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Barriers and facilitators to a combined strategy of HPV vaccination and cervical cancer screening among Mexican women

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ABSTRACT

HPV-FASTER is an innovative public health intervention combining HPV vaccination and HPV-based screening in adult women at the same visit. FASTER-Tlalpan adapted the combined HPV-FASTER strategy in Tlalpan, Mexico City for women aged 25–45 years. To understand the barriers and facilitators to participation in a combined strategy, we conducted semi-structured interviews with 14 FASTER-Tlalpan participants. We used the constant comparative method for the analysis, as well as the socioecological model to organize the findings. At the intrapersonal level, barriers included the belief that only younger women are at risk for HPV, embarrassment about the pelvic exam, and lack of time, while facilitators were having information regarding the benefit of the combined strategy, perception of time saved by having both procedures at once, feeling reassured about their health, self-esteem regarding their health, and perceived severity of cervical cancer. Interpersonal-level barriers were experiences of stigma and prejudice, and lack of support from partners, while facilitators were family encouragement and peer-to-peer communications. Institutional-level barriers were lack of infrastructure and inconvenient hours at the health center, perceived high time burden, and low quality of care from providers, while facilitators included high-quality care by health center personnel, including partners in the combined strategy, and phone reminders. Community-level facilitators included willingness to participate. Public policy facilitators included mass information campaigns and free procedures. Our findings point to significant barriers which need to be addressed, along with facilitators which can be leveraged to scale up the combined strategy in similar settings.

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Introduction

Human Papillomavirus (HPV) vaccination and HPV-based screening are well-documented approaches for primary and secondary prevention of cervical cancer.[1–3] In low- and middle-income countries, cervical cancer continues to be a major cause of cancer mortality among women, underscoring the reality that this cancer, despite being both preventable and treatable, burdens the most impoverished.[4–6] In Mexico, HPV testing as a primary screening modality began in 2008, and HPV vaccination became national policy in 2012.[7] National guidelines for the prevention and screening of cervical cancer were first published in 2013,[8] and most recently updated in 2021.[9] These include vaccinating girls during year 5 of elementary school (between 11 and 13 years of age), cervical screening for women 25–64 via pap smear; and HPV-testing of women aged 35–64.[8,9]

In 2018, the World Health Organization released a call to action stating that the elimination of cervical cancer is feasible if effective prevention methods are expanded to populations "not currently vaccinated or screened."[10,11] Mexico is experiencing a slowdown in reducing mortality rates; women continue to die from cervical cancer despite the incorporation of HPV vaccination and HPV diagnostic tools in the national guidelines more than a decade ago. The innovative combined strategy of HPV vaccination and HPV-based screening in adult women during the same visit promises to be an effective combination for lowering mortality rates, as evidenced in higher-income countries with a history of strong implementation.[11–15] In Mexico, the combined strategy would not only expand vaccination to adult women but it is anticipated that the effective implementation of the combined strategy could result in a comparable reduction in the

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mortality rate of cervical cancer. Given that effective implementation is key, this study aims to explore barriers and facilitators to implementation of a combined vaccination and screening strategy as part of the cervical cancer prevention program in Mexico.

Methods

Background

The FASTER-Tlalpan Study evaluated the impact of combining HPV vaccination with screening in the context of a cervical cancer prevention program.[16] FASTER-Tlalpan took place in health centers of the Tlalpan borough in Mexico City, enrolling women between 25 and 45 years of age.[16,17] The present qualitative study recruited women who participated in the evaluation of the combined strategy within the FASTER-Tlalpan Study and was conducted from July to August 2018. All study-related documents, including the informed consent were approved by the Institutional Review Board (IRB) of the Instituto Nacional de Salud Pública (INSP) (CI: 1417).[16]

Theoretical frameworks

We utilized the health belief model (HBM) to conceptualize possible barriers and facilitators for participation in the combined strategy (Figure 1).[18–20] The Theory of Reasoned Action (TRA) allowed us to understand the attitudes of women toward vaccination and screening, understand what women believe other people think about the prevention behavior, and understand how these beliefs could influence the attitudes and behaviors toward this approach.[21,22] We considered the construct of self-efficacy to explain women's capacity and ability to control the motivation and behavior to be vaccinated and screened as measures that allow them to prevent cervical cancer.[23,24] HBM and TRA components used to explore HPV vaccine and HPV screening perceptions are defined in Supplementary Table S1.

