New vaccine introduction: strengthening health literacy to increase health equity

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ABSTRACT

Introduction: The human papillomavirus (HPV) vaccine can reduce inequalities in cervical cancer. Countries introducing the vaccine need a strategy and communication plan that address the health literacy of target populations.

Aim: To inform HPV vaccine introduction activities aiming to strengthen the health literacy of target groups, through exploring barriers and drivers, as well as seeking ideas for communicating the introduction of the vaccine.

Methods: Qualitative studies using focus group discussions and in-depth interviews in Armenia, Georgia and the Republic of Moldova. The 218 participants were parents, teenage girls, doctors (family, school, specialist, paediatricians), nurses, oncologists, teachers and a priest. Data were analysed using thematic analysis.

Findings: Many findings were similar across countries and target groups. The key driver was the recognition of the need for vaccines. Barriers ranged from confusion to fears related to adverse effects (including infertility), vaccines’ provenance and the quality of free vaccines. Health-care providers too were sceptical, susceptible to adverse information and willing to bend rules to avoid vaccination.

Conclusion: The studies informed tailored strategies to strengthen HPV vaccination-related health literacy of key groups, by using tailored messages targeting misperceptions communicated through health-care providers and a community approach. Furthermore, the studies indicated more generally that increased decision-making power at an individual level creates uncertainty, which also affects health-care providers, who therefore need to be a target group in themselves and not just a channel of communication.

Keywords: HPV, IMMUNIZATION/VACCINATION, COMMUNICATION, HEALTH LITERACY, EQUITY

INTRODUCTION

Vaccination is a remarkable public health success: each year it saves millions of people from illness, disability and death (1). The vaccines against human papillomavirus (HPV) – a virus that causes cervical and other types of cancer – are a recent contribution to this. Cervical cancer is one of the most common cancers affecting women; in 2018 there were an estimated 570 000 new cases of cervical cancer with 310 000 deaths worldwide (2). Unlike most cancers, cervical cancer is more likely to develop among young women aged 20–45 than among older women (3).

In 2016 and 2017 Armenia, Georgia and the Republic of Moldova decided to introduce the HPV vaccine and requested support from WHO. As part of this, formative research was conducted with key target groups to inform introduction strategies and communication plans. A key aim of this research was to gain insight into the vaccination-related health literacy skills of the intended beneficiaries. These skills are
defined as “the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health” (4). In this context, this enables positive HPV vaccination behaviours, for example, the timely receipt of vaccination and recommending vaccination.

Women from lower socioeconomic backgrounds are disproportionately affected by cervical cancer, however, the HPV vaccine has been shown to have the most profound effect on deprived populations and thereby has the potential to reduce inequalities in cervical cancer occurrence (5). Planning the introduction of the HPV vaccine in a way that strengthens the health literacy of the intended beneficiaries is thus an opportunity not only to promote a cost-effective disease prevention intervention but also to promote health equity.

The urgency of the need to strengthen health literacy at this time was increased by the threat of misconceptions that could create an adverse environment for the new vaccine. Despite scientific consensus about the safety and effectiveness of the HPV vaccines (6), HPV vaccine controversies have challenged health authorities in countries such as Colombia, Denmark, Ireland and Japan with misinformation being shared globally (7). The risk of such controversy is that it can potentially lead to an erosion of public trust in all vaccines, as well as in health authorities (8–11).

Health literacy is the responsibility not only of the individual but also of health systems, which need to ensure access for all by providing clear, appropriate and accessible information (12). For this reason, the WHO-supported immunization programmes of Armenia, Georgia and the Republic of Moldova conducted qualitative formative research studies with key target groups. The studies aimed to inform national HPV vaccine introduction strategies and communication plans, which would strengthen the health literacy of the intended beneficiaries of the vaccine through:

(i) exploring the barriers and drivers for positive HPV vaccination behaviours among target groups; and
(ii) seeking ideas for key messages and communication channels for HPV vaccine introduction.

In the European Region, published literature on vaccination-related health literacy and determinants of vaccination behaviour is primarily focused on the western part of the Region; evidence specific to eastern Europe is insufficient. Hence the contribution of these studies goes beyond national HPV vaccine introduction: it has a broader relevance to the understanding and promotion of vaccination-related health literacy in eastern Europe as a whole.

