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Using social marketing theory as a framework for understanding barriers and facilitators of human papillomavirus screening in women: A qualitative study

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Abstract:

BACKGROUND: Human papillomavirus (HPV) is known as the common sexually transmitted disease and the cause of cervical cancer. The HPV test is being proposed as the primary screening tool for cervical cancer. This study aimed to identify barriers and facilitators of screening based on the social marketing model in designing interventions and planning to increase HPV screening.

MATERIALS AND METHODS: This qualitative directed content analysis was conducted between December 2020 to September 2021 to identify the key concepts of social marketing theory (i.e., the four P's: product, price, place, and promotion) in Mashhad, Iran. Semistructured interviews were fulfilled with 24 individuals (10 women with HPV and 14 key informants) after obtaining participants' consent, who were initially purposively sampled and snowball sampling was then used to facilitate further recruitment. Data analysis was carried out simultaneously with data collection.

RESULTS: Following the code extraction, four main categories (themes) and 10 subcategories extracted. Subcategories included knowledge on screening, screening benefits, and motivational factors for screening (product), individual inhibitors, environmental inhibitors, and facility problems related to price, place of service delivery, and service delivery channels (place) and health promotion and education.

DISCUSSION: Lack of knowledge about HPV and screening, negative attitudes toward sexually transmitted diseases, taboo about sexual issues in society, fear of the reaction of spouse and family members, lack of proper policies and information and communication challenges, high costs of screening, access barriers to facilities such as difficult transportation have been challenges of health systems. It is suggested that HPV screening as a standard method for detection of cervical cancer be considered and the barriers to access are removed.

Keywords:

Human papillomavirus, qualitative study, screening, social marketing

Introduction

Human papillomavirus (HPV) is the most common sexually transmitted disease in many countries.[1] HPV-DNA is present in 95%–100% of cervical cancers, and can be attributed to high-risk types 16 and 18.[2] Six lakhs four thousand one hundred and twenty-seven women were diagnosed with cervical cancer and 34,181 died of this disease worldwide in 2020.[3] The WHO recommendation on combating cervical cancer and other gynecological diseases with early diagnosis and screening

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programs is an essential component of cancer control programs.[4] The proliferation of clinical HPV tests, which are more sensitive and accurate than the initial cytology (Pap smear) test, has recently changed the pattern of cervical cancer screening. According to European guidelines as well as the World Health Organization (WHO), the HPV test is now recommended as a primary screening method for cervical cancer.[5]

HPV has been observed in 7.4% of normal Pap smears in Iran.[6,7] The results of the study by Shahi *et al*.[7] with the aim of investigating the prevalence of HPV among women referred to the laboratory of Jihad University in Mashhad, showed that the prevalence is high. Moreover, according to the relatively high prevalence of HPV in women with normal cytology, it is better to use the HPV test to screen for cervical cancer, and due to the direct link between cervical cancer and HPV, timely treatment of the virus before entering the phase of cellular changes can prevent the onset of changes in cells in the area and have a significant effect on the prevention of cervical cancer. Therefore, HPV testing and determination of high-risk genotypes are among the beneficial interventions,[8] and the implementation of HPV-based cervical screening programs with effective and efficient treatment of precancerous lesions has the potential to significantly reduce cervical cancer incidence and mortality.[5] The absence of high-risk HPV as an organism involved in cervical cancer may indicate a low risk of cancer over a period of 5–7 years.[9]

Studies show that young women, especially those in low socioeconomic condition, have not performed well in HPV screening.[9] The function of the health system in sexual behavior (prevention and screening) is influenced by individual behavior. Improving health with the social marketing approach and behaviors that require the use of a health product and access to facilities and is also more influenced by the attitude and decision of the individual can be associated with valuable success.[10] There are three main strategies for changing or modifying social behaviors: For people who do not have enough knowledge and skills but accept suggested changes, education is a solution. While, law enforcement is appropriate for people who are not willing to change. Social marketing is an approach to bridge the gap between education and law.[11] Study results revealed that theory-based interventions were effective in all types of outcomes among studies target groups.[12] This framework uses business marketing concepts and techniques to develop interventions and provides proper strategies for changing adverse health behaviors and preventing disease, given the statistics associated with increasing disease prevalence and the need to correct adverse attitudes and behaviors.[13] In social marketing, price includes tangible, and intangible costs (barriers perceived by customers). Place includes the place and time when the target market performs the desired behavior and achieves the product. Location includes actual location, business hours, the convenience, and access to the product. Promotion includes persuasive communications to show product benefits, pricing strategies, and location components.[14] Social marketing-based interventions have been performed in various fields of health promotion such as HIV screening,[15,16] breast cancer screening (mammography),[17] and sexual health.[18] It is a conceptual framework that can be used to develop an intervention to increase HPV screening. Preventive and diagnostic measures reduce the complications and mortality caused by HPV.[19] To use the social marketing model (SMM), we need to know the needs of the population. The most important responsibility for social marketers in health is to ensure that what is ultimately stated in the form of intervention will satisfy the needs and wants associated with health in the client.[20] Given the strong correlation between cervical cancer and high-risk human papilloma virus,[21-23] HPV screening is being considered as a method to promote uptake of cervical cancer screening among women and with regard to HPV screening, it is not clear what the barriers and facilitators are in Iran, Given that no study has so far evaluated the above-mentioned issue in Iran, Therefore, this study aimed to identify the components of social marketing (i.e., the four Ps: product, price, place, and promotion) and to analyze the perspectives of women and health care providers (key influential people) about barriers and facilitators to HPV screening as the first step in designing interventions and planning HPV screening.

