

# Cervical cancer screening in Jordan; a review of the past and an outlook to the future – facts and figures

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## Abstract

**Introduction:** This study aims to assess the attitude, knowledge, and behaviour of Jordanian women toward cervical cancer screening and its phenomenal role in preventing the disease, and to identify the defects and obstacles in the national screening programs for early detection of this manageable kind of malignancy.

**Material and methods:** A prospective study via a questionnaire that included the demographic data, knowledge, behaviour, and attitude among Jordanian women about the cervical screening program using face-to-face interviews.

**Results:** Among 655 women who responded to the questionnaire, 340 (51.9%) reported having no idea about the smear, 350 (53.4%) had completed higher education, 84 (12.84%) were not happy to be screened, and 53 (8.09%) were afraid of the result being positive for malignancy. The shocking and scandalous upshots reported that 600 women (91.6%) had no idea about the role of vaccination against this threatening disease.

**Conclusions:** Screening programs occupy a limited space among the health care provider's priorities. The health education and national awareness strategy regarding cervical cancer should be adopted and implemented in primary health care units. The media with its different facets and platforms must take responsibility and share this national cancer education battle. The once-in-a-lifetime screening test should be adopted urgently, being the most important step, because it represents the minimum correct starting point to lessen the future burden on the national healthcare system and benefit the health of the target groups.

**Key words:** screening, cervical cancer, women attitude, vaccination, media role.

## Introduction

When dealing with individual patients, healthcare professionals face a decision with 2 trajectories ahead: to “intervene” or “not intervene”. However, for many anticipatory interpolations, the scientific evidence does not bestow such a simple dimensional view but rather a complex decision-making process with multiple factors that come into play. Worldwide, cervical cancer is the second most common gynaecological cancer in women; on the other hand, it ranks third in Jordan [1, 2]. The majority of these cases have never been screened before even though they share the main well-known risk factors, such as early age of marriage and high parity. Efforts are being made and funds are being allocated to contain and reduce this dangerous disease, but cervical cancer is often the most common genital malignancy among women in developing countries, and current efforts to implement screening against cervical cancer have failed to reduce the incidence and mortality rates in these settings due to many factors, the most im-

portant of which are social and family habits that limit the role of women in their health care. With that in mind, it remains the second most common cancer worldwide with 470,000 new cases diagnosed annually [3]. About 80% of cases cluster in developing countries where cervical cancer is most common [3, 4]. In many developed countries, adherence to cytological screening has led to a significant reduction in the incidence and mortality of cervical cancer. However, in developing countries organized cervical cancer screening programs are limited, and testing is of poor quality and performed inefficiently among the population. On the other hand, cervical cancer screening tests should not be overused because it is frequently stereotyped, which leads to a number of downstream consequences [5, 6].

The American Cancer Society estimates this health problem in advance and reported in 2020 that about 14,480 new cases of invasive cervical cancer will be diagnosed, which was the cause of death in about 4290 women [7]. Current efforts in screening have been

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effective in reducing the high incidence and mortality rates due to cervical cancer in Jordan and the region. One of the major barriers to preventing cervical cancer is the low coverage of screening programs. In Jordan 53% of women reported not being screened in recent years [8]. In a recent review of qualitative studies related to cervical cancer screening in Jordan and developed countries, it was concluded that the main obstacles to efficient screening included a lack of accessible and available high-quality services, the scarcity of comfort and privacy in health centres, discourtesy of the health care centre staff towards those seeking their service, the high cost of service, anxiety related to waiting for the results, and an overall fear of cancer diagnosis [9]. Understanding factors that affect women's participation and adherence to cervical cancer screening programs plays a key role in designing and implementing a screening program and establishing a screening policy tailored to women's needs and circumstances, one that encourages women to seek screening and thus helps reduce the burden of the disease [10]. One of our main objectives was to understand the reason behind women's aversion to seeking screening despite having been exposed to promotional activities. This article reports logistic regression and simulation model results, discusses the findings in light of recently published work in developing country settings, and elaborates on the implications of programs for improving women's screening coverage. These results are pivotal and of crucial value for tailoring purposeful efforts for women's health preservice, and they point out the different strategies that may be required to best reach women who have never been screened.

