Evaluation of Human Papillomavirus (HPV) Knowledge among Healthcare Professionals: A study of conference attendees in Angola

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Abstract

Human papillomavirus (HPV) plays an essential role in cervical cancer development. Angola has a high cervical cancer incidence rate (36.1 per 100,000); therefore, knowledge of HPV among clinicians is essential for the prevention of cervical cancer and educating at-risk individuals. This study aimed to evaluate knowledge of HPV among healthcare professionals in Angola. A 44-item questionnaire was distributed to 65 healthcare professionals who attended a conference on cancer burden in Angola. Non-parametric and multiple regression analyses were conducted. Of the participants (55.6%) were male, and 33.3% were aged 31-40 years, 56.3% had an undergraduate degree, and 35.9% had a postgraduate degree. All participants worked in healthcare in academic and/or clinical settings, with 36.7% in joint contracts. Most (62.2%) knew that early sexual debut increases the risk of contracting HPV, and HPV vaccines are most effective if administered before sexual debut. However, there was limited knowledge regarding the virus transmission. Mean HPV knowledge score was 11.08 ± 8.76 and knowledge was higher among older healthcare workers (>50 years) with a postgraduate degree and working in a clinical role. Overall, HPV knowledge was limited among the respondents. Policymakers should consider promoting knowledge and targeted public health initiatives among healthcare professionals in Angola.

Keywords: Angola, Cervical cancer, Healthcare, Human papilloma virus, HPV Knowledge.

Introduction

Human papillomavirus (HPV) is a small double-stranded DNA virus that causes lesions in cutaneous and mucosal tissue.[1] This is a heterogenous group of viruses with varying life-cycle strategies.[2] HPV infections are highly associated with cervical cancer, with the virus detectable in >99% of all cervical cancers.[3,4] Yet the infection is often asymptomatic and self-limiting, so cervical precancerous or cancerous lesions are often missed.[5]

Some high-income countries (HICs), such as Australia, Canada, New Zealand, Sweden, the UK, and the US [6-13] have substantially reduced the number of women with HPV 16 and/or 18 infections, the genotypes most strongly linked to cervical cancer and precancerous cervical lesions.[14] Some vaccines also protect against HPV genotypes 6 and 11, which are known to cause genital warts. A previous systematic review and meta-analysis found that in countries where HPV vaccines were administered, there was a significant decrease in anogenital warts in girls and young women between 20-39 years of age and in males aged <20 years.[15] In addition, in countries with female vaccination coverage of at least 50%, in girls aged 13-19 years old HPV type 16 and 18 infections decreased by 68% between the pre and post-vaccination periods; anogenital warts decreasing by 61%.[15] HPV vaccination is an opportunity to strengthen health services and reduce the burden of HPV-associated cancers across sub-Saharan Africa (SSA).[16]

According to the World Health Organisation (WHO), nearly 90% of all recorded deaths related to cervical cancer in 2018 occurred in low-and-middle income countries (LMICs), where the burden of cervical cancer is greatest.[17] As of 2020, there were an estimated 604,000 new cases and 342,000 deaths globally, with SSA (88.5%) having the highest share of death rate.[18] Over the same period, there was an estimated 1,949 deaths of cervical cancer in Angola.[19]

Research shows that the peak time for acquiring HPV infection for both men and women is shortly after becoming sexually active,[20] with nearly 40% of HPV-positive women infected within two years of their first sexual contact.[21] However, transmission may occur through skin-

to-skin genital contact as well as through sexual intercourse.[7] For this reason, condoms do not fully protect against infection.

In Angola, the age-standardized incidence rate of cervical cancer cases attributable to HPV is 36.1 per 100,000.[22] This rate is much higher than that in high-income nations (for example, The United Kingdom or United States) where cervical cancer incidence rates are <10 per 100,000.[23] Additionally, even in the worst-off regions, in Sub-Saharan Africa (for example, Congo, 17.5 per 100,000), the incidence rate in Angola remains significantly higher.[22] Despite this challenge, there is currently no public HPV vaccination program in Angola.[24] Although, the introduction of HPV vaccination of its national immunisation program was announced in 2014, no program lunch date has been recorded.[25] Moreover, there is no available cervical cancer screening program.[22] Given the high incidence rate of cervical cancer in Angola, a greater understanding of risk factors can help healthcare professionals to inform patients about behaviours and conditions that can lead to increased risk for HPV-associated cancers.