Materials and Methods

Study design and setting

This qualitative study was fulfilled based on directed content analysis of interviews in Mashhad a city in north east of Iran which is the second-most-populous city of the country and the capital of Razavi Khorasan Province. Using social marketing model (SMM), the researchers collected the viewpoints of recipients of health services, managers, health service providers in the context of HPV screening using in-depth and semistructured interviews. The interviews followed a guide developed by using existing literature.[14,24]

Study participants and sampling

The study participants included HPV-positive women living in Mashhad, who were initially purposively sampled and snowball sampling was then used to facilitate further recruitment[25] from December 2020 to September 2021. The HPV diagnosis was also based on the symptoms of genital warts or via the polymerase chain reaction technique. A sample of

24 persons including 10 women with HPV and 14 key informants (i.e., gynecologists, dermatologists, urogenital tract specialists, reproductive health specialists, midwives, and managers) participated in the study. The purpose of the study, inclusion criteria and length of the interview were explained for them. Those who met inclusion criteria and were interested in participating, gave verbal consent to enter the study. The sample variance was observed in terms of underlying factors such as age, the level of education, type of occupation, and marital status. The sampling was started purposefully and continued until data saturation and the emergence of no new codes.[26] The post hoc interviews did not contribute with new themes [Table 1]. Two of the authors independently read and coded the transcripts and grouped the generated codes into SM benchmarks according to their similarities.

Data collection tool and technique

The data were collected via face-to-face interviews based on semistructured open-ended questions. The interviews were conducted based on the questionnaire guide using Grier and Bryant's definitions of the 4 P's.[27] We developed operational definitions for product, price, place, and promotion as related to women with HPV and key informants. The interviews began with an open question (i.e., *How did you understand that you have HPV? Speak about the information you had about HPV before you get the diagnosis)*, then subsequent and supplementary questions were asked based on the participants' response and questionnaire guide (i.e., *What made/would make you decide to have HPV screening? (product) Where was your information from? Were you aware of the screening sites? Where did you first hear about the HPV/HPV screening? (Place) What challenges you faced to participate HPV Screening programs? (price) If you needed it, where did/would you look for information about the HPV screening? (promotion)*. For health service provider, there were other questions (*i.e., talk about your own experiences in dealing with patient with genital wart or HPV positive test. What are the barriers to the HPV screening? What factors cause women to refer to HPV screening? What approaches would be useful to promote HPV screening uptake among women?)* Each interview took between 45 and 90 minutes. All interviews were audio recorded and, at the end of each session, the written-in responses were reviewed by the researcher with the assistance of the interviewees. The audio-recorded file of each participant was transcribed word for word immediately after each interview. The primary author read through all of the transcripts several times to obtain a sense of the data. Then, she read the transcripts line-by-line, highlighting the words and making notes of words that captured the

Table 1: Demographic information of the study participants

Participant	Age (years)	Education	Study field	Marital status	Group	Duration of the interview (minute)
P_1	28	Bachelor	Theology	Married	HSR	50
P_2	40	Bachelor	Nursing	Married	HSR	90
P_3	55	High school diploma	Art	Married	HSR	45
P_4	32	High school diploma	Technics	Married	HSR	45
P_5	27	Bachelor	Management	Divorced	HSR	50
P_6	40	Primary	-	Married	HSR	45
P_7	22	High school diploma	Art	Married	HSR	55
P_8	36	Illiterate	-	Married	HSR	45
P_9	52	Bachelor	Midwifery	Married	HSP	60
P_{10}	36	Master	Healthcare	Married	HSP	60
P_{11}	35	PhD	Dermatology	Married	HSP	65
P_{12}	36	Bachelor	Midwifery	Married	HSP	90
P_{13}	45	PhD	Gynecologist	Married	HSP	45
P_{14}	46	PhD	Oncologist	Married	HSP	45
P_{15}	35	PhD	Urologist	Married	HSP	45
P_{16}	55	Bachelor	Midwifery	Married	HSP	50
P_{17}	39	PhD	General doctor	Married	HSP	50
P_{18}	45	PhD	General doctor	Married	HSP	55
Post hoc interviews						
P_{19}	30	Master	English	Divorced	HSR	70
P_{20}	50	Bachelor	Midwifery	Married	HSR	45
P_{21}	45	PhD	Reproductive health	Married	HSP	50
P_{22}	45	Bachelor	Midwifery	Married	HSP	50
P_{23}	28	Bachelor	Midwifery	Married	HSP	60
P_{24}	47	Master	Midwifery	Married	HSP	70

