Psychosocial factors and SARS-CoV-2 vaccine hesitancy among moroccan hemodialysis patients

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Abstract

Introduction: Patients on dialysis are at increased risk for COVID-19 related complications, and thus a high-priority group for vaccination. However, a substantial fraction of patients on dialysis belong to groups more likely to be hesitant about vaccination.

Objective: Our work aimed to determine hesitancy rates and to describe psychosocial barriers in chronic hemodialysis patients generating a delay in vaccination mainly for the third or booster doses of SARS-CoV-2 vaccine among chronic hemodialysis patients in the Nephrology and Dialysis, Department of the Rabat Military Hospital, Morocco.

Patients and Methods: The trial was designed as a prospective single-center study which included all hemodialysis patients in the nephrology department of the Rabat Military Hospital. Patients were surveyed with an ad hoc questionnaire. The questionnaire explored different domains associated with vaccine hesitancy, such as perception of disease severity, sources of information about the vaccine and the disease, and confidence in the health care system.

Results: We included Forty patients, the mean age of patients were 57 ± 16,7 years were included in this study. The sex ratio (female/male) was 1.2. Mean dialysis duration was 108 months. Personal history of COVID -19 illness was found in 15 patients. 52% of COVID-19 vaccination refusals were more worried about vaccine side effects than COVID-19 infection. Most frequently mentioned sources of information regarding opposition to vaccination were social media (35,8%) followed by self-conviction (22,7%), The odds of vaccine acceptance were higher among women (62%), diabetic patients, students and married patients; and patients who already received an influenzae vaccination

Conclusion: Vaccine hesitancy was not associated with educational level, age, but rather with lack of confidence in vaccine safety and regarding the conspiratorial theory of this pandemic, 50 % of patients believe in it.

Keywords: coronavirus disease 19, chronic hemodialysis, vaccination against sars-cov-2, psychosocial barriers, vaccine hesitancy

Introduction

Severe acute respiratory syndrome secondary to SARS CoV-2 infection is responsible of high morbidity and mortality in patients with chronic renal disease, and particular in chronic hemodialysis patients [1, 2].

Considering the serious health implications of SARS-CoV-2 infection in patients receiving dialysis, combined with the potential for increased risk for exposure with travel to, from, and during the provision of in center hemodialysis or crosstraffic between dialysis facilities and skilled nursing facilities [3]. A substantial fraction of persons receiving dialysis, however, belong to racial, ethnic, socio- economic, cultural, and religious groups are more likely to be vaccine hesitant [4].

Vaccination against SARS-CoV-2 remains in the current era the cornerstone of the fight against the virus in this extremely vulnerable population [5, 6]. Vaccination schedule of 3 doses against SARS-CoV-2 has been validated by health authorities, however they remain hampered by a growing refusal from hemodialysis patients [7, 8].

This growing vaccine hesitancy has a significant impact on herd immunity, which is one of the
challenges recently taken up by the World Health Organization aimed to dispelling myths and misconceptions about vaccination [9].

This study focused on psychosocial barriers in chronic

hemodialysis patients generating a delay in vaccination mainly for the third or booster doses of SARS-CoV-2 vaccine.

Patients and Methods

The study was designed as prospective observational single-center study conducted in the renal nephrology and renal transplant department of the Mohammed V Military Training Hospital in Rabat. All the 40 chronic hemodialysis patients were recruited for this study. The inclusion criteria were: adult dialysis patients (over 18 years of age), chronic hemodialysis patients for more than 1 year, three sessions per week, 4 hours each.

We conducted this study using a precise questionnaire in French and/or translated into dialectal Arabic, the questionnaire was based on a literature review of identified barriers to vaccination in general and to vaccination against SARS-CoV-2.

Besides the respondent's decision on whether or not he or she would receive the vaccine against COVID-19, the questions regarded the following topics: acknowledgement of the severity of COVID-19; amount of information received from the dialysis team and from the media; fear of side effects from the vaccine; confidence in the health care system; and confidence in the efficacy of the vaccine.

In addition, clinical parameters (age, sex, marital status,

employment status, medical history, educational attainment, smoking, underlying renal disease, blood pressure), biochemical measurements and dialysis metrics were collected from the medical records of the patients. A personal history of COVID -19 disease and data concerning the anteriority of an influenza vaccination and the intention to be vaccinated against seasonal influenza and were also collected. Additional information collected about sources of information regarding opposition to vaccination and reasons for vaccine hesitancy were listed.

Patients were asked to indicate whether they believe vaccines in general offer protection against infectious diseases and whether vaccines have any health risks.

