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Acceptability of deferring the start of cervical cancer screening to age 30 for women vaccinated against human papillomavirus

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ABSTRACT

HPV vaccination of girls younger than 15 is very effective in reducing their risk of cervical cancer. In Italy, for vaccinated women, the starting age for cervical cancer screening is set to change from 25 to 30. Adherence to a protocol change is crucial to assure efficacy. The aim of our study was to monitor women's reaction to the change and learn about their attitudes.

In September 2022, an anonymous online questionnaire was proposed to 3122 women born in 1997, fully vaccinated before 15 years of age and afferent to an organized cervical cancer screening programme in the Veneto region (North-East Italy). The questionnaire included 30 items on knowledge of HPV infection and preventive measures for cervical cancer, gynaecological check-ups and reactions to the deferment of the start of screening.

Overall, 147 questionnaires were completed (4.7% participation rate). Almost all women had some information on HPV and HPV vaccination, while one third were unaware of the existence of the screening programme. Over 66% expressed agreement with the rationale for the deferment of screening initiation, but 62% would have preferred to start screening at 25. There was a significant association between having had one or more Pap tests and the willingness to undergo additional testing outside the screening programme before the age of 30. Continued efforts are required to improve the effectiveness of communication to women, especially when implementing existing protocols, together with strategies to promote correct approaches.

1. Introduction

Cervical cancer can be effectively prevented by HPV (human papillomavirus) vaccination and organized population-based screening (Bosch et al, 2016). Vaccination is of maximum benefit when administered before 15 years of age, and has been found to be highly effective in preventing pre-neoplastic lesions and invasive cancer (Lei et al, 2020). Searching for viral sequences of high-risk HPV (hrHPV) types as primary screening has been demonstrated to be more effective than cytology-based screening (Ronco et al, 2014), and HPV-based screening is being implemented in many countries. In Italy, population-based organized cervical cancer screening programmes, actively inviting women between 25 and 64 years-old, have been in place for more than 20 years. Cytology is gradually (on a regional basis) being replaced by hrHPV testing (with cytology triage in case of a positive result) for women older than 30. Active campaigns of free vaccination for girls aged 12 were started in 2007/2008, later extended to boys of same age in 2015.

These two preventive measures need to be integrated, in order to ensure effectiveness and avoid unnecessary interventions (Sundstrom and Elfstrom, 2020). A consensus conference held in Italy in 2015 provided guidelines on amending the protocol of cervical cancer screening in women vaccinated before the age of 15 (Giorgi Rossi et al, 2017). Women effectively vaccinated at a young age, as indicated by the World Health Organization (WHO, 2022), are considered at lower risk than those who are unvaccinated, and their screening protocol can be amended. One of the proposed changes is to start screening at the age of

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30 instead of 25 (Giorgi Rossi et al, 2017), using hrHPV testing every 5 years. In Italy, the Ministry of Health recommended this change in 2021 (Piano Nazionale della Prevenzione, 2020–2025).

Oncologic screenings in Italy are performed according to national guidelines and are operated at a regional level. Veneto (North-East Italy) was the first region to implement this change, which requires cross-linking screening and vaccination databases and the exclusion of women successfully vaccinated before age 15 who turn 25 in the calendar year; in 2021, this involved the 1996 birth cohort, and in 2022 the 1997 birth cohort.

The effective communication of the scientific reasons of the change and the new protocol is crucial for ensuring both acceptance of the change and adherence to the new strategy (Nemec et al, 2022). The direct involvement of all the stakeholders in the process is a fundamental step. On the one hand, we need to provide specific training for healthcare professionals to prepare them for the change, involve them in the process and provide the knowledge and tools for explaining it to the women subject to screening. On the other hand, women need to be adequately informed and to receive clear and correct answers to their queries. In Veneto, specific training sessions were conducted separately in 2019 for the different categories of healthcare professionals: all those involved in screening and vaccinations; operators of gynaecologic facilities outside the organized screening programmes; general practitioners and general paediatricians. Those directly involved in organizing the screening (including secretariats and information technology) also participated in additional periodic operational meetings.