Interview participants' characteristics. Their age varied from 28 to 55 years (mean 38 years). The participants were recruited from two groups: Health service recipients (HSR) (i.e., women with HPV) and Health service providers (HSP) (i.e., gynecologists, dermatologists, urogenital tract specialists, reproductive health specialists, and midwives, and managers)

relevant themes discussed for each key concept (i.e., the 4 P's). Themes were created by first, assigning concepts to key words or phrases. Then, the concepts were sorted into categories and organized into themes. Similar concepts that were grouped together were named with a particular theme. Through this process, a list of codes for each theme emerged. The interviews continued until the saturation point was reached. The recordings of group discussions were listened several times, transcribed, and then reassessed.

The MAXQDA 10 software (VERBI) was used to analysis the data. The four trustworthiness criteria of credibility, confirmability, dependability, and transferability suggested by Lincoln and Guba were used for assessing the quality of the study.[28] The credibility of the study was evaluated as follows: the continuous presence of researchers within the various stages of the study, transcribing recorded interviews after each interview, reading the transcribed texts several times, offering transcribed text to the participants and receiving comments from them, and finally offering extracted dimensions, components and conceptual model formulated to the experts' panels and receiving comments from them. Moreover, the findings were verified by referring to the participants. For further assurance, the findings were tested by an expert experienced in qualitative study methods. The dependability of the research was ensured by the transcribing interviews as soon as possible, accurate recording of all stages of the research, and providing the participants with equal situations. For the transferability of the research, the continuous presence of researchers in all stages of the study, recording and transcribing the interviews after each interview, reading the transcripts several times and also providing the text to the interviewees and receiving their comments (checked by the participants) and finally, presenting the dimensions and components extracted as well as the conceptual model developed to the experts and receiving their opinions and agreement were among the most important measures in this regard. The verification of the findings was made possible by referring to the participants. For confirmability, the findings were provided to an external observer experienced in qualitative research.

Ethical consideration

All participants were informed about the purpose of the study and their right to withdraw at any time of study and were assured that all personal information would remain anonymous and confidential. Verbal and written consent was taken from participants prior to interviewing and voice recording. Ethical approval was obtained from the Ethics Committee of the university (Ref. No, IR.MUMS.REC.1399.547).

Results

Demographic information of the participants is presented in Table 1. The viewpoints of the participants are explained in the form of four main categories (Theme) and 10 subcategories [Tables 2–5].

Theme 1: Product

General views on the product category (HPV screening test) were divided into three subcategories: familiarity with screening, the importance of screening, and the motives for screening [Table 2].

Familiarity with screening tests

Most of the HPV$^+$ women participating in the study stated that they had no knowledge of the screening before the onset of symptoms (lesion, discharge, burning, and itching). Moreover, most service providers stated that most patients were unaware of the screening test before showing the symptoms. "Women in general are not doing well in this area. I have never had a patient come and tell me I am here for an HPV screening" (p12 midwife, service provider, private clinic).

The importance of screening

With regard to the importance of screening, the participants pointed the high prevalence of HPV, its association with cancer, and the benefits of early detection. In response to the question what do you think about the importance of HPV screening, most service providers acknowledged that the incidence of HPV and the prevalence of genital warts had increased in recent years. "HPV is very high today. In the past, smears were rarely reported to ASCUS, but now the results of smears report very Ascus, and then when we send it for HPV typing, we see that the answer is yes (midwife, service provider, and private clinic).

One of the managers participating in the study, while pointing to the high prevalence of HPV in the population of women with high-risk sexual behaviors, said "in a city-wide project, we identified a number of women with high-risk sexual behaviors, approximately over 40, and of these, 5 percent were high risk for cancer." (physician, manager, 15 years of experience).

The service providers noted the benefits of HPV screening in identifying sexually transmitted diseases, reducing virus loading and even clearing the virus after initial diagnosis and strengthening the immune system. "Considering society's characteristics and the change of social and sexual behaviors, HPV screening is in the interest of the Iranian society. Because HPV screening is often followed by HBS and HIV screening and sexually transmitted diseases." (midwife, service provider, working in a health center and private office).

Table 2: Product: The importance of screening of HPV+ and the motives from the perspectives of women