Angola has five medical schools, several professional schools for nurses and other healthcare professionals, and two training programs: breast oncology for general practitioners and nurses, and a training program for urologists.[26] However, an evident ongoing issue for cancer control is the training of specialists in oncology for better cancer patients care.[27] Meanwhile, since the general health of cancer patients is managed by non-cancer specialists,[28] cancer-related nontechnical skills and knowledge are also necessary to meet clinical practice and societal needs.

Studies conducted in sub-Saharan Africa on HPV and cervical cancer awareness[29-31] have found limited awareness and knowledge.[32-34] Several studies exploring how to control HPV-associated cancers have examined the awareness of, and knowledge about, HPV among health professionals in different parts of the world.[5,29-31,35-45] HPV knowledge varied across studies, ranging from good/high levels in Brazil, Slovenia, New Zealand, United Kingdom,

Greece, and Turkey[35-41] to poor/low levels in Poland, Malaysia, Bahrain, United States, Ireland, Cameroon, Nigeria, and South-Africa.[5,32-34,42-45] However, detailed information about awareness levels across studies were lacking, with healthcare professionals often uncertain and confused about HPV. It was suggested that a high degree of awareness regarding HPV reflected a high level of knowledge among healthcare professionals. [16,35-37,39] Age, sex, level of education, profession area, number of years since training and occupational status were strong predictors of HPV knowledge,[37-39] whereas female gender and employment in the health sector were strong predictors of high levels of HPV awareness.[43]

To our knowledge, no studies have been published on HPV knowledge and awareness among healthcare professionals in Angola. This occupational group strongly influences policy and strategy planning regarding health and health practices and makes a large contribution to the public's health and wellbeing. Therefore, documenting healthcare professionals' knowledge about HPV is an important step in developing programs and policies to reduce the impact of cervical cancer in Angola. The aim of this study was to (1) evaluate HPV knowledge and (2) identify factors predicting HPV knowledge among healthcare professionals in Angola.

Methods

Study participants

Healthcare professionals in academic and/or clinical settings were invited to complete a self-report questionnaire during the 'Conferência Internacional Sobre a Incidência do Cancro em Angola' (International Conference on the Incidence of Cancer in Angola) held in Luanda, Angola, on June 7, 2017. Seventy-five delegates attended, and participation in the study was voluntary with no compensation provided.

Sampling technique and data collection

Convenience sampling was used in this study. The inclusion criteria were attendees who resided in Angola and aged ≥ 18 years. Exclusion criteria were attendees who did not reside in Angola, were part of the research team, and were unwilling to participate in the study. Upon registration at the conference, attendees living in Angola were invited to complete the survey by hand on site. Informed consent was obtained at the beginning of each survey. Delegates were provided with an enclosed copy of the questionnaire and given time to complete it before the conference began. Confidentiality was ensured by asking participants to seal their completed questionnaires and access was restricted only to authorised research team members.

Reliability and validity of questionnaire

A 44-item questionnaire was used for this study. The questionnaire was initially developed in English, and then translated into Portuguese. The first part included 10 questions on sociodemographic characteristics. The second part included 34 questions on HPV knowledge adapted from other validated questionnaires by Perez et al[46] and Waller et al.[47] The internal consistency reliability of the 34-item knowledge of HPV was assessed by Cronbach's alpha.[48]

Quality control and scoring of responses

The data participants provided were entered into MS Office Excel for initial cleaning and then transferred to the Statistical Package for Social Sciences (SPSS) (v.27)[49] for coding and analysis. Each correct response was awarded 1 point. Scores were summed (possible range 0-34) to obtain a total knowledge score. Based on a mean value of 11.08 points, participants were identified as having high (≥11) or low (<11) levels of knowledge. In addition, some questions had reverse-scored responses. For example, 'HPV is very rare' was reverse scored, with a "Yes" being the wrong answer. 'HPV always shows visible signs or symptoms', was also reverse scored, with "No" being the correct answer.

