



Expectations and potential concerns of patients with autoimmune and rheumatic diseases regarding vaccination against SARS-CoV-2: the worldwide online VAXICOV study

Renaud FELTEN¹ (MD MSc), Maxime DUBOIS¹ (MD), Manuel F. UGARTE-GIL² (MD MSc), Aurore CHAUDIER¹ (MD), Lou KAWKA¹ (MD), Hugo BERGIER¹ (MD), Charlotte COSTECALDE¹ (MD), Luc PIJNENBURG¹ (MD), Jérémy FORT¹ (MD), Emmanuel CHATELUS¹ (MD), Christelle SORDET¹ (MD), Rose-Marie JAVIER¹ (MD), Jacques-Eric GOTTENBERG¹ (MD PhD), Jean SIBILIA¹ (MD PhD), Yurilis FUENTES-SILVA³ (MD), Laurent ARNAUD¹ (MD, PhD).

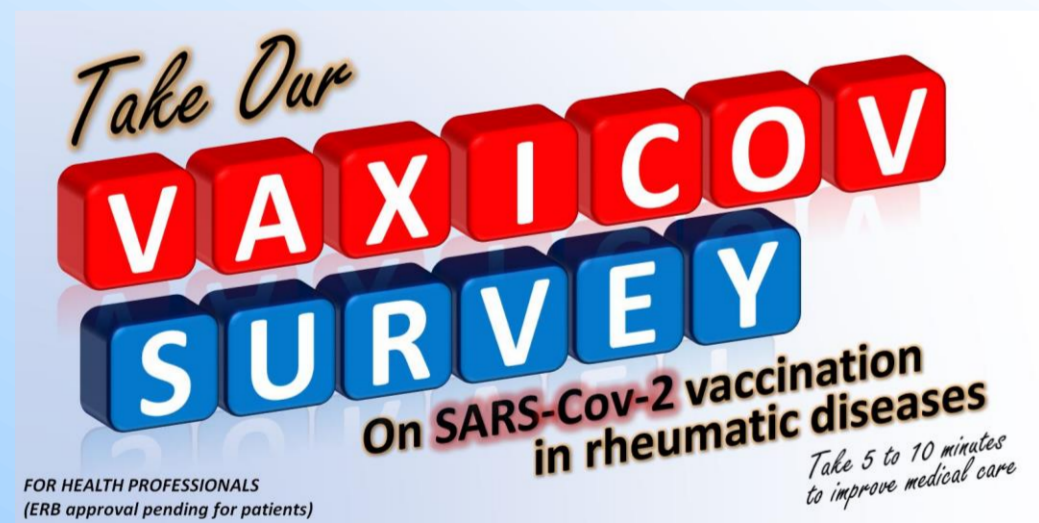
National Reference Center for Autoimmune Diseases
Strasbourg, France

¹ Service de rhumatologie, Centre National de Référence des Maladies Auto-immunes Systémiques Rares (RESO), Hôpitaux Universitaires de Strasbourg, Strasbourg, France.
² School of Medicine. Universidad Científica del Sur, Lima, Peru. Rheumatology Department. Hospital Nacional Guillermo Almenara Irgoyen. EsSalud, Lima, Peru.
³ Division of Rheumatology, Complejo Hospitalario Universitario Ruiz y Páez, Universidad de Oriente, Ciudad Bolívar, Centro Nacional de Enfermedades Reumáticas, Venezuela

VAXICOV is an international study about expectations and potential concerns regarding SARS-CoV-2 vaccine in patients with AIIRDs and healthcare professionals.

Methods:

Online study consisted of 57 questions which addressed determinants associated with SARS-2-CoV-2 vaccine willingness. Dissemination was ensured through social media and patient associations between December 12 and December 21, 2020