Category	Subcategory	Final codes	Women HPV+ (*n*=10) Frequency (%)	Service provider (*n*=14) Frequency (%)	Examples of the responses
Being familiar with the screening	-----	No having knowledge	9 (22.5)	10 (19.6)	I did not know anything about the HPV virus. I had not even heard of a Pap smear and I had not given a Pap smear, did know the virus. (P5)
Importance of screening	-----	High prevalence	1 (2.5)	8 (15.6)	In my previous marriage, my husband had a lesion on her body (penis) but he did not care. I did not think it was important either. I did not know there was screening. (P19)
		The relation with cancer	8 (20)	7 (13.7)	I have been working for exactly 30 years today. In the early years, I rarely saw genital warts, but now it has really increased. (P9)
		Advantages	2 (5)	4 (7.8)	Screening is very important because some HPV strains are linked to cancer. (P12)
Motives for screening	Clinical experiences	Obvious lesions	7 (17.5)	10 (19.6)	We usually reduce the virus load by strengthening the immune system. (P13)
		Painful lesions	1 (2.5)	-	HPV screening is often followed by HBS and HIV screening and sexually transmitted diseases, I think it helps a lot. (P16)
		Stinky discharge	1 (2.5)	-	I had big lumps on my body. I could not sit up straight at all. (P6)
	Others recommendations	Spouse	1 (2.5)	-	The lesions on my body did not hurt at first. I did not think it was a special case either. After a year, the lesions became so large and so large that it was annoying and unbearable. (P4)
		Peers	1 (2.5)	1 (1.9)	I had so much infectious discharge, I had a continuous infection for a year. It did not go away completely, until I went to the doctor. (P4)
		Healthcare providers	3 (7.5)	3 (5.8)	From the beginning of my marriage, I was constantly infected. After two years, because I had high infection and did not respond to treatment, doctor suggested that I have an HPV test. (P2)
	Knowledge	TV	-	1 (1.9)	I remember years ago in Honeymoon (a TV program) they explained about this disease and we had a lot of clients during that time. (P9)
		Internet	6 (15)	7 (13.7)	When I looked at the lesions and searched, I saw that it looked very much like a wart and could cause cancer. (P19)

Motives for screening

In connection with the motives for screening and in response to the question of what factors motivated you to participate HPV screening? Some symptoms such as warning signs (obvious lesions, painful lesions, and foul-smelling discharge) recommendation from others (spouse's advice, friends) and awareness (through medical staff, TV programs, and Internet search) were among the factors mentioned by participants. One HPV+ participant said that "I have been constantly infected since the beginning of my marriage. My doctor asked for a Pap smear, which was normal. But after two years, because I had high infection and did not respond to treatment, he offered me an HPV test, which was positive." (40-year-old woman, married, HPV+, and nurse).

Theme 2: Price

Obstacles mentioned by the study participants were classified into three subcategories: individual inhibitors and environmental inhibitors and facility problems [Table 3].

Individual inhibitors

Regarding the subcategory of individual inhibitors, low awareness, wrong attitudes and feelings were the barriers that most participants in the study mentioned. Asked why she did not get screened for HPV earlier, one of the HPV+ participants said that the painful genital lesions caused her to see a doctor after 1 year and that she had no previous knowledge about HPV and its screening. "The lesions were not painful at first, after a year the lesions became so large and so large that it was annoying and unbearable. I went to the doctor and the doctor asked me for a test." (40-year-old woman, married, HPV+, and primary education).

Lack of knowledge, and accurate information about HPV, and the test, lack of accurate understanding of the nature of the test and screening, feeling no need for screening until the lesion occurs and seen in the spouse body were concepts that most of the study participants mentioned. "Although I am a medical staff, I did not know much about this virus. After my test was positive, I searched for it and found it was linked to cancer (40-year-old woman, married, HPV+, and nurse).

Table 3: Price: Barriers to human papillomavirus screening in women from the perspective of the participants

Category	Subcategory	Final code	Women HPV+ (*n*=10) Frequency (%)	Service provider (*n*=14) frequency (%)	Examples of participants' responses
Individual inhibitors	Knowledge	Lack of knowledge	8 (16.3)	1 (1.2)	I had no information about the virus at all, and it so happened that my doctor became suspicious following my Pap smear. (P2)
					«I had never heard of a Pap smear until I had my lesions." (P5)
					«Although I am a medical staff, I did not have much information about this virus. After being infected, I searched for it." (P2)
		Misunder standing	3 (6.1)	6 (7.4)	My husband did not have any lesions, how is it possible that I was infected when he did not have the disease?" (P1)
					"I can almost say that during this time I did not have a client who said that she had come for screening and that everyone who came was looking for symptoms." (P10)
		Rumors	1 (2)	3 (3.7)	A friend of mine said that during the test, a piece of tissue is removed from your body. It is as if a part of your body meat is removed." (P4)
					"Most patients are afraid of the pain of sampling when I tell them to take a sample. They have misconceptions about the test." (P14)
	Attitude	Beliefs	3 (6.1)	4 (4.9)	Many people think that because they do not have multiple sex partners, they will never be infected with the virus. Maybe the disease is so prevalent that it is only for sex workers." (P18)
		Trust	3 (6.1)	5 (6.1)	I had a client who had the lesion and said that I did not have high-risk behavior, so I do not get this kind of disease, and it happened to be positive." (P13)
					"Often people do not come at all because of the confidence they have in their sexual partners and that they know the disease is completely sexual." (P22)
	Feelings	Fear	3 (6.1)	6 (7.4)	Getting this disease was a huge shock to me. My world fell apart. How bad I was. I cried at night for fear of getting cancer." (P1)
					"I am divorced . Now, if my mom finds out I tested positive, what will she think of me?" (P5)
		Unfavorable	2 (4)	-	I hate the feeling of the examination. It is a shame. I have not done examination until I got pregnant. (P1)
Environmental inhibitors	Cultural challenges	Taboo	3 (6.1)	5 (6.1)	"We should have been informed much sooner than this. Much earlier than the university. We needed the information at school." (P5)
					"Well, I broke up with my husband. Woe to me if my family finds out! They must think I was in a relationship with someone else." (P19)
		Shame	2 (4)	-	"I only go to the doctor for my delivery if I have to. It is a sin for a person to want to be examined all the time." (P1)
					"A lot of patients are embarrassed to get naked; they even offer to ask if there is a blood test, and when they find out there is a biopsy, they give up." (P13) Shyness
					"I was afraid to go to the doctor because I had read that the disease is transmitted sexually. The doctor might change his mind about me. Shame of illness" (P19)
		Role of the spouse	2 (4)	4 (4.9)	"When the doctor wrote me a test, my husband said he did not want me to go. You have no problem." (P4)
					"My husband, who is totally against the test, says that doctors only want to get paid." (P6)

