limit the number of disease cases	11.2

existence of the virus or immune defects are answers that appear in only 3.91%. They consider that both the virus and the human immune response are insufficiently known and the green certificate does not limit the number of infection, being discriminatory (Table 7).

In general, SARS\_CoV\_2 infection is considered mild (69.03%) and although it can be severe (4.26%), it is not followed by sequelae (2.13%), deaths being exceptional (6.62%); 8% of responders believe that the severity of the disease is exaggerated by doctors and 9.93% have no opinion.

They are not convinced of the quality of emergency approved and monitored vaccines; are concerned about the lack of transparency in pharmacovigilance and vaccine efficacy studies; are convinced that vaccines do not stop the virus transmission, do not provide either lasting protection nor would eradicate the virus.

The green certificate is considered abusive and discriminatory (37.6%), necessary (26.9%), questionable 20.9%, useless and not scientifically validated in limiting diseases 12.2% (Table 8).

Cronbach's alpha with raw variables = 0.8231, 95% lower confidence limit = 0.8000.

**In conclusion,** all 4 levels of the VAX scale are represented in the answers (lack of confidence in the

benefit of vaccination, fear of long-term side effects, concerns about commercial benefit, and confidence in natural immunity). The assessment of the pandemic on the severity of the disease, general and specific protection measures, is balanced. Distrust of organic regulators is high. Distrust in health authorities is present. Information about the disease and vaccines underpins its own decisions. The population is a relevant component in making public health decisions. Our results are similar to those of other studies [8].

**Conflict of interest**

The authors declare that they have no conflict of interest.

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