

Article

Formative Research to Create Culturally Sensitive HPV Vaccine Messages for Middle-School Children

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Abstract

HPVs (Human Papilloma Viruses) are the cause of several diseases and types of cancer, but infections can be prevented through a vaccine that children are recommended to receive when they are about 12 years of age. Communicating with children about HPV is an important albeit underdeveloped task. This is especially critical in countries such as Italy, where the HPV vaccination rate is dropping. To understand Italian middle-school children's communication challenges, needs and preferences, and to provide evidence to inform the development of targeted and culturally-sensitive messages about HPV for them, this study adopted a multi-method participatory approach consisting of focus group discussions and participatory drawings. Results indicated that children ($N = 54$) wanted to be actively engaged in decisions about their health but faced several communication challenges, including adults' language and attitude. Children struggled to retrieve reliable information on their own. They provided specific information on the sources and the strategies they would want adults to adopt. Results helped to identify positive and negative behaviours among these themes, as well as key resources to be leveraged in the development of HPV-related messages. The communication strategies identified in this study may help parents, healthcare providers, and caregivers to improve their communication with children.

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Keywords

Message design, child-parent communication, child-physician communication, culturally-sensitive message, HPV prevention

Communicating with children about their health is important to help them develop healthy behaviours and practices that will affect their future well-being. Research indicates that when children take an active role in the decision-making process about their health, their general well-being is improved. Children's participation in the decision-making process has in fact been linked to better satisfaction and greater confidence, improved preparedness, and increased adherence to health guidelines and treatments (Coyne et al., 2016; Harder et al., 2011). However, communicating with children and engaging them in health-decisions can be challenging, especially when a given health topic is stigmatised within a society (Wilson et al., 2010), scary (Harder et al., 2011), or when misinformation is widely disseminated via media and social networks (Dunn et al., 2015; Dunn et al., 2017). This is the case, for example, of the human papillomavirus (HPV) vaccinations.

HPVs (Human Papilloma Viruses) are a group of viruses that are mainly transmitted through sexual contact and that can cause several diseases and types of cancers in humans (Giuliano et al., 2015). There are two vaccines that can prevent HPV infections and are recommended for children aged 9-12. Despite numerous studies confirming the safety and effectiveness of these vaccines, in many countries the vaccination rates are low or are declining (Lefèvre et al., 2018; Ministero della Salute, 2020; Morimoto et al., 2015).

In Italy, the problem of low HPV vaccination rates is particularly severe. The vaccine is available for free to both males and females aged 11 to 12. However, data from 2018 showed a decrease in the vaccination rate compared to 2015 (Ministero della Salute, 2020). More specifically, for females, the HPV vaccine coverage rate in 2015 was 66.6% for the first dose and 56.3% for the second dose of the vaccine, but in 2018 it dropped to 61.7% for the first dose and 40.4% for the second dose. For males, official data from 2015 are not available, but compared to females, in 2018 the vaccination rate was very low: 44.1% for the first dose and 20.8% for the second one (Ministero della Salute, 2020).

Several barriers to HPV vaccination have been identified in this specific context, some of them encountered specifically by Italian adolescents. First, they possess limited knowledge and several misconceptions about HPV and the HPV vaccine; this barrier is in line with what was previously observed for other countries (Firenze et al., 2015; Sopracordevole et al., 2012). Second, when adolescents stop visiting their pediatrician for their healthcare needs and start seeing adult physicians, they are much less likely to discuss vaccinations (Esposito et al., 2013). Third, adolescents with previous sexual experiences also showed to be less likely to consider the vaccine important, possibly due to the belief that the vaccine should be received before engaging in sexual activities (Firenze et al., 2015; Pelucchi et al., 2010). Last, there was a discrepancy in the level of information between males and females, with females being generally more informed than males (Firenze et al., 2015).

These barriers could be addressed by improving the communication between children, their parents, and healthcare providers about the availability and the benefits of the HPV vaccine.

Researchers have used several methods, including focus groups and surveys, for working with children to understand their beliefs about the HPV vaccine and reactions to HPV-related messages (Cates et al., 2018; Evans et al., 2012). This research, conducted in other countries (mainly USA), shows that children aged 11-12 years old have the capabilities to understand HPV-related information and they also benefit from participating in the decision-making process about their health (Cates et al., 2018; Evans et al., 2012). Also, the available HPV and vaccine-related educational interventions targeting children or adolescents worldwide have shown positive effects (Cates et al., 2018; Cates et al., 2015). These educational interventions have adopted several message strategies, like educational games (Cates et al., 2018), text messages (Cates et al., 2015), or videos (Vallely et al., 2008), and have shown to increase participants' knowledge of the HPV and intervention's acceptance. Even if children cannot receive any vaccine without approval of their parents, educating children about the importance of HPV prevention and the availability of the HPV vaccine is important for their future well-being and can also represent a successful strategy to reach their parents. For example, reaching parents through the support of schools and educational modules created for their children has shown to be a successful strategy in Italy (Corradini, 2007).