Contd...

Table 3: Contd...

Category	Subcategory	Final code	Women HPV+ (*n*=10) Frequency (%)	Service provider (*n*=14) frequency (%)	Examples of participants' responses
	Organizational challenges	Human resources	4 (8.1)	5 (6.1)	Not all doctors and midwives have the expertise to perform the test. I see many cases where midwives and even gynecologists do not know how to perform this test." (P10)
					"Health care providers in health centers have a lot of responsibilities, we really do not have enough time to study this and we have so many responsibilities that we cannot spend a lot of time consulting with clients." (P24)
					Different tasks and systematic registration take a lot of our time in health centers. There must be more staff to be able to talk to people about diseases." (P24)
		Lack of executive policy	-	5 (6.1)	We have not been instructed in HPV screening or even counseling." (P12)
					"We did not do this in health centers because we do not have a policy of notifying health centers about screening. Even Pap smears are not done in (health) centers." (P17)
	Dissemination of information	Lack of educational policy	(2) 4	5 (6.1)	I used to go to several schools as a counselor and teach sexually transmitted diseases there, but now we as midwives are no longer invited to speak in schools." (P12)
					"We even fail to educate medical and paramedical students. Many of them do not have accurate information about HPV screening." (P22)
		Lack of information communicating	5 (10.2)	8 (9.8)	Lack of information in media is a major problem right now." (P16)
Facility problems	Costs	Costs	4 (8.1)	7 (8.6)	"I was regularly visiting a healthcare facility during my pregnancy but no one told me anything about it." (P6)
		Insurance	(1) 2	4 (4.9)	Currently, liquid-based Pap smears are not covered by insurance." (P13)
					"Unfortunately insurance program does not cover HPV Typing." (P12)
	Access challenges	Geographical	(2) 4	2 (2.4)	I was under the care of my own doctor, but when this problem occurred to me, they told me to go to another doctor for sampling. It was too far away for me." (P4)
					"I was at work in the morning, I had to go for sampling in the morning and I could not." (P5)
		Transportation	(1) 2	2 (2.4)	My place if so far. It takes me some time and I have to change a few buses to get there." (P4)
					Our house was too far from the clinic." (P6)

Many health care providers referred to the lack of understanding of screening. Most of the health care providers participating in the study believed that many women still did not have a clear understanding of the disease, being a carrier and screening. Many do not know that they can detect the virus or underlying diseases by screening before symptoms or lesions begin showing. Wrong attitudes and beliefs about HPV and its screening was another challenge mentioned by most study participants. The sexual nature of the disease, marital status and the impact on sexual activities, not taking genital warts seriously and family members' reactions were among the factors influencing women's attitudes to HPV screening. "My husband is not currently in a relationship with anyone else. There is a donut on his penis. He says I had intercourse before marriage. I do not know if he is telling the truth or not! I must have been infected through my husband" (40-year-old woman, married, HPV^{+}, and primary education).

Most participants in the study acknowledged that the effect of genital warts and papilloma virus on sexual intercourse is one of the factors that prevent them from screening. "Some of my clients are of the opinion that if they follow this screening, it may harm their sex." (midwife, service provider, and private clinic).

The reactions of family members, including the pessimism of the spouse and the reaction of the parents,

Table 4: Place: Appropriate screening sites and information channels for screening for human papillomavirus in women