Descriptive and deductive statistical analyzes were performed using SAS 9.4. Data are expressed as mean ± standard deviation or interquartile median interval or percentage according to their nature and distribution.

Descriptive analyzes were conducted to calculate the frequencies and proportions of categorical variables in the total study sample and after stratification by general acceptance of a COVID-19 vaccine variable.

A multivariate regression analysis was subsequently conducted to determine the factors independently associated with opposition to vaccination.

At the end of this statistical analysis, we will highlight the factors associated with general acceptance of a COVID-19 vaccine.

Result

We included Forty patients, the mean age of patients were 57 ± 16,7 years, sex ratio (female/male) was 1.2. Mean dialysis duration was 108 months. Cause of end-stage renal disease was unknown in 27% of cases, glomerulonephritis in 16% of cases, a tubulointerstitial disease in 27%, diabetes in 19% of cases and vascular disease in 8% of cases. Personal history of COVID -19 illness was found in 15 patients and we asked about family member or close acquaintance died from COVID-19.

52% of COVID-19 vaccination refusals were more worried about vaccine side effects than COVID-19 infection.

The anamnestic, anthropometric, dialytic, biological and social data as well as the level of education of dialysis patients, history of receiving influenza vaccine, are shown in **Table 1.** Only 22% of responders did not receive, or were not planning to receive, an influenza vaccine during the 2021–22 season.

Correlates of vaccine hesitancy included age, sex, race and ethnicity, level of education, death of a family member from COVID-19, and whether the patient had received or was planning to receive the influenza vaccine.

The odds of vaccine acceptance were higher among women (62%), diabetic patients, students and married patients; and patients who already received an influenzae vaccination,

Regarding the conspiratorial theory of this pandemic, 50 % believe in it. The response validated by participants is the possibility that the virus was manipulated into this more virulent strain before being spread in population. 36% think that it is a mean to control demographic expansion and 27.6% believe that it is a method that the WHO created for purely commercial purposes. Even for those who voted for the other theories, it is observed that 70% of them believe that the virus has been manipulated.

Conversely, it was found that initial nephropathy, educational level, hypertension, dyslipidemia, or Family member or close acquaintance died from COVID-19 had no effect on answers to the questionnaire.

Table 1: Socio-demographic, anthropometric, laboratory and dialysis characteristics of the population study according to acceptance of COVID-19 vaccine

Study variables		N=40	Acceptance of COVID19 Vaccine	
			%	p value
Age (years)		57,4 ± 16,7		
Gender	Female	22 (54,1)	62	0,001
	Male	18(45,9)	48	
Cause of End Stage Renal Disease	Glomerulonephritis	6 (16,2)	37	0,08
	Diabetic	8(19)	48	
	Vascular	4 (8,4)	35	
	Unknown	10 (27)	41	
	Tubulointerstitial	10 (27)	60	
Diabetes		8 (21,6)	48	0,001
Hypertension		21(56,8)	38	0,06
Smoking		0		
Dyslipidemia		9 (24,3)	21	0,08
Educational attainment :				
▪ High school or less		10(25)	31	0,04
▪ Bachelor's degree		03(7,5)	50	
Marital status :				
▪ Single		3(7,5)	20	<0.001
▪ Married		32(80)	73	
▪ Divorced		5(12,5)	52	
Employment status:				
▪ Retired		7(17,5)	68	0,001
▪ Unemployed		30(75)	28	
▪ Students		2(5)	96	
Adopted theory :				
▪ Scientific theory		11(27,5)	62	0,001
▪ Political theory		16(40)	20	

▪ Conspiracy theory		8(20)	77	
▪ Religious theory		5(12,5)	25	
Family member or close acquaintance died from COVID-19		6(15)	34	0,07
History of receiving influenza vaccine: ▪ Never ▪ >12 months ago ▪ During the last flu season		3(7,5) 29(72,5) 8(20)	4 48 10	<0.001
Intention to receive influenza vaccine this coming flu season: ▪ Definitely will not take ▪ Probably will not take ▪ Probably will take ▪ Definitely will take		9(22,5) 10(25) 5(12,5) 16(15)	10 45 35 61	0,08