Despite this, at the moment there are no interventions or messages that have been developed to communicate specifically with children in Italy about HPV vaccinations. In addition, the little formative research available has been conducted with Italian adolescents only (Firenze et al., 2015; Pelucchi et al., 2010; Picerno et al., 2010; Sopracordevole et al., 2012). This is especially problematic, because research indicates that there are some cultural variations in how parents and physicians communicate with children about health topics (Fitzpatrick & Barry, 1990). For example, in some cultures, parents tend to be more outspoken with their children about health issues (see the study from Fitzpatrick & Barry, 1990, comparing American and Irish parents' communication, and Poulsen and colleagues, 2010, comparing parents in US and Kenya). Individuals from different cultures may also have various perceptions of who is considered a trustworthy source of health information; they may associate different meanings to images; and they may respond differently to proposed arguments (Kreuter & McClure, 2004).

Formative research is a multidisciplinary approach used to collect information about a target audience, and it is necessary to identify specific information needs and delineate adequate message strategies to communicate about a health issue (Martinez et al., 2012). To be effective, health messages need to offer solutions that are compatible with the characteristics and habits of the individuals belonging to a cultural group (Dutta, 2007). Therefore, it is important to understand what children's information needs and health communication challenges are, and to include social norms, values, and beliefs into the design of targeted, culturally-sensitive health messages (Dutta, 2007). In this study, we worked with Italian middle-school children to (1) identify the health communication challenges they face; to (2) understand children's information needs and preferences with regard to the HPV vaccine; and to (3) develop targeted and culturally-sensitive message recommendations about HPV and HPV prevention. The study was guided by insights from social cognitive theory, which posits that learning is the result of the interaction between social influences and a person's cognitions (Bandura, 2005); the integrated behavioural model, which posits that a health behaviour is influenced by attitudes, norms, and agency factors

(Montaño & Kasprzyk, 2015); and by previous research on effective campaign design (Noar, 2012).

Methods

The challenges of communicating about sensitive and controversial topics such as vaccines and sexual education during focus group discussions are not unprecedented, and qualitative researchers have long debated how to better work with children and adolescents (Barter & Renold, 2000; Bryan et al., 2019; Campbell et al., 2012; González-Rivera & Bauermeister, 2007). To account for these challenges, this study was designed using a multi-method participatory approach consisting of focus group discussions and participatory drawings (Driessnack, 2006; Farokhi & Hashemi, 2011; González-Rivera & Bauermeister, 2007; Literat, 2013; Noonan et al., 2016; Yuen, 2004). Participatory drawings are a visual research method in which participants are asked to collaborate on solving an issue and express solutions or ideas by drawing. Participatory drawings work especially well when attempting to create culturally appropriate messages, as they promote an inclusive and interactive environment for children (Literat, 2013; Noonan et al., 2016).

Participants

After having received ethical approval from the IRB (Institutional Review Board, n° 20170738) of the University of Miami and parental consent, children aged 11 to 13 years old attending a large public school in the northern part of Italy (urban setting) were invited to join a focus group study. This age range was chosen because in Italy the first dose of the HPV vaccine is given for free when children are about 11-12 years of age. Families receive an invitation letter, and the follow-up vaccination happens about six months after the first dose is injected. Children whose parents signed the informed consent to allow their participation in the project were all given a child assent form and had the possibility to refuse to participate in the study. Only one child decided not to participate. A total of 54 children joined the study; the majority of them were females ($n = 31$, 57%) and were attending the first year of middle school at the time of the study ($n = 41$, 76%).

Procedure

The study included nine focus groups all conducted by the same moderator, to ensure consistency. The moderator is trained in communication research methods and has experience in working with middle school children. The focus groups were hosted in one of the school's spare classrooms, and the moderator was the only researcher present in the room. Focus groups were all conducted in Italian, were audio recorded, and lasted from 40 minutes to 1 hour. The largest focus group was composed of eight children and the smallest included five children. The focus groups included both males and females. This choice was made to mirror their familiar classroom environment and for the potential to elicit contrasting viewpoints during the discussion (Horner, 2000). The focus groups were structured as follows. First, children received the child assent and were given the opportunity to ask any questions they might have about the study. Second, the moderator introduced herself and children were engaged in an ice-breaker exercise. They all introduced themselves by describing their favorite color, food, and their dream job. Third, the moderator asked

the children some general questions about what it means to be healthy, and about their perceptions and understanding of vaccines in general. Children were then asked specifically about the HPV vaccine, and how they learned about it. They described the challenges they face in communicating with adults about health in general, and about HPV and the HPV vaccine specifically. The guidelines for these sections of the focus groups were guided by social cognitive theory (in particular, aspects of observational learning, expectations, self-efficacy) and the integrated behavioural model (in particular, attitudes, personal agency, environmental constraints). Fourth, children were prompted to describe the information they would like to receive. This section of the focus group guideline was created considering the ACME framework for health communication campaigns (Noar, 2012). Fifth, the children were asked to create drawings that they thought would help children of their age understand the HPV vaccine. They were given paper and pens and prompted to reflect on the following question: “What messages should we create to help your friends learn about the HPVs and the HPV vaccine?” Then, children discussed their drawings and explained their perspective. The focus group guidelines are included in Appendix A.