Category	Subcategory	Final codes	Women HPV+ (*n*=10) frequency (%)	Service providers (*n*=14) frequency (%)	Examples of the responses
Place of service delivery	Healthcare facility	Clinics	8 (24.2)	7 (18.4)	There are government clinics near our house, and I would prefer my tests to be done there at a lower cost." (P1)
					"I think going to the doctor's office is the best for this test, but they referred me to another doctor." (P6)
		Health centers	(2) 6	5 (13.1)	Health centers are accessible to the general public, especially to the middle or low-income group." (P9)
					"We currently have high-risk women counseling centers where high-risk women can be informed." (P18)
	Portable services	Volunteer	-----	1 (2.6)	With volunteer groups, we can screen people who have transportation problems." (P12)
		Selfscreening	-----	1 (2.6)	"Selfscreening kits is used in many countries and can be a good way for those who are embarrassed to get tested." (P13)
Channel for service delivery	Inter personal	Peers and family members	2 (6)	2 (2.5)	"The advice of affected and friends with similar conditions is effective in screening." (P18)
		Healthcare providers	6 (18.1)	8 (21)	I was under the care of my own doctor. If the issue is raised by my own doctor, it would be most acceptable to me." (P2)
					Midwives' advice in midwifery offices can be effective, given that they have a lower fee of visits (compared to specialists)." (P21)
		Others	2 (6)	2 (2.5)	I think women who attend religious services and trust the speakers can be informed through them." (P9)
					"In schools and universities, the role of professors and teachers is very important." (P16)
	Social media	Multi media	3 (9)	5 (13.1)	Everyone should be informed through TV. Well, most people watch TV." (P12)
					"Nowadays, the use of cyberspace has become very common for everyone, and we can provide information through official virtual channels." (P45)
		Written media	1 (3)	2 (5.2)	Information about screening can be disseminated through pamphlets in centers such as dermatology clinics." (P11)
					"We can inform by installing posters in crowded places." (P23)
	Lack of information about the place of screening before infection	-----	9 (27.2)	5 (13.1)	"Before I had the symptom, I did not know at all what the test was and where I should go to do it." (P5)

were among the main problems mentioned by most of the study participants. Fear and worry, embarrassment and shame are the emotions and barriers that affect the HPV screening. Service providers cited cancer as a deterrent, citing people's excessive fear of cancer and death. Many participants said that people's high fear of

Table 5: Promotion: Strategies and ideas for screening of human papillomavirus in women

Category	Final codes	women HPV+ (*n*=10) frequency (%)	Service providers (*n*=14) frequency (%)	Examples of the responses
Encouragement	Decreasing the costs	5 (26.3)	10 (30.3)	I think the government should set up centers for single women that can cover at least part of the cost." (P12)
				Insurance companies do not even accept liquid base Pap smear done by midwives. If it does, many middle-class people can get screened." (P21)
				"We are now consulting and trying to get discounts through some labs, and this will make the costs payable." (P21)
	Ease of access	2 (10.5)	5 (15.1)	Usually, most of the people who go to health centers are of middle class, so services should be provided in health centers." (P9)
				Many midwives do not even know that Ascus cases should be referred for HPV typing. So informing them is one of the main points." (P10)
				"In my opinion, conducting experiments in mobile centers and in the form of volunteer camps can be helpful." (P12)
Education	General education	10 (52.6)	10 (30.3)	"These issues should have been taught to us much earlier in high school." (P2)
				"Many people are pessimistic about their spouses and many people are suspicious of their spouses. We really need to create a culture in this area. Sexual health education in premarital counseling sessions is very helpful in this regard." (P10)
				"We have to start in schools. We have to have a license to work in schools and then teach at universities." (P12)
				"Training peers, health volunteers and health liaisons can be very helpful in this regard." (P18) "Awareness among the rich may also be low, because they do not go to the health center very often. Perhaps through training in skin and beauty clinics and private offices, more work was done on the awareness raising among this group." (P9)
				Many people now get information from cyberspace. Awareness through formal virtual channels can be very helpful. (P17)
				"Banners and pamphlets can also be used in counseling centers, offices and health centers, and I think it is very important to inform people." (P12)
	Academic education	2 (10.5)	8 (24.2)	Continuing training on sexual health and screening for midwives and physicians should get greater emphasis." (P21)
				Training medical students or staff and continuing education courses, seems very important." (P16)
				I had many patients who were even under the care of the health center but did not receive any training in this area. So we must work on the awareness raising of health care workers and midwives." (P13)
				I think the health care staff should be educated first. In my opinion, these are the most important categories because they themselves do not even have enough information about transmit, diagnose and treat the disease." (P22)
				"The training of dermatologists and urologists must be considered." (P12)

cancer sometimes causes them not to take any screening measures to detect it early. "Some people are scared and say we would better not to know. We have this problem in most cases of screening." (gynecologist oncologist, service provider, and private clinic).

Most service providers cited women's high fears of cancer following a positive screening result, citing that fear as a barrier to further referrals. "Concern about test results is a very important factor, just like breast exams or mammograms. Many people do not go for the test because of the fear of test result. The same goes for Papilloma virus screening." (P1)

One of the service providers expressed great fear among women following the positive result of the test. "A lot of my clients who have wart lesions came in with panic and said we did a Google search and saw a link to cancer." (midwife, service provider, and health facility).

Some service providers cited fears of sampling as a barrier. "People need to be informed about how to do the test. Many people get anxious when we tell them to have a cervical biopsy and do not come back." (midwife, service provider, and health facility).

