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Focus group with nurses, teachers and support staff:

HPV infection

HPV is a sexually transmitted infection

Most (83%) respondents to the questionnaire knew that HPV is a sexually transmitted infection. We observed 98% correct answer among nurses and 76% and 75% among teachers and support staff respectively. There was only 13% unsure respondents.

HPV infection concerns boys and men

79% were aware that HPV concerns boys and men, but nurses had more correct answers (94%) than teachers (71%) and support staff (68%).

Participants to the focus groups felt very poorly informed about HPV, they often perceived as an infection concerning mainly females.

More than half men and women are infected by HPV during their life course

Less than 50% (47%) knew that more than half men and woman are infected by HPV during their life course, 46% of participants were unsure. Percentage of correct answer is very low among teachers (only 34%) and support staff (38%), while we observe 70% of correct answers among nurses.

HPV infection not always symptomatic

52% of teachers, and 51% of support staff thought that HPV infection is always symptomatic or were unsure. 87% of nurses were aware of that.

Most HPV infections can be eliminated spontaneously by our immune system

The knowledge on the capacity of our immune system to eliminate HPV infections is very poor. Indeed, among all respondents there is only 28 % of correct answer and 48% of unsure answer.

There was only 21% of teachers who knew that an HPV infection can be eliminated spontaneously by our immune system. Nurses had 40% of correct answer.

No antiviral treatment against HPV infection

The fact that there is no antiviral treatment against HPV infection is the point on which we observe the least knowledge (18%) . Indeed, 62% were unsure on this topic and 20% thought there was an antiviral treatment

25% of nurses, 19% of support staff and 13% of teachers knew that there is no antiviral treatment against HPV infection.

Condom doesn't protect against HPV infections

It is concerning that only 21% of participants have accurate knowledge regarding protection against HPV with the use of condoms. 60% of all participants believed that condom protects against HPV infections and 19% were unsure. We observed only 29%, 24%, 15% correct answer among support staff, nurses and teachers respectively.

Knowledge about STI in general and in particular HPV infection	All participants (%)						
	Correct Answer	Incorrect answer	Unsure	Nurses (%) Correct Answer	Teachers (%) Correct Answer	Support Staff (%) Correct Answer	P ^{ab}
HPV is a sexually transmitted virus (T)	83	4	13	98	76	75	<.001
HPV also concerns boys and men (T)	79	7	14	94	71	68	<.001
More than half men and women are infected by HPV during their life course (T)	47	7	46	70	34	38	<.001
HPV infection is always symptomatic (F)	62	7	31	87	48	49	<.001
Most HPV infections can be eliminated spontaneously by our immune system (T)	28	24	48	40	21	25	0.005
There is no antiviral treatment against HPV infections (T)	18	20	62	25	13	19	0.043
Condom protects against HPV infections (F)	21	60	19	24	15	29	0.061

Consequences of HPV infections

HPV infections causes genital warts

Only 47% of respondents were aware that HPV causes genitals warts. However, the lack of knowledge is especially among teachers and support staff who had 34% and 30% of correct answer respectively. 74% of nurses knew it.

Different types of HPV exist; only some of them cause cancers

We observed that, 83% of nurses knew that there are different types of HPV and only some of them cause cancer while 52% of teachers and 51% of support staff knew it. Among all participants, there was 3% of incorrect answers but 34% of unsure answers.

Cervical cancer is due to a persistent HPV infection

Few participants (38%) were aware that cervical cancer is due to a persistent HPV infection. 51% of support staff answered correctly compared to 37% of nurses and 33% of teachers. 47% of respondents answered incorrectly to this question.

HPV can also cause oral cancers

Finally, participants were more hesitant in their answers (51%) than in their ability to answer correctly (36%), regarding that HPV can cause oral cancers.

Nurses were more aware than teachers or support staff. (56% vs 23% ; 34% respectively).