Data Analysis

Focus Groups. Focus group discussions were recorded and transcribed verbatim in their original language. The transcripts were uploaded in Nvivo 12, a software to analyse qualitative data. To protect children’s anonymity, all their original names were deleted and were substituted with different names. Transcripts were coded line by line (Charmaz, 2006) following a constant comparative method (Glaser & Strauss, 1967). This method consisted of creating coding categories while analysing a transcript and further refining these categories as all transcripts were coded. Transcripts were then recoded after each revision to include the changes in the specific categories. The most salient and representative quotes of each category were then translated into English for publication in this journal.

Drawings. During the focus groups, children were given the opportunity to create drawings or, if they preferred, short texts. In total, the children produced 49 drawings and 5 short texts. The majority of these drawings contained a mix of images and words ($n = 22$) rather than images only ($n = 18$). These materials were scanned and turned into PDFs before being destroyed. A code book was created considering a previous study working with children’s drawings (Lev-Wisel & Liraz, 2007). The unit of analysis was each single drawing. Elements that were coded included the overall message each child was trying to convey; the characters appearing in the drawings; the emotions expressed; the types of information the children considered important to learn; and their preferred information delivery format (e.g., video, lecture, pamphlet, etc.). To be consistent with past studies using drawings as a research method (Farokhi & Hashemi, 2011; González-Rivera & Bauermeister, 2007), two raters were used to code all of the drawings and the coding was compared with the translations of the children’s description of their drawings when such descriptions were available. Raters discussed any inconsistencies until consensus was reached.

Results

This study aimed to understand children's communication needs and to provide evidence to develop targeted and culturally-sensitive messages about HPV for Italian middle-school children. Several themes emerged. First, children identified some challenges they face when talking about health. Second, they discussed the content they would like to receive, focusing in particular on the unanswered questions they have about the HPV vaccine. Third, children explained several characteristics of the messages they use or would like to use when learning about health. In particular, they described their preferred sources of information; and lastly, they discussed the strategies that they find useful when learning about health.

Communication Challenges

Focus Groups. Nowadays, one of the most difficult aspects of communicating about health is retrieving accurate information. For children, this includes both identifying reliable information online as well as openly conversing with adults about their questions. When looking for health information online, children said that they struggle to find the right content that they are looking for.

Pietro: "On the Internet the information sometimes are not ... they are not the correct ones, they are a bit like that."

Tobias: "Maybe they are explained poorly."

Moderator: "Do you mean they are written too complicated?"

Tobias: "Or else they are not really very precise."

Another challenge children face when browsing the Internet is understanding which information is correct. When asked how they identify correct information, children said they consult several sites or ask adults.

Luke: "[We] compare the information with other information, and those that are more similar are thought to be the right ones."

Agata: "Maybe if you have a doctor friend, rather than the ASL [Local Health Agency], you ask the doctor what to do."

However, children face some challenges even when talking with adults about their health. In particular, the language and tone used to communicate with them about health in general and vaccines in particular can represent a barrier. According to children, sometimes adults use complex words and explanations that prevent them from understanding.

Loretta: "[...] like when our parents talk to us about something, they use a language that we don't understand very well and so we have to ask them the same question every time."

Also, children highlighted that they prefer to rely on different searching strategies compared to their parents and caregivers. This can cause some friction and misunderstanding between children and adults.

Mia: “My parents say that in their time since there was no internet they consulted the dictionary and various things. [...] Now they tell us to use the dictionary every once in a while ‘because you are always on the phone watching the meanings of words on the internet.’”

When children encounter these challenges, they re-ask questions, go online, ask different adults, or their questions remain unanswered.

Content (Unanswered Questions)

Focus Groups. Children identified several key questions that could help them to better learn and understand key HPV-related information. First, children were not sure what HPVs are and why it is important to get protected against HPV infections. Almost all the children mentioned they had heard about HPV before but they were not clear what it meant or what it was.

Maria: “I don't hear any more information, I mean, when you asked this question [Have you ever heard about HPV vaccine? What do you know about it?] ... I didn't know what to answer.”

Other questions children considered important to ask concerned the vaccine itself and the vaccination process. In particular, children wanted to know if there was an alternative to the vaccine and what to expect if their parents decided to have them get the vaccine.

Pietro: “Why should we get this vaccine? What is it that they are injecting?”

Cesare: “For how long should it be done?”

After a brief explanation provided to the children during the focus group that allowed further discussion, children said that it is important to explain to people the possible dangers associated with an HPV infection and that the vaccine is meant to prevent infection rather than cure infection.