Environmental inhibitors

To environmental barriers, cultural challenges (taboo, shame, and the spouse's role), organizational challenges (manpower challenges and lack of executive policy) and information challenges (lack of educational policy and information) were mentioned by most of

the participants in the study. The taboo of sexually transmitted diseases was one of the major obstacles to HPV screening. One of the service providers about hiding this issue from families stated: "Many people are involved in this issue because it is taboo. They do not talk about it and are not willing to vaccinate and do the screening." (physician, manager, and 15 years of experience).

Embarrassment and shame of the internal examination and being naked were among the problems mentioned by service providers and recipients. Many service providers, in response to barriers and challenges to HPV screening, pointed to organizational challenges, including manpower challenges and a lack of proper executive policy. "Not all gynecologists and midwives are specialized in sampling, which makes them less motivated to perform the test. Even one or two of the specialists I worked with did not know how to write a patient prescription that I was writing for."

Facility problems

Facility problems included two subcategories: cost problems and access problems. The high cost of services and lack of insurance were major problems that most study participants cited. The high cost of Pap smear testing, HPV Typing, pathology, and specialists and midwives' fees in private clinics are major obstacles. "I gave the test twice and each time it costed more. It was very difficult for me to pay, but I had to. Can you introduce me to a health facility that costs less?" (32-year-old woman, HPV$^+$, married, and bachelor).

Regarding the cost challenge, most service providers stated that even after informing people about the HPV screening test and women going to the lab, many women give up the test because of the high cost of the test. Geographical access and transportation problems were among the access problems mentioned by the study participants.

Theme 3: Place

The main category of location was divided into two subcategories of service delivery place and service delivery channel [Table 4].

Place of service delivery

HPV$^+$ women in response to the question "Where is the best place to get HPV screening services?" said the best places were health centers and clinics. In addition to medical centers, service providers mentioned mobile and selfscreening centers in private sector. One of the service providers said that "I have had many patients with the obvious lesion, but when I told them do the test for virus, they did not. Many participants did not know where the test site was. There is very little information among the general public about this test, and they do not even know where they can go to be examined." (midwife, service provider, working in a health center and private clinic).

Service delivery channel

HPV$^+$ women and service providers in response to the question "What is the best way to provide screening services to increase HPV screening?" referred to influential people in this regard. According to the results, service delivery channels include interpersonal communication channels (influential people) including the individuals (friends and relatives), medical staff and other people (religious speakers and teachers) and mass communication channels including audio-visual media (radio and television, Internet, and satellite) and print media (pamphlets and posters) were among the items mentioned by most participants in the study. "Educating peers, health provider volunteers and health liaisons, and using complementary information resources, films that address Islamic and cultural issues can be effective," said one service provider about influencing people on the HPV screening. Of course, doctors and health care providers that women trust are very effective too." (physician, manager, and 15 years of experience).

Most of the study participants mentioned the effect of media on culture and increasing the level of sensitivity among individuals. "In my opinion, the best channels are radio and television," said one participant. "Many people follow media programs, especially television." (midwife, service provider, and clinic).

Given the cultural barriers to raising the issue of sexually transmitted diseases by individuals, the use of virtual communication systems and channels that reduces direct exposure of people to health care providers can be a useful way of informing.

Theme 4: Promotion

Encouragement (cost and easy access), education (general and academic), culture building (spouse and family) were subcategories that fell under the category of promotion (advertising) [Table 5].

Encouragement

In response to the question, "What strategies and motivators do you think will increase the rate of HPV screening?" Study participants answered reducing costs by providing free Pap smears, being insured, discounts, and easy access to screening tests in public health centers, clinics, mobile centers, selfscreening. "Insurance does not even accept midwife services for liquid base Pap smears. If accepts, many middle-class people can get screened." (PhD in reproductive health, service provider, faculty member and consultant).

Education

Public and academic education discussed by most of the participants in the promotion discussion. "Many do not know at all. Few come for screening. We need to educate people, whether general at the level of community understanding or professionally in universities" (midwife, service provider, and clinic).

Sexual education in schools and universities was one of the strategies mentioned by most of the study participants. "I think these trainings should have been given at school. I have not received any HPV training at school or university." (divorced woman, HPV$^+$, and management expert). One of the service providers pointed to the need to start education in high school and said: "I think we need education in high schools. They hold the phone in their hands (to get information) and face an endless world. We really need a course on sexually transmitted diseases." (dermatologist, service provider, and working in a dermatology clinic).