The Socio-Ecological Model (SEM) was employed as a guiding framework to organize the barriers and facilitators women faced at each of the levels.[25–28] The SEM provides a framework for understanding the interaction and influence of various factors on behavior, allowing us to suggest ways to reduce potential barriers during implementation.[25–27]

Sample and recruitment

A non-probabilistic purposeful sample of women who participated in FASTER-Tlalpan were interviewed.[29] We conducted 14 interviews, and determined that thematic and theoretical saturation was reached since no new themes emerged and the same type of data included in the codes began to appear repeatedly.[30,31]

Study instruments and data collection

Trained study interviewers (LLM, GP) reviewed the informed consent with the participant, obtained verbal consent and administered a subsequent brief open-ended questionnaire to collect sociodemographic data. Our team developed an interview guide based on research questions, the constructs of the theoretical frameworks and previous literature (supplementary Table S2). The interviews and brief questionnaires were conducted in Spanish, in person and audio recorded. Interviews lasted approximately 30–40 minutes. There was no financial compensation for participating in the study.

Information processing and analysis

Interviews were professionally transcribed verbatim and checked for accuracy by the study team. The constant comparative method guided simultaneous coding and analysis to explore and analyze differences, similarities, and consistency of information.[32] As a validation strategy, the triangulation of theoretical perspectives was used.[33] Through an iterative process, two coders (LLM, AC) read through the interview transcripts, considered the constructs of the SEM, HBM, TRA and reviewed the interview guide and field notes to create the codebook. The codebook was refined over multiple meetings

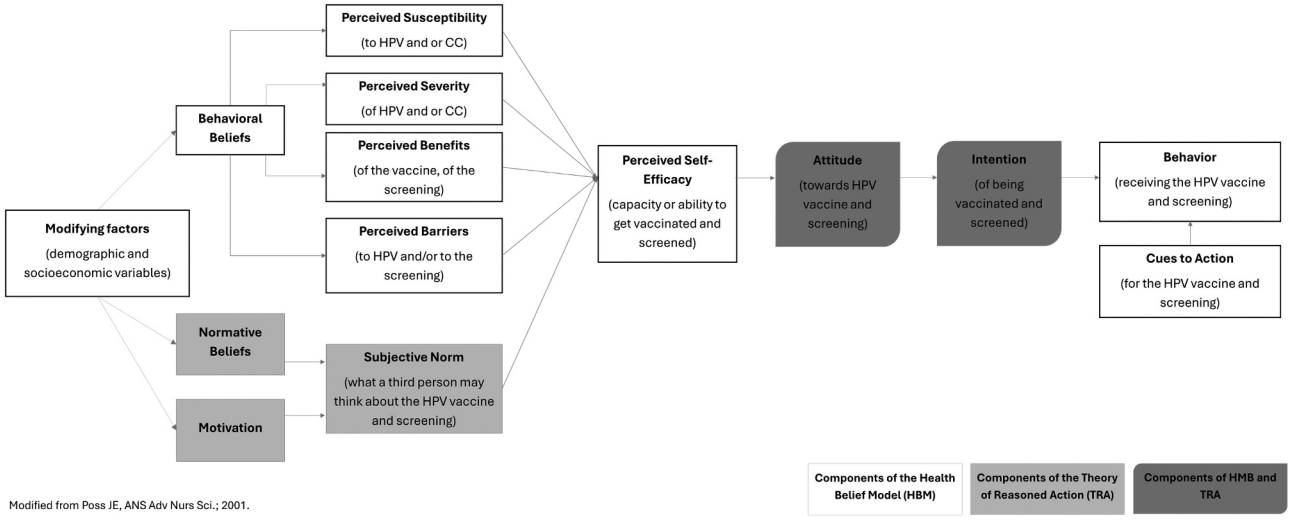

Figure 1. Model of women's behavior toward a combined strategy of HPV vaccination and cervical cancer screening in Mexico.