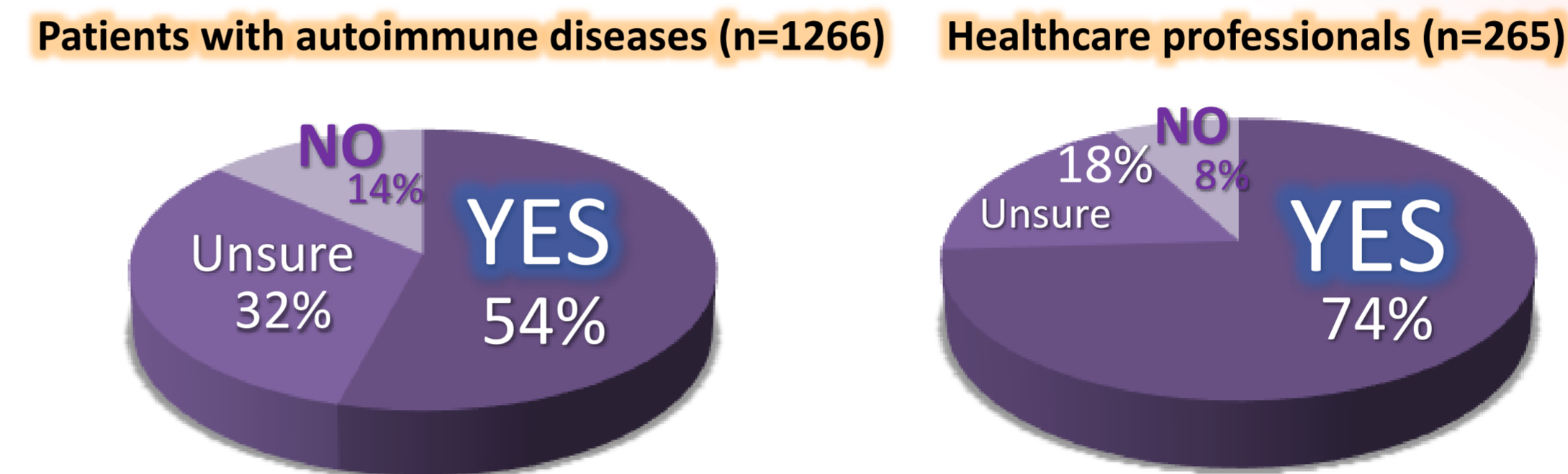
Results:

In patients, the willingness to get vaccinated increased significantly with age ($p < 0.0001$) and was strongly associated with the fear to be infected by SARS-CoV-2 ($p < 0.0001$) or to develop severe COVID19 ($p < 0.0001$) but not with presence of additional comorbidities ($p = 0.71$) or immunocompromised status ($p = 0.94$). The most trusted healthcare professional regarding the recommendation to get vaccinated against COVID-19 was their specialist (rheumatologist, internist, etc.) for 69.9%.

