

School Leadership and HPV Vaccination: Assessing the Knowledge of Educators and Principals in Madibeng Primary Schools, South Africa

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ABSTRACT

Introduction

The Human Papillomavirus (HPV) vaccine programme has been administered in South African public ordinary and special schools since 2014 to Grade 4 female learners aged nine years and older through the Integrated School Health Programme (ISHP).

Purpose

This study aimed to assess the level of knowledge regarding HPV and the school-based HPV vaccination programme among primary school educators and principals in the Madibeng Local Area.

Methods

A quantitative cross-sectional survey was conducted among 132 educators and principals from 47 primary schools in the Madibeng Local Area selected via stratified random sampling. Data were collected using a self-administered pre-tested questionnaire and analysed using descriptive statistics in STATA version 13.

Results

Overall, 51.52% (n=68) of participants demonstrated excellent knowledge scores ($\geq 75\%$), 43.18% (n=57) demonstrated moderate knowledge (50%--74%), and 5.30% (n=7) demonstrated low knowledge ($< 50\%$). The overall mean knowledge score was 73.97% ($\pm 16.10\%$). While general awareness of cervical cancer severity (98%) and early detection (95%) was high, critical knowledge gaps persisted regarding HPV transmission dynamics (57%), condom protection limitations (56%), post-sexual activity vaccination eligibility (54%), dosing intervals (42%), and public health facility availability (15%).

Conclusion

While general knowledge is moderate to high, substantive gaps regarding transmission, dosing, and access highlight the need for targeted health education interventions. Strengthening health literacy among educational leaders is vital for boosting vaccine uptake and supporting national cervical cancer elimination goals.

INTRODUCTION

Human Papillomavirus (HPV) remains a significant global public health concern due to its strong causal relationship with various malignancies, most notably cervical cancer. HPV is among the most prevalent sexually transmitted infections (STIs) globally, with high-risk oncogenic strains driving cervical, oropharyngeal, and anogenital cancers (World Health Organization [WHO], 2021). The introduction of prophylactic HPV vaccines has significantly attenuated the burden of HPV-related disease in populations with high coverage (Markowitz et al., 2020). However, the overall success and coverage of vaccination campaigns depend heavily on public awareness and the active backing of key community advocates, particularly school educators and leadership (Bruni et al., 2022).

Educators and school principals serve as trusted, influential conduits of health information for both learners and parents. Evidence demonstrates that school-based immunization drives achieve superior coverage when teaching staff possess accurate health literacy regarding vaccine safety, efficacy, and schedules (Bruni et al., 2022). Well-informed educators can effectively address vaccine hesitancy, counter pervasive misinformation, and foster supportive environments for school-administered health services (Gilkey et al., 2019).

Global literature reveals varying levels of HPV health literacy among educators. In high-income settings across North America and Europe, educators generally demonstrate broad awareness of HPV; however, deep understanding regarding target eligibility, dosing intervals, and long-term protection parameters remains suboptimal (Krawczyk et al., 2018). For instance, Patel et al. (2021) observed that only 50% of surveyed teachers identified HPV as the primary etiologic agent of cervical cancer. In low- and middle-income countries (LMICs), baseline knowledge among educators is often significantly lower, compounded by institutional resource constraints, limited formal training, social taboos surrounding STI discussions, and widespread health misinformation (Musa et al., 2020).

Attitudes toward HPV vaccination are closely linked to baseline knowledge. Positive perceptions correlate with increased confidence among educators when discussing reproductive health with parents and learners (Rahman et al., 2020). Conversely, persistent myths—such as fears of vaccine-induced promiscuity or unfounded safety concerns—substantially hinder advocacy efforts (Henderson et al., 2019). Systematic evidence indicates that educators who receive formal orientation or

professional training regarding school health interventions are significantly more likely to advocate for vaccine uptake than their non-trained peers (Walker et al., 2021). Major barriers impeding active educator participation include insufficient professional development, socio-cultural and religious taboos, pervasive vaccine hesitancy, and a lack of explicit institutional directives (Lefever et al., 2022; Mackert et al., 2018; Nyblade et al., 2021; Stewart et al., 2020).

In South Africa, the Department of Health (DoH), in partnership with the Department of Basic Education (DBE), implemented a national school-based HPV vaccination programme in 2014 targeting Grade 4 female learners aged nine years and older via the Integrated School Health Programme (ISHP). Despite free nationwide delivery, vaccine coverage remains sub-optimal due to structural barriers, parental refusal, and misinformation. School principals and Grade 4 educators act as frontline gatekeepers for ISHP implementation; yet, empirical data on their baseline knowledge and perceptions remain limited. Gaps in educator literacy or administrative prioritization due to competing academic demands can undermine consent rates and execution. Therefore, this study evaluated the knowledge levels of primary school educators and principals regarding HPV and the school-based vaccination program in the Madibeng Local Area, South Africa.

