

What do Lebanese Women Know about Cervical Cancer and Human Papillomavirus? A Report on Awareness Levels in Urban Communities

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Abstract

Objectives: To evaluate the knowledge of urban adult Lebanese women regarding the symptoms and risk factors of cervical cancer and the diagnostic tests and vaccination of human papillomavirus (HPV) infection. To measure in the same population the uptake of the cervical cancer-screening test (Pap smear) and the uptake of HPV vaccination, and determine the factors that may influence them.

Methods: 444 Lebanese women above 18 years of age, residing in Beirut and Mount-Lebanon, with no medical background, were recruited online and in health care facilities to fill out a 32 item questionnaire about cervical cancer and HPV. Collected data was exported to and analyzed in SPSS® v. 21.0.

Results: 45.7% of the women aged 18 to 25 y, residing in Mount-Lebanon (51.8%), single (49.3%), with high education qualifications (73.9%) and currently employed (49.1%) in a field not related to health (84.9%). They did not visit a general physician (64%) or a gynecologist (64.6%) regularly. 85.6% were aware of cervical cancer; HPV infection involvement in the pathogenesis of cervical cancer was identified in 53.9% of cases. 35.6% of women were aware of HPV infection but 80.4% believed they lack information. 37.6% of participants had been screened by Pap smear for cervical cancer at least once whereas 9% did not know what a Pap smear was. Screening was significantly associated with cervical cancer awareness and regular visits to general health physicians and gynecologists. Only 11.7% of participants aged 18 to 35 were vaccinated against HPV. Vaccination uptake was significantly associated with cervical cancer awareness, religion, field of work and studies, and regular visits to gynecologists.

Conclusion: Urban Lebanese women in Beirut and Mount-Lebanon are not well informed about cervical cancer and HPV. Screening by Pap smear and HPV vaccination uptakes are non-satisfactory. Further interventions are required to improve these numbers.

Keywords: Cervical Cancer (CC); Human Papillomavirus (HPV); Pap Smear

Introduction

Cervical cancer (CC) is the fourth most common gynecologic cancer and the seventh in females worldwide with 528000 new cases and 266000 deaths in 2012 [1]. 85% of the cases and 87% of the deaths occur in emerging countries; it is estimated that in 2050, more than 90% of CC new cases will be diagnosed in these countries [2]. In the Lebanon, nearly 90 new cases are detected yearly. 600000 pap smears

are expected to be done yearly covering theoretically 25% [3] better than the past records of 11% [4] and surely lower than the numbers of the developed countries. No data is found defining the level of knowledge of Lebanese women on CC, its symptoms and risk factors. According to the WHO, 12 genotypes of human papilloma virus (HPV) are oncogenic viruses. Genotypes 16 and 18 are responsible of more than 70% of CC. HPV infection is a sexually transmitted disease; the virus is recovered from 10% of all women and at least 50% of sexually active individuals worldwide. The highest incidence lies between 15 and 24 years old females [5]. More than 75 genome-sequencing tests are available but did not yet proved efficacy in randomized trials so must be used carefully only in validated clinical settings [6]. Three vaccines are available each covering different number of HPV genotypes: Cervarix® covering genotypes 16 and 18, Gardasil® covering 6, 11, 16 and 18 and Gardasil 9® covering 6, 11, 16, 18, 31, 33, 45, 52 and 58. Genotypes 1 and 11 cause 90% of anogenital warts. Cervarix and Gardasil cost respectively 75 and 176US\$ in the Lebanese market per vial and are not reimbursed. They have proven safety and efficacy [7].

The Lebanese society is long considered conservative concerning sexuality; it is undergoing nowadays a sexual revolution against traditions.

This fact triggers a change in the health system introducing the HPV vaccination in the vaccination schedule. This modification faces multiple obstacles; economic, cultural, social and religious and will have to adapt slowly [8]. One way to promote the vaccination is based on the information-motivation-behavior (IMHC) model. The latter is well validated and confirms that a well informed patient about HPV and its vaccination, motivated to act by his knowledge and capable to search for and finance the 3 doses of HPV vaccination will most probably be vaccinated. The first step is to collect the Lebanese data [9]. This study assesses the level of knowledge of Lebanese women living in Beyrouth and Mount-Lebanon about:

- Cervical cancer, its symptoms and risk factors in addition to the predictive features of the degree of knowledge realization.
- HPV, its diagnostic tests and vaccination and the consequences of HPV infection as well as the predictive elements of this knowledge.
- The link between HPV infection and CC.

Aim of the Study

This study aims also at defining the level of screening for CC and vaccination against HPV and the promoting factors for their fulfillment endorsement achievement in this same population.