Ethical approval

Ethical approval was provided by the Joint Research Ethics Committee of Queen's University Belfast (17.21v2) and Universidade 11 Novembro, Cabinda, Angola. All participants consented to the use of anonymous data for this study and publication in a peer-reviewed journal.

Statistical analysis

Demographic variables are reported using descriptive statistics (frequencies and percentages). The mean and median differences between sociodemographic characteristics were compared using the Mann–Whitney U-test (for variables with two levels) and Kruskal-Walli's test (for variables with more than two levels), using Bonferroni correction for multiple comparisons post-hoc tests conducted using Dunn's (1964) procedure.[50] Chi-square or Fisher's exact tests were applied to assess the associations between knowledge level and sociodemographic variables. Stepwise multiple linear regression analysis was performed to predict factors influencing HPV knowledge. Age, gender, education, residence, profession, religion, and marital status were the explanatory variables, and the knowledge score was the dependent variable. The level of statistical significance was set at $P < 0.05$.

Results

Demographic characteristics of respondents

In total, 75 people attended the conference, with 65 (86.7%) returning the survey. Of these, 55.6% were men, and 44.4% were women. Most were aged 31-40 years (33.3%) and resided in Luanda (87.1%). Luanda is the capital and largest city in Angola, with 5,531,546 inhabitants in 2015.[51] Most respondents (56.3%) had a university-level education. The demographic characteristics are detailed in Table 1.

Table 1. Sociodemographic characteristics of respondents and factors associated with HPV Knowledge

	Sample	±Knowledge score	
	n (%)	*($\bar{x}$±s)*	*p value*
Total	65 (100)	11.08±8.76	
Gender (n=63)			
Male	35 (55.6)	10.54±8.71	0.667
Female	28 (44.4)	11.57±8.94	
[#]Age group (years) (n=63)			
20-30[a]	13 (20.6)	4.15±4.08	
31-40	21 (33.3)	10.90±8.44	**0.001****
41-50	15 (23.8)	11.80±8.48	
>50[d]	14 (22.2)	18.21±7.73	
Residence (n=62)			
Luanda	54 (87.1)	11.46±8.83	0.992
Other region	8 (12.9)	11.25±9.13	
[#]Education (n=64)			
Secondary[a,c]	5 (7.8)	2.40±3.58	**0.001****
Undergraduate[b,c]	36 (56.3)	7.86±6.95	
Postgraduate[c]	23 (35.9)	18.26±7.38	
[#]Profession (n=60)			
Academic[a,c]	24 (40)	10.46±7.54	
Health professional[b,c]	14 (23.3)	19.86±7.19	**0.001*****
Joint contracts[c]	22 (36.7)	8.45±7.44	

Religion (n=56)			
Christian	50 (89.3)	11.64±8.93	0.384
Other	6 (10.7)	15.33±5.43	
Marital status (n=62)			
Single	24 (38.7)	9.04±8.07	0.128
Married/Cohabitating	38 (61.3)	12.74±9.14	

Note. Postgraduate (Masters/PhD) ; Joint contracts (i.e., an academic and clinical healthcare role); $\bar{x}$= mean; s = standard deviation; ± Maximum score =25, represents the output where Mann-Whitney U and Kruskal-Wallis tests were applied; Superscript, # = variables where Kruskal-Wallis test was statistically significant; a,b,c = Bonferroni correction post hoc test for each level, groups that was statistically significantly different from each other in the same group; P value = * $p<0.05$, **p<0.01, ***p<0.001.

