Original Article

Dual Insight into Human Papillomavirus and Cervical Cancer amid Pakistani Women and Physicians

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Abstract

Objectives: To gain insight into sexual health awareness, knowledge of the link between Human Papillomavirus (HPV) and Cx Ca, and perceptions regarding HPV vaccination acceptability among indigent Pakistani women and physicians of Pakistani heritage.

Study Design: Prospective observational study

Methodology: Anonymized questionnaires were administered in July 2012. Women attending a private co-education college in Karachi, Pakistan. Health care providers of Pakistani descent affiliated with a local chapter of a medical society in North America. Two separate questionnaires were administered to different populations – one at the level of the "population", and one at the level of the "health care provider". Both surveys were approved by the Yale University Human Investigation Committee; approvals from the respective institution/organization were additionally obtained.

Results: Amongst surveyed Pakistani women (N=74), awareness regarding sexual transmissibility of HPV (57%) and linkage of HPV to Cx Ca (38%) was limited; only 13.5% felt they knew enough about HPV pathogenicity and its vaccine. Of the 15 multidisciplinary physicians of Pakistani descent who were surveyed, only 7% correctly identified the currently recommended eligibility criteria for HPV vaccination. Few (13%) were confident of the adequacy of their training in addressing sexual health concerns of their patients, while 40% felt comfortable approaching this topic with patients. A majority (93%) strongly agreed that education and awareness on reproductive health amongst Pakistanis was deficient.

Conclusion: Our survey underscores concerning level of awareness regarding transmissibility of HPV and pathogenesis of a potentially preventable entity, i.e. Cx Ca. A need for targeted dissemination of sexual health-related education amongst the Pakistani community – both at the level of the patient and healthcare provider, is evident.

Keywords: Cervical cancer, HPV, Sexually transmitted infections.

Introduction

Poor perceptions regarding sexual health, inadequate access to medical care and advanced disease stage at diagnosis contribute to higher rates of cervical cancer (Cx Ca) related morbidity and

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mortality in developing countries. The global burden of cervical cancer (Cx Ca) is significant. With an estimated incidence of 527,600 in 2012 alone[1], it is the fourth most common malignancy in women worldwide. Approximately 70% of Cx Ca cases worldwide are attributed to genital infection with Human Papillomavirus (HPV) strains 16 and 18.[1] In the developed world, the implementation of stringent HPV screening guidelines, considerable investments in sexual health programming and the arrival – and increasing acceptability – of the HPV vaccine have yielded significant impact, with the U.S incidence and mortality of Cx Ca decreasing by 2.0% from 2000-2009.[1]

The Global South, however, offers a stark contrast: in 2012, 85% of Cx Ca cases were observed in developing nations.[3] A societal lack of emphasis on women's health, limited resources and access to medical care can result in advanced disease stage at diagnosis.[4] Consequently, low-income communities have disproportionately high rates of Cx Ca-related morbidity and mortality.[5] In 2012, the incidence of Cx Ca in South-Central Asia accounted for 18.9% of all cancers in females - second only to breast cancer.[3] South Asian countries alone account for 1/4th of the global burden of Cx Ca. [3]

WHO statistics estimate that 2,876 deaths and 5,233 diagnoses are annually attributed to Cx Ca in Pakistan (Gross National Income (GNI) per capita of Pakistan = USD 1,400, GNI per capita of USA = USD 55,200).[2] Of these cases, 88.1% test positive for HPV 16 and 18.[6] Notably, a study conducted in 2008 surveying 192 women admitted to a tertiary hospital in Lahore, Pakistan, identified that only 5% of Pakistani women were aware of disease specific screening strategy and only 2.6% actually had a PAP smear once in their lives.[7] Equally concerning is the unfamiliarity of Pakistani medical personnel with the causes, risk factors and etiology of Cx Ca; a survey reported that only 6.7% of interns and nursing staff in three major teaching hospitals in Karachi, Pakistan were fully aware of the recognized pathogenic underpinnings for Cx Ca.[4] Only 54% of the interns and nurses surveyed were aware of a screening strategy against Cx Ca and only 9.4% knew that a protective vaccine against Cx Ca existed.[4]

The purpose of this study was to evaluate the level of awareness regarding HPV and its pathogenic relevance for Cx Ca amongst a susceptible population in Pakistan. We aimed to assess knowledge regarding sexual health related concepts, and gain insight into population awareness regarding the link between HPV and Cx Ca, screening and preventative strategies and perceptions regarding vaccination acceptability amongst reproductive-aged Pakistani women. We also strived to evaluate general knowledge of HPV, of the link between HPV and Cx Ca (and other malignancies), awareness of screening and preventive strategies, perception and knowledge of eligibility criteria for HPV vaccination, susceptible/treatable populations, relative comfort level with treating/counseling patients regarding sexual health amongst physicians of Pakistani descent in North America.