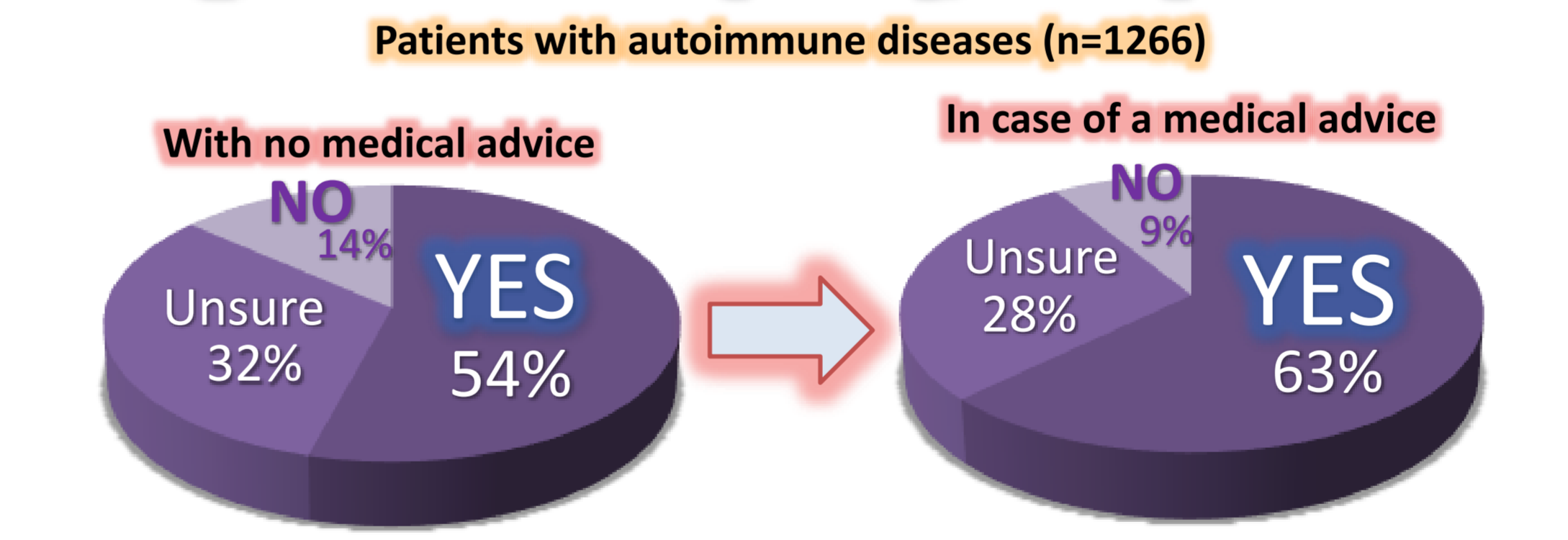
Subject groups	Patients	Healthcare professionals
N	1266	265
Age (years), median [IQR25-75]	50 [40-61]	40 [32.5-53]
Female, n (%)	1141 (90.1%)	150 (56.6%)
Male, n (%)	125 (9.9%)	115 (43.4%)
Country, n (%)		
France	320 (25.3%)	159 (60%)
UK	345 (27.3%)	4 (1.5%)
Chile	123 (9.7%)	4 (1.5%)
USA	114 (9.0%)	7 (2.6%)
Venezuela	43 (3.4%)	26 (9.8%)
Spain	57 (4.5%)	3 (1.1%)
Mexico	53 (4.2%)	3 (1.1%)
Argentina	45 (3.6%)	8 (3.0%)
Other*	166 (13.1%)	51 (19.2%)
Rheumatic diagnosis, n (%)	1266	-
Systemic lupus erythematosus	492 (38.9%)	-
Spondyloarthritis	176 (13.9%)	-
Rheumatoid arthritis	160 (12.6%)	-
Giant cell arteritis / Polymyalgia rheumatica	144 (11.4%)	-
Primary anti-phospholipid syndrome	64 (5.1%)	-
Inflammatory myositis	62 (4.9%)	-
Relapsing polychondritis	45 (3.6%)	-
Other**	123 (9.7%)	-
Health professionals, n (%)	-	265
Doctor	-	203 (76.6%)
Nurse (or equivalent)	-	23 (8.7%)
Nursing assistant	-	11 (4.2%)
Other***	-	28 (10.6%)
Associated comorbidities, n (%)		
Diabetes	69 (5.5%)	6 (2.3%)
Hypertension	267 (21.1%)	24 (9.1%)
Myocardial infarction, stroke, transient stroke	60 (4.7%)	1 (0.4%)
Respiratory disease (asthma, chronic bronchitis, emphysema, etc.)	169 (13.3%)	13 (4.9%)
Renal failure	47 (3.7%)	1 (0.4%)
Obesity (BMI > 30)	228 (18.0%)	18 (6.8%)
At least one associated comorbidity, n (%)	588 (46.4%)	50 (18.9%)
Smoker, n (%)		
Current	128 (10.1%)	22 (8.3%)
Past	411 (32.5%)	51 (19.2%)
Never	719 (56.8%)	192 (72.5%)
No answer	8 (0.6%)	0
Use of oral glucocorticoids, n (%)	551 (43.5%)	3 (1.1%)
Immunocompromised[§], n (%)	770 (60.8%)	0
On a 0 to 10 scale, median [IQR25-75]		

* Other countries: Algeria (n=1), Australia (n=11), Austria (n=1), Belgium (n=3), Bolivia (n=3), Brazil (n=2), Canada (n=18), Colombia (n=16), Costa Rica (n=3), Cuba (n=2), Denmark (n=1), Ecuador (n=26), El Salvador (n=4), Estonia (n=2), Finland (n=1), Germany (n=8), Gibraltar (n=1), Greece (n=1), Guatemala (n=2), Honduras (n=3), Iceland (n=7), India (n=8), Ireland (n=7), Israel (n=2), Italy (n=8), Jordan (n=1), Lebanon (n=1), Libya (n=1), Lithuania (n=2), Luxembourg (n=1), New Zealand (n=4), Nicaragua (n=2), Norway (n=2), Panama (n=3), Paraguay (n=2), Peru (n=28), Philippines (n=1), Poland (n=1), Portugal (n=1), Puerto Rico (n=3), Romania (n=3), Russia (n=1), Slovakia (n=2), Sweden (n=4), Switzerland (n=2), The Netherlands (n=4), Uruguay (n=7).
** Other rheumatic diagnosis: Behçet n=11, mixed connective tissue disease n=10, other type of vasculitis n=10, overlap n=24, undifferentiated connective tissue disease n=8, unknown n=7, sarcoidosis n=2, Sjögren's syndrome n=18, Systemic sclerosis n=16, other autoimmune or inflammatory diseases n=17.
*** Other: dentist, pharmacist, physiotherapist, psychologist, speech therapist.
§ at least one immunosuppressant (except hydroxychloroquine/chloroquine and apremilast) or glucocorticoids at a dose greater than 10 mg per day of prednisone-equivalent

ARE YOU GOING TO GET THE COVID19 VACCINE?



If you doctor tells you that YOU should get vaccinated against SARS-CoV-2 (COVID), would you do it?



