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Short communication

Understanding COVID-19 vaccination willingness among youth: A survey study in the Netherlands

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ABSTRACT

Vaccination of youth could be key to preventing future outbreaks of SARS-CoV-2. Given the limited direct health benefit for young people, it is important to understand how youth themselves perceive obtaining a vaccination. This survey study in a representative sample of Dutch youth aged 12–18 showed that 73% were willing to get vaccinated against COVID-19. In regression analyses, vaccination willingness was strongly related to age, perceived personal (protect own health) and societal benefits (to get rid of restrictive policies), and their peers' and parents' vaccination uptake. Negative associations with vaccination willingness were perceived side-effects and potential unknown long term consequences. On-going and transparent communication with up-to-date information about safety and risks, delivered by independent and trusted experts (as perceived by the recipients) seems important for addressing questions and concerns. Local information sessions for youth and parents where a vaccination can be obtained without appointment could have merit in addition to mass media communication.

1. Background

On June 30, the Dutch health council advised to vaccinate healthy youth against COVID-19 with the BioNTech/Pfizer vaccine, which was reason for the Dutch government to start vaccinating healthy Dutch youth (12–18 years old). In the week prior to the Dutch health council advice, we conducted a study on vaccination willingness amongst 12–18 year old Dutch youth, which we report on in this short communication. In addition, we examined demographic factors, personal beliefs and social norms that could be related to vaccination willingness in this age group. Understanding vaccination willingness and perceptions is key to informing policies and communication to support vaccination uptake.

2. Material and methods

The Corona Behavioural Unit at the Dutch Institute for Public Health and the Environment (RIVM) designed the study, using two youth panels from a Dutch survey company. These were designed to be demographically representative for the Dutch youth. A brief questionnaire was sent by e-mail directly to 16-and-17-year-old panel members and to the parents of 12–15-year-olds. Parents were requested to let their children independently fill out the questionnaire. The questionnaire could be completed between June 22 and June 27, 2021. The questionnaire includes questions on their vaccination willingness, vaccination willingness among parents and peers, and on specific reasons in favor or against vaccination. In addition, children responded to several vaccination beliefs on a 5-point scale (completely agree-completely disagree; see below). As introduction, children were informed that vaccination is voluntary and they were informed about safety, efficacy and potential side effects of the vaccine. A total of 1468 children participated in the study (5478 were invited: response rate 27%), of which three children were excluded from analyses because of unreliable response patterns (i.e., identical responses to all questions). Characteristics of the final sample are shown in Table 1. Participants were informed about the aims and procedure of the study in the invitation e-mail for the study, and provided informed consent by starting the questionnaire.

3. Results

3.1. Vaccination intention among 12–18-year-old youth

The majority of the participants (73%) indicated they would probably (27%) or certainly (46%) get vaccinated if they would be

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Table 1
Sample characteristics (n = 1465).

Age (M=14.8; SD = 1.7)	
	60% 12–15 years old
	40% 16–17 years old
Gender	
	48% boys
	52% girls
	1% different/unknown
Educational level	
	19% low
	24% middle
	57% high
Minority background	
	96% Dutch as main language at home
Previous COVID-19 infection	
	21% yes

offered a vaccine. Seven percent was hesitant and 20% indicated they would not get vaccinated (9% certainly not, 10% probably not). Vaccination intention was comparable when data were weighted on age, gender and educational level to match the Dutch population (72% probably or certainly willing). Vaccination intention was higher amongst older youth (80% for 16–17-year-olds vs. 68% for 12–15-year-olds) and amongst youth with a higher educational level (78% high educational level vs. 64% for low educational level). No differences were found between boys and girls.

3.2. Explaining vaccination intention

Based on the literature and our previous research in adults (16 years and older), which includes questionnaire studies and qualitative interviews [1–2], we assessed a number of vaccination beliefs. We were interested in beliefs about the safety and effectiveness of the vaccines and social influence from parents and peers. First, it is likely that the vaccination intention of youth is dependent upon the vaccination behavior or intention of their parents [3]. Indeed, nearly all parents (93%) from youth who expressed willingness to vaccinate were (willing to get) vaccinated themselves, compared to only 39% of parents from youth who were (probably) not willing to vaccinate. In light of these findings, it should be noted that in the Netherlands, children over 16 can make their own choices about vaccination, whereas children between 12 and 16 years old decide together with their parents. The descriptives for other vaccination beliefs are shown in Fig. 1, separately for youth willing, hesitant, and not willing to vaccinate. Specific reasons why youth were or were not willing to vaccinate are given in Table 2. The most frequently-mentioned reasons to vaccinate were to protect themselves (81%) and to protect others (79%) against COVID-19, and the most frequently-mentioned reason for not getting vaccinated was fear of unknown long-term side effects (73%).