Materials and Methods

Protocol for patient selection: This is a transversal descriptive study concerning HPV infection and CC conducted between January and February 2015. It includes Lebanese women aged > 18 years who are not medical doctors and living in Beyrouth and Mount-Lebanon districts. We excluded non Lebanese participants, physicians, people living outside Beirut and Mount-Lebanon or aged < 18 years. Nurses or laboratory technicians and pharmacists were not excluded. The minimal number of patients required for this study to get significant results is 385 for an interval of confidence of 95%, error margin of 5%, probability of success of 50% and power of 80%. The questionnaire was provided in Arabic and English, anonymous and auto administrated taking 7 to 10 minutes to complete. It was proposed in 2 versions so that we could approach a maximum number of patients but also to outwit immeasurable factors as non-responses or recording errors specific to each method. The first version was the diffusion of a computerized Google form version via the social media. This program saves automatically the individuals' answers in a virtual secured database ensuring the anonymity all through the study. We got 185 answers via this method. The second method was random sampling distributing the questionnaire to patients waiting for their appointment and people in public area in the governorates of Beirut and Mount-Lebanon. Our aim was to get a representative population enclosing different age categories, religions, occupations and education levels and fields. We recovered 259 responses out of 350 questionnaires (74% of reply level).

Elaboration of the questionnaire: The survey consisted in 31 items divided in 3 sectors: the first dealing about knowledge concerning the symptoms and risk factors of CC in addition to reasons delaying the medical consultation in case of alarming symptoms. The corresponding items of the questionnaire were inspired by the cancer awareness measure toolkit (CAM) and by the cervical CAM toolkit both validated by the Cancer Research UK ($\alpha > 0.7$; linear correlation $r > 0.7$). The second sector assesses the knowledge about HPV, its diagnosis and vaccination.

The content of this part of the survey were taken from the text of Waller, *et al.* validated in many countries ($\alpha = 0.838$; $r = 0.79$). All these elements are translated into Arabic and adapted by a pilot study to local population of young women in Beirut and Mount- Lebanon before the initiation of this study. The third part includes the demographics and the gynaecologic past history of the studied population.

Ethical issues

The study protocol and the questionnaire were both approved by the ethical committee at Hotel Dieu de France hospital in January 2015. All participants were free to stop the questionnaire at any time or skip any question in the study. Anyway, there was, in every reply was inserted an option "I prefer not to answer". All data are kept in total confidentiality and treated by medical professionals in total secrecy. Finally, a clear online or written consent is obtained from each participant after having explained the objectives of the study.

Study progress and conduct

First, all participants are asked about CC. Those who affirms having heard about CC continue answering series of 10 questions about the symptoms and 11 questions about its risk factors.

Then, all participants were asked about HPV. Again, those who have heard about it continue answering 13 other questions linked to HPV. Then, if they are aware of a single diagnostic test, they will have to respond to 6 new related questions. Last, if they know that a protective vaccination exists, they answer 10 supplementary correlated questions.

The third and final part of the questionnaire collects the demographics as well as data about the reproductive health of the population. The questionnaire in Arabic is shown in the annexes.

Analytic analysis

All the collected data is first analysed with Microsoft Excel then exported to the version 21 of Statistical Package for Social Sciences (SPSS) where all the statistical evaluation is done.

Based on the answers of the participants, 5 different knowledge scores were assessed dealing with: CC symptoms, CC risk factors, HPV, HPV diagnosis and HPV vaccination. Every score reveals the correct answers of each series. 1 point is given to a correct answer and no point to an incorrect or uncertain one. The total number of points i.e. correct answers reflects a higher level of knowledge of the participant about the specific subject. The scores are thereafter adapted to a scale of 10 according to the following calculation: $z = 10 \times x/y$ (x = total number of points, y = number of items within the series and z = total score/10) and presented in a quantitative variable as "median \pm standard deviation" for every subgroup. The data afterwards were stratified in three levels of knowledge: low, medium and high. The interval of "median \pm standard deviation" is considered as reference; it matches medium level and contains 50% of the studied subgroup. The knowledge level (KL) is so a qualitative variable shown as a percentage (%). A statistical association between the demographics and the KL is also done for each score using the Chi² test or Fisher's exact test with a significant value of $p < 0.05$. We did the same for the relation between CC screening levels and HPV vaccination using different demographic elements.

Results

Demographic data

Demographics and characteristics of the studied population is shown in table 1. All participants were adult Lebanese women, mostly young (45.7% aged between 18 to 25 years), living in the area of Mount-Lebanon (51.8%), Christian (50.7% v/s Muslims 40.3% and Druze 1.8%), single in 49.3%, on-going or having obtained a higher education diploma in 73.9%, employee (49.1%) or student (27.3%) in a field other than the health system in 84.9%. most of them do not visit regularly a general practitioner (64%) neither a gynaecologist (64.6%). 32.9% only were aware of a national campaign of sensitisation for CC inviting women to do a pap-smear for screening of this cancer. 13.5% believed wrongly that a campaign of HPV screening was on-going at a national level. Only 37.6% of the participants had at least one pap smear and 9% ignore what is a pap-smear. At last, just 7.9% are vaccinated against HPV.