where the team discussed the codes and their definitions until a consensus was reached. Intercoder reliability testing was conducted, concluding with 92%. After intercoder reliability was established, the coders used ATLAS.ti (version 8.4.26.0) to code all interviews. Finally, the research team reviewed and discussed the coded interviews, yielding the final categories of barriers and facilitators. The categories were organized within the levels of the SEM to enhance our understanding of factors influencing Mexican women´s participation in a combined strategy. The quotes included in this manuscript were translated from Spanish to English by bilingual study team members.

Results

A total of 14 women were interviewed, Table 1 shows an overview of their demographic information. The mean age of participants was 34 years, 43% were single, and 93% had healthcare coverage and had public social security insurance of some kind. Figure 2 highlights barriers and facilitators to the combined strategy organized by SEM levels.

Intrapersonal level

A common barrier discussed by women at the interpersonal level was the belief that only younger women and girls are susceptible to HPV, which older women said made them hesitant to participate in the combined strategy. One woman explained, *"Older ladies are the ones who refuse the most . . . 'I don't get involved in that, I'm older, whatever happens to me has to happen to me,' . . . they think that it's for girls, but no . . . they are also at risk, even if they are older"* – W10.

Women identified embarrassment during the pelvic exam required for the screening procedure as a major barrier that might contribute to women not participating in the combined strategy. *"Older women have a lot of embarrassment when going to the gynecologist, it's more difficult for them"* – W01. Moreover, women identified lack of time as a barrier to participation. It was mentioned that women have many competing demands in terms of their work outside the home, caring for children, and heavy schedules leading to difficulty making time for participating in this intervention. One participant explained: *"What would make it difficult? A lack of time, or they might have to run to work, or to pick up their kids, or*

Table 1. Demographic information.

ID	Age	Highest level of education	Partnership status	Children	Occupation
1	39	Some college	Single	0	Administrative assistant
2	28	Some High School	Single	3	Student
3	36	Some High School	Cohabitating	4	Food vendor
4	34	Some college	Single	1	Self-employed
5	44	Some High School	Single	2	Employed but unspecified
6	28	Elementary school	Married	1	Self-employed
7	27	Middle school	Cohabitating	3	Homemaker
8	28	Elementary school	Single	2	Shoe shiner
9	44	High School	Single	2	Employed but unspecified
10	32	High School	Married	2	Waitress
11	46	Elementary school	Cohabitating	1	Homemaker
12	41	Middle school	Married	3	Homemaker
13	25	College	Single	0	Student
14	28	College	Cohabitating	1	Homemaker