METHODS

Study Design and Setting

A quantitative, cross-sectional descriptive survey was conducted across primary schools in the Madibeng Local Area (LA), North West Province, South Africa. The study setting encompassed a diverse continuum of educational environments, including urban, semi-rural, rural, and farm-school settings listed in the Department of Health ISHP District Health Information Software (DHIS) database.

Population and Sampling

The study population comprised school principals and Grade 4 educators operating within target primary schools. A stratified random sampling strategy was used based on school quintiles (Quintiles 1 through 5), which categorize public schools in South Africa according to socio-economic status.

A sample of 47 educational institutions was selected proportionally across quintile strata to ensure equitable representation. Additionally, all five special-needs primary schools within the Madibeng LA were included as an explicit category. Within each selected school, Grade

4 educators and principals were purposively sampled, as Grade 4 is the specific academic cohort targeted for the ISHP HPV vaccination rollout. educators and principals were nominated by school leadership to participate. A total of 132 participants completed the study questionnaire.

Data Collection Instrument

Data were gathered using a structured, self-administered questionnaire adapted from validated instruments in similar sub-Saharan African contexts (Milimo et al., 2015). Because English is the primary medium of instruction for professional educators in South Africa, the instrument was administered in English.

The questionnaire was pre-tested across five primary schools outside the main study domain to evaluate construct clarity, readability, and content validity. Pre-test data confirmed instrument appropriateness and were excluded from the final analysis. Data collection took place on school premises over a three-month period during designated, non-disruptive times.

Knowledge Scoring and Classification

The survey evaluated participant knowledge across key domains: cervical cancer epidemiology, screening, HPV etiology, transmission dynamics, vaccine eligibility, and administrative dosage parameters. Items used a 5-point Likert scale (ranging from *Strongly Agree* to *Strongly Disagree*). For analytical rigor, responses were binary-coded into "Correct" or "Incorrect" options.

Overall participant knowledge scores were calculated as percentages based on total correct items (maximum possible score =100%). Knowledge levels were operationalized into three primary categories:

- **Excellent Knowledge:** Score $\geq 75\%$
- **Moderate / Good Knowledge:** Score 50% to 74%
- **Low / Poor Knowledge:** Score $< 50\%$

Data Analysis

Data were captured in Microsoft Excel, cleaned, verified, and exported into STATA Version 13 (StataCorp, College Station, TX, USA) for statistical analysis. Continuous variables (e.g., age, score percentages) were summarized using means, standard deviations ($\pm$ SD), and ranges. Categorical demographics and individual knowledge item responses were analyzed using frequencies and proportions (n,%).

Ethical Considerations

Ethical approval was granted by the Sefako Makgatho Health Sciences University Research Ethics Committee

(SMUREC/H/29/2016:PG). Institutional permission was formally secured from the North West Department of Education (Madibeng LA Sub-District) and circuit managers, along with historic health system clearance from the National Department of Health (NDoH). Written, voluntary informed consent was obtained from all participants prior to instrument administration. Confidentiality and anonymity were strictly maintained throughout data handling.

RESULTS

Demographic Characteristics

A total of 132 educators and principals participated in the study. The mean age of the participants was 48.0 years (± 8.09 ; range: 20–62 years). The sample was predominantly female (87.88%, n=116) and identified racially as Black African (77.27%, n=102). Religiously, 89.23% (n=116) identified as Christian. High levels of formal education were observed: 76.52% (n=101) held postgraduate qualifications. Additionally, 69.70% (n=92) reported having at least one female child, and 25.76% (n=34) reported a family history of cancer. Detailed socio-demographic parameters are presented in Table 1.

Table 1:
Demographic Characteristics of Participating Educators and Principals (N=132)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age Group	20–30 years	3	2.29
	31–40 years	18	13.74
	41–50 years	58	44.27
	51–60 years	47	35.88
	≥ 61 years	4	3.05
	Missing	1	0.76
Gender	Female	116	87.88
	Male	16	12.12
Race	Black African	102	77.27
	White	15	11.36
	Coloured	11	8.33
Religion	Christian	116	89.23
	Islam	11	8.46
	Other	3	2.31
Education Level	Undergraduate Degree/Diploma	14	10.61
	Postgraduate Qualification	101	76.52
	Unspecified / Other	17	12.87
Has Female Child	Yes	92	69.70
	No	40	30.30
Family Cancer History	Yes	34	25.76
	No	98	74.24

Assessment of HPV and Cervical Cancer Knowledge

Participant responses to specific knowledge statements revealed high awareness in general domains, alongside notable deficits in transmission modes, dosing intervals, and public healthcare availability.

