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Anaesth Crit Care Pain Med 40 (2021) 100860

Contents lists available at ScienceDirect

Anaesthesia Critical Care & Pain Medicine

journal homepage: www.elsevier.com

Letter to the Editor

Willingness to get a COVID-19 vaccine among critical care non-medical healthcare workers and impact of a vaccine information session

Introduction

The approbation of vaccines against coronavirus disease 2019 (COVID-19) raises the hope of a pandemic control. Vaccination of intensive care unit (ICU) healthcare workers (HCWs) is of first importance since this personnel is at risk of exposure, can endanger fragile patients, is essential for maintaining healthcare system capacity and their vaccination may set an example for the general population. However, vaccine hesitancy (VH), one of the 2019 top ten global health threats according to the World Health Organization, defined as delay in acceptance or refusal of vaccines despite availability of vaccination services, does not spare HCWs [1]. We hypothesised that in the context of new generation platforms vaccines approbation and of misinformation sharing related to COVID-19 pandemic, with a previously identified risk of VH [2], non-medical HCWs (NM-HCWs) would show the same low vaccine acceptance rate that the general population (*i.e.*, around 60% [3]) and that an information session would improve the willingness to be vaccinated. Our objectives were to evaluate ICU NM-HCWs willingness to be vaccinated with already approved COVID-19 vaccines and the impact of an information session on this attitude.

Methods

According to the French law [4], ethical approval for this study was obtained from the French Ethics Committee for Research in Anaesthesia and Critical Care (IRB 00010254-2021-015) and every participant gave his informed consent. In February 2021, after European marketing authorisation of two mRNA and one viral vector-based vaccine and before vaccination extension to less than 50-year-old French HCWs without comorbidities, an information session was proposed to NM-HCWs of four ICUs. It was a 45-minute lasting session delivered by intensivists based on literature reviews and guidelines issued from learned societies and health authorities. The meeting was divided into three parts: 1st part exposing in a succinct manner basics in cellular and molecular biology, virology and vaccinology including data related to available COVID-19 vaccines; 2nd part introducing the phenomenon of VH along with its main determinants; 3rd part was a question and answer session. Sessions were delivered directly in the units in order to increase the participation rate and were not pre-recorded videos in order to favour interactions with participants. Before and after the session, the participants were asked to answer a questionnaire. Categorical variables were reported as count and proportions, and continuous variables as mean ± standard deviation. Non-parametric tests were performed for categorical (Fisher exact test) and continuous variables (Mann–Whitney). McNemar's test was used to compare acceptance rate before and after the session. Statistical significance was considered as $p < 0.05$. All analyses were performed using Statistica 9.0 (Statsoft®).

Results

Out of 84 NM-HCWs working during the study period, 61 filled out the questionnaire (participation rate of 73%) (Table 1). Main sources of information about COVID-19 vaccines were other healthcare workers (n = 46, 75%) and televisual media (n = 41, 67%). Health authorities approved COVID-19 vaccines were seen as effective by 36 (59%) participants, ineffective by 6 (10%) and 19 (31%) did not know if the vaccines were effective or not. The estimated rate for serious adverse events associated with COVID-19 vaccines was 22 ± 21%. COVID-19 vaccine acceptance rate was 56% (n = 34) before the session and significantly increased to 82% (n = 50) after the session ($P < 0.001$, Fig. 1). Information delivered during the session was perceived as understandable and relevant for respectively 61 (100%) and 59 (98%) participants and all of them recommended the session to other NM-HCWs.

Discussion

While a worldwide race is launched in order to extend vaccination, the low vaccine acceptance rate among ICU NM-HCWs before any intervention emphasises the fact that vaccines availability is not the only issue. NM-HCWs' perception of the benefit-risk balance seems to be biased with an underestimation of vaccines efficacy and an overestimation of their risks by at least a factor of 100. By delivering objective data issued from reliable sources and enabling exchanges about COVID-19 vaccines concerns, an information session delivered by intensivists seems to be effective in increasing the ICU NM-HCWs' vaccine acceptance rate. Our observation calls for an urgent implementation of public health strategies addressing VH combined to the provision of vaccines. It is still time to avoid the repetition of previous vaccination campaigns failures [5].

https://doi.org/10.1016/j.accpm.2021.100860
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Table 1
Characteristics of ICU non-medical healthcare workers and impact of the vaccine information session (values are count and proportion for categorical variables and mean ± standard deviation for continuous variables).