Marcus: “[...] and then I would warn him and tell him things to do to prevent this virus and things not to do to prevent this virus from coming precisely.”

Drawings. Contrary to what was expected from the preliminary discussions, in their drawings children only indicated a few key points of information that educational messages about HPV should report. Among these, they firstly identified the vaccine as able to beat HPV. Most of the time, the HPV vaccine was represented as a needle connected to a defeated virus, or as a needle in the hands of a healthcare professional, as displayed in Figure 1.



Figure 1. "Stop to the Papilloma!"

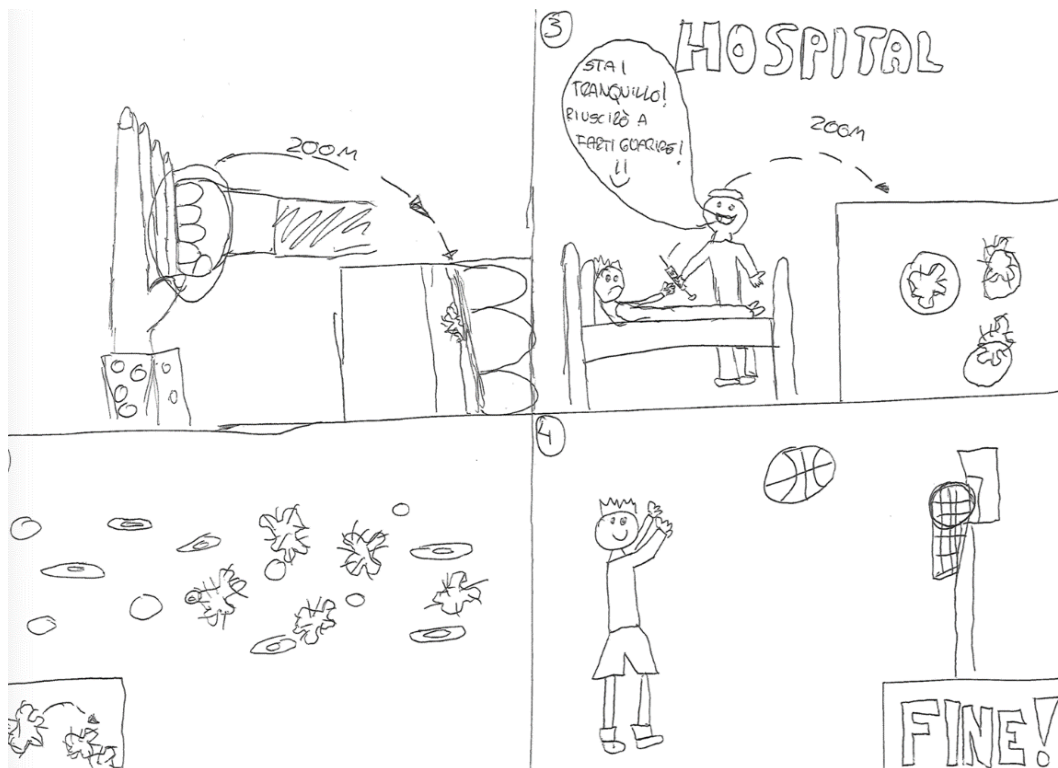


Figure 2. "Don't worry! I'll be able to heal you!"

The HPV vaccine was also drawn as a gun to kill the HPV virus or as a circle englobing the virus. Interestingly, while all of the children identified getting the HPV vaccine as important for their health, in the drawings they all misinterpreted it as a treatment to cure the virus rather than a prevention measure against it. For example, children drew sick patients lying in a hospital bed waiting to receive the vaccine to heal them (see Figure 2) or indicated that the vaccine is a medicine an infected person could take to restore their health.

The third most important information to convey was the importance of getting the vaccine. This conclusion was the most depicted scenario in the drawings. In the end, children said they would like to receive more information about this topic. The discussion that followed centered on their preferred strategies to learn about health.

Communication Sources

Focus Groups. Overwhelmingly, children mentioned that they prefer to receive HPV-related information from older adults, individuals who have more knowledge but also more experience than them. Children identified several profiles of adults that represent “experts” of health topics. In particular, children mentioned physicians and pediatricians.

Elisabetta: “Maybe a doctor. However, like a pediatrician for children who talks about it, who can speak well about how this virus behaves. However always with details [appropriate for] our age.”

Despite identifying physicians as a key and reliable source of health information, children admitted to referring to their parents the most when asking health-related questions. For this reason, children said they would benefit from educational materials and opportunities to have health-related discussions with parents.

Moderator: “From who would you like to receive this information? Parents? School?”

Clara: “From the parents.”

Agata: “You can be more open with parents.”

Children also raised concerns about the lack of opportunity to be heard by adults and to express their own concerns and opinions freely. This seems to be especially important for sensitive topics, meaning topics they may otherwise feel embarrassed to talk about.