## Material and methods

Our current study is a retrospective review of 655 patients receiving medical care at the outpatient clinics at Jordan University Hospital (JUH), the only tertiary hospital in the capital city of Amman, the largest teaching hospital, aiming to highlight the common reasons why the women are hesitating to be integrated into screening policies in general, and particularly to be enrolled in the national screening program, especially in the programs that take care of the early detection of cancers that have a long precancerous phase, fulfilling the World Health Organization (WHO) criteria, because some do not like to mention the word "cancer" explicitly, and can be called by other nicknames such as "that disease", which is well-known terminology in society for this disease. The study was carried out after the approval of the Department of Obstetrics and Gynaecology Board, the Institutional Review Board (IRB), the Ethics Committee, and the Scientific Research Committee (SRC) at our hospital. We used the Statistical Package for the Social Sciences (SPSS) for data analysis. The essential statis-

tical analysis values of the study were calculated using the  $\chi^2$  and Wallis test. The purpose of the study was explained to the participants. It was designed to check and review their knowledge, behaviour, and attitudes about cervical cancer health problems and screening programs with their essential role in preventing this disease. Written consent was obtained from every participant who stated her agreement to be involved in this study. The vital data to fulfil the aim and scope of the study were determined then the questionnaire was designed to encompass these points and collect the targeted data. All patients were interviewed in the outpatient clinic during a routine visit, with great care and privacy in a suitable state of affairs. The patients were selected randomly during the study, period which extended from May 2020 to May 2021. We aimed to conclude all the age groups, marital statuses, and different educational levels. The strength of this study is its focus on the reasons for rejecting the idea of participating in the screening campaign due to outdated behaviours among the population, especially those who are unsatisfied with these ideas and almost providing sufficient detail to identify reasons for opposition, but a major challenge and limitation is the absence of demographic information about the participants.

## Ethical issues

The study proposal was approved by the Ethics Committee, the SRC, and the IRB of the Jordan University hospital, University of Jordan, School of Medicine, Amman, Jordan (Ref. 67/2020/5338 DATED 17/12/2020).

## Results

We collected data using a structured questionnaire that was adopted, formulated, and approved by the authors of this manuscript. It contains 4 sections: sociodemographic characteristics, knowledge about cervical cancer and screening, attitude towards cervical cancer screening, and practice of cervical cancer screening. A total of 655 women participated in the study. The socio-demographic data of all participants are illustrated in Table 1. Their ages ranged 20–82 years, with a median of 44.34 ( $\pm$  standard deviation – SD, 12.26), and the majority of responders were housewives – 330 women (50.4%), followed by employees in the governmental and private sector – 280 (42.7%). The gravidity ranged between zero and 15, with a mean of 3.6 ( $\pm$ SD 2.8) and parity ranging between zero to 15, with a median of 2.98 ( $\pm$ SD 2.8). The level of education was mostly a bachelor's university degree or higher, as found in 350 women (53.4%), followed by school certificate in 165 women (25.2%). Table 2 illustrates the data related to sexual life: a total of 540 (82.4%) women were married, 55 women (8.4) were widows, 30 women were

**Table 1.** Demographic data

Parameters	Measure	Min	Max	Mean	SD
Age (years)	Value	20	82	44.34	12.269
Occupation	Status	Housewife	Government employee	Private teacher/engineer/doctor	Other
	Frequency	330	135	145	45
	Percentage	50.4	20.6	22.1	6.9
Gravidity	Measure	Min	Max	Mean	SD
	Value	0	15	3.6	2.8
Parity	Measure	Min	Max	Mean	SD
	Value	0	15	2.98	2.511
Education level	Status	Illiterate	School	College	Bachelor's degree and higher education
	Frequency	50	165	90	350
	Percentage	7.6	25.2	13.7	53.4

SD – standard deviation

**Table 2.** Sexual life and activity

Parameters	Status	Married	Divorced	Single	Widowed
Marital status	Frequency	540	30	30	55
	Percentage	82.4	4.6	4.6	8.4
Age of first sexual intercourse	Status	Before 25 years old	25–39 years	39–49 years	Never
	Frequency	415	195	20	25
	Percentage	63.4	29.8	3.1	3.8
Current sexual activity per week	Status	1–2 times	3–5 times	More than 5 times	Currently not sexually active
	Frequency	410	75	15	155
	Percentage	62.6	11.5	2.3	23.7
Number of marriages	Measure (times)	Min	Max	Mean	SD
	Value	0	3	1.40	0.029

SD – standard deviation

**Table 3.** Knowledge about post-activation potentiation smear due to World Health Organization information

Parameters	Frequency	Percent
Does not know about it	340	51.9
Gynaecologist	200	30.5
Family doctor	40	6.1
Friend	30	4.6
General practitioner	20	3.1
Advertisement	10	1.5
Family planning clinics	10	1.5
Nurse	5	0.8
Total	655	100

divorced (4.6%), and another 30 women (4.6%) were single. The age of first sexual intercourse started with a total of 415 women (63.4%) under the age of 25 years, 195 women (29.8%) between the age of 26 and 39 years, 20 women (3.1%) between the age of 40 and 49 years, and 25 women (3.8%) never had any sexual activi-