METHODS

The studies were conducted during 2016 and 2017 and were guided by a WHO Field guide to qualitative research for new vaccine introduction, which was pilot tested as part of the process (13).

ETHICS

The studies involved human subjects and were conducted in accordance with the guidelines of the Helsinki Declaration. They were conducted in three countries where institutional review boards or committees are not mandatory, and the respective authorities of the three countries considered this research as exempt from the requirement of ethical approval. All participants provided written informed consent to participate and to audio record, use and share their contributions for scientific purposes without disclosure of their identity.

PARTICIPANTS AND RECRUITMENT

Participants were identified by authors AC, MS and GS from the national vaccine introduction teams as those who make decisions about HPV vaccination, that is, mothers and girls, and those likely to influence their decisions, including family doctors, paediatricians, nurses, oncolgists, specialist doctors, teachers, school doctors and priests. They were a convenience sample, recruited by national and subnational immunization programmes. When approached, participants were asked to take part in a discussion on health and vaccination. We did not record how many, or why, participants declined to take part.

The selected target groups varied by country, however, all three studies were conducted in various settings to ensure a mix of socioeconomic contexts and ethnic groups. Table 1 presents the participant groups (218 participants: N=73 Armenia, N=64 Georgia, N=81 Republic of Moldova). Participants reflected a mix of age, education, income and urban/rural location.

DATA COLLECTION

A mixture of focus group discussions (FGD) and face-to-face in-depth individual interviews (IDI) (where there was only one participant in a target group) were used. They took place in participants’ schools and workplaces (for example, health facilities), were audio recorded and facilitated in the national languages by local researchers, who were not known to the
participants. In Georgia this was a sociologist experienced in qualitative research but unfamiliar with the field of vaccination. In Armenia and the Republic of Moldova, the researchers, from the national vaccine introduction teams, were less experienced in qualitative research methods, but highly knowledgeable about vaccination.

Discussion guides were developed in English and translated into the national languages to ensure consistency of data collection both within and across the three countries. The format was flexible to allow for country and participant group differences and to permit participants to raise any additional issues they considered important. The topics covered are presented in Table 2.

The FGDs lasted between 75 and 120 minutes. The IDIs lasted between 45 and 60 minutes.

DATA ANALYSIS
The FGDs and IDIs were transcribed verbatim and then translated into English. All transcripts were checked for accuracy against the audio recordings. Personal data were anonymized. The FGD and IDI data for each country were analysed together. Authors SMN and MS undertook the analysis in Armenia, SMN and BF in Georgia and AC, BF and SMN in the Republic of Moldova. In all three countries, the national vaccine introduction team partners were actively involved throughout the process and the final analysis was discussed, reviewed and agreed on by all.

WITHIN-COUNTRY ANALYSIS
The data were analysed in English using thematic analysis (14), a useful approach for producing qualitative analyses suited to informing programme development.

<table>
<thead>
<tr>
<th>Target group</th>
<th>Armenia</th>
<th>Georgia</th>
<th>Republic of Moldova</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
<td>National capital</td>
</tr>
<tr>
<td>Paediatricians/Family Doctors</td>
<td>5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Nurses</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Obstetricians/Gynaecologists</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Oncologists</td>
<td>1*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>School doctors</td>
<td>0</td>
<td>0</td>
<td>1*</td>
</tr>
<tr>
<td>Teachers</td>
<td>8</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Priests</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mothers/caregivers of teenage girls</td>
<td>7</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Teenage girls</td>
<td>7</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>32</td>
<td>41</td>
<td>30</td>
</tr>
</tbody>
</table>