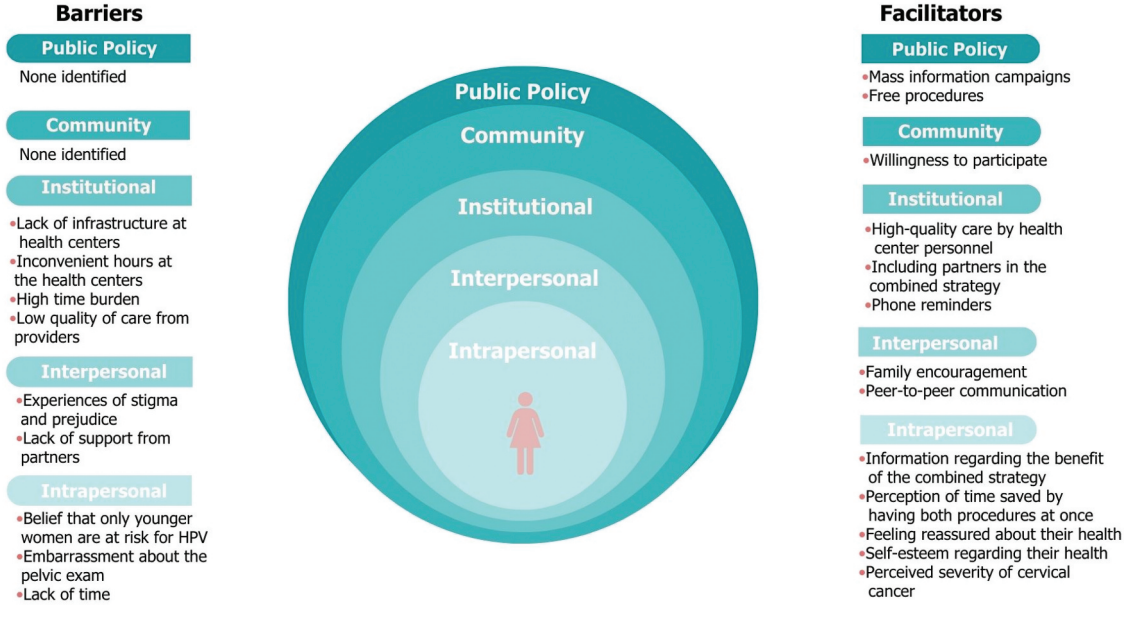

Figure 2. Women's perceptions of implementing a combined strategy of HPV vaccination and cervical cancer screening in Mexico.

whatever it may be, things that are more immediate" – W01. Another said *"A woman might have to leave it for another day, and then other things come up . . . we women have to leave it for later and then we don't have time"* – W12.

On the other hand, receiving information regarding the benefit of the combined strategy was considered a major facilitator for acceptability, and was the most commonly mentioned facilitator among the women interviewed.

Another reported advantage of the combined strategy was the time saved having both procedures at the same visit on the same day. Additionally, some women believed that completing two procedures at the same visit would be less complicated and would be more accessible, rather than various appointments, in terms of time saved, especially considering travel to the clinic. " *It would be more comfortable [having both procedures at the same visit], I had to travel all the way to the health center. It would be less complicated, more accessible"* – W08. Others said that completing both procedures at the same time provides an opportunity to not "leave it for later" and then having a lack of time due to giving priority to other activities and then delaying the visit to the clinic. *"Other things come up . . . Better to have the visit now, fast and done."* – W12.

Another facilitator was feeling reassured about their health, knowing that one is healthy or, in the face of a positive screening result, to be treated promptly. One woman noted that early detection of HPV is a benefit since she could start treatment immediately. Other women highlighted feeling safe and protected after combined testing and vaccination, in knowing that they do not have cancer, perceiving these as benefits, *"Knowing that we could be secure, safe, and protected, if we get vaccinated and do the screening"* – W06. " *. . . Knowing that your body is healthy and that you don't have the virus, another positive is prevention with the vaccine"* – W02. Feeling reassured about their health was important for women, when talking about the combined strategy, *"For prevention. . .let's say she [another woman] will already be getting the vaccine, then it's just about doing the screening . . . it provides tranquility"* – W12, and *"Having the information, [about the virus], if you have it then you can treat it. If you don't then you can get vaccinated and protect yourself, get the second dose, continue monitoring that everything is fine and you are protected.."* – W01.

Women expressed awareness of the severity of cervical cancer as a perceived facilitator for acceptance of the combined strategy, *" . . . this type of cancer [cervical cancer], it's the silent type and you won't know you have it"* – W10. Some women expressed that participating in screening is a reflection of self-esteem regarding their health, and the importance of self-care even without having the support of others, *"Self-esteem in having the confidence of knowing that your health comes first"* – W13. Another said *"It's our own health, right? Being concerned for yourself, sometimes our partners won't support us. . .more than anything it's being concerned with oneself"* – W08.

Interpersonal level

Barriers to participation at this level centered around experiences of stigma and prejudice and lack of support from partners. Participants disclosed that experiencing stigma and prejudice from others, including family, friends, neighbors, and partners was a reason for not participating in the combined strategy, *"[Others] get scared and they begin to ask questions 'why are you involved in something like this?' and they dig for more information and make up stories"* – W10. Women talked about experiencing stigma and prejudice for being involved in the combined strategy, especially when HPV was linked to sexual activity. Not having their partners' support or the outright refusal from partners about their participation was identified as a major barrier for many women. *"The partner more than anything . . . Not all men agree with a woman getting one of these tests"* – W08.