We hypothesized that there is, at the very best, sparse awareness of HPV, its prevalence, its risks, prognosis and prevention amongst the young Pakistani women; it is further hypothesized that a combination of factors (such as societal perceptions and a reluctance to openly acknowledge issues relating to sexuality), and inadequacy of medical school curriculum appropriately prepare trainees in the assessment and optimization of the population's sexual health.

Methodology

The population survey was administered and analyzed during July 2012 as a paper questionnaire to female students (N=74) attending a private institution of higher education (with English language as the medium of instruction) in Karachi, a cosmopolitan city in Pakistan. Over a one-month period, the questionnaires were administered in person by a single investigator (SK); participants provided verbal consent and completed the questionnaires in the presence of the investigator, independent of any extraneous input. The survey assessed basic demographic information, and questions captured level of awareness and sources of information pertaining to sexuality and sexual health, awareness of Cx Ca, knowledge of HPV and related disease burden, awareness and beliefs about HPV vaccination, screening and sexual health education in schools.

Studies have shown that cultural perceptions and language can affect response rate and reporting in regards to health care surveys.[8] To decrease the affect of language, the survey was administered to students in a university of which English was the language of instruction.

The provider survey entailed an online questionnaire disseminated and processed in 2012 to 75 health care providers (including medical doctors, physician assistants, nurse practitioners, medical assistants and social workers) of a select Pakistani health care

provider group. The survey remained open for two months duration with email notifications sent on Day 1 and Day 15. Results of the survey were available to the investigators in real-time and final results were analyzed upon the closing date of the survey. The provider survey assessed awareness and knowledge of HPV related disease burden, Cx Ca risk factors, HPV vaccine awareness and acceptability, prescriber bias and provider's perception of their preparedness to offer sexual counseling.

Results

Population survey: A one hundred percent response rate was achieved (N=74). Participant characteristics are presented in **Table I.**

Table I. Participant Demographics

Population Survey: Participant Demographics	
Number of Participants (N)	74
Mean Age in years (± SD)	22.6 (± 3.2)
Median Age in years (range)	22 (18-39)
Marital Status, n (%)	
Single	23 (31%)
Married	50 (68%)
Level of Education Completed/Being Attained, n (%)	
Bachelor's Degree	23 (31%)
Professional or Master's Degree	50 (68%)
Annual household Income, n (%)	
< Rs. 100,000	21 (28%)
Rs. 100,000 - Rs. 200,000	32 (43%)
> Rs. 200,000	13 (18%)
Ethnicity, n (%)	
Muhajir	33 (45%)
Punjabi	18 (24%)
Sindhi	12 (16%)
Pathan	4 (5%)
Other	5 (7%)
Occupation, n (%)	
Students	74 (100%)
Employed part- or full-time	17 (23%)
One or two working parents	66 (89%)
Working Father	64 (86%)
Working Mother	14 (19%)
Physician Survey: Participant Demographics	
Number of Participants (N)	15
Mean Age in years (± SD)	42.9 (± 8.1)
Median Age in years (range)	44 (28-53)
Median Years in Clinical Practice (± SD)	10.5 (± 5)
Country of Medical Education, n (%)	
United States	2 (13%)
Pakistan	13 (87%)

Table I continued

Specialty, n (%)	
Internal Medicine	6 (40%)
Pediatrics	2 (13%)
Obstetrics and Gynecology	1 (7%)
Other	5 (33%)

Reproductive Health Awareness: Amongst reproductive-aged Pakistani women seeking education beyond high school, reproductive and sexual health related knowledge was found to be concerningly low. The majority (N=47, 64%) of women seemed unaware of the importance of regular gynecological evaluations and had never seen a gynecologist. The number of married women (N=6) who received regular gynecological evaluations was N=3 (50%). Our results show that even basic reproductive knowledge was lacking in women, as 16% (N=12) were unaware that pregnancy could result from sexual contact. While a significant proportion of participants (N=48, 65%) knew that infections could result from sexual contact, most were unaware of the specific manifestations and consequences of these infections. (Figure 1)