Annalaura: “I think even when the experts tell us about these things I think we should also have our opinion by saying what it means for us, if we can talk about it so freely or we have some, that is, I mean embarrassment to talk about things like that.”

Drawings. These preferences vividly emerged from the drawings as well. The children's drawings mainly centered on the characters (see Figure 3) that they considered important to see in health messages about HPV. Characters included a physician ($n = 25$), a scientist ($n = 9$), and a teacher ($n = 7$). This finding indicates that children tend to value "expertise" as an important prerequisite that individuals communicating about health should have.

The majority of these experts were drawn as males ($n = 21$). Only a few children specifically wrote or mentioned while writing that the gender of the character drawn was irrelevant. The majority of the drawings ($n = 38$) included an adult figure as the expert. Most of the time, these experts were represented alone; only 21 drawings represented a middle-school child, and only 1 short text mentioned a toddler. When middle-school characters were drawn, boys ($n = 7$) and girls ($n = 9$) were equally visually represented.

Interestingly, several children anthropomorphized animals in their drawings to represent adults or added animals as side-kicks. The animal that the children used the most in their drawings was a mouse, but they also included exotic animals such as an iguana (see Figure 4) and a reindeer. In all of these cases, the characters were represented positively.

Communication Channels

Focus Groups. According to the children, having an expert lecturing for them about the HPV vaccine is a positive first step to have more in-depth and open discussions. However, while children expressed an appreciation for in-person lectures, they also mentioned the use of alternative formats to learn health information. They elicited multiple ideas and examples of what they considered appropriate media to integrate. The majority of the children's ideas involved some form of visual communication.

Elisabetta: "According to me, to explain well, there must be a person maybe a little more informed to explain it to you with some examples, some drawings, some photos."

Children also overcame the idea of in-class lectures by identifying other possible channels to convey health and HPV-related information.

Cesare: "To send this message faster we could send it through the Internet by doing a video. So, when someone asks these questions - given often times he does not know where to find them - he can search on the Internet and download the video that explains correctly and easily the answer he is looking for."

Other children suggested more interactive and specific platforms that should be developed, with the purpose to reduce their uncertainty when navigating online and to identify targeted answers more easily.

Tecla: "[They should] make a program that they [experts] could use for everything they know about their body and their health, [so that I] insert a question and they have the answer. [The answers must have been] created by university scientists and so [the children] can learn through that method."

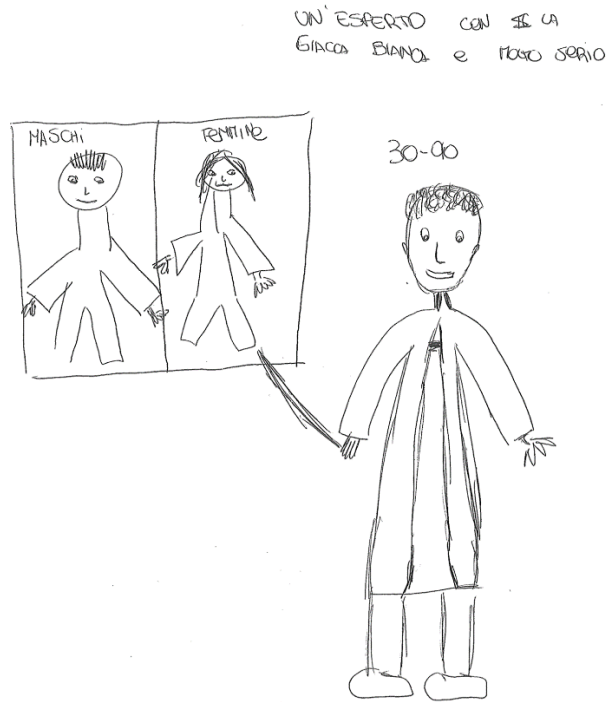


Figure 3. “An expert with the white jacket and very serious.”



Figure 4. “Dr. Iguana.”