Assessment of HPV knowledge

The average knowledge score was 11.08 (SD = 8.76, achieved score range 0–25 out of 34). The Cronbach's alpha value was 0.943, indicating that the scale has good internal consistency reliability. HPV knowledge scores did not significantly differ by gender (p=0.667), residence (p=0.992), religion (p=0.384) or marital status (p=0.128), Table 1. Older participants had a higher HPV knowledge score than younger participants (ptrend<0.01). HPV knowledge was significantly associated with level of education (p<0.01). Those with a postgraduate education ($\bar{x}$ 18.26) scored significantly higher than those with undergraduate ($\bar{x}$ 7.86) or secondary education ($\bar{x}$ 2.40). HPV knowledge was also higher for healthcare professionals working in a clinical setting than in those working in academia, p<0.01. However, they only answered about 20 out of 34 questions correctly on average.

In general, knowledge of HPV was limited among respondents, ranging from not knowing that 'HPV cannot be cured with antibiotics' to understanding that it is a common sexually transmitted infection that can cause cervical cancer, Table 2. Most respondents knew

that having sex early increases the risk of contracting HPV (69.4%) and that most sexually active people will have HPV at some point in their lives (66%). Many knew that HPV could cause cervical cancer (61.5%) and that HPV vaccines are most effective if given to people pre-sexual debut (54.9%). However, there was limited knowledge regarding the transmission of the virus. Only 20.4% of respondents correctly answered when asked if '*the virus can be transmitted through oral sex*' and just 36.7% correctly answered when asked if '*HPV can be transmitted through skin-to-skin genital contact*'. Moreover, only 8% of respondents correctly answered when asked if '*men cannot get HPV'* and 26.5% correctly answered when asked if *'the virus can cause genital warts'*, which are one of the most common viral sexually transmitted infections (STI) caused by HPV.

Most respondents (70.9%) knew that HPV was not '*very rare*'. 71.4% of respondents knew that '*HPV vaccines offer protection against all sexually transmitted infections*' and 61.5% of respondents knew that HPV does not '*HPV always shows visible signs or symptoms*. The responses are summarised in Table 2.

Table 2. Knowledge of respondents toward HPV

Questions	**Total**	**Correct (%)**	**Incorrect (%)**
HPV vaccines offer protection against all sexually transmitted infections	49	35(71.4)	14(28.6)
HPV is very rare	55	39 (70.9)	16(29.1)
Having early sex increases the risk of contracting HPV	49	34(69.4)	15(30.6)
HPV does not normally need any treatment	50	34(68)	16(32)

Most sexually active people will have HPV at some point in their lives	47	31(66)	16(34)
HPV can cause oral cancer	51	33(64.7)	18(35.3)
HPV always shows visible signs or symptoms	52	33(63.5)	19(36.5)
HPV can cause cervical cancer	52	32(61.5)	20(38.5)
HPV can cause HIV/AIDS	48	28(58.3)	20(41.7)
HPV can cause cancer of the penis	49	27(55.1)	22(44.9)
HPV vaccines are most effective if given to people who have never had sex	51	28(54.9)	23(45.1)
Girls who have had the HPV vaccine do not need a Pap smear test	48	26(54.2)	22(45.8)
HPV can cause herpes	50	27(54)	23(46)
There are many types of HPV	49	25(51)	24(49)
HPV vaccines offer protection against most cervical cancers	47	23(48.9)	24(51.1)
You can cure HPV by getting the HPV vaccine	48	23(47.9)	25(52.1)
Having many sexual partners increases the risk of contracting HPV	47	22(46.8)	25(53.2)
The HPV vaccine requires only 1 dose	49	22(44.9)	27(55.1)
HPV can be transmitted during sexual intercourse	45	20(44.4)	25(55.6)
The HPV vaccine protects you against all types of HPV	49	20(40.8)	29(59.2)
The use of condoms reduces the chances of transmission of HPV	47	18(38.3)	29(61.7)