	N		N (%)
Age (years)	18 - 25	203	45.7%
	26 - 50	178	40.1%
	51 - 80	63	14.2%
Region	Beyrouth	203	45.7%
	Mont Lebanon	230	51.8%
Religion	Christian	225	50.7%
	Muslim	179	40.3%
	Druze	8	1.8%
	Prefer not to answer	32	7.2%
Civil status	Single	219	49.3%
	Married or living with someone	160	36.0%
	In relationship	29	6.5%
	Divorced or widow	24	5.4%
	Prefer not to answer	12	2.7%
Education level	University diploma	226	50.9%
	On-going university studies	102	23.0%
	High education diploma	42	9.5%
	Unfinished high education	35	7.9%
	Technical diploma	15	3.4%
	Prefer not to answer	24	5.4%
Profession	Employee	218	49.1%
	Student	121	27.3%
	Domestic woman	70	15.8%
	Non working woman	22	5.0%
	Retreated	4	0.9%
	Prefer not to answer	9	2.0%

Table 1: Population demographics.

Concerning the uterine CC

85.6% heard about CC from different sources: the media in 32.6%, the physicians or healthcare professionals in 25.8% and from their relatives in 41.6%. The knowledge level about CC is significantly statistically correlated to age, level of education, employment and civil status. In fact, the portion of women having heard about CC was the highest significantly in those aged between 26 and 50 years (94.4%, $p < 0.001$), those who completed their higher education (92%, $p < 0.001$) and those working or retired (91.3% and 100% respectively, $p < 0.001$).

Regarding the uterine CC symptoms: The median of the cancer symptoms score is 3.00 ± 2.13 displaying a poor knowledge level. Indeed, respectively 22.6%, 53.2%, 57.1% and 23.7% of the subgroup who had already heard about uterine CC knows that hypermenorrhea, extra period bleeding, post menopausal bleeding and post sexual intercourse bleeding might be CC symptoms. Similarly, 37.2% and 44.7% do not associate chronic vaginal discharge and vaginal pain during sexual intercourse respectively to the risk of having CC. finally, chronic pelvic pain, chronic lumbar pain, rectorrhagia or hematuria and unjustified weight loss were linked to uterine CC in respectively 42.4%, 19.2%, 30.5% and 42.9%. A high proportion of doubtful women is to be noted. The results are shown in table 2.

	Yes	No	Not sure
Longer periods duration	22.6%	54.5%	22.9%
Inter periods vaginal bleeding	53.2%	22.4%	24.5%
Post menopausal vaginal bleeding	57.1%	18.2%	24.7%
Chronic malodorous vaginal discharge	33.7%	39.2%	27.1%
Vaginal bleeding during sexual intercourse	23.7%	37.4%	38.9%
Pain or discomfort during sexual intercourse	21.1%	44.7%	34.2%
Chronic pelvic pain	42.4%	25.5%	32.1%
Chronic lumbar pain	19.2%	43.9%	36.8%
Rectorrhagia or hematuria	30.5%	43.4%	26.1%
Unexplained weight loss	42.9%	27.1%	30.0%
Tobacco smoking	58.4%	28.4%	13.2%
Immunity disorders	70.5%	17.6%	11.8%
Long duration oral contraceptive treatment	55.0%	22.1%	22.9%
Sexually transmitted diseases	66.3%	18.9%	14.7%
Uncircumcised sexual partner	26.6%	50.0%	23.4%
Early sexual activity	26.3%	45.5%	28.2%
Direct multiple sexual partners	53.7%	24.5%	21.8%
Multiparae	15.5%	66.8%	17.6%
Indirect multiple sexual partners	44.2%	30.5%	25.3%
Non-adherence to screening pap smear	68.7%	17.6%	13.7%
HPV infection	53.9%	11.3%	34.7%
HPV infection is rare	17.1%	60.1%	22.8%
There are many types of HPV	60.8%	5.7%	33.5%
HPV can cause uterine cervical cancer	84.8%	1.3%	13.9%
Infected patients can be asymptomatic	65.2%	9.5%	25.3%

HPV infection has always clear physical signs	18.4%	45.6%	36.1%
HPV is sexually transmitted	70.9%	11.4%	17.7%
Sexually active people are infected	28.5%	32.3%	39.2%
Early sexual activity rises the risk of infection	32.3%	33.5%	34.2%
Condom use reduces the risk of transmission	62.0%	14.6%	23.4%
Antibiotics can treat the infection	11.4%	42.4%	46.2%
The infection does not need treatment	10.1%	53.2%	36.7%
Men can be infected by HPV	32.3%	32.9%	34.8%
A positive HPV test indicates surely a uterine cervical cancer	14.0%	61.6%	24.4%
A negative HPV test indicates a low risk of uterine cervical cancer	36.0%	32.6%	31.4%
The test is done simultaneously with the pap smear	48.8%	7.0%	44.2%
The test's results are given the same day	7.0%	41.9%	51.2%
The test determines the infection duration	26.7%	25.6%	47.7%
The test's result determine the need to vaccinate	19.8%	31.4%	48.8%
2 vaccines are available	52.4%	7.8%	39.8%
Vaccination is recommended for the 11/12 and 25/26 years old	75.7%	4.9%	19.4%
Vaccination consist of 3 doses of HPV vaccine	61.2%	2.9%	35.9%
The vaccine protects against all STDs	8.7%	68.0%	23.3%
The vaccine is protective against most oncogenic HPV types	56.3%	26.2%	17.5%
Of the vaccine is protective against genital condylomas	35.0%	10.7%	54.4%
It is better to vaccinate before sexual activity	54.4%	10.7%	35.0%
Vaccinated women will never have uterine cervical cancer	16.5%	62.1%	21.4%
Vaccinated women do not need to do pap smears	5.8%	64.1%	30.1%
Men can be vaccinated	16.5%	34.0%	49.5%