A facilitator at the interpersonal level was family encouragement. One participant stated "*Family encouragement, I convinced my sister, I told her they would take samples . . . that they would give us a check-up and would monitor us*" – W03. Women highlighted having a female family member encouraging their participation and providing information as a facilitator. Another participant posited the importance of peer-to-peer communication, saying, *"This is what would work; testimonials. . . take women who have cooperated and get closer to other women."* – W10. Other women interviewed also suggested that this would be a strategy to facilitate the participation of other women.

Institutional level

Barriers at the institutional level included the lack of infrastructure at health centers. Specifically, women noted that the infrastructure was insufficient to carry out the HPV screening. An example of this is that the available space for the number of women who needed the screening was too small or lacked privacy. A woman said, *"The space where they take the sample is very small, there are many people there and there are not enough cubicles"* – W14.

Similarly, women reported little flexibility in health center schedules. One woman mentioned that clinic hours in general are limited, and another woman reported that they are not accessible for women who work outside the home, *"They should have ample schedules, they only have morning appointments and with only a few dates available. What about women that work in the mornings?"* – W03. Another participant said *"Having better times, there are many women that work all day. Having more accessible schedules [at the health center], many of us have long [work] hours"* – W05. Several women perceived low quality of care from providers as a barrier, especially when providers seemed uninterested or did not provide information they saw as crucial. *"They are not interested, this shows in the service and attention they give to people as well as the [lack of] information they provide"* – W04. Other women said " *. . . there are [providers] that don´t explain things"* – W07. *"They don't explain, they should be more patient since there are people that don't understand the same way others do"* – W14.

In contrast, high-quality care by health center personnel was identified as an institutional facilitator. One woman shared *"They should be kind, provide nice treatment, I think a bit more sensitive, sometimes they [personnel] are very insensitive"* – W02. Another woman said *"From the time you arrive . . . and say 'I am here for my screening' they*

should inspire confidence. It should be something with respect and they shouldn't discriminate against you" – W10. Women shared that during the counseling sessions, explanations about the procedure should be provided in simple and clear language without technicalities, underscoring the desire for clear information in easy to understand language. *"Have solid explanations 'hey this is for this' and use terms that are not as medical"* – W10.

Women shared that having institutions include their partners in the combined strategy could be a facilitator. One participant gave the example of other health-related activities their partner was usually a part of: "*The information should also be given to my partner, like in family planning for example*" – W02.

Finally, women mentioned that receiving phone calls from health center personnel to remind them of their appointments was helpful, *"'It's time' . . . it's great that they contact you via phone"* – W10.

Community level

Participants reported that hearing others in the community talking about the combined strategy showed that the community as a whole was more open to the idea of this type of service and that the community's willingness to participate was *their* reason for deciding to participate. One woman said *"I think all people from Tlalpan have become more open to this [participation], right? I have heard that many people came from around here, literally the whole borough"* – W07.

Public policy

At the public policy level, many participants highlighted the need for mass information dissemination as a potential facilitator for the combined strategy. Women believed it was up to the government and the public health sector to get the information out, as they did for other illnesses "*. . . have health fairs in the boroughs, at the parks like they [the government] do with the influenza vaccines . . . These health fairs can get to a lot of people, sell the idea of the benefits they can get from this procedure*" – W01. One woman suggested that she would have not known had it not been for her friend informing her about the combined strategy and that having wider-reaching campaigns was a necessity, *"Have campaigns, I had not heard anything about this, it was through a friend that came here that I found out. I am always at work, have campaigns . . . otherwise I wouldn't have known"* – W05. Other women also suggested individual-level dissemination with explanations while women were waiting in clinics, online efforts, community campaigns, talks or workshops, hiring community health workers and people from the community, using signs, or flyers.

