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SOCIO-ECONOMIC AND DEMOGRAPHIC DETERMINANTS OF HUMAN PAPILLOMA VIRUS (HPV) VACCINE AWARENESS AMONG URBAN WOMEN AGED 18-45 YEARS IN EMBAKASI, NAIROBI,KENYA
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M. F. KAIRITHIA, B. N. A. OKELLO and W. A. KAMAU

ABSTRACT

***Background*: Cancer of cervix is the third leading gynaecological malignancy in the world and the leading cause of deaths in sub-Saharan Africa. Cancer of cervix can completely be treated with early diagnosis. Approaches to reduce related morbidity and mortality include screening for cervical cancer and administration of Human Papilloma Virus (HPV) vaccine to HPV non-infected females to trigger host resistance. The uptake of HPV vaccine globally has been reported to be less than 1%.**
***Objectives*: To assess the level and identify determinants of awareness of HPV vaccines among the participants**
***Design*: Cross sectional descriptive study.**
***Setting*: Umoja Estate in Embakasi, Nairobi County, Kenya.**
***Subjects*: Three hundred and eighty four (384) eligible respondents were randomly recruited into the study.**
***Results*: Most of the respondents (72%) were aged between 18 and 31 years and 42% had attained tertiary education. Fivety six point eight percent were married and 33.1% were unemployed. More than one third (38%) had monthly income of less than 20,000 Ksh (US $ 220). Majority (60.2%) had no medical insurance cover. Only 2.3% had had HPV vaccine despite a higher awareness level of 25.8%. There was strong association between awareness about HPV vaccine and age (P=0.000); having children (p= 0.010); level of education (p=0.000); marital status (p= 0.054); having insurance (p=0.000); occupation (p=0.000) and monthly income (p=0.000).**
***Conclusion*: There was low awareness of HPV among the study population. No sensitisation programme existed in the area of study.**

INTRODUCTION

It is estimated that 274,000 new cases of cancer of cervix are diagnosed annually worldwide and that this is the second most common gynaecological malignancy (1, 3). Studies further estimate that 90% of all deaths from cancer of cervix are in resource poor settings which lack screening and prevention programme (2). In Kenya, approximately 2500 new cases are discovered, mostly in late stages. The average annual mortality from cancer of the cervix is in Kenya is 1700 (4). This alarmingly high number of deaths has prompted the government of Kenya with other partners to intensify screening services. These have unfortunately over concentrated in urban areas where only about 20% of the women at risk live (4, 5).

Studies have linked human Papilloma viruses (HPVs) to the pathogenesis of cancer of the cervix (6, 7, 31). This association has been utilised in formulating vaccines against the most oncogenic variants of HPV (8, 9). Viral components are integrated in the vaccine to produce antibodies against these oncogenic strains. These vaccines have been certified as safe for wide administration (32). The prevalence of HPV infection among women aged 15 – 44 years is estimated at 38.8% (10, 11). According to Bosch (2002), 69% of all cervical cancers result from either HPV strain 16 or 18. The use of viral protein particles (VPP) from HPV has resulted into two commercially available vaccines (10). The immunogenicity of these vaccines has warranted enlisting as one critical step in preventing morbidity and mortality from cancer of cervix (12). Wide use of HPV vaccine in Finland has reduced cancer of cervix prevalence from 21.1 per 100,000 to 7.3 per 100,000 (12) and in the USA from 14.8 per 100,000

to 6.5 per 100,000 (13, 14). Protective effects of HPV vaccine against infection with oncogenic stains among infection naïve women have been documented (6, 15-17). Moreover the World Health Organisation (WHO) has advocated for inclusion of HPV among essential vaccines (18). The American College of Obstetrics and Gynaecologist (ACOG) and the American Cancer Society recommends administration of HPV vaccines among preferably prepubertal girls before their sexual debut (19,20). This is to mount immunity against oncogenic HPV strains before natural infection is conferred through sexual activity. Despite these well documented benefits of the vaccine, the global HPV vaccine uptake is estimated to be less than 1% with an even lower levels of awareness (12). Owing to multiple factors that play a role in both attitude and uptake of the vaccine, Hopkin and Wood (2013) have suggested opt-out school programme to introduce these vaccines in school (11). There have been studies that have documented many determinants to both awareness and perception towards the HPV vaccine which ultimately may influence uptake. These include age (15, 21), presence of insurance cover (23), level of education (24, 25, 26) and socio-economic status (25, 26).