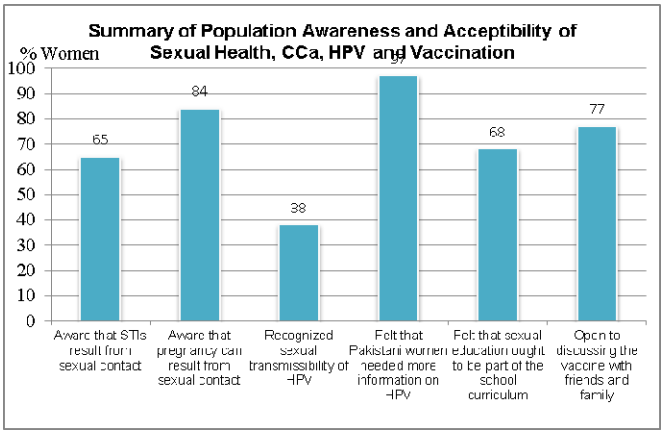

Figure 1. Summary of Population Survey on Awareness of Sexual Health, CCa, HPV and Vaccination

Sources of Sexual Information: The majority (N=60, 81%) of women surveyed reported depending on family or friends for sexual health information, whereas only 12 (16%) relied on sexual education in schools. Forty-six (62%) turned to media (television, books, and internet) with sexual health concerns. While 32 (43%) women would turn to a physician amongst other sources, only 15 (20%) would solely turn to a physician for questions about sexual health. When asked about sources of HPV knowledge, 27 (36%) of women reported no source of information at all, and only 3% (N=2) attained their HPV knowledge from a physician.

Fifty (68%) women felt that sexual education ought to be part of the school curriculum. (Figure 2)

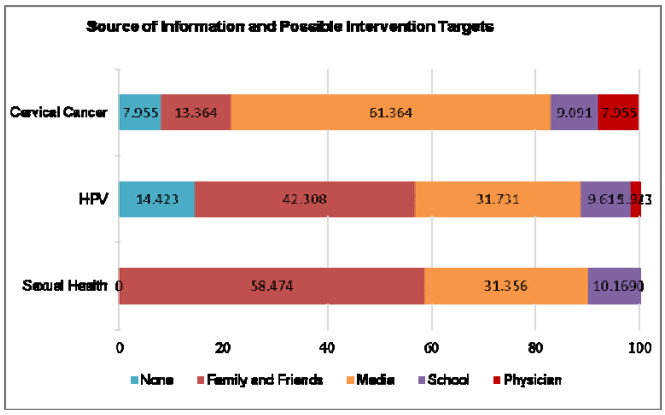

Figure 2: Source of Information and Possible Intervention Targets

HPV and Cx Ca Awareness: As hypothesized, HPV and Cx Ca awareness was also concerningly low. Only 28 (38%) correctly identified the sexual transmissibility of HPV, 42 (57%) participants were aware of HPV as a risk for Cx Ca, and even a smaller proportion (N=16, 22%) identified sexual contact as a potential risk for Cx Ca. The majority of respondents, 50 (68%), were unaware that Cx Ca is a prevalent gynecological problem in Pakistan. Of the 74 women questioned, almost all (N=72, 97%) agreed that Pakistani women needed more information on HPV related risks. Over three quarters (N=58, 78%) expressed an interest in seeking additional information on HPV, other sexually transmitted infections (STIs) and preventative health. (Figure 1)

HPV Vaccination: Only 10 (13.5%) women felt they knew enough about HPV and its vaccine and 57 (77%) were open to discussing the vaccine with their friends and family. It was reported that the decision to receive the vaccination would be either a decision of the woman herself or a joint decision of the woman and her parents by 66 (89%) participants. In the conservative society of Pakistan, it is encouraging to see family acceptance of the HPV vaccine as 56 (76%) women said that their parents would be happy to get them vaccinated; only 14 (19%) women said their parents would disapprove of the vaccination.

Provider survey: Only fifteen of 75 members of a local chapter of an ethnically representative medical society comprised of health care providers of Pakistani descent responded, giving a response rate of 20%. All 15 members were practicing medical physicians in North America with expertise in a variety of specialties; thirteen (87%) received their medical education in Pakistan. Eight (53%) physicians' patient populations included reproductive-aged men and women, and almost all (N=14, 93%) had direct patient contact with women or pediatric patients who could potentially benefit from HPV vaccination. Provider characteristics are presented in Table I.