Active information campaigns began in 2021 with letters sent to all the women affected by the change and ad-hoc messages were disseminated on social media (messages in languages other than Italian are also under preparation).

In order to monitor the impact of the change and gain insights for the possible amendment and improvement of the communication methods, in 2022 women born in 1997 who were vaccinated before the age of 15 were invited to complete an anonymous online questionnaire on the notice of deferment of the starting age.

2. Methods

2.1. Study design and participants

In the Veneto region (North East Italy), implementation of HPV-based cervical screening was introduced in 2015; women aged 25–29 undergo cytology-based screening every 3 years, and women aged 30–64 undergo hrHPV testing every 5 years, with cytology triage in case of a positive result. HPV vaccination of 12-year-old girls began in 2008 using the quadrivalent HPV (qHPV) vaccine, later substituted by the nonavalent vaccine. The study group consisted of women born in 1997 vaccinated with at least two doses of HPV vaccine before the age of 15, residing in the area covered by the screening programme of the Local Health Authority (LHA) 9 Scaligera. In 2022, these women received a personal letter informing them that the screening starting age was being shifted to 30 years of age (instead of 25), due to the fact that vaccination lowered their risk of cervical cancer. Along with the letter, they received an invitation to complete an anonymous questionnaire aimed at assessing the impact of this change and the quality of the communication. The contents of both documents are reported in the Supplementary materials. This study analyses the data derived from one of the structural monitoring activities foreseen by the programme, for which no reminders or additional strategies are used to reinforce participation.

3. Questionnaire

An ad hoc standardized (closed-ended questions) anonymous questionnaire was developed for the women directly affected by the protocol change. The items were taken from both published (Trucchi et al, 2020) and unpublished (previous surveys conducted locally for screening assessment) questionnaires.

The questionnaire was pre-tested with a small group of women of same age by one of the Authors (G.M.) through in person interviews to generate feedback on how clearly they understood the questions. The wording was then modified according to their observations and suggestions.

The final version of the questionnaire was self-administered through the intranet LHA website (no credentials needed for access). The invitation to participate to the survey was included in the personal letter, which provided the link and the QR (quick response) code to access the platform directly. The first page provided participants with information on the aims and objectives of the survey and on the fact that participation is voluntary. The next page showed information on the privacy protection policies adopted, described as follows: questionnaire reviewed by the local Data Protection Officer, access to the local intranet with no registration required, no personal information collected, completely anonymous questionnaire, no third party involvement in data processing. Informed consent was not necessary. Finally, participants proceeded with completing the questionnaire.

The questionnaire was composed by four sections and included a total of 30 questions. The first two sections investigated awareness and knowledge on HPV and HPV vaccination, and consisted of 12 and 3 questions, respectively. The third section was on knowledge of and approach to cervical screening and gynaecological check-ups (6 questions), and the last section investigated the reactions to the deferment of the starting age for cervical screening as well as the attitudes towards this change and the willingness to adhere to the new protocol, through 9 statements for which participants expressed their agreement/disagreement on a 4-grade scale.

The aim of our questionnaire was to monitor the reactions of the women, so blocks to the questions were not introduced.

4. Statistical analyses

We carried out descriptive statistical analysis by calculating the percentage distribution of the answers for each survey question. We also evaluated the association between knowledge on/ approach to cervical cancer prevention, as well as previous gynaecologic check-ups, and the agreement/disagreement with statements regarding the deferment of the starting age of cervical screening. For this analysis, the 4-grade scale was re-classified into two categories (agreement, including the options “Agree” and “Completely agree”, and disagreement including the options “Disagree” and “Completely disagree”). The Chi square test was used to estimate rate ratios with 95% confidence intervals. P-values < 0.05 were considered statistically significant. Stata 14.0 statistical software was used for all analyses.