In this study we sought to establish socio-demographic and economic determinants of awareness about HPV vaccine among the urban female respondents in Nairobi, Kenya.

MATERIALS AND METHODS

Study design: This study used a cross sectional design. It used a mixed method approach and targeted female respondents aged 18 – 45 years who had lived in the study area at least for the past 12 months and consented to participate in the study.

Study area: The study was conducted in Umoja area of Embakasi Sub-county in Nairobi, Kenya. Umoja is located in the highly populated Eastland's area of Nairobi and it is approximately six kilometres from the central business district. The population consists of mixed socio-economic strata with high literacy levels. The population is fairly young and the area is estimated to have a population of about 270,000 and about 9,815 households. The area is densely populated with density of 4547.27 / Km^2 according to the Kenya National Bureau of Statistics (27).

Sample size and sampling: A total of 384 respondents are randomly selected and interviewed in this study. The area was divided into ten electoral clusters using data from the national bureau of statistics. The sampling interval was 59. In the 59^{th} household a respondent who met inclusion criteria was identified and interviewed. Where no respondent was found in the identified household or the interviewee declined, the next household was targeted to provide an interviewee. Inclusion criteria for this study included residence in the area for previous 12 months, being within age bracket 18-45years and willing to give informed consent

Ethical Clearance: Authorisation and clearance to carry out this study was obtained from the Kenyatta University ethical review committee. Participation was voluntary and informed consent was sought from respondents before the interviews. Confidentiality was strictly observed during and after the interviews. There was no monetary compensation for participation in the study. However, the study communities are expected to benefit indirectly from the outcomes of this study, once the results are disseminated, as the information could be used to improve programme aimed at increasing uptake of HPV vaccine among women in Kenya.

Data management and analysis: Both primary and secondary quantitative and qualitative data were obtained. Secondary data were obtained from relevant written sources including journal articles, policy documents and books. A questionnaire was administered to the community to obtain required data. Quantitative data were analysed using SPSS version 20 to establish descriptive statistics and derive associations.

RESULTS

Socio-demographic characteristics of study participants: Most of the study participants were aged 18 – 31 years with almost all (98.4%) having attained formal education. A large majority of the respondents were married and majority (73%) had one to two children. One third of respondents were unemployed and 38.8% had monthly income of less than Ksh 20,000. Only 39.8% had medical insurance with 60% having none.

Table 1 below summarises the socio-demographic characteristics of the study participants.

Table 1

Demographic characteristics of respondents

Characteristic	n (%)	Characteristic	n (%)
Age in years (N = 384)		Occupation (n = 384)	
18 – 24	125 (32.6)	Business woman	131 (34.1)
25 – 31	149 (38.8)	Unemployed	127 (33.1)
32 – 38	78 (20.3)	Manual laborer	24 (6.3)
39 – 45	32 (8.3)	Employed –Education	22 (5.7)
		Employed- Healthcare	18 (4.7)
		Public sector	27 (7.0)
		Other	35 (9.1)
Level of education (n = 384)	Monthly income in Ksh[1] (n = 214)		
None	6 (1.6)	< 20,000	83 (38.8)
Primary	44 (11.5)	20,001 – 40,000	96 (44.9)
Secondary	107 (27.9)	40,001 – 60,000	17 (7.9)
Tertiary/College	162 (42.2)	60,001 – 80,000	11 (5.1)
University	65 (16.9)	> 80,000	7 (3.3)
Religion (n = 384)	Having medical insurance (n = 384)		
Christian – Catholic	164 (42.7)	Yes	153 (39.8)
Christian – Protestant	193 (50.3)	No	231 (60.2)
Muslim	20 (5.2)		
Other	5 (1.8)		
Marital status (n = 384)	Medical insurance scheme (n = 153)		
Single/Never Married	148 (38.5)	NHIF	69 (45.1)
Married	218 (56.8)	BRITAM	7 (4.6)
Divorced/Separated	13 (3.4)	Nairobi	
Water Medical Scheme	4 (2.6)		
Widowed	5 (1.3)	Jubilee	25 (16.3)
CIC	6 (3.9)		
Having children (n = 384)	Linda Jamii	9 (5.9)	
Yes	267 (69.5)	UAP	5 (3.3)
No	117 (30.5)	Other	28 (18.3)
Number of children (n = 267)			
1 - 2 children	195 (73.0)		
3 - 4 children	67 (25.1)		
5+ children	5 (1.9)		