Consequences of HPV infection	All participants (%)						P^{ab}
	Correct Answer	Incorrect answer	Unsure	Nurses (%) Correct Answer	Teachers (%) Correct Answer	Support Staff (%) Correct Answer	
HPV causes genital warts (T)	47	9	44	74	34	30	<.001
Different types of HPV exist; only some of them cause cancers (T)	63	3	34	83	52	51	<.001
Cervical cancer is due to a persistent HPV infection (T)	38	47	15	37	33	51	0.068
HPV can also cause oral cancers (T)	36	13	51	56	23	34	<.001

Knowledge about vaccination in general and in particular HPV vaccination

Existence of the HPV vaccine

Almost 90% of the respondents to the questionnaire knew the existence of the HPV vaccine.

Recommended population

Participants to the focus group do not understand why it is recommended for boys now and not 10 years earlier: *“And why vaccinate boys, what is the point of vaccinating boys? [...] we say at the beginning 10 years ago it was girls, now we say boys [...] what has changed now it would be boys?... it's unclear”* (P11, nurse).

56% of participants knew that it is recommended for heterosexual boys but we observed less knowledge on it from teachers (42%) and support staff (46%) than nurses who had 81% of correct answer.

Among all participants 60% doubted that HPV vaccine is recommended for men who have sex with men until 26 years old. Only 24% of teachers and 23 % of support staff knew it while 51% of nurses were aware.

HPV vaccine efficacy and safety Protection

Regarding HPV vaccine efficacy and safety, 76% were aware that HPV vaccine protects against virus which cause cancers, while 63% knew that HPV is effective to prevent precancerous lesions of the cervix. On this topic nurses had 79% of correct answer while teachers and support staff only 55% and 54% respectively.

Only 32% respondents, knew that HPV vaccine cannot eliminate an HPV infection that already exists. 79% of teachers thought or doubted that vaccine can help eliminate an HPV infection that already exists and fewer nurses (51%).

Finally, only 27% were aware that HPV vaccine protects against genital warts.

Some participants reported doubts about vaccine efficacy because it protects only against a few types of HPV: *“Because there are so many papillomaviruses and this vaccine concerns only one kind of papillomavirus so is it useful?”*

Misunderstandings about its schedule

Participants in the focus groups had some misunderstandings about its schedule, especially the reason why it is recommended before the first sexual relationships: *“But once he had his first intercourse, it was no longer effective”* (P4, support staff).

19% thought that after the first sexual intercourse it is too late to get vaccinated against HPV and 24% were unsure. 67% were aware that is not too late even after the first sexual intercourse while only 49% of teachers were aware.

The questionnaire results showed greater knowledge about HPV and HPV vaccination among nurses.

Sources of information they have

Participants often cited their own general practitioner (GP) as their main source of information about HPV.

News, media is also mentioned as a source of information: “I follow the news very regularly [...] that's how I heard about the papillomavirus” (P5, teacher).

For a nurse, some knowledges are completed by gynaecologist: “I learned it from my gynaecologist who said that it caused oral cancers in boys, well, it's true that I didn't know” (P14, nurse).

Nurses learned about HPV during their initial training but regretted not receiving any other information as part of their work (even during training about sex education or meetings with other school nurses). They get new information through personal research or the media.

Attitudes, beliefs and concerns about vaccines in general and HPV in particular

Vaccination in general:

Respondents to the questionnaire showed high confidence in vaccination and had positive attitudes towards collective benefits of vaccination (mean scores >5, on a scale of 1-7).

Barriers to vaccination for themselves (complacency and perceived constraints) were low with mean scores <2.5

Some participants from the focus group showed low confidence in vaccination in general due to past health controversies that occurred in France: *"We have already seen vaccines that have caused multiple sclerosis [referring to the hepatitis B vaccination]"* (P3, support staff)

Side effects

Respondents were more unsure (49%) than sure (43%) that HPV is not responsible for many side effects. 8% responded that HPV vaccine is responsible for many side effects. Nurses were much more aware (69%) than teachers (30%) and support staff (29%).