*indicates an in-depth individual interview, otherwise data were collected in focus group discussions

| TABLE 2: TOPICS EXPLORED IN THE FGDs AND IDIS |
|----------------------------------------------|--------------------------------------------------|
| · Awareness and knowledge – vaccines in general, HPV vaccine, cervical cancer and HPV |
| · Information sources – where to seek information from, which sources to trust |
| · Attitudes – vaccines in general, HPV vaccine, cervical cancer and HPV |
| · Rumours about vaccination |
| · Discussing vaccination with parents/teachers/teenagers/church members |
| · Support/information needed to introduce HPV vaccination |
| · Ideas for motivational key messages |
| · Ideas for communication channels |
| · Ideas for policy |
The steps were as follows:
1. Familiarization: researchers became immersed in the raw data by repeated reading of the transcripts and listed key ideas for coding.
2. Generating initial codes: initial codes and a coding framework were developed, informed predominantly by the topics in the discussion guide (Table 2), although novel views expressed by participants were also captured. The interview data were then coded to this framework, working with paper copies of the transcripts.
3. Searching for themes: the codes were organized into potential themes and subthemes. At this point, similarities and differences in views across target groups and rural/urban settings were explored.
4. Reviewing themes: the coded data within each potential theme were reviewed and the themes modified to ensure that they formed a coherent pattern.
5. Producing the report: the thematic analysis findings were written up.

CROSS-COUNTRY SYNTHESIS
The final step was a cross-country synthesis undertaken by BF and CJ. Using the findings for each country, similarities and differences in barriers and drivers to positive HPV vaccination behaviours, and ideas for communicating the introduction of the HPV vaccine were explored. The entire research team reviewed this final level of analysis.

FINDINGS
Findings for the three countries are presented below, organized by 1) barriers and drivers to positive HPV and general vaccination behaviours and 2) ideas for communicating the introduction of the HPV vaccine. Despite the differences in language and culture among the three countries, many findings were consistent. The findings below can be assumed to be general across the three countries, unless differences are specified. Illustrative quotes are presented in Tables 3 to 5.

BARRIERS AND DRIVERS TO POSITIVE HPV (AND GENERAL) VACCINATION BEHAVIOURS

NEED FOR VACCINES
Respondents in all groups across the three countries generally agreed with the need for vaccination and prevention of disease. All groups said vaccines prevent diseases and, as a result, some diseases of the past are no longer major threats (Table 3, quotes 1 and 2). However, the knowledge of parents and schoolteachers was generally very basic.

Comments from the Republic of Moldova suggest some parents have begun questioning whether vaccinations are still needed. If the diseases are no longer present, are the vaccines doing harm by reducing a child’s natural immunity (Table 3, quotes 3 and 4)?

The teenagers interviewed in Armenia (the only teens included in study) had little concern about the necessity of vaccines, as none mentioned vaccination as an aspect of a healthy lifestyle. Indeed, they had little to say about it, deferring to parental authority (Table 3, quote 5).

VACCINE SAFETY
Questions over vaccine safety were those that played most on the minds of respondents in all groups across all three countries. Safety questions were dominated by two concerns: the vaccine’s provenance and the risk of adverse effects.

No parent respondent in any country appeared to know that all prequalified vaccines meet uniform standards. Instead, many incorrectly assume that high-quality vaccines come from Europe and low-quality ones from Asia (Table 3, quote 6). Importantly, many health-care providers repeated this idea. Some doctors mentioned that they sometimes persuade clients to vaccinate by assuring them that the vaccines are so-called good European ones (Table 3, quote 7).

The dual system of free vaccines provided by the state versus self-paid vaccines from private providers complicates the perception of vaccine quality and safety and affects trust in the national health systems of the Republic of Moldova and Georgia. Many parents wrongly assume that the vaccines offered free of charge in public health facilities are of lower quality – either less effective or with more side-effects – and some say that letting so-called inferior vaccines into the country breaks down the public's trust in the national health system (Table 3, quotes 8 and 9). Some respondents dislike having to make this choice, which they said causes confusion and undermines their trust in the health-care system. Others suggest that pharmacists and physicians only recommended the more expensive vaccines because they stand to gain economically from them.

The greatest concern about vaccine safety is the fear of adverse events following immunization (AEFI). This fear is self-perpetuating: parents are frightened by horror stories of what might happen to their child if they choose to vaccinate and health-care providers are afraid they will be blamed.
In Georgia, stories circulate of doctors who were taken to court by angry parents claiming vaccination harmed their child. One doctor reported facing an angry father who refused to vaccinate his second child, an autistic boy, after seeing a Russian video claiming a link between the MMR vaccine and autism. Health-care providers complained that neurologists and other specialists blamed vaccination whenever they could not find an adequate explanation for a child’s health problem, and that they had to bear the consequences (Table 3, quote 10).