Table 2
Reasons contributing to vaccination intention, separately for youth who are willing to get vaccinated or do not know whether they want to get vaccinated (positive intention) and youth who are not willing to get vaccinated or do not know (negative intention).

Reasons contributing to..		
...positive vaccination intention	Willing (n = 1071)	Hesitant (n = 107)
I want to protect myself	81%	41%
I want to protect others	79%	40%
I want to help ending the corona crisis	67%	42%
I want to go on vacation abroad without testing for corona	52%	44%
I want to go to an event without testing for corona	42%	33%
I no longer want to keep distance from others	40%	25%
My parents want me to get vaccinated	23%	11%
I want to do what is best according to the government	13%	7%
Other	2%	8%
...negative vaccination intention	Not willing (n = 287)	Hesitant (n = 107)
I am afraid of unknown long-term effects of the vaccine	73%	56%
I do not know enough about the vaccine yet	38%	45%
I am afraid of side effects	38%	41%
I do not think I will get sick of the coronavirus	38%	24%
I think the vaccines are not safe	33%	10%
All vulnerable people have already been vaccinated	30%	15%
My parents do not want me to get vaccinated	17%	3%
I think the vaccines are not effective	15%	6%
I am afraid of needles	14%	17%
I do not think I will get infected with the coronavirus	13%	8%
Other	10%	7%

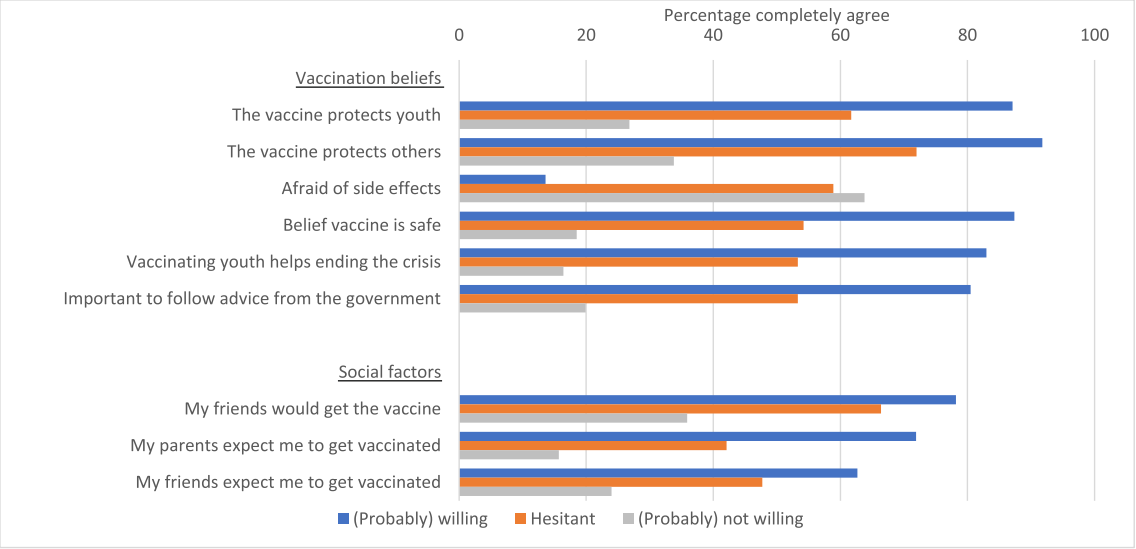

Fig. 1. Descriptives of vaccination beliefs, separately for youth who are willing, hesitant or not willing to get the vaccine.

Table 3
Determinants of vaccination intention for youth who are probably or certainly not willing compared to youth probably or certainly willing to vaccinate (Model 1) and for youth who are hesitant compared to youth who are probably or certainly willing to vaccinate (Model 2).