5. Ethics

The survey was part of the activities to assess the cervical cancer screening programme; the questionnaire was anonymous and all the steps (invitation letter, questionnaire administration and processing the results) were conducted within the LHA 9 Scaligera. Approval from an Ethical Committee and an informed consent were not necessary.

The study complied with the data protection guidelines for the protection of the safety and privacy of human subjects.

6. Results

6.1. Participants

In September 2022, a letter of notification of the deferment of the starting age for cervical screening to the age of 30 was sent to the 3122 women born in 1997 residing in the catchment area of the LHA 9 Scaligera in the Veneto region and vaccinated with at least 2 doses of HPV vaccine before age 15 (vaccination coverage for the 1997 cohort in

Veneto is 72.7%). The letter included an invitation to participate in a survey to assess the impact of the change. Overall, 147 (4.7%) questionnaires were completed. The rather short window of time for participation (four months) was based on previous experiences showing that participation did not increase beyond this time period. Questions were left blank in 5/30 questions, with a median rate of 1% (range 1–5%).

Only one woman had never had a check-up with a gynaecologist, but the majority (56.5%) had never had a Pap smear (16% only once, 12% more than once, 16% at least once a year) (Table 1). Among those who already had a Pap test, the most common age at the first test was 21–23 years (20.4%). Only 3 women had been diagnosed with an HPV-related lesion (2.0%).

7. Awareness and knowledge on cervical cancer screening, HPV infection and HPV vaccination

A sizable proportion of women (29%) was unaware of the existence of the cervical screening programme, while 42% did not know that it starts at the age of 25 (Table 2).

Overall, 95% women knew something about HPV, the sources being a family member (52%) or a physician (48%) (mainly a gynaecologist (33%) and/or a general practitioner or paediatrician). Internet and the school were also sources of information for 28% and 32% women, respectively. Overall, 70% and 23%, respectively, declared they use internet or social media to search for health information. A breakdown of the awareness and knowledge of HPV infection and related diseases is reported in Tables 2 and 3.

In terms of vaccination, 95% women had heard about it, 92% remembered being vaccinated, the great majority knew the effectiveness of the vaccine in reducing the risk of developing cervical cancer (80%) and of acquiring HPV infection (75%), while a much smaller proportion declared that the vaccine reduced the risk of condylomas (20%) and transmitting the infection (29%).

8. Reactions and attitude to the screening deferment

The great majority of the women expressed agreement with the statements supporting the deferment of the screening starting age for women protected by vaccination (see the first two statements in Table 4). Nonetheless, 62% of the women would have preferred to start the screening at age 25, and 37% considered it unfair not to be able to start the screening at 25, though 78% women still agreed with the statement "Even if, being vaccinated I will start screening at 30 instead of 25, I still feel protected". Notwithstanding, almost half of women declared they will start Pap tests or HPV tests before they reach 30. Finally, all but one women declared that if they will have some children they will have them vaccinated against HPV. A summary of the answers to the statements is reported in Table 4.

We compared the agreement/disagreement with the statements on the deferment of screening with knowledge/beliefs on the issue and previous gynaecologic check-ups, i.e., those who had already had one or more Pap smears (n = 64, 44%) vs those who had not (n = 83, 56%) (Table 5). A higher proportion of the women who had undergone a Pap test would prefer to start screening at 25 (72% vs. 54%) and did not appreciate the deferment of screening to age 30 (56% vs. 35%). Women

Table 1
Main characteristics of the 25-yrs-old women, fully vaccinated against HPV before age 15, residing in the area of the LHA 9 of the Veneto region in Italy, responding to the survey conducted in 2022 (N = 147 women).