In reaction to parents’ fears of AEFI, along with their own fears of being blamed, some doctors agree not to vaccinate children when parents are anxious. Some commonly mentioned contraindications (reasons for not vaccinating) used include haemangioma, allergic rhinitis, dermatitis, low haemoglobin, or simply that the child seemed nervous and would be likely to respond negatively to the experience of an injection.

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**TABLE 3: ILLUSTRATIVE QUOTES FOR EFFECTIVENESS, NECESSITY AND SAFETY OF VACCINES**

**Effectiveness and necessity of vaccines**

1. “We need [vaccination] to protect our health. Children need it in order not to get sick. In case we get sick, the vaccine helps us to get over an illness more easily.”
   Teacher, rural Republic of Moldova

2. “Several diseases that used to lead to death in the past are now, due to vaccines, either eliminated or have a very mild form.”
   Mother, urban Armenia

3. “Other mothers bring as argument the fact that their children entered kindergarten and school without vaccination and did not get measles or polio and are healthy. Why should they vaccinate the second child?”
   Doctor, urban Republic of Moldova

4. “I understood that vaccines lower the child’s immunity. We were vaccinating the baby, but with fear, great fear.”
   Mother, urban Republic of Moldova

5. “Mother said I needed to be vaccinated, so we went to the polyclinic and I received the shot.”
   Teenage girl, urban Armenia

**Vaccine safety**

6. “European factories ... have more possibilities to produce a clear, effective vaccine that will not have adverse effects, compared with those from Vietnam, China or India.”
   Mother, urban Republic of Moldova

7. “I know that European vaccines are better and I feel more secure. As we were informed, they are filtered, cleaner than Indian ones.”
   Nurse, national capital Georgia

8. “When I asked the paediatrician to explain to me the difference, she told us, ‘Imagine you were invited to a party, what make of car would you choose to drive there, a Mercedes or a Lada? The difference is the same!’ She told us that the syringes that are provided with the self-paid vaccines are better and children feel nothing when they are injected with these syringes, and that they had fewer and less severe side-effects.”
   School doctor, national capital Georgia

9. “We think that since it’s free, it can’t be of good quality, so you are obliged to choose the self-paid one. But if a vaccine is not of good quality, it shouldn’t be there. The country should not import vaccines that are of bad quality.”
   Parent, regional capital Georgia

10. “Yes, the vaccine is always a culprit! How can we persuade those people who are against vaccination that vaccination is good when doctors themselves tend to blame vaccines in any problem a patient may have?”
    School doctor, national capital Georgia

11. “During the Soviet times, I didn’t think about vaccine quality, or the country they came from. It was engineered. Someone else knew how. But now I would really think and analyse.”
    Nurse, urban Republic of Moldova

12. “Those vaccines were from the Soviet Union period, but who knows what kind of vaccines we have now ... probably this is why they have so many side-effects.”
    Mother, rural Republic of Moldova
There is a perception among some parents and doctors in all three countries that even routine vaccination has become a risky business. For some, this is in sharp contrast to the situation under the Soviet Union when vaccination was unquestioned. Some look back with nostalgia on a simpler past when vaccination decisions were taken centrally, neither individual parents nor health-care providers had to take responsibility for the consequences and things seemed safer. Even in cases where vaccination is mandatory, parents are sometimes asked by health-care providers to sign a form taking responsibility for refusing or accepting vaccination, increasing their sense of personal responsibility for the decision (Table 3, quotes 11 and 12).

CONFUSIONS AND MISUNDERSTANDINGS

Questions arose during the research from all target groups, except teenage girls, about the age of the recipients and the reason for HPV vaccination. There was a clear lack of understanding about the importance of giving the vaccination before the onset of sexual activity. Related to this, the emphasis on HPV as a sexually transmitted disease, rather than its relationship to cervical cancer, seems to be a stumbling block for some respondents who say that good sexual hygiene and fidelity make the HPV vaccine unnecessary. The authors believe there was confusion between HPV and HIV (Table 4, quote 1).