HPV can be transmitted through skin-to-skin genital contact	49	18(36.7)	31(63.3)
Someone who had the HPV vaccine cannot develop cervical cancer	47	17(36.2)	30(63.8)
One of the HPV vaccines offers protection against genital warts	45	16(35.6)	29(64.4)
A person can have HPV for many years without knowing	45	15(33.3)	30(66.7)
HPV can be transmitted through anal sex	46	14(30.4)	32(69.6)
HPV can cause genital warts	49	13(26.5)	36(73.5)
HPV can be transmitted through oral sex	49	10(20.4)	39(79.6)
HPV can be cured with antibiotics	52	9(17.3)	43(82.7)
HPV infections always lead to health problems	48	8(16.7)	40(83.3)
HPV can cause anal cancer	50	7(14)	43(86)
HPV is a bacterial infection	53	5(9.4)	48(90.6)
Men cannot get HPV	50	4(8)	46(92)
A person without symptoms cannot transmit HPV infection	51	4(7.8)	47(92.2)

Note. Questions are ordered by decreasing % answered correctly

Categorising HPV knowledge into low and high levels resulted in significant differences in response rates based on age ($p<0.01$), education ($p<0.01$), marital status ($p=0.037$) and profession ($p<0.01$), Table 3. HPV knowledge was significantly higher among respondents who were over age 50 years (78.6%, $p=0.001$), had a postgraduate degree (82.6%, $p = 0.001$) and were clinical health professionals (85.7%, $p = 0.009$). Participants who were married or

cohabiting also had higher knowledge scores than single persons, but to a lesser degree (59.7%, p = 0.037).

Table 3. Cross tabulation of factors associated with HPV Knowledge

Characteristics		**Knowledge Level**		
		Low n (%)	***High n (%)***	***Sig***
Overall		35 (53.8)	30(45.2)	
Gender	Male	19(54.3)	16(45.7)	0.955
	Female	15(53.6)	13(46.4)	
Age (years)	20-30	13(100)	0(0)	**0.001*** **
	31-40	9(42.9)	12(57.1)	
	41-50	8(53.3)	7(46.7)	
	>50	3(21.4)	11(78.6)	
Education	Secondary	5(100)	0(0)	**0.001*** **
	Undergraduate	25(69.4)	11(30.6)	
	Postgraduate	4(17.4)	19(82.6)	
Profession	Academic	14(58.3)	10(41.7)	**0.009** **
	Health professional	2(14.3)	12(85.7)	
	Joint contracts	14(63.6)	8(36.4)	
Residence	Luanda	27(50)	27(50)	0.709
	Other region	5(62.5)	3(37.5)	
Religion	Christianity	27(54)	23(46)	0.193
	Another religion	1(16.7)	5(83.3)	
Marital Status	Single	17(70.8)	7(29.2)	**0.037***
	Married/Cohabitation	16(42.1)	22(57.9)	

Note. Postgraduate (Masters/PhD); Joint contracts (an academic and clinical healthcare role); $\chi 2$ = output where Chi-square statistic was applied; Sig= * *p<0.05,* **p<0.01, ***p<0.001.

Multiple regression analysis

The combined influence of age, education, and profession accounted for 43% of the variation in HPV knowledge scores. Examining differences in scores for each of these variables revealed that HPV knowledge was approximately 8 times less for respondents aged 20-30 years compared to those aged >50 years, 4 times less for respondents with an undergraduate degree compared to those with a postgraduate degree and approximately 7 times more for clinical healthcare professional compared to academics working in the health or healthcare field.

Discussion

There is limited data on HPV knowledge in Angola. The objective of this study was to evaluate the knowledge toward HPV and identify factors predicting HPV knowledge among healthcare professionals. Since HPV is the most common sexually transmitted infection worldwide and the primary cause of cervical cancer, health authorities must plan appropriate strategies to inform and change the way people think and act to improve their health and well-being. It is therefore of utmost importance that the knowledge of healthcare professionals be studied to guide these efforts.

Overall, HPV knowledge among the conference attendees was poor similar to findings from HPV knowledge studies of health professionals in Nigeria and South Africa.[29,30] This pattern is not limited to Africa or other LMICs. Similar results have been found among healthcare professionals in England, Ireland, and Poland.[5,40,45] However, a high general knowledge about HPV was also reported among healthcare professionals in Slovenia and Greece.[36,39] This shows gaps in HPV knowledge among healthcare professionals. Despite the high-risk consequences associated with HPV, knowledge would be expected to be higher

particularly among health professionals with joint contracts (i.e., having an academic and clinical healthcare role).