HPV and Cx Ca Awareness: All participants (N=15, 100%) correctly identified HPV as a risk factor for Cx Ca and Cx Ca as a preventable condition. Two thirds (N=10, 67%) of the surveyed physicians were aware that Cx Ca was common in Pakistan and 80% (N=12) agreed that the risk of HPV was not overestimated. Sixty-three percent of respondents were able to identify the link between HPV and anal/penile cancers. Four respondents (27%) erroneously perceived that all viral strains were pathogenic, and four were unaware of the potential pathogenicity of HPV for laryngeal warts and polyps. Almost all (N=14, 93%) agreed that regular screenings, knowledge and education of safe sex would prevent HPV infection and progression to cancer. (Figure 3)

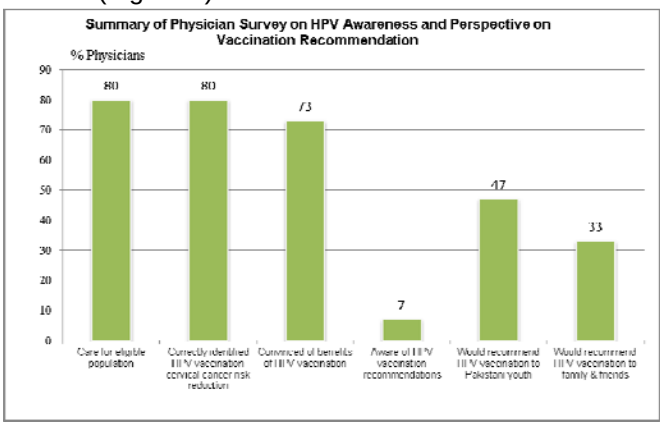

Figure 3. Summary of Physician Survey on HPV Awareness and Perspective on Patient Counseling

HPV Vaccination: Of the 15 respondents, only one (7%) could correctly identify all recommended eligibility criteria for HPV vaccination.[9] While a significant majority (N=11, 73%) were convinced of the benefits of HPV vaccination, only seven (47%) strongly agreed that they would recommend the vaccine to their patients and only five (33%) would recommend the vaccine to their family and friends. (Figure 3)

Perspective on Preparedness and Sexual Health Related Training in Pakistani Medical School Curricula: Only two (13%) physicians firmly believed that they had adequate training to address the sexual health concerns of their patients. Six (40%) physicians felt comfortable broaching the topic of HPV awareness and vaccination with their patients, whereas a small

proportion of physicians (N=2, 13%) were uncomfortable discussing this topic with their patients altogether. Eleven physicians (73%) perceived that they needed more education before they could comfortably recommend the vaccine to their family and friends.

The majority of respondents (N=14, 93%) strongly agreed that both education and awareness of reproductive health was deficient amongst the Pakistani population. Eighty percent (N=12) identified a need for better education and training regarding issues of sexual health, in order to improve communication between Pakistani health professionals and their patients.

Discussion

We aimed to assess the level of awareness with regard to sexual health, HPV and Cx Ca amongst the Pakistani community, both in Pakistan and residing in the US. Our study identifies on one hand that familiarity of concepts critical to sexual wellbeing is alarmingly poor, and on the other, reflects concerns relating to preparedness of Pakistani health professionals in evaluating and addressing issues relating to sexual health. We believe that the observed deficits in cognizance and preparedness of the Pakistani community regarding issues of sexual health and disease are consequent to our society's erroneous perception regarding modesty. Indeed, the observed level of awareness regarding prevalent sexually transmitted infections (STI) and of mode of transmission of STI's can be tied to a myriad of factors including sociocultural perspectives, which limit discussions on reproductive health and sexual issues altogether. Our data highlight inadequacies within the Pakistani educational system across multiple levels (home, community, secondary education, college and even medical school). Reluctance among both healthcare providers and the susceptible population in broaching the subject of sexual health is apparent.

Social media (sexual health 32%, HPV 32%, Cx Ca 61%) and family/friends (sexual health 58%, HPV 42%, Cx Ca 13%) were the primary sources of information for the surveyed population. Although these sources are readily accessible for the surveyed women, they are not confirmed to be based on up-to-date medical data. Therefore, an element of bias may affect interpretation of recommendations and guide sexual behaviors or beliefs in a certain direction.[10] The source of information these women rely on is key point of interest for potential intervention, as only nine (12%) women reported receiving sexual health education from school and 50 (68%) women felt that it ought to be part of the curriculum.

Our results reflect the current state of sexual health education in Pakistan, with scarce integration of sexual health education into most standard curricula.[11] While rare, small-scale efforts have been implemented (as exemplified by sexual education classes covering topics from menstruation to marital rape in Johi, Pakistan (in Sindh district) by the Village Shadabad Organization). All too frequently, however, similar efforts have been quickly discontinued secondary to local objection or government regulation.[12]

The incidents of governmental shutdown and local opposition of sexual education/discussion raise the issue of stigma involved with the discussion of sex in a primarily Muslim, conservative nation such as Pakistan. Through interviews and focus group discussions in a rural district of Sindh, Pakistan, Afsar et al showed that members of the community were unaware of the prevalence of STIs, were unaware of their own risk factors, and overall did not feel comfortable discussing the topic due to stigma.[13] This stigma may also hinder patients from truthfully responding to sexual-health related questions in fear of being ostracized from the community based on their sexual history, practices or orientation.