The connection with cancer also confused a few respondents. Since some people view vaccines as provoking an immune response through a mild infection, they may think the HPV vaccine gives the recipient a mild case of cancer, as did one teacher (Table 4, quote 2). Some mothers said the HPV vaccine was not necessary for them because cancer does not run in their families; their mothers did not have it.

MISINFORMATION

Although the HPV vaccine had not yet been introduced in any of the three countries, misplaced fears of harm to girls’ future fertility were widespread. Even health-care providers who favoured the vaccine were affected by stories circulating on social media with misperceptions about the negative effects of the HPV vaccine on reproductive health. Doctors and nurses reported their own lack of confidence, their doubts and fears of future guilt as they carried out the HPV campaign (Table 4, quotes 3 to 5).

Respondents in all three countries expressed fears that, as members of middle-income country populations, they might be guinea pigs for the HPV vaccine. Doctors, teachers and parents all expressed this fear (Table 4, quotes 6 and 7) despite the fact that the HPV vaccine is actually coming late to this region.

Both parents and doctors talked about stories of AEFI from HPV vaccination in other countries. The source of this misinformation was anti-vaccine information on social media such as Facebook and video platforms such as YouTube. The experience of Japan, where a number of girls fainted as a stress reaction to being vaccinated, was expanded to frightening proportions, through word of mouth and social media stories, to neurological damage and death (Table 4, quotes 8 to 10).

IDEAS FOR COMMUNICATING THE INTRODUCTION OF THE HPV VACCINE

POSITIVE IMPACT ON FERTILITY

When asked what might motivate them to vaccinate their daughters, mothers said they want to know that their daughters will grow up to be healthy and have children of their own (Table 5, quote 1). This suggests that an effective message for the promotion of the HPV vaccine would be that fertility is indeed, protected when cervical cancer is prevented.

HEALTH-CARE PROVIDERS AND COMMUNITIES AS SOURCES OF INFORMATION

Mothers in all three countries said they prefer to get their vaccination information from health-care providers they know and trust, who are well-informed and caring (Table 5, quotes 2 and 3). At the same time, they admit to being highly influenced by their peers, including neighbours, family, teachers, bloggers, other parents similar to them, as well as rumours circulating in the community, at schools and online. The power of the peer story is evidently high.

The internet is a source of diverse information, some authoritative and some not – it poses questions, challenges them and sometimes disturbs them. Mothers say they are influenced by those they can relate to, including bloggers. They want to seek out information online and they want health-care providers to know the answers to questions about what they have seen online. Ideally, mothers said, they would like to see information from credible sources online too (Table 5, quote 4).

HEALTH-CARE PROVIDERS WANT AUTHORITATIVE SOURCES

Health-care providers want an expert source, online or in person, to whom they can go for answers, so that they, themselves, can become expert sources for parents (Table 5, quote 5). Doctors and nurses in all three countries said they
were troubled when they could not answer the questions and allay the doubts of parents. They asked for training with experts, with opportunities to ask questions and to discuss how to answer their patients’ questions. Others asked for websites in languages they know and for vaccines to be packaged with inserts in the local language, to allow them to answer the increasingly detailed questions from parents about vaccines’ contents and provenance.

DISCUSSION

The countries of eastern Europe have undergone profound political and social transformations in less than three decades; individual decision-making power has increased and, with the internet and social media, so has the number of media and information sources. As a result, health literacy expectations and requirements of parents have changed, as have the