The most frequently mentioned sources of information regarding opposition to vaccination were social media (35,8%) followed by self-conviction (22,7%) personal bad experience (10,2%) reading and searching the websites (8,5%) and opinions of family and friends (17%) (Figure 1).
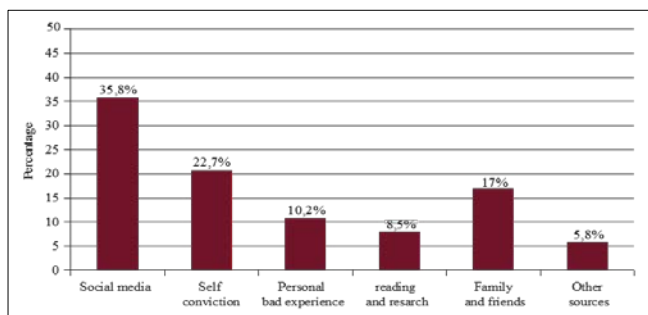

Fig 1: Sources of information regarding vaccination hesitancy

Concerning Reasons for vaccine hesitancy, 52% of participants who were hesitant to receive the COVID-19 vaccine were concerned about its side effects; 22% of participants don't believe COVID is a serious problem of health,18 % believed the vaccine is dangerous, but a sizeable fraction was influenced by their general beliefs (6%) about or prior reaction to vaccines (2%) (Figure 2).
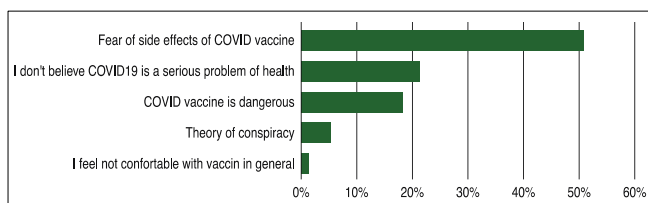

Fig 2: Reasons for vaccine hesitancy

Nearly half of patients (53%) indicated that they would be willing to receive a COVID-19 vaccine, 30% were unwilling to receive the vaccine, and 20% were unsure.
Initially, we hypothesized that having a prior personal history of COVID-19 would be associated with accepting the vaccine; however, only the receipt of an influenza vaccine was associated with a willingness to receive the COVID- 19 vaccine.

Discussion
This study found a relatively high overall prevalence of vaccine hesitancy in the dialysis population, defined as present refusal to undergo COVID-19 vaccination in individuals without contraindications.
In Italy, this rate was 74% [9], similarly, in an international study conducted in June 2020 in 19 countries, when asked "If a COVID-19 vaccine is proven safe and effective and is available, I will take it," only 58.89% of participants in France answered that they would, versus 70.79% in Italy [10].
In 2015, the Strategic Advisory Group of Experts (SAGE), the working group on Vaccine Hesitancy, indicated that "vaccine hesitancy refers to delay in acceptance or refusal of vaccination despite availability of vaccination services. Vaccine hesitancy is complex and context specific, varying across time, place, and vaccines" [11].
The perception of the seriousness of the infection was much lower than that of the general population and may explain the low rate of vaccine acceptance, as it is a factor associated with better acceptability of vaccination [12, 13, 14]. The level of information did not, however, uniformly correlate with vaccine hesitancy. A recent study in England showed that information about COVID-19 vaccines did not influence vaccination intentions [15].
Concordance between the answers on the influenza vaccine and on the COVID-19 vaccine raises questions that merit further discussion: although, as expected, not having received the influenza vaccine was associated with a significantly higher probability of refusing the COVID-19 vaccine, this can be explained by a lower perceived severity of seasonal influenza than COVID-19 by patients on dialysis [16].
Lack of confidence in the health care system was in fact identified as a major determinant of vaccine hesitancy in the case of COVID- 19 and of other vaccines and the low vaccine acceptance of health care workers in some "difficult" settings may also be evidence of this attitude [12, 17, 18-20].
A number of strategies show promise in addressing negative expectations and reducing the nocebo effect, including thoughtful clinical information framing, reducing the negative impact of media coverage, and educating people about the nocebo effect [21].

Conclusions
COVID-19 vaccines hesitancy has become a global issue, despite the tremendous achievements of vaccines and the global comprehensive effort to improve vaccine usage and acceptability.
Patients on dialysis have a keen understanding of COVID-19 risks, however, vaccine hesitancy is closely associated with lack of confidence in vaccine efficacy and concerns about safety. The high acceptance of COVID-19 vaccination may be linked to this trust, the medical team should play a key role to properly guide and inform dialysis patients in this process.

Therefore, a national Interagency government efforts must be simultaneously implemented to examine options to further defuse anti-vaccine disinformation.

Authors contribution
WA: conception and realization of the study and drafting of the article. DEK Critical review and revision of the manuscript. All authors approved the final version.

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None

Conflict of interest:
None

Compliance with ethical principles
Ethical approval of the study was granted by the research ethics committee of the Faculty of Medicine and Pharmacy, Mohammed V University - Rabat – Morocco and all participants provided verbal informed consent.

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