Given that healthcare professionals are critical for patient care, they require theoretical or practical understanding of the subject to educate the public on good health practices needed to improve their well-being and for policy interventions. A promising suggestion on how to increase knowledge among health professionals is the need for (continuing medical education, CME) trainings on all aspects of medical oncology that integrate face-to-face, online and reference resources. This would help health professionals learn at every stage of their career and provide a low-cost way to receive an update on changes to vaccination and/or screening programmes and guidelines in a format that would be easily accessible to many staff whilst requiring relatively little time commitment to complete.[38]

As in our study, clinical healthcare professionals generally knew more categories of HPV knowledge[38,43] but has highlighted significant gaps in knowledge. In this study healthcare workers had limited knowledge of HPV. Evidence suggests that knowledge about HPV and HPV-vaccination were significantly higher when participants followed a form of medical education,[52] and healthcare professionals with HPV training had higher knowledge than those who had never had HPV training.[38]

It is vital that healthcare professionals receive adequate training as a lack of knowledge can spread misinformation and cause confusion among patients as they seek treatment.[34] A recommendation would be the integration of HPV training into the undergraduate healthcare curriculums, particularly for younger healthcare professionals. This will help elevate awareness and understanding of HPV, improve communication in delivering HPV results and information to patients, and help patients understand their health condition.

Knowledge awareness of HPV and cervical cancer among members of the general public in Angola is unknown but systematic reviews conducted in Arab states of the Middle

East and North Africa region and across sub-Saharan Africa reveal poor public knowledge of HPV and HPV vaccination.[16,53] These reviews indicated that barriers to HPV knowledge included lack of political will to engage in national cervical cancer prevention, high cost of vaccine delivery, low levels of cervical cancer screening, poor health system capabilities, inaccessibility to medical care, low awareness and knowledge of cervical cancer and failure of cervical cancer to be recognised as a major health concern.[16,53]

In contrast, in an international survey of three developed nations - Australia, the United Kingdom and the United States, which included 2,409 people, 61% of the respondents were aware of HPV infection and HPV vaccination. Knowledge was influenced by level of education, marital status, having a daughter 9–17 years of age, and previous vaccination.[54] Surveys of public HPV knowledge would therefore be warranted in Angola. This would help identify significant knowledge gaps and help disseminate information about healthy living to prevent HPV, resulting in policy changes, better use of healthcare services, improving health literacy, and reducing health disparities.[55]

Unlike previous studies in other countries gender was not a contributing factor to better HPV knowledge in our survey of healthcare professionals in Angola.[35, 43,56] A possible reason for the gender difference in HPV knowledge could be due to misconception that cancer is a reproductive disease that generally affects women. Our study revealed that only 14% of respondents correctly answered when asked if "*HPV can cause anal cancer*". HPV infection is a significant cause of anal intraepithelial lesions.[57]

According to a recent systematic review and meta-analysis of 18, 646 men and women, like cervical cancer, an estimate 89–100% of anal cancers are caused by persistent infections with high-risk HPV, especially HPV16, irrespective of gender.[58] Moreover, men play a significant role in the transmission of HPV; therefore, it is necessary to increase the awareness of HPV infection, its public health importance, primary symptoms, and strategies for prevention

among healthcare professionals, particularly regarding the role of men and male healthcare professionals.

Older respondents were more knowledgeable about HPV than the younger respondents. This finding is contrary to those of Xenaki et al.,[39] who reported that 75% of respondents aged 20-29 years achieved a higher knowledge score in Greece. However, data from Villar et al.[35] and Smolarczyk et al.[5] suggest there were no age difference in HPV knowledge by age. Our finding could reflect on the hands-on experience older health professionals have had with cervical cancer or other cancers caused by HPV. Interestingly respondents who were married/cohabiting were also more knowledgeable about HPV than single respondents. It is also suggested that older health professionals have increased knowledge not just because of their age, i.e., practicing longer, but perhaps their spouses have had cancer diagnosis – or have more experience with screening just because they are older.