<table>
<thead>
<tr>
<th>TABLE 4: ILLUSTRATIVE QUOTES FOR HPV TRANSMISSION, TESTING AND AEFIS</th>
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<tbody>
<tr>
<td><strong>HPV as a sexually transmitted virus</strong></td>
</tr>
<tr>
<td>1 “I don’t think that everybody needs this vaccination. The disease is linked with the behavioural factor. If I have one husband who I am faithful to, and I am confident that it is mutual, the need for the vaccination disappears.” Gynaecologist, urban Armenia</td>
</tr>
<tr>
<td>2 “We know that vaccination makes the virus penetrate into your body, hence many people will think that this intervention will infect children with a mild type of cancer.” Teacher, urban Armenia</td>
</tr>
<tr>
<td>3 “In the period of the campaign there were many articles on Facebook saying that this vaccine caused infertility, that Europe had banned the HPV vaccine, so you can imagine what we must have been through trying to convince parents.” Doctor, regional capital Georgia</td>
</tr>
<tr>
<td>4 “I also heard about infertility. Who would wish a girl to be infertile and then they would be guilty about this? Who would take that responsibility?” Nurse, rural Republic of Moldova</td>
</tr>
<tr>
<td>5 “Me, as a doctor, I have a heavy heart, because five years ago, the orphan children from children houses were vaccinated. And I’m afraid that these children will be infertile. I have this load on my mind. Maybe I did a good thing, but I don’t know what’s next. The fact that infertility is rising in the population becomes a concern.” Doctor, urban Republic of Moldova</td>
</tr>
<tr>
<td><strong>HPV vaccine tested in middle-income countries</strong></td>
</tr>
<tr>
<td>6 “We have to be sure that the vaccine is not being tested in our country on our children and that the intention is not to use the statistics and the results obtained here for introducing it to European countries. So we want to know where, in which countries the vaccine is used and what results it has and what the coverage rate is there. Only after this will we encourage our patients to have their children vaccinated.” Doctor, regional capital Georgia</td>
</tr>
<tr>
<td>7 “Many adults say that Armenia is a developing country and that vaccines are tested on the population of Armenia.” Family doctor, rural Armenia</td>
</tr>
<tr>
<td><strong>HPV vaccination and AEFIs</strong></td>
</tr>
<tr>
<td>8 “In Japan I heard there were problems. I don’t know out of how many million girls, I think 2000 had side-effects. I don’t remember the figures. There were convulsions, paralysis, children confined to wheelchairs after it.” Mother, urban Republic of Moldova</td>
</tr>
<tr>
<td>9 “Thirty-two deaths, anaphylactic shock and reactions such as ovarian destruction caused by the vaccine, central nervous damage and intoxication. I read this in the literature.” Doctor, urban Republic of Moldova</td>
</tr>
<tr>
<td>10 “I do not think they’re all published, but I’m talking about London cases that have been studied … that HPV vaccination at a fertile age has led to menopause and complete ovarian tissue atrophy, leading to infertility and major complications: there have been cases of sudden death through embolism.” Oncologist, urban Republic of Moldova</td>
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</table>
NEW VACCINE INTRODUCTION: STRENGTHENING HEALTH LITERACY TO INCREASE HEALTH EQUITY

Table 5: Illustrative quotes for ideas about communicating the introduction of the HPV vaccine

| Positive impact on fertility |  
|----------------------------|-------------------------------------------------------------|
| 1                          | "Maybe the desire to see my daughter growing healthy, having babies and being happy. This is the most important desire of every mother."
|                            | Mother, urban Republic of Moldova                           |

| Health-care providers as preferred source of information |  
|---------------------------------------------------------|--------------------------------------------------|
| 2                                                       | "My children were vaccinated because I trust the paediatrician."  |
|                                                        | Mother, urban Armenia                                 |
| 3                                                       | "I believe that the family doctor plays an important role. I for example am lucky to have a very good family doctor. And I have always vaccinated my child with an open heart because the family doctor was always explaining how the child should be, how to prepare the child before vaccination, what medicine we should take, how the child feels."  |
|                                                        | Mother, urban Republic of Moldova                      |
| 4                                                       | "Well, if it was posted on Facebook by the University of Medicine, I think the world would believe in this information."
|                                                        | Mother, urban Republic of Moldova                      |
| 5                                                       | "We attend training. We study the vaccine. We read the instructions. We have some briefings."
|                                                        | Q, You have some briefings, but do you have access to a source, let’s say in case you have some questions?
|                                                        | "[What we have] it isn’t enough. It would be useful. Better to know from an expert."  |
|                                                        | Nurse, rural Republic of Moldova                       |

Expectations and requirements of health-care providers and educators. In this complex context, these three studies provided useful, much needed insight into vaccination-related health literacy and determinants of positive vaccination behaviour in order to inform HPV vaccine introduction strategies tailored to different target groups (15).