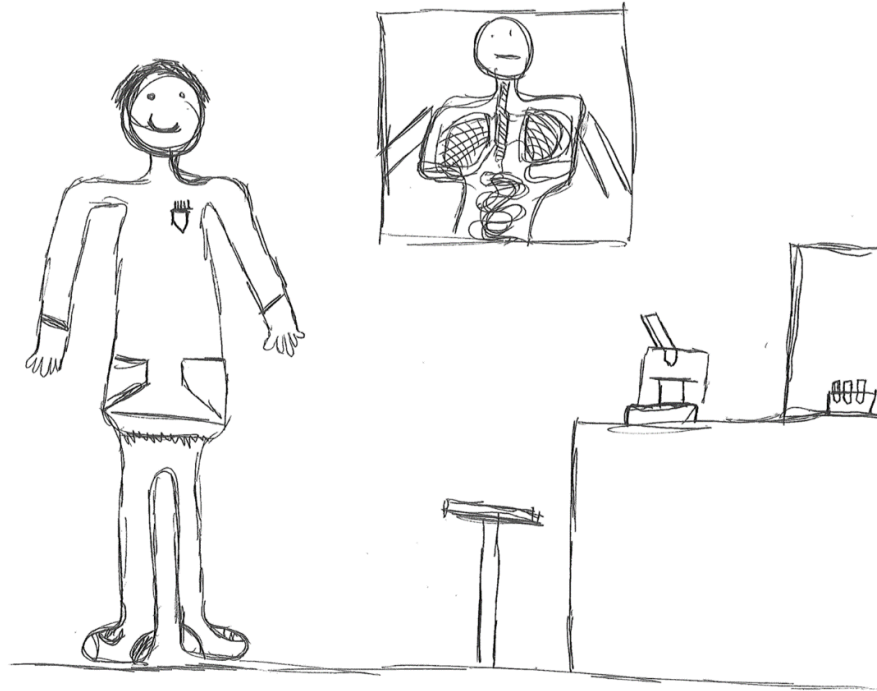


Figure 5. "A physician in his office."

Drawings. Through the drawings, children provided several detailed explanations of how such videos or interactive platforms should be developed. The majority of the drawings represented single scenes ($n = 42$) rather than episodes as in Figure 2. Only six of the drawings indicated several episodes that should appear in HPV-related videos. The drawings were also useful in nailing down the setting of the video, of which a "classroom" type setting and a "medical office" (see Figure 5) were the two most common.

Communication Strategies

Focus Groups. When children were prompted to explain what they meant when they requested health information relevant and appropriate to them, several interesting points were brought to light. Children indicated factors such as the length of the educational materials but also the communication style, which according to them should be "engaging." Children also stressed the importance of receiving information in a language that is familiar to them and easy to understand.

Franco: "Not too long explanations."

Giuseppe: "Clear."

Franco: "Clear but not too long."

Giuseppe: "And not too complicated."

Moderator: "So we should adopt a simple language?"

Giuseppe: "Yes, without words we do not know."

Franco: "Not too boring."

With these key ideas in mind, children proposed several strategies they would want adults to use to communicate with them and with other children about health and HPV-related issues. One of these strategies is the identification of key questions that adults could collect from children and then answer. This idea also appeared in some of the drawings.

Sabrina: “We could ask the questions that the kids might ask, and then we could find answers and a speech to make to them.”

Moderator: “Ok, why do you want to ask questions to the kids?”

Sabrina: “To then satisfy their questions, and thus give them all the information they need so that they at least are not scared of the things they need to do or the problems they may have.”

Children also commented on the importance of keeping such information interesting. In this regard, they said they would like to be actively involved in the development of materials and projects. For this reason, some of them proposed to conduct “research projects” in groups at school and then share these projects with the other students.

Margherita: “Do a research project, do a research project and show it in each class or even in other classes but do a research project and talk of what the papillomavirus is and show them what we did.”

Drawings. In the drawings, children used stories to talk about the HPV vaccine. In the majority of the cases, experts and/or children display a smile ($n = 38$) and the stories have happy endings only (the child gets healed or can play a sport, as in Figure 2). Children also represented the HPV virus in their drawings, often personalising it with angry or fearful expressions, depending on the scene represented. Figure 1 illustrates this personification of the HPV virus in the top right corner. Table 1 displays a summary of the results.

Discussion

Engaging children in HPV related discussion is important to help them maintain a healthy lifestyle and adopt preventive behaviours such as getting vaccinated against HPV. The present study integrated traditional focus group discussions with participatory drawings (Literat, 2013) to collect data on the information needs, preferences, and challenges of Italian middle-school children and to provide evidence for the development of culturally-sensitive messages addressing HPV and the HPV vaccine. The study provides evidence in support for the use of social cognitive theory and the integrated behavioral model to investigate barriers and enablers of HPV vaccine discussions. The insights from the ACME framework were also helpful to guide the discussion for informing message design practices. Children identified key sources of information and provided several inputs on the communication strategies HPV messages should adopt to be useful to them. Considering these findings, several considerations emerged.

Table 1. Summary of Results

Categories	Needs/Barriers	Solutions/Preferences
Communication challenges	<ul style="list-style-type: none"> ▪ Retrieving accurate and reliable information ▪ Find answers to questions ▪ Talk with adults ▪ Complex jargon ▪ Diminishing tone ▪ Different information seeking behaviours ▪ They do not find an answer 	<ul style="list-style-type: none"> ▪ Children ask questions multiple times ▪ They go online ▪ They ask to different individuals
Content	<ul style="list-style-type: none"> ▪ Learn about HPVs and the HPV vaccine 	<ul style="list-style-type: none"> ▪ What HPVs are ▪ Dangers of HPV infections ▪ Symptoms ▪ Why a vaccine is needed ▪ Importance of the vaccine
Sources	<ul style="list-style-type: none"> ▪ Lack of opportunity to be heard ▪ Embarrassment for certain health topics 	<ul style="list-style-type: none"> ▪ Parents ▪ Experts (Physician scientist, teacher) ▪ Adult figure
Channel	<ul style="list-style-type: none"> ▪ Connection with experts ▪ Quick retrieval ▪ Space to ask questions 	<ul style="list-style-type: none"> ▪ Lectures ▪ Videos ▪ Interactive platforms
Strategies	<ul style="list-style-type: none"> ▪ Adequate length of materials ▪ Engaging messages 	<ul style="list-style-type: none"> ▪ Materials to facilitate health discussions with parents ▪ Materials to facilitate health discussions with physicians ▪ Visual communication