Women highlighted that offering the combined strategy procedures for free is a facilitator. One woman commented, "*I think other women would accept [the combined strategy] because it is beneficial and additionally if it is a service that is offered for free . . . it should be free . . . as a matter of fact if you want, I will bring you more women [to participate]*" – W01. Women shared that others would want to participate as long as institutions or the government offered these procedures for free.

Discussion

We explored women's perceptions regarding the implementation of a combined vaccination and screening strategy as part of the cervical cancer prevention program in Mexico. We found that barriers to participating at an intrapersonal level were embarrassment and lack of time and at the interpersonal level were experiences of stigma and prejudice, and lack of support from partners. Barriers identified at the institutional level were often structural, including the lack of infrastructure at health centers, limited clinic hours and women's high time burden to receive care. In this study, facilitators were mostly at the interpersonal level, including information regarding the benefit of the combined strategy. However, women also identified structural facilitators such as high-quality care by health center personnel and phone reminders.

Intrapersonal level

At the intrapersonal level, the low risk perceived by older women for contracting HPV,[34] and even low-risk perception among parents for their daughters contracting HPV[35] has been documented. This is perhaps due to the lack of information about HPV infection in young people soon after sexual debut.[36] Studies have found that a strong perception of susceptibility or risk favors preventive behavior[37] and on the contrary, a low perception of risk limits acceptance and use of preventive measures.[38,39]

In this study, embarrassment related to the pelvic exam was reported as a significant intrapersonal barrier for nonattendance to cervical cancer screening, consistent with several studies around the world, including among minorities, and migrants and other populations in Mexico.[40–49] Lack of time was a significant barrier at the individual level. A Malaysian study also documented this barrier to the combined strategy of HPV vaccination and screening.[50–52] Moreover, other studies have documented lack of time as a barrier to screening; for example, a study on HPV screening in Ecuador found that women had many obligations to complete before being able to access health care.[53]

Intrapersonal barriers are closely linked to institutional ones. At over fifty years after the cervical cancer national prevention program was implemented in Mexico, structural problems persist. For example, women feel greater embarrassment during the pelvic exam when the staff is male.[41] To ameliorate this barrier, institutions should hire women.[54,55] The lack of time may be improved with better organization of the elements of the combined strategy, including flexible schedules, quick and efficient attention, the strengthening of strategies such as self-collection, studying the potential implementation of urine collection and use of technology for scheduling. These structural problems are preexisting barriers that continue to limit care. It is apparent that the program has not been consolidated, and the necessary processes have not yet been implemented completely or optimally. These structural problems also became apparent at the institutional level. The barriers at this level are related to the lack of information, counseling and health education that are provided.

Clear understandable information, when provided, was noted as a necessary input for making decisions. Information regarding the benefit of the combined strategy may help fill knowledge gaps, which facilitates decision-making leading to increased reach.[56,57] Women were aware that they saved time by simultaneous screening and vaccine. Limitations and high time burden as barriers are well documented, and effective and efficient strategies, such as the combined strategy that lead to optimized procedures in less time, will undoubtedly be a -facilitator.[58,59] Feeling reassured about their health has been documented as a facilitator for HPV screening.[60] In this study, women reported that participating not only permitted them to know their HPV status but also with the added advantage of the vaccine. Self-esteem regarding their health as a facilitator has been less studied, although it has previously been reported that self-care, a form of self-esteem, aids women in overcoming barriers to participate in HPV screening.[61] A common thread among facilitators at intrapersonal level is the importance of providing information and education, which leads to making informed decisions, and empowers women to take preventive actions despite barriers. Facilitators can be considered key recommendations that we must consider when designing and implementing successful health programs for cervical cancer prevention in this context.