The extent of vaccine-safety scepticism among health-care providers revealed by these studies, their receptiveness to rumours and their willingness to bend the rules out of fear of being blamed, all came as a surprise to the health authorities planning HPV vaccine introduction. This alerted them to the pivotal importance of interventions targeting health-care providers.

Adding to this complexity, these three studies confirm what has been shown in other studies: that health-care providers are a preferred and trusted source of information about vaccination for parents (16). Health-care providers are important influences on parental trust in vaccination and can help sustain high vaccination uptake through positive communication with parents (17). Health-care providers should be central to the HPV vaccine introduction strategy and communication plan. These studies suggest that comprehensive action is required to focus on health-care providers as a target group themselves, not just as a channel to reach parents and teenage girls.

Other important influencers include those in local communities and online forums. The influence of social communities on vaccination risk perceptions and decisions, which has been shown in other studies (9, 18), is confirmed here, highlighting both online and local communities. However, civil society in eastern European countries can be weak (19) and the communication strategy employed in these three countries cannot rely on a generations-old tradition of well-established and trusted nongovernmental civil society networks or organizations that are found in other countries. These findings suggest that the community approach should be focused on online influencers and, importantly, should include local analysis to identify trusted individuals who have informal influence in each area or community, such as home-visiting nurses, local politicians, local nongovernmental organizations, community leaders and others.

Informing messages for the new vaccine introduction, the studies showed that an appreciation of vaccination and its benefits was evident across target groups, along with a wish to ensure young girls’ future fertility and health. However, misunderstandings, confusion and fears were much more widespread than anticipated.

The studies indicated that the issue of personal responsibility – the flip side of increased individual decision-making power in a democratic society – is a source of concern. As a potential
area for further research, it would be relevant to explore the implications of the shift from state to individual decision-making following societal change on vaccination.

The strengths and weaknesses of this research should also be acknowledged here. Data were collected from over 200 participants from multiple target groups in three countries to inform targeted HPV vaccine introduction strategies and communication plans. This is especially important for countries with less capacity to respond to vaccine safety-related crises, where societal changes have set new health literacy requirements and expectations. The time and budget for this work was limited due to the dates set for HPV vaccine introduction, which dictated our use of convenience sampling. This means we did not sample purposively to find groups with low access, low utilization or lack of trust in the HPV vaccine. Nevertheless, we spoke with participants across a mix of age, education, income and urban/rural location; and captured a range of views about vaccination, thus providing a valuable breadth of insight. The involvement of the national vaccine introduction teams in conducting the research led to capacity-building and ownership and, given the above-mentioned diversity in findings, it did not seem to discourage participants from expressing their views. Technical guidance and support from WHO throughout the process ensured the quality of the research and the lessons learned led to the revision of the WHO Field guide to qualitative research for new vaccine introduction (13). Using cross-country synthesis is a strength as it allows findings with a broader relevance, however, it also disregards critical context-specific factors, which have been captured in individual country-specific study reports (available from the corresponding author).

Exploring barriers and drivers to HPV vaccination and seeking ideas about communicating the introduction of the HPV vaccine allowed immunization programmes in the three countries to challenge their own preconceptions and develop HPV messages and plans tailored to the needs of different groups. Immunization uptake is related to inequity factors such as parental education and income, and identifying the determinants of vaccination allows countries to enhance the equity in uptake (20). Improving health literacy – supporting intended beneficiaries in better understanding and using information about vaccination – is a critical factor in this. The public health benefits of this go beyond immunization: equitable immunization policies generate wider health, social, political and economic benefits, and immunization can improve coverage of other health interventions, benefiting many, including the most vulnerable (20).

CONCLUSIONS

A diversity of factors was shown to affect health literacy and vaccination behaviours in the three different countries: individual misperceptions, confidence, knowledge and capacity of both health-care providers and parents as well as cultural, societal, historic and community factors. The insights of the studies informed the development of national strategies for the HPV vaccine and contributed to a needed strengthened understanding of these factors in eastern Europe. Findings across the three countries were similar, indicating that findings may have a broader relevance for eastern Europe as a whole.

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