Discussion

In this qualitative study, the perspectives of women and service providers on HPV screening were explained and its barriers and facilitators were examined based on the SMM. The results showed that women were generally less aware of the HPV and screening tests. Most women did not know about the test until the lesions became visible and symptomatic. Lack of knowledge about HPV screening and cervical cancer until the prescription of a physician or health care provider has been found by Chakraverty study (2020) too.[29] In the study of Saraiya *et al*.,[30] knowledge and acceptance of HPV screening test were low among American women. Given the low level of awareness among people about the HPV virus, it is not surprising that the rate of HPV screening among women is low. The present study showed that most of the women did not feel that they were at risk of cervical cancer. This finding was showed by Yadav *et al*.,[31] which stated that some women did not feel concerned about cervical cancer and as a result had delayed screening attendance in the past. The present study showed that misunderstandings, rumors, and fears about screening tests have reduced the rate of HPV screening among women. The findings of the present study support the findings of the study of Kivuti *et al*.,[32] which showed that misconceptions about how to perform a cervical cancer screening test are barriers to screening, while screening tests (Pap smear and HPV typing) are performed by opening the vagina with a speculum in a lithotomy position and are not invasive. A review of the literature shows that providing information and group discussions are useful in removing barriers to HPV and cervical cancer screening and changing women's attitudes about it.[33]

Apart from the fear of how the test will be performed, the fear of cancer or death following unfavorable results are among the barriers to screening.[34] Some people prefer the disease not to be diagnosed. Similarly, a review of the literature showed that in addition to factors such as lack of information, apathy and difficulty in accessing health facilities, or fear of an unfavorable outcome can prevent women from screening. By community-based approaches and using women's experiences in screening can help removing wrong attitudes about the painful and aggressive nature of screening testing. Until the start of the COVID-19 pandemic, limited studies have been performed on selfefficacy related to online learning, and most previous studies in this field have been more focused on technology-related selfefficacy.[35] Regarding the particular attention to online education after COVID-19 pandemic, the use of this tutorial can be used as a strategy on training and the possibility of discussion and participation in the field of sexually transmitted diseases (such as HPV). Cultural and religious taboos, the shame of being naked for examination, and the shame of illness that is related to sexuality were among the barriers to HPV screening in the present study. Due to cultural and social considerations in Islamic societies, testing by female service providers has been considered[22] and in Iran, referral to gynecologists and midwives has been effective in reducing this barrier to screening. Similar to the results of the present study, the Malays who majority subscribed as Islam adherents had reported the lowest reproductive and contraceptive knowledge as compared to Chinese.[36] The results of Vahabi study showed that Muslim women have a positive attitude toward selfscreening for HPV by home kits. After seeing the HPV selfsampling kit, many participants stated that it was a practical and culturally acceptable method for Muslim women and that they were willing to use the kit.[37] Numerous studies have shown that mobile services and home kits can be useful for large numbers of women to be screened for cervical cancer and HPV.[38-40] It seems that the use of home screening kits can be welcomed among Iranian women as well. Difficult access to specialists was one of the barriers that emerged from the results of the study. One of the strategies proposed to solve this issue is to screen in health centers and midwifery clinics. On the other hand, HPV Typing done by midwifes is not supported by insurance programs and this is a cost barrier.

The results of the study showed that the lack of proper policies with regard to HPV screening in health centers is one of the obstacles that existed at the time of the study. A review of the literature suggests that the high cost of HPV screening services is one of the barriers to cervical cancer screening.[41] Lack of sufficient skills and knowledge among screening service providers is another barrier. It is suggested that training be given to

key influencers in HPV screening through universities and in-service courses. The study by Townsend *et al*.[42] showed that training sessions are effective in improving the awareness of women and service providers in the field of HPV screening. Given the importance of the role of spouses and sexual partners in Iranian societies, it seems that educating men in universities and by means of communication, and physicians especially urologists who are in contact with men with genitourinary disorders, can be HPV screening in women. The results of Widiasih study indicated the low cooperation of spouses in matters related to the prevention and early detection of gynecological cancers.[43] Fear of family speculation and pessimism, especially of spouses, is one of the barriers to HPV screening. A review of the literature showed that in screening for cervical cancer and HPV, we need the participation and information of family members, especially men, to prevent suspicion and misunderstanding.[44] The results of the present study also showed that due to the pivotal role of spouses, their performance is not enough and sometimes their lack of knowledge of men on the concept of screening can be a barrier to screening in women. Lee and Yeo showed Equipping the young generation with appropriate knowledge could create a foundational change in their attitude and shaping positive behaviors that related to prevention of risky sexual behaviors and sexual exploitation.[45]

Limitations and recommendation

The first limitation of this study is that the data reflect the situation of the female population in Mashhad, Iran and therefore may not be generalizable to other communities. On the other hand, due to the sexual nature of HPV and the taboo about this issue in Iran, participants' responses may have been influenced by cultural conditions. To reduce this possibility, we tried to have a good relationship between the interviewer and the participants. To reduce interviewer bias, an interview guide was used. Finally, the small sample size in qualitative studies prevents the results from being generalized to a wider population of Muslim women. Future studies using larger samples will overcome this limitation.

Conclusion

The level of knowledge about HPV and its screening test is low among women and even the healthcare staff. Due to the lack of a related policies about HPV Screening in health centers, a negative attitude toward HPV screening, not having health insurance and high cost of testing, facilities barriers and lack of groups of population and the taboo of sexually transmitted diseases in Iran, it is suggested that HPV screening management be on the agenda as a way to screen for cervical cancer. This developmental study was performed as the first step in designing a social marketing-based intervention to increase the rate of HPV screening among women.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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