Interpersonal level

Experiences of stigma and prejudice have been widely documented surrounding HPV and cervical cancer, manifested by fears of judgment and social rejection, guilt, and shame.[35,54,56,57,62–64] These negative attitudes at the interpersonal level can be dispelled with information, counseling, health education, and interventions to minimize them.[35,54,56,57,62–64] For example, positive messages about the benefits of the HPV vaccine have been evaluated to minimize stigma and prejudice in place of focusing on communicating the possible consequences of not getting vaccinated.[35,54,56,57,62–64] Similar to another study, we found that lack of support from partners was a barrier to participation in vaccination and screening efforts.[50] This barrier is particularly important given partners' power to influence the attitudes of women toward the combined strategy, and that support from partners encourages women to make positive decisions and actions about their health.[50,52,61] Women may not participate in cervical cancer prevention programs for fear of disturbing or having altercations with their partner.[52] Information, counseling and education are useful tools to minimize this barrier. However, these tools must be strengthened and expanded since they must reach women's partners, because misconceptions about the HPV vaccine and screening impede awareness in couples about the importance of prevention and timely detection of cervical cancer.

In addition, family encouragement has been well documented as a facilitator in vaccination and screening efforts.[50,57,58,60,65] Similar to other reports, this study found that peer-to-peer communication, included close women friends, colleagues, and neighbors, and even women who may or may not be part of their community, were identified as important facilitators.[34,61,65–68] Other peers outside the family also played an important role as facilitators, promoters, or advisors, recommending directly and empowering women regarding participation in the combined strategy. Counseling and education targeted to the woman, family, and peers, should be a fundamental strategy of programs and interventions for the prevention of cervical cancer.[34,61,65–69] In contrast, poorly informed families and peers promote stigma and prejudice, generating peer pressure discouraging women from cervical cancer screening and prevention.[67]

Institutional level

Well-trained and well-equipped health personnel, as well as minimum necessary clinical infrastructure, are required.[17,54,56,70] These findings are consistent with evidence indicating that infrastructure is essential to the response capacity of health services and organized population-based cervical cancer prevention programs.[71] In Mexico, around four thousand women die from cervical cancer each year,[72] indicating that government efforts have not achieved the desired results. This points to the need to identify the weaknesses in the program, aggravated by lack of infrastructure, and the persistence of logistical problems, despite years of program operational experience in Mexico.[17,54,56,73] Strengthening infrastructure is a strategy that has the capacity to reduce deaths and disability from cervical cancer.[74] Successful implementation of the national guidelines requires infrastructure (material, and financial support).[75,76]

In our study, we identified low quality of care from providers as a barrier, which can be minimized with awareness and training. A continuous training program for health professionals has been studied to improve the provision of services. This may be useful to raise awareness about the importance of providing quality services, communication and advice.[56,63,65,77] High-quality care by health center personnel was a strong facilitator, as in other studies.[57,58,62,68] Other studies have discussed the importance of shorter waiting times and extended service hours as facilitators to reduce barriers.[54,57,78] For example, reviewing the optimal functioning of the program in extended hours, since the opportunity to provide care in extended shifts is being lost. High time burden was a logistical barrier identified in this study, consistent with minimized time for the procedures as a facilitator of screening.[59]

Partners were identified as robust facilitators, here and in other studies, not only for their support but also in their education on cervical cancer prevention.[50,61,76,77] The involvement and support of partners in women's health require education at different levels, not only at the level closest to women (interpersonal) but in other spheres such as the institutional. It is necessary to consider the involvement of partners, which will require innovative strategies and resources.

Phone reminders were reported to be a strong facilitator, like previous findings.[57,79–81] Telephone reminder implementation is facilitated by information and communication technologies since reminders can be made through calls and text messages sent to the phone, as well as the use of instant messaging applications. The implementation of these tools

can be cost-effective but require resources as well as cultural and institutional changes.