ty. The average sexual activity was mostly 1–2 times per week, as reported by 450 women (62.6%), while 155 women (23.7%) had no current sexual life activities due to different reasons. The average number of marriages ranged between zero and 3, with a mean of 1.4. In total, 340 women, which represented about 51.9% of the study group, did not know about this screening test, 200 women (30.5%) received the information from their gynaecologist, 40 women (6.1%) were informed via their family doctor, and 30 women (4.6%) via their friends, as illustrated in Table 3. The data included in Table 4 clarify the causes for not having this test before: 84 women (12.82%) were not happy to do it for no reason, 48 women (7.32%) refused the screening because they were afraid about the result, 34 women (5.19%) did not believe in the screening tests, 20 women (3.05%) had no complaint, and 20 were single. Another 19 women (2.9%) who were interviewed did not having any sexual life, and they linked this procedure with sexuality, whereas 17 women (2.59%) claimed they no time to do it, a similar percentage defended their decision based on

having had a similar, painful procedure, and 11 women (1.83%) had had a bad experience with such a procedure. In Table 5, the data illustrate the status of vaccination against cervical malignancy: 600 women (91.6%) had no idea about the vaccine or the purpose of this vaccine, 35 women (5.3%) were aware of this vaccine but were not happy to be vaccinated, and only 20 women (3.1%) had taken the vaccine before.

**Discussion**

Cervical cancer imposes limitless adversity on women’s health in both developed and underdeveloped countries due to poor personal hygiene, fertile soil for risk factors, its high incidence, and poor prognosis for most patients. It is our view of the point of cervical cancer and motivation that drove the conduction of this study among women attending the women’s clinic at JUH. The results of this study were staggering, but expected, and manageable. Although we are filled with remorse for the delay in handling this delicate health issue, our results will hopefully pave the way for change and improvement, because they clearly reveal limited adherence to the screening schedule in our society. These limitations have been ascribed to several risk factors including, but not limited to, restricted access to and availability of screening services, some beliefs, difficulty specifying the focused target women, inadequate monitoring and evaluation of screening programs, and a health service system that is overwhelmed by health demands [11–13]. Despite the growth of community awareness of cervical cancer and the launch of cervical screening programs and the HPV vaccine, knowledge and awareness remain static on the low side of the curve, weighed down by fears relating to speculum examination, discomfort with male health workers, and limited spousal approval, all of which have been identified as additional factors contributing to suboptimal screening rates [14, 15].

Our current study calls attention to the fact that there is a significant percentage of women who mistrust and doubt the importance of screening programs and underestimate their value. This doubt mostly originates from the false beliefs and misconceptions that these tests could be the seed for starting a malignant process, stimulating and accelerating cancer spread due to manipulation, and the false feeling of security that stems from the denial of being inflicted with the disease to the point of avoiding mentioning the disease by its name and using other vague nicknames to describe it. It is distressing as well as shocking to find that 340 women (51.9%) in the study group did not know about this screening test, 84 women (12.82%) were not happy to be screened and/or they do not believe in the value of these tests, and 48 women (7.32%) were afraid of the result. In addition, 34 women (5.19%) did not believe in the screening tests,

**Table 4.** The cause of not having a post-activation potentiation smear previously

Parameters	Frequency	Percent
Does not know about it	340	51.9
Not happy to be screened for no reason	84	12.84
Afraid of the result	53	8.09
Does not believe in screening test	39	5.95
Having no complaints	35	5.34
Single	25	3.81
Does not have time to do it	20	3.05
Not sexually active	19	2.9
Painful procedure	19	2.9
Financial problems	11	1.68
Bad experience with a similar procedure	10	1.5

**Table 5.** Knowledge about HPV vaccine

Parameters	Frequency	Percent
Does not know about it	600	91.6
Knows about it but has not received it	35	5.3
Knows about it and has received it	20	3.1
Total	655	100

in addition to 17 women (2.59%) who claimed to have no time to do it. All these reasons and justifications are no longer acceptable, and we are on the verge of using the fifth generation of technologies that have made the world a small, exposed village.

The startling increase in the number of newly diagnosed cases is noticeably linked to the widespread aetiological causes for this sexually related disease: younger age of marriage, which is directly linked in our society to an earlier age of first sexual activity, and subsequently young age at first childbirth. It also reflects the rise in the incidence of genital infections and worsening smoking habits. The first sexual intercourse was documented by a total of 415 women (63.4%) to have started under the age of 25 years, and the average frequency of sexual activity was mostly 1–2 times per week, as reported by 450 women (62.6%), with a respected number of multiple sexual partners. Moreover, the gravidity ranged between zero and 15, with a mean of 3.6 (±SD 2.8), and parity ranging between zero and 15, with a median of 2.98 (±SD 2.8), despite the level of education being mostly a bachelor’s university degree or higher, as found in 350 women (53.4%), followed by school certificate in 165 women (25.2%).