Counteracting the barrier of stigma, and hence, minimal emphasis on this topic would likely require a multifold approach: media campaigns, non-government organizations, TV/radio commercials, educational seminars/curriculum for community, training of health care providers and governmental support. This approach has been used in the past with similarly initially "low-priority" topics to "high priority" in conservative nations such as maternal mortality and has been shown to elicit change in outcomes.[14] Pakistan has, as a nation, undertaken similar initiatives in the past, such as making STIs a priority in the National Reproductive Health Package and training community health care workers on STI prevention and reproductive health. Several non-government organizations have similarly focused on providing reproductive health education resources directly to the community. To tackle the lacking knowledge of HPV, Cx Ca, HPV vaccination and sexual health found with our study among the population, similar support and emphasis would be essential to in order to integrate education into the school curricula on a larger scale. This could be a topic that could be introduced at the level of secondary education.

Comparable to the population results, our study demonstrates that health care providers of Pakistani descent are similarly constrained by societal perspective as relates to sexual health and disease. Health care providers of Pakistani descent perceived that their training in assessing and addressing issues of sexual health was deficient and acknowledged hesitation in exploring issues of sexual health with their patients. Although a majority of the surveyed providers (N=14, 93%) cared for patients who could benefit from HPV vaccination, only 40% (N=6) even felt comfortable broaching the topic and even fewer (7%, N=1) could correctly identify eligibility criteria for HPV vaccination. Khanwalla et al showed similar findings of deficiencies in sexual health knowledge regarding STI diagnosis and management among 100 physicians (gynecologists, urologists, dermatologists and general practitioners) in Karachi.[15] In the same vein, another study conducted in Karachi not only found physicians to be lacking in awareness regarding sexual and reproductive health, but also found them to be judgmental, and discriminatory based on gender.[16] This is an interesting finding, as it implies that providers may be imparting biased care to their patients. Similar to the Afsar et al population study, our findings also suggest some level of innate bias among providers who seemingly underestimate their own risk, as the majority (N=11, 73%) agreed upon the importance and effectiveness of HPV vaccination, yet the majority (N=10, 66%) still would not recommend its use to their own family and friends.[13] Another study conducted amongst 45 primary care physicians in the District Turbat of Balochistan, Pakistan, showed physicians to be lacking in the ability to enable their patients in making their own reproductive health decisions.[16]

An observational design, small population sample restricted to a single urban institution (population survey), and poor provider response rate are recognizable limitations to our work. For the population survey, the questionnaire was distributed within a single institution within a large cosmopolitan city, which may reflect results that cannot be generalized to the entire population, 2/3 of which represents rural communities with lesser access to formal education. Our survey did not include any questions that directly enquired regarding sexual activity due to cultural sensitivity around this topic. Marital status was taken as a surrogate for sexual activity. Even with these limitations, however, both surveys showed a lack of knowledge in regards to HPV, HPV vaccination and Cx Ca.

While our findings cannot be extrapolated to reflect the status of awareness of the entire Pakistani community as regards pathogenicity of HPV for Cx Ca, our data nonetheless underscore a need for prioritizing education on sexual and reproductive health matters, both at the level of the community and within the medical education curriculum; indeed 80% of the surveyed providers in our study agreed to the latter. In order to comprehensively address the overall health status of the Pakistani diaspora, the topic of sexual health can no more be dealt as a taboo. The template for action should be such that, on one hand, the health care providers (physicians and community health workers) be better equipped to evaluate and identify those at risk and impart scientifically accurate information in a culturally sensitive manner, and on the other hand, the public be better equipped with the information needed to empower their participation in their own wellbeing. It is only through improving reproductive health related awareness amongst both the providers and the population, and prioritizing the importance of education in sexual health that we can hope to minimize the burden of transmissible and now preventable diseases such as Cx Ca in the Pakistani community.

Conclusion

Our survey underscores concerning level of awareness regarding transmissibility of HPV and pathogenesis of a potentially preventable entity, i.e. Cx Ca. A need for targeted dissemination of sexual health-related education amongst the Pakistani community – both at the level of the patient and healthcare provider, is evident.

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