Participants from the focus group explain also their fear of HPV vaccine and wondered whether there is enough information about safety: *"I'm afraid that it [the HPV vaccine] will lead to something else because we don't have enough hindsight"* (P9, teacher)

Vaccination and sexuality

Among all participants, 88% knew that getting vaccinated against HPV do not prone young girls to have sexual relationships, 11% were unsure and only 1% were incorrect.

We observed that teachers have little less correct answers (83%) than nurses (97%) and support staff (85%).

Participants to the focus groups mentioned that is complicated and taboo to discuss about HPV vaccination with young pupils aged 11 because of the linked with sexuality:

"Papillomavirus equals sexuality in everyone's head that's it and inevitably ask a little boy/girl who's entering 6th grade, well, let's think about your sexuality, well, it's taboo for many families, right? I'm not sure if we in the 6th grade can talk about this it's complicated" (P11, nurse)

Collective Responsibility

Participants in the focus groups expressed a favourable attitude towards HPV vaccination, citing the potential to decrease the incidence of cancers in both girls and boys as a key factor:

"Yes it's a public health problem [...] I don't know if this vaccination would really eradicate the virus completely if we were all vaccinated [...] but in any case it would greatly reduce the number of cancer risks for both girls and boys" (P14, nurse)

Tools and information they use for HPV infection and vaccine, and health topics in general.

Untreated subject

Explore if they ever address health topics in class and especially vaccine and the specific HPV vaccine. If not, explore if favourable of talking about HPV vaccine in class with their students

The questionnaire results showed that vaccination was the public health topic least frequently discussed at school, including by nurses (55% of nurses discussed it often or always with pupils vs 90% for screens' addiction, diet and sexuality, the most commonly topics discussed

Target population:

For the respondents, it was more appropriate to propose vaccination to pupils in grade 8 (age: 13-14 years) than in grade 6 (age: 11 – 12 years)

Positive attitude to talk about HPV vaccine in class

In the focus groups, nurses claimed that educating pupils about HPV was fully part of their job (Table 3 and Additional Table 5): *"It's fully within our job, we're not here for minor medical care essentially we're also here for information and prevention"* (P13, nurse).

It appears that, teachers in life sciences or external workers are more legitimate to discuss about HPV: *"I think of the sciences, in particular... yes life sciences [...] even an external worker euh I think that it could be interesting"* (P6, support staff)

Complicated / Not favourable to discuss about HPV in class

Many participants to the focus groups stated it is very complicated to discuss about HPV vaccination with young pupils aged 11 because of the link with sexuality:

"Papillomavirus equals sexuality in everyone's head that's it and inevitably ask a little boy/girl who's entering 6th grade, well, let's think about your sexuality, well, it's taboo for many families, right? I'm not sure if we in the 6th grade can talk about this it's complicated" (P11, nurse).

Among teachers and support staff, some were reluctant because they feared parents' reactions or substantial additional workload. Some felt, that it is not the role of school to inform pupils about HPV: *"Well, the school is not necessarily the place to get information about vaccinations [...] I think we already do quite a lot"* (P1, teacher).

Not favorable to offer access to HPV vaccination at school

Nurses in the focus groups were against vaccination at school. For them, vaccination should involve a GP: *"I don't think it's the school's role [...] I think it's the role of the family's health professionals"* (P4, support staff) ; *"Be careful, the school is not a place of care so euh vaccinate, we are alone that is to say that there is no doctor..."* (P11, nurse).

They also argued that school is not a place to get vaccinated and that other places are available in France: *"I would tend to say that this is not the place and that our country allows us to be vaccinated, I mean we have other places"* (P14, nurse).

Participants acknowledged that vaccination at school already occurred in the past in France (e.g., when they were young for the vaccine against tuberculosis, for hepatitis B in the late 1990s or influenza A(H1N1) in 2009) but were not favorable to it, except in exceptional situations like the current Covid-19 pandemic.

Explore if favourable to participate in training courses to improve knowledge on HPV infection and vaccination and on how to deal the topic in class with the students

Subject not treated