Conclusion
Data from this study are crucial to understand the main expectations and concerns regarding SARS-CoV-2 vaccination in patients with AIIRDs and healthcare workers and allow the identification of valuable strategies to increase vaccine coverage in those populations.

Statements	Patients				Healthcare professionals			
	No Median [IQR]	Unsure Median [IQR]	Yes Median [IQR]	P-value*	No Median [IQR]	Unsure Median [IQR]	Yes Median [IQR]	P-value*
I am one of those people who never get sick/ill therefore vaccines are not useful in my case	4 (0 - 5)	1 (0 - 4)	0 (0 - 1)	<.0001	2 (0 - 5.5)	1 (0 - 2.75)	0 (0 - 0)	<.0001
A COVID-19 vaccine may have DECREASED EFFICACY in my personal situation	5 (4 - 8)	5 (3 - 7)	4 (0 - 6)	<.0001	2 (0 - 5.5)	1 (0 - 3)	0 (0 - 1)	<.0001
There is a lack of hindsight regarding new anti-COVID-19 vaccines	10 (9 - 10)	9 (8 - 10)	5 (2 - 8)	<.0001	10 (9.5 - 10)	9 (7.25 - 10)	5 (2 - 8)	<.0001
There is a lack of hindsight regarding vaccines in general	8 (5 - 10)	6 (3 - 8)	3 (0 - 6)	<.0001	7 (3.5 - 9.5)	5 (3 - 8)	1 (0 - 5)	<.0001
I will be careful if the anti-COVID-19 vaccines uses a technology that has never been used before (e.g. RNA vaccine)	10 (7 - 10)	8 (5 - 10)	5 (2 - 8)	<.0001	9 (7 - 10)	8 (5 - 10)	4 (1 - 6)	<.0001
Maybe a COVID-19 vaccine can induce a flare of my auto-immune/inflammatory disease	10 (8 - 10)	9 (7 - 10)	5 (3 - 8)	<.0001	5 (0.5 - 8.5)	5 (2.5 - 5)	2 (0 - 5)	0.01
I am afraid of the pain of the injection, or to develop local reaction after the vaccination	4 (0 - 8)	2 (0 - 7)	0 (0 - 3)	<.0001	0 (0 - 2)	0 (0 - 2)	0 (0 - 1)	0.54
I am concerned about vaccination, in general	7 (3 - 10)	6 (2 - 9)	1 (0 - 5)	<.0001	1 (0 - 6)	2 (1 - 5)	0 (0 - 2)	<.0001
I am concerned about the general management of this health crisis by governments	10 (8 - 10)	9 (6 - 10)	8 (5 - 10)	<.0001	8 (4.5 - 10)	5 (3 - 8)	5 (2 - 9)	0.07
I am afraid of potential side-effects induced by the COVID-19 vaccine	10 (9 - 10)	10 (8 - 10)	5 (2 - 8)	<.0001	9 (8 - 10)	7.5 (5 - 9)	3 (1 - 5)	<.0001
A COVID-19 vaccine could induce a disease, such as a chronic disease, an infection or a cancer	9 (5 - 10)	6 (5 - 9)	2 (0 - 5)	<.0001	7 (4.5 - 9.5)	5 (3 - 5)	1 (0 - 3)	<.0001
A COVID-19 vaccine could give me the COVID-19	5 (3 - 9)	4 (1 - 6)	0 (0 - 3)	<.0001	1 (0 - 4.5)	1 (0 - 3)	0 (0 - 1)	0.001
I think a COVID-19 vaccine is not needed in my case	5 (2.25 - 8)	2 (0 - 5)	0 (0 - 1)	<.0001	4 (0 - 5.5)	2 (0 - 4)	0 (0 - 0)	<.0001
I think COVID-19 vaccination is mostly recommended because of the financial links between governments and pharmaceutical companies.	7 (5 - 10)	5 (1 - 7)	0 (0 - 2)	<.0001	5 (0.5 - 10)	2 (0 - 5)	0 (0 - 1)	<.0001

*p-values in bold remain significant after Bonferroni correction. Answers were assessed on a 0 (not at all in agreement) to 10 (Fully agree) likert scale. The cell colors are coded based on the median value from lowest (dark green) to highest (dark red); green as a positive association with willingness to get vaccinated and red as a negative association.

Vaccine unwillingness was low (7.9%) among healthcare professionals and willingness was significantly increased in those who had been vaccinated against influenza in the last 3 years ($p = 0.01$).

Felten et al. Vaccination against COVID-19: Expectations and concerns of patients with autoimmune and rheumatic diseases. The Lancet Rheumatology 2021;3(4):e243-5.
@Lupusreference & @DocFelten