Table 2

Distributing the scores by relatively by knowledge levels (KL): 33.9% of women have low KL, 51.3% medium KL and 14.7% high KL. These levels are significantly correlated to educational and employment stages ($p = 0.007$). Actually, 21% of women working in the health care system have a low KL and 25.8% have a high KL compared to 36.5% with a low level and 12.6% with a high level in those working in other fields. Table 3 shows these results.

Considering the cancer risk factors: The median of the score of the CC risk factors is 5.5 ± 2.22 reflecting a KL. Actually, more than half of the women correctly identified tobacco smoking (58.4%), immunity disorders (70.5%), long-term use of oral contraceptives (55%) as well as sexually transmitted infections as chlamydial (55%) as risk factors of uterine CC. As to sexual behavior, direct and indirect multiplicity of sexual partners were correctly implicated in 53.7% and 44.2% respectively. However, 26.6%, 26.3% and 15.5% of women only consider that a sexual intercourse with a non-circumcised man, early sexual activity (< 17 years old) and multipara (having > 7 children) respectively risk factors of CC. As to screening, 68.7% of women state that failing to perform regularly pap smears is an important risk factor for CC. HPV infection is correctly linked in 53.9%; however 40.3% of those having heard about CC know about HPV. Table 2 displays these results.

		Working field	
		Health	Others
		N (%)	N (%)
Cervical cancer symptoms (p = 0.007)	Weak (0 to 2): 33.9%	21.0%	36.5%
	Moderate (3 to 5): 51.3%	53.2%	50.9%
	High (6 to 10): 14.7%	25.8%	12.6%
Risk factors of cervical cancer (p = 0.001)	Weak (0 to 4)	17.7%	39.3%
	Moderate (4 to 8)	62.9%	52.5%
	High (8 to 10)	19.4%	8.2%
HPV (p = 0.05)	Weak (0 to 4)	16.7%	35.5%
	Moderate (4 to 7)	62.5%	50.9%
	High (7 to 10)	20.8%	13.6%
HPV diagnostic tests (p = 0.20)	Weak (0 to 1)	6.9%	15.8%
	Moderate (1 to 5)	51.7%	59.6%
	High (5 to 10)	41.4%	24.6%
HPV vaccination (p = 0.245)	Weak (0 to 4)	17.1%	32.4%
	Moderate (5 to 7)	65.7%	51.5%
	High (7 to 10)	17.1%	16.2%

Table 3

If we divide the scores by the population knowledge levels, 35.8% of women have a low KL, 54.2% with a medium KL and 10.7% a high KL. These KLs are statistically significantly correlated to the education field or working status (p = 0.001). Actually, 17.7% of health care workingwomen have a low KL and 19.4% of them have a high KL compared to 39.5% and 8.2% of low and high KLs respectively in women working in other fields. The data are presented in table 3.

Regarding HPV

35.6% only say they heard about HPV. Among these, 19.6% affirm having sufficient knowledge about HPV and 80.4% believe they do not know enough on this issue. Knowledge about HPV is significantly correlated to religion, educational level, expertise and work field and frequency of doctor or gynecologist visits. In fact, the proportion of women having heard about HPV was the highest statistically in Christians (45.3% v/s 21.5% of Muslims, p < 0.001), in health care working field (71.6%, p < 0.001) and in those visiting frequently their general practitioner (45.0%, p < 0.001) or gynecologist (42.0%, p = 0.023).

General knowledge (GK)

The median score of GK about HPV is 5.39 ± 2.38, exposing a low to moderate level. First, the majority of the population knew that HPV infection was not rare (60.1%), there are different kinds of HPV (60.8%), HPV is a cause of uterine CC (84.4%), HPV infection is not always symptomatic (45.6%) and that people could be infected for years before knowing (65.2%). Nevertheless, only 10% of the participants believe that this kind of infection does not usually need any treatment; 11.4% think it does require an antibiotherapy and 46.5% were not sure. Just 32.3% knew that men could be infected with HPV. 72.2% and 62.0% knew that sexual intercourse with multiple partners increases the risk of transmission of the virus and that the use of condoms lowers it respectively. Most of the participants were not aware

that early sexual activity favors HPV infection (32.3%) and every sexual active individual is at 28.5% risk of being infected with HPV. The results are illustrated in table 4. Distributing the scores by population knowledge levels, 29.7% have a low level, 54.4% a medium level and 15.8% a high level. These levels are statistically correlated to the educational or working fields ($p = 0.05$). In fact, 16% of health care workingwomen have a low KL and 35.5% a high KL compared to 20.8% and 13.6% respectively in women working in other fields. The results appear in table 3.