Children recognize themselves as individuals capable of understanding health related information and being engaged in health discussions. Most importantly, middle-school children in this study expressed the desire to be more involved. This is consistent with what is observed in previous studies on this topic, in which middle school students collaborated in the message design process (Cates et al., 2018; Cates et al., 2015) and wanted to play an educational game with their parents (Cates et al., 2018). These findings are in line with past research grounded in social cognitive theory and the integrated behavioral model (Priest et al., 2015; Rodriguez et al., 2019), indicating that personal agency is a fundamental component to overcome behavioural barriers (in this study, communicating and retrieving information about the HPV and HPV vaccine). Further, according to the children, many adults tend to underestimate children's role in taking care of their own persona, and do not consider their voice. In addition, adults sometimes use language that is too complex for children. These results indicated some challenges that adults should overcome in

order to improve the way they communicate with children. In particular, children call for a more active role in their health and for relationships based on mutual respect. Interestingly, children did not consider their peers a valuable source of HPV-related information. This indicates that peer-led interventions that have shown promising results in other contexts (Begg, 2020; Christensen et al., 2021) may not be suitable to address HPV prevention with the audience for this study.

Considering these findings, to empower children, it is important to develop simpler, entertaining messages that take into account the more active role children want to have in their health. In this regard, children indicated several characteristics the ideal health expert should have in these messages. These characteristics were influenced in part by the challenges children have when communicating with adults, and in part by the barriers they face when trying to retrieve health information on their own. Experts should have identifiable features and titles, like the ones of a physician, scientist, or teacher. These experts should provide specific and detailed information, but with clear words and with a “serious but enjoyable tone.” By embracing these characteristics and behaviours, healthcare providers and experts would help children to develop better relationships with them.

While children mostly identified the HPV vaccine as the important action against HPV infections, they highlighted a special interest towards the symptoms which help identify HPV infections. This differs from what has been observed in other countries or cultural contexts in which children did not ask about symptoms but were mostly interested in transmission routes (Cates et al., 2015). This interest in symptoms may stem from children’s misconception that vaccines can “cure” an infection, or it may be the product of influences from the media and from conversations with family members and healthcare providers (Bandura, 2005). Children were also surprised by the fact that this virus can infect both males and females.

Messages should be designed considering the preferences children have for certain media. In particular, children showed a preference for visual forms of communication, which included video, websites, or dynamic platforms where they could ask questions and interact. Children also seemed to call for information provided in a style that promotes self-learning and exploration, while also valuing the guidance of experts.

Messages created considering these needs and characteristics could be especially useful to Italian middle-school children and should be integrated into the communication strategies used to inform the public about HPV and the importance of getting the HPV vaccine. These messages could also represent an additional opportunity for the government and institutions to reach children’s parents. These messages could also help parents to better communicate with their children and ultimately support shared decision-making (Ndiaye et al., 2013).

In addition to these practical recommendations, this study also provides evidence on the effectiveness of participatory drawings to work with children to co-create health and more specifically HPV-related educational messages. The drawings successfully integrated the focus group discussions, giving the children a chance to open up and feel more comfortable to talk about a sensitive topic such as HPV. In fact, the drawings were more targeted towards character design vs. information wanted in the health message, which generally came out in the focus groups. The drawings gave the children an active role in the message design process, giving them a vested

interest in solving a communication problem they indicated having. This is in line with what was previously observed in studies using drawings to stimulate children discussions (Yuen, 2004).

There are some limitations to this study that are important to mention. First, data was only collected in one school, in a northern region of Italy. It is possible that children in other regions have been exposed to different information or have had access to different services and resources (Esposito et al., 2013; Firenze et al., 2015). Future studies should include more schools and from different regions to control for such differences and develop tailored educational materials. A second limitation of this study is that children were not given the option of using colors while drawing. Color has been shown to be an intentional and careful calculation that is important to children when using drawing as a research tool (Lev-Wisel & Liraz, 2007). Further direction on the look and feel of the educational messages could have been produced if children were given that option.