A profound reorganization of the program's activities is recommended and urgent. Explicit recommendations for the program are detailed elsewhere.[82] Although cervical cancer screening is one of the longest running services within the program, the infrastructure is inversely proportional, as the years have gone by, dedicated space has been lost and the minimum equipment is obsolete, deteriorated or out of use.[17]

Community level

Although other studies have documented barriers at the community level,[55,83,84] women did not identify barriers at the community level that limited their participation in this program. This could denote a lack of community dialogue on cervical cancer care that could be incorporated into a local plan for the prevention and control of cervical cancer that considers the local context, needs, and priorities. A participatory approach is recommended to create a collective plan, which strengthens relationships between the community and health professionals. Willingness to participate was the only facilitator identified at this level. Willingness to participate among the community would encourage other women; since the whole borough was participating, they would also give it a try. Similar facilitators have been documented at the community level for vaccination only, such as enhanced accessibility in communities, and community outreach efforts.[85] Again, the participatory approach is essential to identify the factors that would facilitate women's participation in the combined strategy.

Public policy

No public policy barriers were identified by women in this study. Studies in other countries investigating barriers to cervical cancer screening identified barriers related to regulations and funding.[55,83] In Mexico, although screening is free for women, the vaccine is only free for girls, highlighting a barrier that regulations and funding also pose to the successful implementation of the combined strategy.[7–9] It is important to understand the factors that affect decision-making at the national level on public policies for regulating and funding the vaccine for adult women.

Women identified two facilitators at the public policy level: mass information campaigns and offering the combined strategy procedures for free, also previously reported.[71,80,85] It has been shown that programs that collectively educate, outreach to and mobilize the community and the media improve participation, attitudes, knowledge, awareness, and communication of women with health professionals.[61] Although current legislation includes vaccination in girls and HIV-positive cisgender and transgender women, a combined strategy implementation will require legislation that allows the extension of vaccination to all adult women within the national cervical cancer prevention program.

While the sample size in this qualitative study is relatively small, it offers insights into the perspectives of Mexican women regarding HPV vaccination and screening as a combined strategy. While Tlalpan is a relatively diverse borough, participants were limited to those who spoke Spanish and excluded those who only spoke other languages including indigenous languages. One of the main strengths of this study is the semi-structured approach used during the interviews. These interviews covered a diverse range of topics pertaining to the combination of HPV vaccination and HPV screening and capitalized on the ongoing FASTER-Tlalpan initiative.

Vaccination in adult women in Mexico and the combined strategy itself are novel. Providing evidence on women's perceptions not only informs implementation, but also informs health professionals, decision-makers, and public policymakers. Current proposals to overcome the stagnation of cancer mortality and incidence rates in Mexico are scarce. Our findings provide useful information for the formulation of policies and implementation as a whole and contribute to advancing the current need for cervical cancer prevention in Mexico. The present study provides evidence and alternatives to advance the prevention and control of cervical cancer in Mexico, especially for the most impoverished and vulnerable who die disproportionately from a preventable cause. It is also aligned with the regional call of the Director of the Pan American Health Organization (PAHO) to take urgent action to eliminate cervical cancer in the Americas, who said that the number of cases and deaths from cervical cancer in the region is "unacceptable."

Conclusion and recommendations

As far as we are aware, this is the first manuscript reporting findings on facilitators and barriers to a combined strategy of HPV vaccination and HPV-based screening in Mexico and Latin America. This promising approach could help to meet the goal of the elimination of cervical cancer in many countries, in response to the global call for elimination.

Vaccination and screening for cervical cancer prevention have proven to be successful public health interventions, leading to reduced mortality and morbidity in countries where it is implemented. There are recommendations to use both strategies to speed up the elimination of cancer. Mexico has the enormous advantage of supporting both strategies individually; using them in combination in adult women can lead to cancer elimination. In addition to promoting policy to implement a combined strategy, it is essential to study the barriers and facilitators for its implementation. As long as the barriers are not mitigated, it will be difficult to achieve the global call to eliminate cancer by implementing HPV-FASTER or other robust strategies with the potential to eliminate cervical cancer. Although barriers such as those at the institutional level are longstanding challenges in Mexico and other countries in Latin America, they can be modified. These barriers affect the poorest and most disadvantaged women, and include lack of infrastructure, lack of information, and poor quality of care. The recognition of the barriers is essential to be able to mitigate them or in the best of scenarios, to eliminate them. Recognizing the barriers and facilitators of implementation is crucial to guiding the successful implementation of the combined strategy.

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Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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