	Willing vs not willing					Willing vs hesitant				
	Model 1a			Model 1b		Model 2a			Model 2b	
	OR		95% CI	*OR*	95% CI	*OR*		95% CI	*OR*	95% CI
Demographic characteristics										
Age (16–17 yr)	2.03	***	1.51 ~ 2.73	1.55	0.96–2.53	1.39		0.89–2.17	1.21	0.73–1.99
Gender (boys)	1.10		0.84–1.44	0.84	0.54–1.32	1.21		0.80–1.82	1.01	0.63–1.60
Educational level										
Low vs high[a]	0.73		0.51–1.03	0.72	0.40–1.29	0.38	***	0.23–0.62	0.54 *	0.31–0.92
Middle vs high[a]	0.62	**	0.45–0.84	0.57 *	0.34–0.96	0.69		0.41–1.15	0.96	0.54–1.72
Dutch main language at home	1.37		0.69–2.72	0.58	0.17–1.95	0.87		0.26–2.90	0.63	0.17–2.33
Previous infection	0.79		0.57–1.08	1.08	0.63–1.85	1.13		0.66–1.94	1.32	0.73–2.39
Vaccination beliefs										
The vaccine protects youth				1.45 *	1.08–1.94				0.74	0.51–1.09
The vaccine protects others				1.30	0.97–1.75				1.45 *	1.02–2.06
Afraid of side effects				0.54 ***	0.44–0.67				0.43 ***	0.35–0.53
Belief vaccine is safe				1.80 ***	1.36–2.38				1.45 *	1.06–1.98
Vaccinating youth helps ending the crisis				1.74 ***	1.34–2.26				0.95	0.70–1.30
Important to follow advice from the government				1.32	0.99–1.76				1.49 *	1.06–2.09
Social factors										
My friends would get the vaccine				1.33 *	1.05–1.68				0.82	0.62–1.07
My parents expect me to vaccinate				2.05 ***	1.65–2.56				1.46 **	1.16–1.84
My friends expect me to vaccinate				1.04	0.83–1.32				1.11	0.88–1.40

Note. OR = Odds Ratio (OR > 1 indicates a higher odd for probably or certainly willing to get vaccinated).
[a] Higher educational level is reference category, indicating that OR < 1 indicates a higher odd for high educational level.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

In order to statistically examine the beliefs most important for a positive vaccination intention, we conducted two logistic regression analyses with the following binary outcomes: 1) not willing (0) versus willing (1), and 2) hesitant (0) versus willing (1). The first regression analysis (see Table 3), showed that 16–17-year-olds were more often willing to get vaccinated compared to 12–15-year-olds. Also, youth with a higher educational level were more often willing to get vaccinated. Youth more willing to get vaccinated, more often believed that the vaccine protects their health, that the vaccines are safe, and that vaccinating helps ending the corona crisis. They were less often afraid of side effects. Youth more willing to get vaccinated more often thought their friends would get a vaccine and that their parents would expect them to get a vaccine. Comparable associations were found when comparing youth who are hesitant to get vaccinated and youth who are more willing to get a vaccine. The only difference was that youth who are willing (compared with hesitant), more often believed that the vaccine protects the health of others in their environment, and more often thought it is important to follow guidelines from the government.

4. Conclusion and discussion

Seven out of ten respondents in a demographically representative sample of Dutch youth (aged 12–18 years) indicated to be probably or certainly willing to get vaccinated. Vaccination intentions were higher amongst older youth and amongst youth with a higher educational level. The main reasons for wanting to get vaccinated were to protect one's own health and to protect others' health, and ending the crisis. Main reasons for not wanting to get vaccinated were concerns about side-effects and unknown long-term consequences. These motivations are very similar to what has been found in adults and in a US adolescent sample [1,4]. Moreover, vaccination intentions from peers, but in particular perceptions about what parents expect their children to do, were associated with respondents willingness to obtain the vaccine – a finding that has also been reported for other vaccination programs [5].

5. Policy implications

The current results suggest many youth are willing to vaccinate against COVID-19 to protect their own health, those of others, and as a way out of the crisis. Concerns about vaccine safety underline the need for providing objective, reliable, tailored and up-to-date information for parents and youth about the risks and benefits of vaccination [6–8]. Such vaccination campaigns should target and be co-created with youth and their parents [9], information should be delivered by a trusted expert (e.g., their general practitioner, cf. [10,8,11]), and people should have the opportunity to ask questions and share their concerns [1,12,13]. Studies about vaccine hesitancy among adults suggest that advice or recommendation from health professionals are positively associated with vaccine uptake [14]. Finally, on a more general note, we stress that intentions are not always translated into behavior. Therefore, reminders [15] and ensuring easy access (e.g., local walk-in vaccination units)

could be important complements to local and national communication campaigns [14,16]. With the new school year starting, an effective strategy could thus be to organize information sessions nearby schools where parents and youth can obtain information, ask questions to local are professionals, and immediately vaccinate without appointment - in addition to mass media approaches.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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