Nevertheless, our findings showed poor knowledge of HPV, which is not unexpected, considering the lack of education regarding the virus among healthcare professionals and the absence of HPV vaccination in the national immunisation programme in Angola. It has previously been highlighted that poor awareness and knowledge of HPV result from lack of public education regarding the virus and the absence of HPV vaccination in the national immunisation schedule[43] and where HPV vaccines is available but not promoted by the authorities.[59] Level of education was also an important determinant of HPV knowledge. Those with only secondary level education had much less knowledge. This may suggest that knowledge of HPV may be even lower if researched in a community setting. Therefore, a potential solution to facilitate better understanding of HPV will be to promote up-to-date information to improve awareness and knowledge of HPV through effective communication, education, and training.

Strength and Limitations of study

This study is one of the first in Angola to document the level of knowledge about cervical cancer and HPV among clinicians and academics working in a health-related field. Our findings provide a valuable baseline for future research. In addition, the findings add new evidence concerning knowledge about HPV. However, there are limitations to this study. First, participants were attendees at a conference on cancer held in the national capital. No provision was made to hear from other people who could not travel to the conference. One of the fundamental limitations of this study is the number of participants who completed the survey. This study targeted attendees of a cancer conference hosted by the Angolan Ministry of Higher Education in Luanda so the findings cannot be generalised to all healthcare professionals in Angola. Also, this study did not seek to assess healthcare professionals' attitudes and practice towards HPV.

Implications of study

The finding of this study highlights two main implications. Firstly, assessing the existing level of knowledge, attitudes, and practice towards HPV amongst healthcare professionals provides insights into developing targeted strategies to address their needs. A particular focus should be to increase the knowledge of healthcare professionals through continuous training opportunities to inform and provide support to patients. Secondly, to achieve sustainable quality of care for patients, there is need to consider motivational elements. It is crucial that public health authorities in Angola establish HPV management policies based on existing World Health Organisation cervical cancer management guidelines. This will provide a basis for healthcare professionals to develop HPV management practices in their team. Findings from this study could help policy makers and healthcare professionals develop and enforce strategies to cancer incidence and mortality.

Conclusion

This study provides the first data on HPV knowledge among clinicians and academics working in a health-related field in Angola. Increased awareness of HPV among this group, as well as the public, is important in preventing cervical and other cancer burden in Angola. Further research: however, is needed to understand professionals' knowledge based on a random sample from across the country, as well as the public's knowledge of HPV. Such evidence is needed for policymakers to make evidence-based decisions when designing and implementing policies and prevention strategies.

This study found overall a low level of HPV knowledge among healthcare professionals in Angola. That points to the need to improve their understanding of the link between HPV and cervical cancer in Angola through health promotion messages that fosters awareness and knowledge. It highlights a need for awareness programmes with different targets and messages for varying sociodemographic groups. It is suggested that routine knowledge analysis can be an effective monitoring tool to measure the performance of mitigation measures in HPV. In any such application, the results of this study can be used as a baseline in Angola. Furthermore, future research should explore the educational interventions to improve healthcare professionals' HPV knowledge and perception of HPV vaccination. This may prepare healthcare professionals to appropriately discuss the potential benefits of the HPV vaccine with policymakers and promote vaccination uptake among the target population.

Ethics approval and consent to participate

This study was approved by the Joint Research Ethics Committee of the School of Medicine, Dentistry and Biomedical Sciences, Queen's University Belfast and Universidade 11 Novembro, Cabinda, Angola and followed the Declaration of Helsinki Ethical Principles for

Medical Research Involving Human Subjects. Completing the questionnaire was voluntary and signing the consent and information sheet forms implied willingness to participate in the study.

Consent for publication

Not applicable.

Availability of data and materials

Data for this study is not available for sharing due to ethical restrictions. Participants of this study did not agree for their data to be shared publicly, so supporting data is not available.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

The author(s) read and approved the final manuscript.

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Authors' information

Where authors are identified as personnel of the International Agency for Research on Cancer / World Health Organisation, the authors alone are responsible for the views expressed in this

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