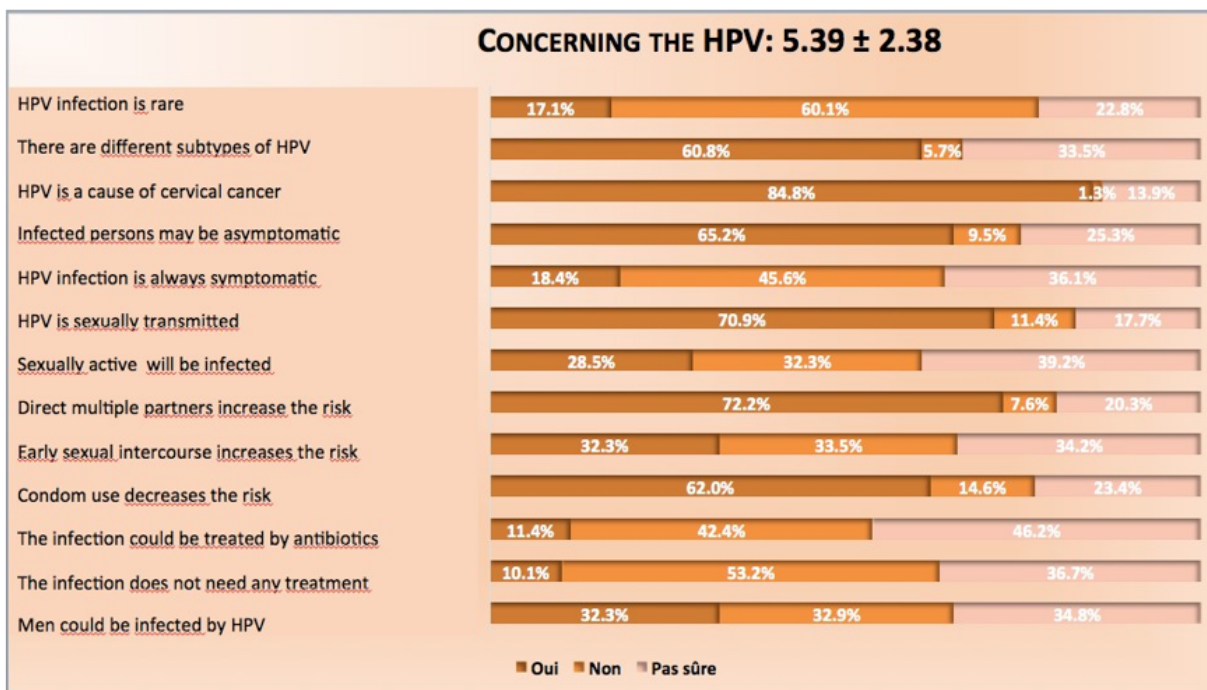


Table 4

Last, 31% believe that HPV infection is independent from the age; 8.2%, 32.3% and 1.3% state that women

aged < 25 years, 25 to 55 years and > 55 years were more at risk for HPV infection. 27.2% are uncertain about their answers.

Considering the HPV diagnostic tests: 54.4% of the women that heard about HPV know that, beside the pap smear, another diagnostic test of HPV does exist. The median score regarding the diagnostic tests is 3.33 ± 2.85 , demonstrating a low KL. We noticed great deal of uncertainty regarding the practical part of the diagnostic test; 44.2% were not sure if it is done simultaneously with the pap smear and 51.2% did not know if the result is given the same day. 47.7% and 48.8% ignored if the test predicts the duration of the infection or is an indicator for vaccination respectively. Nevertheless, 61.6% are aware that a positive HPV test is not diagnostic of CC and 36.0% knew that a negative test suggests a low risk of CC. The results are given in table 2. Again, distributing the scores by population KL, 12.8% have a low KL, 57% a medium one and 30.2% a high level. These are significantly correlated to educational and working fields.

Moreover, 6.9% of working women in the health care system have a low KL and 41.4% have a high level paralleled to 15.8% and 24.6% with low and high levels respectively in workingwomen in other fields. These results are not statistically significant ($p = 0.2$) as to the low number of patients in these subgroups ($N = 86$). The results are shown in table 3.

Regarding the HPV vaccination: 65.6% of those who heard about HPV know that there is at least one vaccine against the virus. The median score of KL concerning HPV is 6.00 ± 2.41 demonstrating a medium level. 52.4% of the concerned population identifies 2 anti HPV vaccines; recommendation to vaccinate girls between 11/12 and 25/26 years (75.7%) and that vaccination schedule is in 3 doses (61.2%). As to the vaccination effect on the CC, 68% and 56.3% realize that it does not cover all STDs but most subgroups of oncogenic HPV respectively furthermore 54.4% are not sure as to its effect on genital warts. They do know that vaccinated women still need to have regularly pap smears (64%) because the vaccination does not protect completely against uterine CC (62%) but its efficacy is best if administrated before sexual activity (54%).