	N	%
Total	147	100
Ever had a Pap smear		
No	83	56.5
Yes, one time	23	15.6
Yes, some times	18	12.2
Yes, regularly (at least annually)	23	15.6
At what age had the first Pap smear		
15–17 years	5	3.4
18–20 years	17	11.6
21–23 years	30	20.4
24–25 years	12	8.2
Never had a Pap smear	83	56.5
Ever had a gynaecologic visit		
No	1	0.7
Yes, one time	0	0.0
Yes, some times	39	26.5
Yes, regularly (at least annually)	107	72.8
Ever been diagnosed with HPV-related lesions		
No	138	93.9
Yes	3	2.0
Doesn't know	6	4.1

Table 2
Summary of the answers provided by the 25-yrs-old women, fully vaccinated against HPV before age 15, residing in the area of the LHA 9 of the Veneto region in Italy to the questions related to awareness on cervical cancer screening, HPV infection and HPV vaccination (N = 147 women).

	N	%
Cervical cancer screening		
Aware of the existence of the cervical cancer screening programme	105	71.4
Aware that screening starts at 25 years	85	57.8
HPV infection		
Ever heard about HPV infection	139	94.6
If yes, where did you hear it:		
General practitioner or paediatrician	40	27.2
Gynaecologist	48	32.7
Healthcare operator of vaccination centre	19	12.9
Other healthcare operator	19	12.9
Friends	35	23.8
Family member	76	51.7
Partner	0	0.0
Television, radio, newspapers	30	20.4
Internet	41	27.9
Social media	23	15.6
Other (19 in school, 2 not specified)	21	14.3
HPV vaccination		
Ever heard about HPV vaccination	139	94.6
Remember being vaccinated against HPV	135	91.8

Table 3
Summary of the answers provided by the 25-yrs-old women, fully vaccinated against HPV before age 15, residing in the area of the LHA 9 of the Veneto region in Italy to the questions related to knowledge on HPV infection and HPV vaccination (N = 147 women).

Knowledge on HPV infection **Number (N) and percentage (%) of correct answers**	Correct answer	N	%
HPV is a very frequent infection	True	63	42.9
HPV infection is sexually transmissible	True	91	61.9
Males can acquire HPV infection	True	93	63.3
HPV infection is serious	False	110	74.8
Cervical cancer is caused by HPV	True	143	97.3
Genital herpes is caused by HPV	False	43	29.3
Genital condylomas are caused by HPV	True	50	34.0
Infertility is caused by HPV	False	29	19.7
Cervical cancer is frequent among HPV-infected	False	45	30.6
women	False	70	47.6
There are drugs to cure HPV infection			
Knowledge on HPV vaccination			
HPV vaccination reduces:			
- the risk to acquire HPV infection	True	110	74.8
- the risk to transmit HPV infection	True	43	29.3
- the risk to develop cervical cancer	True	117	79.6
- the risk to develop genital condylomas	True	29	19.7

Table 4
Agreement with statements* on the age shift of cervical cancer screening initiation expressed by the 25-yrs-old women, fully vaccinated against HPV before age 15, residing in the area of the LHA 9 of the Veneto region in Italy; the first two statements refer to knowledge/beliefs, the following four statements refer to attitude, and the last two refer to willingness.

	Completely disagree		Disagree		Agree		Completely agree		No answer	
	n	%	n	%	n	%	n	%	n	%
I do not need to undergo cervical cancer screening before 30 years because I am vaccinated against HPV	8	5.4	39	26.5	91	61.9	9	6.1	0	0.0
My risk of being diagnosed with a cervical cancer before 30 years is almost zero because I am vaccinated against HPV	11	7.5	40	27.2	86	58.5	10	6.8	0	0.0
Notwithstanding I am vaccinated against HPV, I would prefer start screening at 25 years	2	1.4	54	36.7	64	43.5	27	18.4	0	0.0
I am happy to start screening at 30 instead of 25	13	8.8	52	35.4	70	47.6	12	8.2	0	0.0
It is not fair that I cannot start screening before 30	16	10.9	77	52.4	39	26.5	14	9.5	1	0.7
Even if (being vaccinated) I will start screening at 30 instead of 25, I still feel protected	7	4.8	26	17.7	100	68.0	14	9.5	0	0.0
Anyway, I prefer to undergo a Pap smear or a HPV test on my own	9	6.1	66	44.9	50	34.0	21	14.3	1	0.7
I will wait until I am 30 to have a HPV test within the screening program	16	10.9	35	23.8	75	51.0	21	14.3	0	0.0