Awareness of HPV vaccine among the study participants: We found a generally low level of awareness of HPV vaccine among the participants. While only 99 (25.8%) reported being aware of the vaccine, we established that 163 had visited a doctor in the preceding 12 months. Only 42.9% of the respondents who had visited a doctor had been told about cancer of the cervix. While cancer of cervix remains a significant public health concern, we found there were many missed opportunities to sensitise women of the disease and both the preventive and screening approaches. Only 5.2% of participants knew of a person who had had HPV vaccine. Table 2 below illustrates

respondents' awareness of the HPV vaccine.

Table 2
Respondent's awareness of human Papilloma virus vaccine

Awareness of HPV Vaccine	Response	n (%)
Aware of any vaccine given to prevent cancer of the cervix (n = 384)	Yes	99 (25.8)
	No	285 (74.2)
Health care provider informed me about cervical cancer vaccine (n = 163)	Yes	70 (42.9)
	No	93 (24.2)
Aware of any person who has ever had HPV vaccine (n = 384)	Yes	20 (5.2)
	No	364 (94.8)

Association between socio-demographic characteristics and awareness about of vaccines: We found strong association between awareness of HPV vaccine and age (p= 0.000), level of education (p=0.000), socio-economic status (p=0.000), marital status (p=0.054), occupation (p=0.000) and having children (p=0.010). There was no association with religion (p=0.976).

Table 3
Socio-demographic characteristics and awareness of HPV vaccine

Characteristic	Total	Awareness of HPV vaccine		95% CI	P
		Yes	No		
Age in years					
18 – 24	125	17 (13.6%)	108 (86.4%)		0.000a
25 – 31	149	43 (28.9%)	106 (71.1%)		
32 – 38	78	23 (29.5%)	55 (70.5%)		
39 – 45	32	16 (50.0%)	16 (50.0%)		
Level of education					
None	6	0 (0.0%)	6 (100.0%)		0.000a
Primary	44	2 (4.5%)	42 (95.5%)		
Secondary	107	10 (9.3%)	97 (90.7%)		
Tertiary/College	162	55 (34.0%)	107 (66.0%)		
University	65	32 (49.2%)	33 (50.8%)		
Religion					
Christian – Catholic	164	44 (26.8%)	120 (73.2%)		0.976a
Christian – Protestant	193	48 (24.9%)	145 (75.1%)		
Muslim	20	5 (25.0%)	15 (75.0%)		
Other	7	2 (28.6%)	5 (71.4%)		
Marital status					
Single/Never Married	148	29 (19.6%)	119 (80.4%)		0.054a
Married	218	65 (29.8%)	153 (70.2%)		
Divorced/Separated	13	5 (38.5%)	8 (61.5%)		
Widowed	5	0 (0.0%)	5 (100.0%)		
Respondent with children					
Yes	267	79 (29.6%)	188 (70.4%)		0.010a
No	117	20 (17.1%)	97 (82.9%)		
Occupation					
Unemployed	127	19 (15.0%)	108 (85.0%)		
Business woman	131	23 (17.6%)	108 (82.4%)		0.000a