Nevertheless, 16.5% only believe that vaccination could be done to men. The results are given in table 2.

Apportioning the population scores by KL, 27.2% of women have a low KL, 56.3% a medium one and 16.5% a high KL. These levels correlate with the working and education fields. In fact, 17.1% of health care workers have a low KL as well as with high levels compared to 32.4% of working women in others domains with low levels and 16.2% with high Kls. These scores were not statistically significant ($p = 0.23$) as to the low number of the participants in this subgroup. These are summarized in table 3.

Considering the pap smear

37.6% of the participants did at least once a pap smear while 9% didn't know what is a pap smear.

Undergoing a pap smear is statistically correlated to 3 major issues: having heard about uterine CC, regular visit to a general practitioner and regular visit to a gynecologist. The results are shown in table 5.

		Have done a pap smear at least once: 37.6% / 9% do not know		
		yes	No	Do not know what is a pap smear
		N (%)	N (%)	N (%)
*($p < 0.001$)				
Heard about cervical cancer*	Yes	96.4%	84.8%	45.0%
	No	3.6%	15.2%	55.0%
Visits regularly a GP*	Yes	50.3%	29.1%	17.5%
	No	49.7%	70.9%	82.5%
Visit a gynecologist regularly*	Yes	67.7%	17.3%	7.5%
	No	32.3%	82.7%	92.5%

Table 5

Regarding the vaccination, 7.9% of the study population is vaccinated against HPV. If we correct this figure to include only vaccinated women aged 18 to 35 years since 2007, the adjusted rate is 11.7% and is statistically correlated to the religion, education and working fields, the fact of having heard about uterine CC and to routine visits to a gynecologist. The figures are listed in table 6.

		Is vaccinated (18 à 35 years) : 11.7%	
		Yes	No
		N (%)	N (%)
Religion (p = 0.021)	Christian	74.3%	48.3%
	Muslim	17.1%	42.3%
	Druze	0.0%	1.7%
	Prefer not to answer	8.6%	7.7%
Work or study domain (p = 0.03)	Health	34.3%	18.5%
	Others	65.7%	81.5%
Visits a gynecologist regularly (p = 0.022)	Yes	42.9%	23.4%
	No	57.1%	76.6%

Table 6

Other results

In case of symptoms suggesting a uterine CC, 58.9%, 25.9% and 9.2% of the study population state waiting less than a week, a week to a month and more than a month respectively before consulting a gynecologist.

Among the causes for the delay in consulting appear the fear (51.8%), anxiety (55%) and temporal or economic constraints (20.8%). 12.9% fully trust their physician and 8.25 have no problem discussing such issue.

	N	N (%)
Study or working field	Healthcare	67 15.1%
	Others	377 84.9%
Visits regularly a general practitioner	Yes	160 36.0%
	No	284 64.0%
Visits regularly a gynecologist	Yes	157 35.4%
	No	287 64.6%
Have done a pap smear	Yes	167 37.6%
	No	237 53.4%
	Do not know what is a pap smear	40 9.0%
Is vaccinated against HPV	Yes	35 7.9%
	No	409 92.1%
Thinks there is a national sensitization campaign for cervical cancer	Yes	146 32.9%
	No	298 67.1%
Thinks there is a national sensitization campaign for HPV	Yes	60 13.5%
	No	384 86.5%

Table 7

Discussion

This study is one of the rare studies assessing the knowledge level of the Lebanese women about uterine cervical cancer, HPV infection, its diagnostic tests and available vaccination. It highlighted the fact that 14.4% of Lebanese women ignore all about uterine CC. Throughout data collecting, some participants asked about the definition of the cervix, whether it is visible when looking at the genital area reflecting deep gaps in knowledge that should be addressed in the future. However, 85.6% did hear about the disease showing a high sensitization level. These figures even though slightly high because of the sampling in Beirut and Mount Lebanon districts are similar to Great Britain's (70%) [10] and those of the United States (68%) [11] and higher than under developed countries like Ghana where 31.6% of women knows about CC [12]. Socioeconomic status is a determinant factor in recognizing the diseases as 90% of workingwomen or having completed their higher education are informed about it. The information sources are frequently the media, family and friends (74.2%) displaying a risk of incorrect data biasing their future behavior.

Therefore, healthcare professionals are to sensitize their patients about CC as its incidence reaches 5.6/100.000 with a mortality rate of 1.7/100.000 [13] but most of all because early detection and treatment save lives. Nevertheless those who had heard about CC had low KL with a score of 3.00 ± 2.13 .