* In the questionnaire, the following sentence preceded the statements in Table 4: "Your Local Health Authority advised you that you will start cervical screening at 30 years instead of 25 because you have been vaccinated against HPV before 15 years of age. Please indicate how much you agree or disagree with each of the following statements".

Table 5
Agreement with statements* on the age shift of cervical cancer screening initiation expressed by the 25-yrs-old women, fully vaccinated against HPV before age 15, residing in the area of the LHA 9 of the Veneto region in Italy: comparison between women who had or had never undergone a Pap smear; the first two statements refer to knowledge/beliefs, the following four statements refer to attitude, and the last two refer to willingness.

	Had one or more Pap smears		Never had a Pap smear		Rate ratio	95% Confidence Interval	p-value
	Agree (%)[1]	Disagree (%)[2]	Agree (%)[1]	Disagree (%)[2]			
I do not need to undergo cervical cancer screening before 30 years because I am vaccinated against HPV	60.9	39.1	73.5	26.5	0.83	0.47 – 1.44	0.48
My risk of being diagnosed with a cervical cancer before 30 years is almost zero because I am vaccinated against HPV	67.2	32.8	63.9	36.1	1.05	0.61 – 1.82	0.85
Notwithstanding I am vaccinated against HPV, I would prefer start screening at 25 years	71.9	28.1	54.2	45.8	1.33	0.76 – 2.32	0.29
I am happy to start screening at 30 instead of 25	43.8	56.3	65.1	34.9	0.67	0.37 – 1.22	0.16
It is not fair that I cannot start screening before 30	40.6	59.4	32.5	66.3	1.23	0.63 – 2.43	0.51
Even if (being vaccinated) I will start screening at 30 instead of 25, I still feel protected	75.0	25.0	79.5	20.5	0.94	0.56 – 1.59	0.82
Anyway, I prefer to undergo a Pap smear or a HPV test on my own	78.1	21.9	25.3	73.5	3.05	1.60 – 5.89	0.0002
I will wait until I am 30 to have a HPV test within the screening programme	46.9	53.1	79.5	20.5	0.59	0.33 – 1.05	0.054

* In the questionnaire, the following sentence preceded the statements in Table 5: "Your Local Health Authority advised you that you will start cervical screening at 30 years instead of 25 because you have been vaccinated against HPV before 15 years of age. Please indicate how much you agree or disagree with each of the following statements".
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[1] includes the items "agree" and "completely agree".
[2] includes the items "disagree" and "completely disagree".

who had already had a Pap smear expressed the intention to undergo a Pap smear or an HPV test independently (78% vs. 25%; $p = 0.0002$), not settling for waiting until they were 30 to have an HPV test within the screening programme (53% vs 21%; $p = 0.054$). On the other hand, no statistically significant differences were found between women who declared that they were aware of the existence of the screening programme with those who were not, and between women who were aware and those who were not of the effectiveness of the vaccine in reducing the risk for cervical cancer (data not shown).

9. Discussion

In the Veneto region (North-East Italy), the campaign of HPV vaccination for girls aged 12 started in 2008, involving the 1996 birth cohort. In 2021, these women turned 25 and were sent a letter notifying them of the deferment of cervical screening (from age 25 to age 30). In 2022, women born in 1997 and successfully vaccinated, together with the letter of notification, received an invitation to participate to an anonymous online questionnaire on the impact of the notification of deferment. To our knowledge, this is the first survey on the impact of this protocol change among women vaccinated before the age of 15, conducted within an organized cervical cancer screening programme.