Conclusion

Using a multi-method approach with focus groups and participatory drawings was an effective way to identify and understand Italian middle-school children's communication needs and desired solutions. The study helped to understand key aspects of the culture of the children and of the social influences that shape their health learning process (Bandura, 2005; Montaña & Kasprzyk, 2015). The findings allowed the creation of specific recommendations to empower Italian middle-school children and improve their relationships with the adults in charge of their health care. Considering the importance of expert sources, future interventions to educate middle schoolers in Italy about HPV prevention should include experts like scientists, physicians, and teachers. Additionally, these interventions should be promoted in schools and medical offices and include both online and offline strategies. The educational materials specifically designed for the children should have some levels of interactivity, leverage on visual forms of communication, and be easily available. Educational interventions to promote HPV prevention should facilitate the communication between children, their parents, and healthcare providers. Children should have a space where they can ask questions. Parents and healthcare providers should also be supported through HPV-related educational interventions. These interventions should facilitate, and encourage, discussions with children about the HPVs, the HPV vaccine, and their health in general.

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Appendix A

Focus group guidelines

Hello everyone! My name is XXX, and I am a researcher. I work at the university XXX. What does a researcher do? I am a health communication researcher, so my job consists of studying messages, creating informational materials, understanding how to talk to doctors and patients about health. Today I wanted to ask for your help, because you are experts of yourselves. I want to understand how you talk about health, and what you think about health at your age. This information will help me create messages for middle school kids. Do you guys want to help me out?

1) I know that your parents have already signed a document that allows you to participate, but since you are all grown up, it is only fair that you have your own document to read and sign. So, this document [hand child assent to the participants] has been created especially for you. I would like to read it together, and if you agree to participate, you can sign it. If you change your mind and do not want to participate in the project, you can go back to class. This is not a lesson and it is not a test. Help me read it, will you? [At this point the moderator read and collect child assent documents. If a child does not want to participate, the child can come back to class. Once the documents are collected and children agreed to participate, the focus group can begin].

Welcome to this focus group on the health education and prevention for middle school children in Italy. We are doing a study to learn about people's opinions on the ways middle school children can stay healthy and on how we should teach these topics to children of your age. We are asking you to help because we don't know very much about the information preferences of children your age. I really appreciate your willingness to help us with this study.

Everything you say here will be confidential. We ask you to indicate your willingness to keep everything that is said in this room today confidential as well, so that everyone feels comfortable sharing their thoughts. Now, I'd like to lay a few ground rules for our conversation. First, there are no right or wrong answers to the questions I will ask you today. The questions we will ask are only about what you think. There are no right or wrong answers because this is not a test. We expect that not everyone in the group will agree with each other. That's okay. Second, you don't need to speak just to me. Feel free to talk with everyone here and to respond directly to anyone's thoughts or ideas. Third, not everyone talks the same amount. If you talk a lot more than others, I may ask you to give others a chance to speak. If we haven't heard much from you, I may ask you directly for your thoughts. This isn't to single anyone out—it's just to make sure we hear from everyone. Feel free to get up or to use the restroom at any time during our conversation. Do you have any questions?

2) [Opening] We have placed name cards on the table in front of you to help us remember each other's names. Let's get started with introductions. Give us the name you'd like us to use. Tell us something about yourself. I would like to know your favorite food, color, and what job you would like to do when you grow up [Moderator does the exercise as first].

3) What does it mean to be “healthy”?

The following section of the guideline was guided by (1) Social Cognitive Theory and (2) the Integrated Behavioral Model

Follow up questions:

- How did you learn this information? (personal agency²)
- What do you think is the most important health information that middle school children should receive? (attitudes²)
- How should children receive this information? (observational learning¹)
- Do you think children receive enough information related to their health? Why? (environmental constraints¹)
- How do you look for health-related information? (self-efficacy¹)

Have you ever heard of the vaccine called the Human Papilloma Virus vaccine or HPV?

Follow up questions:

- What is it for? (knowledge and expectations¹)
- From who have you heard of it? (observational learning¹)
- What do you think about it? (attitudes²)
- For students who do not know about the HPV vaccine: What are vaccines? (knowledge and expectations¹)
- For students who do not know about the HPV vaccine: What do you think about vaccines? (attitudes²)

4) How should we talk with kids of your age about this vaccine?

The following section of the guideline was guided by the (3) ACME framework

Follow up questions:

- What would you like to discover more about this vaccine? (message³)
- Who should provide the information? (channel³)
- Where should kids find this information? (channel³)
- With whom would you like to share this information? (audience³)

5) Now I am going to ask you to do another exercise. I'm going to give you a blank sheet of paper, and I'm going to ask you to draw. Imagine we want to create some informational materials for kids your age. What messages should we create to help your friends learn about the HPVs and the HPV vaccine? [After children have drawn, ask them to explain their drawing]

I am going to give you another sheet of paper. Please write all the questions you have about the HPV and HPV vaccine. Don't write your name on this sheet. When you have written all of your questions, please fold the paper and drop it in the basket placed at the center of the table.

Is there anything else you would like to add o what we discussed today?

Thank you for your time and help.