Public sector/ civil servant?	27	10 (37.0%)	17 (63.0%)	
Manual laborer	24	10 (41.7%)	14 (58.3%)	
Education (teacher /lecturer?)	22	11 (50.0%)	11 (50.0%)	
Healthcare professional	18	10 (55.6%)	8 (44.4%)	
Other	35	16 (45.7%)	19 (54.3%)	
Monthly income in Ksh				
< Ksh 20,000	83	16 (19.3%)	67 (80.7%)	0.000a
Ksh 20,001 – Ksh 40,000	96	32 (33.3%)	64 (66.7%)	
Ksh 40,001 – Ksh 60,000	17	11 (64.7%)	6 (35.3%)	
Ksh 60,001 – Ksh 80,000	11	6 (54.5%)	5 (45.5%)	
> Ksh 80,000	7	5 (71.4%)	2 (28.6%)	
Medical insurance				
Yes	153	55 (35.9%)	98 (64.1%)	0.000a
No	231	44 (19.0%)	187 (81.0%)	

[a] Statistical significance determined by Chi-square analysis. Values in bold are statistically significant at P = 0.05

DISCUSSION

The socio-demographics represented an evenly distributed urban population. With majority being in lower age bracket, we found that the older the respondents the more likely they are to know about the vaccine. Our findings compare to those of Hopkins *et al* (2013) who documented similar observations (23). It is possible that this is due to prolonged contact with health providers and health messages. This is further supported by the findings that women with children were more likely to be aware of the HPV vaccines (p=0.010). A contradictory finding is that while younger women have more access to electronic and digital sources of information, they were less knowledgeable. This is despite the immense benefit younger HPV naïve women are likely to have from HPV vaccines (12, 28). Due to shorter and limited contact of younger women with health care providers, there is need to identify options and opportunities for communicating messages on HPV vaccine with young women (6, 18, 21). Kamau *et al* (2007) cites appropriateness of health messages as important in developing health massages in order to improve uptake of interventions by adolescents and young adults.

Our study documented that women within higher socioeconomic strata (measured through occupations and incomes) were more aware of the vaccine (p=0.000). Economic empowerment inevitably attracts knowledge and positively affects health seeking behavior of individuals. Our findings were in concurrence with those of Kim *et al* (2013) who noted direct correlation between the economic status and health seeking patterns of cervical cancer interventions among Korean women (29). In our study, women who had insurance were found to have more access to information about the vaccine (p=0.000) compared to those with no insurance. Ibrahim (2011) documented similar findings among Sudanese women health seeking services in Khartoum (22). Say more about Ibrahim's study. In our study, only 39.8% of the respondents had medical insurance scheme, and among these 35.9% compared to only 19% of women who did not have medical insurance had knowledge of HPV vaccine (p= 0.0000). Thus, whereas having insurance is a surrogate indicator of higher socio-economic status, it also translates to better access to health services and consequently to higher chance of getting information on HPV vaccine. It is known that having a medical insurance may not translate to uptake, as the cost of HPV vaccination is often not covered by health insurance covers. Other factors may play role in determining actual uptake of the vaccine. In this study we identified no association between marital status and awareness of HPV vaccine (p=0.054). This finding compared with findings by Ibrahim (2011) who also noted no association. There was no association between religion and awareness in this study (p=0.976). This finding does not conform to findings by Singh (2004) who found religion to be a key determinant of awareness and attitude towards disease with effect in health seeking behaviour (30). Religion may not have played an important role in this study because almost all the study participants belonged to Christian faith.

In conclusions, this study found the age of the respondents, level of education, occupation,

income levels and having a medical insurance as key contributors to knowledge of HPV vaccine. Whereas income levels are closely linked with education and occupation, and in some way to having a medical insurance, the finding on age suggests a need to identify ways of reaching young women with information on HPV vaccine. Young women may miss out on information on HPV vaccination if the information is provided through the health care setting. Thus, there is need to identify alternative approaches of reaching young women with information on HPV in order to increase their knowledge and possible uptake of the vaccine.

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