This is problematic since that not recognizing the cancer's symptoms leads to late consultations and severe prognosis. Actually, 24% of diagnosed cases of CC presented first late at stage III or IV of the disease. Most common identified symptom is abnormal vaginal bleeding while other general cancer signs and symptoms are less known. Similar results are reported in Great Britain [10] highlighting the need to women sensitization about advanced stage cancer disease. Interestingly, few women are aware that vaginal bleeding (23.7%) and pain (21.1%) during sexual intercourse could be abnormal symptoms but it is out of scope of this study. Last, it is not surprising that healthcare workingwomen and students have statistically significant higher scores. Risk factors' awareness is low to medium with a score of 5.50 ± 2.22 .

Nonadherence to pap smear routine screening is mostly incriminated (68.7%) comparable to the British data (75%) [10] and higher than under developed countries where 97.7% of women are not aware of uterine CC (Ghana) [12] compared to 9% in our study. The level of 68.7% might have been interesting without the pap smear screening level of 37.6% in this population. Even though Lebanese women understand the importance of screening for the disease, few do it.

The underlying causes are not reviewed in the Lebanese population and the absence of national recommendations might play a role. Other reasons include the fact that the majority of women do not regularly visit a general practitioner (64.0%) neither a gynaecologist (64.6%) to do a pap smear. It could be financial causes because the cost of a consultation plus the pap smear may reach 100US\$, or geographical as many centres in the remote area do not offer this option. The non-compliance to perform a pap smear is linked to low socioeconomic level in the American studies as in Lebanese female population; the performance of the pap smear is correlated to high educational level and maximal healthcare insurance coverage [4].

Lastly, the traditional Lebanese mentality of "better not to know so we do not fear" interpreting the anxiety of the unknown leads more than half the female population to delay their medical consultation.

53.9% do recognize the HPV infection responsibility in the occurrence of uterine CC. This figure is lower in reality biased by the formulation of the question. Actually 40.3% among women knowing about uterine CC identify HPV. So, the real percentage would be between 40 and 53.9% and it is similar to the figures of developed countries: 46% Great Britain [10] and is higher than under developed countries like Brazil (7%) [16]. Not only the percentage of women having heard about HPV is low (36.5%) but also the majority (80.4%) of them believe their knowledge is insufficient. Sensitization level was less than developed countries such as the United States of America (62%), Great

Britain (44%) and Australia (40%) [17] but is higher than under developed countries. Again, education level and working and educational fields influence knowledge level but interestingly there is a statistically significant relation between religion and the fact of having heard of the virus. Muslim women are less informed than Christians (21.5% v/s 45.3%) because of the sexual aspect of HPV infection. Muslim religion has been a negative determinant of HPV vaccination in other studies [18].

Sexuality is a delicate subject in the Muslim society that is not frequently discussed as well as sexually transmitted diseases and its prevention as vaccination against HPV. This fact is also found in different cultures and societies in the Middle East and North African region (MENA) independently from religious believes.

Knowledge scores regarding HPV were adequate (5.39 ± 2.38) in this study similar to that reported by Dany M., *et al.* in a university student female population ($52.7 \pm 1.71/100$) [19]. The fact that only 32% of females being aware of men HPV infection is worrying as men, who are generally asymptomatic, are a reservoir for HPV and do not seek to be vaccinated maintaining the HPV in the general population. This is supported by the results of Dany M., *et al.* who found that 18% of the population knew that HPV infection is not exclusive to females.

Finally, women most at risk of infection might not be aware of the danger as just 8.2% identified the 18 - 25 age group as the most susceptible to infection. 54.4% of women having heard about HPV are aware of virologic diagnostic tests likewise in the USA (62%), Great Britain (44%) and Australia (40%) [17]. Nevertheless, the knowledge level is low as to the frequent indecisions concerning the practical issues: merely less than half know that the virological test is done simultaneously with the pap smear (48.8%). These tests were recently introduced in the Lebanon and its use is not yet standardized. Better for Lebanese women to recognize the tests basics to get to ask and discuss about it with their physician.

Last, 65.5% of women who heard about HPV are aware of a protective vaccine close to 63% recorded in Dany M., *et al.* the knowledge level is satisfactory reflecting an appropriate comprehension of the practical details of vaccination. Nonetheless, simply 16.5% know that vaccination could be given to males, which highlight the notion of asymptomatic male reservoir. Moreover, we find discordancy between the knowledge level percentage and the real proportion of vaccinated females aged 18 to 35 years (11.7%). This rate is inferior to that of Belgium (82% in 2010), Denmark (79% in 2009), Portugal (81% in 2009) and Great Britain (84% to 92% in 2009). Our figures are slightly less than that in Dany M., *et al.* study mainly because of the differences in the studied populations: the latter treated with younger participants with higher educational and economical status.

In addition, the frequency of vaccination in this study correlated with different factors including the religion. Adding to the preceding is the wrong statement (refuted lately 20) that the vaccination against a STD incites to premarital sexual relations, sexual promiscuity and high-risk behaviour among girls especially adolescents. The latter are not to be sexually active so why would they necessitate to be vaccinated? These findings are frequently seen in Muslims or non-Caucasian ethnicities; it is mentioned among the principal reasons of absence of willingness to be vaccinated or to vaccinate the children [18]. Other causes of low levels of vaccination include the price and the lack of psychological family or partner understanding and support.