Characteristics		Total (N = 61)	Acceptance of COVID-19 vaccine before the session (N = 34)	Refusal of COVID-19 vaccine before the session (N = 27)	*p*-Value
Demographics	Age (years), m ± s	37 ± 7	37 ± 7	38 ± 7	0.37
	Female, n (%)	52 (85%)	28 (82%)	24 (89%)	0.73
Professional characteristics	Nurses, n (%)	38 (62%)	23 (68%)	15 (56%)	0.33
	Nursing Assistants, n (%)	23 (38%)	11 (32%)	12 (44%)	0.33
	Surgical Intensive Care Unit non-medical healthcare workers, n (%)	19 (31%)	13 (38%)	6 (22%)	0.18
	Medical Intensive Care Unit non-medical healthcare workers, n (%)	17 (28%)	5 (19%)	12 (35%)	0.15
	Cardiac Intensive Care Unit non-medical healthcare workers, n (%)	13 (21%)	3 (9%)	10 (37%)	0.01
	Neurosurgical Intensive Care Unit non-medical healthcare workers, n (%)	12 (19%)	6 (18%)	6 (22%)	0.66
Information sources about COVID-19 vaccines	Other healthcare workers, n (%)	46 (75%)	25 (74%)	21 (78%)	0.93
	Televisual Media, n (%)	41 (67%)	23 (68%)	18 (67%)	0.94
	Friends, n (%)	21 (34%)	10 (29%)	11 (41%)	0.35
	Relatives, n (%)	14 (23%)	7 (20%)	7 (26%)	0.62
	Institutional communication, n (%)	12 (20%)	8 (24%)	4 (15%)	0.52
	Personal research on the internet, n (%)	9 (15%)	3 (9%)	6 (22%)	0.27
	Attending physician, n (%)	9 (14%)	5 (15%)	4 (15%)	1
	Social Networks, n (%)	8 (13%)	4 (12%)	4 (15%)	1
	Radio Media, n (%)	6 (10%)	3 (9%)	3 (11%)	1
	Health authorities, n (%)	5 (8%)	1 (3%)	4 (15%)	0.22
	Occupational physician, n (%)	2 (3%)	1 (3%)	1 (4%)	1
	Learned societies, n (%)	1 (2%)	0 (0%)	1 (4%)	1
	Biomedical search engine, n (%)	1 (2%)	1 (3%)	0 (0%)	1
Benefit/risk balance	COVID-19 vaccines perceived as effective, n (%)	36 (59%)	23 (68%)	13 (48%)	0.19
	Estimated risk of serious adverse event associated with COVID-19 vaccines, m ± s	22% ± 21%	16% ± 16%	29% ± 24%	0.07
Evaluation of the information session	Information delivered during the session perceived as understandable, n (%)	61 (100%)	34 (100%)	27 (100%)	1
	Information delivered during the session perceived as relevant, n (%)	59 (98%)	33 (97%)	26 (100%)	1
	Recommend the information session to other healthcare workers, n (%)	60 (100%)	34 (100%)	26 (100%)	1
Impact of the information session	Acceptance of COVID-19 vaccine before the information session	34 (56%)	34 (100%)	0 (0%)	< 0.01
	Acceptance of COVID-19 vaccine after the information session	50 (82%)	34 (100%)	16 (59%)	< 0.01

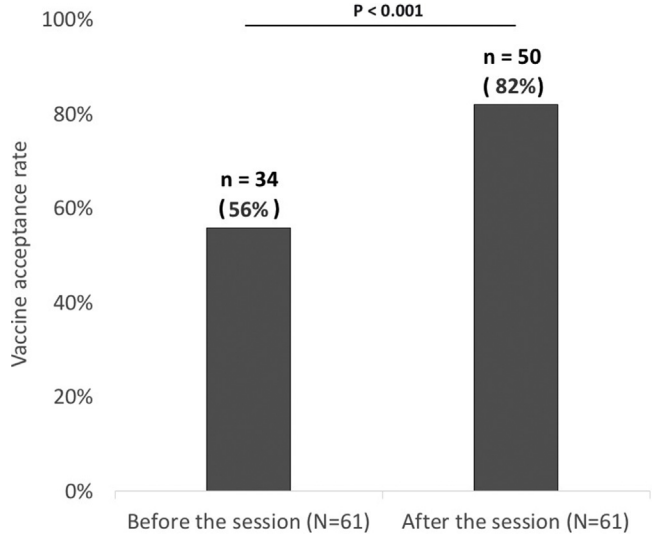

Fig. 1. Impact of the vaccine information session on the vaccine acceptance rate among ICU non-medical healthcare workers.

Availability of data and material

The data that support the findings of this study are available on request from the corresponding author.

Disclosure of interest

The authors declare that they have no competing interests.

Funding

None.

CRediT authorship contribution statement

CG : conceived and designed the analysis, wrote the manuscript. AS: collected the data and performed analysis. IG : collected the data and performed analysis. JLH : wrote the manuscript. PV: wrote the manuscript.

Acknowledgements

We would like to thank the medical and non-medical staffs from CHU de Caen Normandie who made it possible to set up the vaccine information sessions.

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Available online 3 April 2021