Depending on these results, interventions can be made to halt the grave afflictions of cervical cancer on women’s health in our society, because our study represents a pivotal step forward in the advancement of screening programs in our healthcare system. Starting

to spread awareness about the value of early detection of the disease is a vital point of action to counteract the rise in newly diagnosed cases, despite it being a challenging task to accomplish within the common and hereditary culture in our country (Jordan), especially because these programs are not compulsory and are subject to personal culture or the diligence of the medical service provider. Among most target groups for any of the diseases that can be diagnosed in its preliminary stages and early stages, at which treatment can be curative, testing can be bothersome, and regardless of the slope in the learning curve or culture there is the orthodox behaviour of rejecting the search for possible or hidden disease. These challenges are not a reason to lose heart, but instead to put greater effort into implementing the necessary changes. We noticed that 340 women (51.9%) did not know about this screening test and had never heard about its benefits, and 41.1% reported that they were aware of the test but had never been screened before, mainly due to no reason (in 12.82%), being afraid of the result (in 7.32%), and not believing in the screening tests (in 5.19%). Probably similar results were reported by [16, 17].

Moreover, people go through life making many decisions; while some can be trivial, others can be relevant to their health, which could have a considerable long-lasting effect but may in fact seem of limited value and concern. In Jordan, health screening is not obligatory; each type of screening is optional. Such a choice to have the screening done or not is based on the information that the healthcare workers put forth and the personal set of values and attitudes of the target groups. With that being said, one cannot help but wonder why screening is optional rather than mandatory? Would not compulsory screening be of greater value to the healthcare system and be of benefit to more people? With mandatory screening, the net result would be exemplary outcomes and would translate into our hopes to circumvent the grave effects of advanced cancers subject to screening. As so far inherited stubborn ideas constitute the largest hurdle that requires collaborative efforts; healthy and information in order to overcome and maintain the garment of health at its best.

Healthcare providers play a critical central role in the development of the information presented to the public, and such a role should be limited to interaction in a hospital or clinic setting and should employ social media to deliver the information to targeted groups, but this delivery system must be supervised by professionals. Our efforts must consider that the principles we follow to help people in the decision-making process have to place emphasis on people's understanding of the bigger picture, i.e. that their health issues are no longer categorized as personal ones but are considered national issues with a significant impact on the healthcare system. People should be aware

that it is their right to accept or refuse the screening, and this choice should be clearly communicated [18, 19]. The information should be balanced and uniform and encompass details about benefit and harm, the information should be accessible, comprehensible, and easy to follow, it also should be written and delivered in a detailed clear communicated language to the targeted group, and it should be scientifically structured inaccurate designs. The resources must also be periodically evaluated, so they can be improved upon in the future with sustainability. Our study pointed out the focus towards both aspects of the general one and the specific one, granting it additional national and international strength.

Having multiple screening modalities to choose from may expand patients' acceptance and attraction to screening programs; however, it is screening for certain common diseases with the presence of an appropriate infrastructure that will result in a reduction of the incidence and mortality, whilst also being cost-effective for the healthcare system [20, 21]. The pursuit of this health achievement is exclusive within the setting of sustaining health stocks ideally in line with sacrifices and risks. The once-in-a-lifetime screening test adopted by the WHO could be the steppingstone to start changes for the better. Vaccinations against cervical cancer must be kept in mind, and they are an important target to address because 600 women (91.6%) had no idea about the vaccine or its purpose, and even though 35 women (5.3%) were aware of this vaccine, they were not happy to be vaccinated; and only 20 women (3.1%) had taken the vaccine before [22–24]. Early diagnosis of cancerous diseases gives a recovery opportunity for the patient, especially by employing therapeutic skills, especially the surgical skills that come to the fore in the surgical steps [25].

## Conclusions

Cervical cancer rates are growing, giving a red flag for attention. It is the ideal model for using the available means of screening for rapid detection of any early cellular changes before the malignancy status, so it is totally preventable. It is time to spread awareness and make the necessary changes in the and the insight denying of having malignancy as well as the touching the cancers masses may accelerate the speed of spread. Interventions to increase cervical cancer knowledge are urgently needed in Jordan. We are in agreement for a mass national media campaign to spread awareness about these preventable health hazards. Additional research and efforts should be made to further understand and assess the effectiveness of different strategies to improve attitudes regarding cervical cancer, in order to increase the uptake of screening services, particularly among less-educated women and those in hard-to-reach areas.

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## Disclosure

The authors report no conflict of interest.

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