Limitations of the Study

First, the main instrument of this study is a bilinguistic questionnaire in Arabic and English with 2 major sections and a third on demographics validated in English only. But, few words were misperceived because sworn translator did the translation. As the pilot study showed uncertainty over this item, chronic diarrhoea as a symptom of uterine CC was removed from the questionnaire although it still figures in the Cervical CAM toolkit as it is clinically valid. Some supplementary elements are added to the second section of the questionnaire concerning he HPV vaccination without being validated but for their clinical importance. Items on sexual behaviour are not included in the survey as the level of responsiveness was < 40% in the pilot study. A last limitation is in the mode of random screening of the participants who under represent the low socioeconomic population.

Conclusion

HPV linked diseases are increasing in the developing countries. In MENA region including the Lebanon, we witness nowadays a sexual revolution partially explaining the detection of HPV DNA in up to 25% of women with normal cytology tests and up to 98% of those suffering from genito-anal warts, intraepithelial lesions and invasive uterine CC [2]. This phenomenon requires a change in the health policies by introducing the HPV vaccination in the national vaccination program. This modification faces many economical, cultural, social and religious barriers. One way to promote HPV vaccination is based on the IMHC program (information, motivation, behavioral skills). This latter is a validated program and confirms that a well informed subject about HPV and its vaccination, self-motivated and by others to get vaccinated and being able to get and finish all the 3 doses of the vaccine after consulting is the most likely to get the vaccination. The first phase in this process is to collect Lebanese data. This study is a step in this model and should be followed by other surveys and publications that may serve to elaborate a base of sensitization campaigns about HPV vaccination for the Lebanese population.

Bibliography

1. Fact Sheets by Cancer (2015).
2. Seoud M. "Extended Middle East and North Africa: cervical cancer and human papillomavirus: can we make the case for prevention in this "relatively" low prevalence region?" *Vaccine* 31.6 (2013): vii-viii.
3. Sancho-Garnier H., *et al.* "Overview of cervical cancer screening practices in the extended Middle East and North Africa countries". *Vaccine* 31.6 (2013): G51-57.
4. Sakr R and Adib S. "Knowledge, perceptions and practices concerning pap smear screening for cervical cancer in Lebanon (2015).
5. Reichman RC. Chapter 185. Human Papillomavirus Infections. Harrison's Principles of Internal Medicine. 18th edition. McGraw-Hill (2021).
6. Bosch FX., *et al.* "Comprehensive control of human papillomavirus infections and related diseases". *Vaccine* 31.7 (2013): H1-31.
7. Schiller JT., *et al.* "A review of clinical trials of human papillomavirus prophylactic vaccines". *Vaccine* 30.5 (2012): F123-138.
8. El-Kak F. "Sexuality and sexual health: constructs and expressions in the extended Middle East and North Africa". *Vaccine* 31.6 (2013): G45-50.
9. Fisher WA. "Understanding human papillomavirus vaccine uptake". *Vaccine* 30.5 (2012): F149-F156.
10. The EVE Appeal. What Women Know – Report on Awareness Levels of Cervical Cancer amongst Women in England (2022).
11. Blake KD., *et al.* "Predictors of Human Papillomavirus Awareness and Knowledge in 2013: Gaps and Opportunities for Targeted Communication Strategies". *The American College of Preventive Medicine* (2015).
12. Ebu NI., *et al.* "Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana". *International Journal of Women's Health* 7 (2015): 31-39.
13. NCR.Df (2008).
14. Ali SF., *et al.* "Knowledge and awareness about cervical cancer and its prevention amongst interns and nursing staff in Tertiary Care Hospitals in Karachi, Pakistan". *PloS One* 5.6 (2010): e11059.

15. Sait KH. "Knowledge, attitudes, and practices regarding cervical cancer screening among physicians in the Western Region of Saudi Arabia". *Saudi Medical Journal* 32.11 (2011): 1155-1160.
16. Rama CH., *et al.* "Awareness and knowledge of HPV, cervical cancer, and vaccines in young women after first delivery in São Paulo, Brazil - a cross-sectional study". *BMC Women's Health* 10.1 (2010): 35.
17. Dodd RH., *et al.* "Knowledge of human papillomavirus (HPV) testing in the USA, the UK and Australia: an international survey". *Sexually Transmitted Infections* (2014).
18. Marlow LAV., *et al.* "Ethnic differences in human papillomavirus awareness and vaccine acceptability". *Journal of Epidemiology and Community Health* 63.12 (2009): 1010-1015.
19. Dany M., *et al.* "Human papillomavirus vaccination: Assessing knowledge, attitudes, and intentions of college female students in Lebanon, a developing country". *Vaccine* (2015).
20. Jena AB., *et al.* "Incidence of Sexually Transmitted Infections After Human Papillomavirus Vaccination Among Adolescent Females". *JAMA Internal Medicine* (2015).

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