Overall, 147 (4.7%) women filled out the questionnaire; the participation rate was low, but no selection was operated and no participation reminders were sent. It has already been reported that young age is often associated with poor participation in surveys. In an Italian multicentric cross-sectional study conducted in 2008 among women aged 18–26 years invited by letter and subsequently contacted by trained midwives, attendance was in the 34–84% range among the participating centres (Donati et al, 2012). On the other hand, studies involving convenience samples of women and men of similar age have obtained much higher participation rates; one study involving young adults selected among students attending medical schools or other higher education institutions and health professionals conducted in Greece had a participation rate of 95% (Sidiropoulou et al, 2022). The low participation rate in our study can therefore be attributed to the young age and the lack of incentives, motivation and reminders. The decision to participate in a survey is influenced by a number of factors (e.g., socio-economic and health status, age). While age is homogeneous within our group, other factors on which we have no information may have introduced some bias.

The results of our survey indicate that almost all responding women

had heard about HPV and HPV vaccination, with good knowledge on HPV and cervical cancer but less on HPV transmission and frequency of infection; for this latter item, a higher rate of correct answer had been registered in a previous Italian study (Donati et al, 2012). The women included in this study have all been vaccinated before age 15, therefore their first source of information was their family (51,7%), and only later they encountered GPs and gynaecologists. Healthcare professionals have a very important role in educating women about HPV and cervical cancer, so the diffusion of the results of our survey to these professionals might contribute to highlight the need for specific communication and reinforcement to young women, including those already vaccinated.

Nearly all women (92%) remembered having received the vaccination, and 99% declared they were willing to vaccinate their children in the future. The vast majority (78%) agreed they still felt protected with the screening starting at 30 instead of 25, and 68% agreed that they didn't need to start screening at 25, in accordance with the acknowledgement by 66% that the vaccination had substantially reduced their risk of cervical cancer before the age of 30. One study using an anonymous mixed-method online survey administered via a convenience sampling strategy conducted in the United Kingdom (Kola-Palmer et al, 2022) investigated the willingness of the subgroup of 171 vaccinated women to have three cervical screens over their lifetime rather than twelve; 28% said they would agree, and 60% said they would not (12% said they did not know). The large difference in acceptance between the British study and our study could be due to the difference in protocol change proposed and the hypothetical scenario utilized.

In our study, although 65% women declared they were willing to wait until they were 30 to undergo HPV testing within the screening programme, 62% affirmed they would still have preferred to initiate screening at 25, and 48% said that they would probably undergo HPV testing or cytology independently before the age of 30. These results indicate that knowledge and awareness are not sufficient to ensure the right attitude and fully accept the change. We analysed women's reaction to the deferment of screening in relation to their knowledge on cervical screening and HPV vaccination, and their Pap test history. Compared with women that had never had a Pap test, a statistically significant higher proportion of those that already had one or more were willing to undergo testing outside the screening programme before the age of 30. This difference may reflect either a perception of higher risk among those who have already undergone cytology testing or a more open attitude to a change among women with less knowledge on the issue. As reported by Nemec et al (2022), acceptance of a healthcare intervention "reflects the extent to which people consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses"; affective attitude (personal feeling), one's values, intervention understanding, opportunity costs, and perceived effectiveness constitute relevant factors. The introduction of a change to a consolidated protocol is even more challenging. Recently, the HPV-based cervical cancer screening extended the interval between tests from 3 to 5 years; in England, regular attenders have found it harder than first-time attenders to accept the change (Kola-Palmer et al, 2022; Nemec et al, 2022; Rickford et al., 2023). One factor that was deemed important in these surveys was the perception of cancer risk in relation to time; the authors suggested that more precise information on the timeline of cancer development could be instrumental to reducing the fear (Kola-Palmer et al, 2022). The discrepancy between acknowledging that it is safe to defer cancer screening and the intention to get tested independently before the age of 30 that emerged among the vaccinated women in our study may reflect a perception of increased risk, not sufficiently dispelled by the general information on HPV and cervical cancer provided in the letter. The letter was drafted by a national team expert in communication strategies and although the time required for hrHPV infection to develop into cervical cancer was not mentioned, contacts and links for additional information were provided; we will evaluate the appropriateness of including this information in the future.

Our findings disclosed that only one respondent woman aged 25 had never undergone a gynaecological examination. The reasons for the examinations are unknown: they may be related to gynaecological symptoms, contraception or be simple check-ups. Early detection of cervical dysplasia or cancer are unlikely to have been the main reason, as less than 50% of women reported a history of Pap tests or HPV testing. Some dissatisfaction with the deferment of the start of regular cervical cancer screening can be expected in a population in which gynaecological monitoring is perceived as a "good thing", whereas its possible drawbacks (e.g., the risk of overdiagnosis and overtreatment of naturally regressing cervical lesions) are little appreciated. Our findings highlight, therefore, the need to educate the general population about the principles that guide organized screening programmes, i.e., cancer prevention and "doing no harm".

One intriguing finding of our survey was the much lower proportion of women who had correct information on the pathogenetic role of HPV in genital condylomas, in comparison to cervical cancer (34% vs. 97%, respectively). Indeed, although a similar discrepancy on the knowledge of the causative role of HPV in genital warts and cervical carcinoma (9% vs. 74%) had also emerged in a previous Italian study (Donati et al, 2012), there has been improvement in knowledge. Moreover, in the Veneto region vaccination has been very effective in preventing genital condylomas; with around 75% HPV vaccination coverage for the birth cohorts 1996–2007, a significant decrease in female hospitalizations for anogenital warts was recorded from 2007 to 2018 (Cocchio et al, 2020). This may had reduced the awareness on condylomas in vaccinated women.

Strengths. Our study was developed within an organized cervical cancer screening programme and the survey involved the vaccinated women directly experiencing the deferment of the start of cervical screening. The survey was entirely conducted within the LHA, and can therefore be easily replicated in the future in the same and in other centres.

Limitations. The questionnaire did not contain questions on sociodemographic characteristics (deleted by the local Data Protection Officer to ensure anonymity) and we could not evaluate their relation to the investigated topics. The participation rate was low; the invitation was sent to all vaccinated women of the 1997 birth cohort, without reminders. While low participation limits the representativeness of the population under investigation and affects the interpretation of the results, as the figures on the knowledge of HPV infection, HPV vaccination and cervical cancer screening were high among the respondent women and comparable to those of other studies, we are confident that the results of the study have a certain degree of generalization, are capable of showing trends and provide new knowledge on the issue.

10. Conclusions

The results of our survey indicate a good understanding of the rationale for the deferment of the starting age of cervical cancer screening from 25 to 30 years in women vaccinated before the age of 15. Nonetheless, this understanding did not match the level of acceptance and willingness to adhere to the new protocol. Continued efforts are required to improve effective communication with women, especially when implementing existing protocols, together with strategies to promote correct attitudes, i.e. through schools and social media. Moreover, the dissemination of the results of our survey among healthcare professionals could be a first step towards highlighting the need for precise communication and reinforcement among young women, including those already vaccinated.

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.

Data availability

Data will be made available on request.

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We would like to thank the women who participated in the questionnaire pre-test and all those who completed it.

Ethical compliance and patient consent statement

This survey is part of the monitoring activities of the cervical cancer screening programme, and it is exempt from ethical review. The questionnaire was anonymous, delivered online, and information on the data protection policies adopted to ensure participant privacy was provided. Written consent is not required for this type of survey in Italy.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pmedr.2023.102438.

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