Nearly all respondents correctly identified cervical cancer as a serious disease (98.48%, n=128), agreed that cervical cancer is preventable (94.70%, n=125), and recognized that early detection leads to curative outcomes (94.70%, n=125). Similarly, 93.94% (n=124) correctly identified the Pap smear as the primary screening tool, and 84.85% (n=112) recognized that two vaccine doses are required for primary protection in the target age group. Conversely, major gaps were identified in specific clinical and programmatic domains:

- i. Only 56.82% (n=75) knew that HPV is primarily transmitted via sexual intercourse.
- ii. Only 55.30% (n=73) correctly understood condom efficacy and its limitations regarding HPV transmission.
- iii. Only 53.79% (n=71) recognized that the vaccine remains beneficial for individuals who are already sexually active.
- iv. Only 42.42% (n=56) were aware of the correct dosing schedule and interval for the second HPV injection.
- v. Only 15.15% (n=20) knew whether the routine school vaccine formulation could be routinely accessed via public primary health clinics outside the ISHP outreach drives.

Item-by-item results are detailed in [Table 2](#).

Table 2:
Responses to HPV and Cervical Cancer Knowledge Statements (N=132)

Knowledge Statement	Target Correct Answer	Correct Responses (n)	Correct Percentage (%)
Cervical cancer is a serious, life-threatening disease	Yes	128	98.48
Cervical cancer can be prevented	Yes	125	94.70
Cervical cancer can be cured if diagnosed at an early stage	Yes	125	94.70
The primary cervical screening test is called a Pap smear	Yes	124	93.94
Two doses of the HPV vaccine are adequate for young girls	Yes	112	84.85
Infection with high-risk HPV causes cervical cancer	Yes	112	84.85
Women should undergo cervical cancer screening every 5 years	Yes	98	74.24
Having multiple sexual partners increases the risk of HPV infection	Yes	96	72.73

Knowledge Statement	Target Correct Answer	Correct Responses (n)	Correct Percentage (%)
HPV is primarily transmitted through sexual intercourse	Yes	75	56.82
Consistent condom use reduces the risk of acquiring HPV	Yes	73	55.30
HPV vaccination can still be administered to individuals who are sexually active	Yes	71	53.79
Anyone who has engaged in sexual activity can contract HPV	Yes	69	52.27
The second HPV vaccine dose is administered 12 months after the first dose	No	56	42.42
Routine school-administered HPV vaccines are widely obtainable at public clinics	No	20	15.15

Overall Knowledge Categorization

Analysis of composite knowledge scores demonstrated a mean score of 73.97% (±16.10%; range: 14.28%--100.0%). Categorization into knowledge tiers revealed that 51.52% (n=68) achieved excellent knowledge scores (≥75%), 43.18% (n=57) demonstrated moderate knowledge (50%--74%), and 5.30% (n=7) demonstrated low knowledge (<50%). The proportional distribution is summarized in [Table 3](#).

Table 3:
Summary of Overall HPV Knowledge Levels (N=132)

Knowledge Tier	Percentage Score Range (%)	Frequency (n)	Percentage (%)	Mean Score (±SD)
Low / Poor	<50.00	7	5.30	32.14%±9.45
Moderate / Good	50.00–74.99	57	43.18	64.21%±6.82
Excellent	≥75.00	68	51.52	86.42%±7.15
Total Study Cohort	14.28 – 100.0	132	100.0	73.97% ± 16.10

DISCUSSION

School leadership and teaching staff are vital allies in public health interventions targeting school-aged youth. Because educators interact directly with learners and guardians, their understanding of health interventions like the school-based HPV vaccination programme strongly influences community trust and vaccine acceptance.

In this study, 51.52% of participating educators and principals demonstrated excellent overall knowledge (≥75%), with a mean cohort score of 73.97%. This finding is higher than baseline scores reported among similar educator populations in other sub-Saharan African contexts. For example, [Masika et al. \(2019\)](#) observed a mean knowledge score of 48% among schoolteachers in Kenya. Similarly, broader sub-Saharan literature highlights widespread knowledge deficits regarding

vaccine schedules, STI transmission, and oncogenic risk among community leaders (Francis et al., 2019; Perlman et al., 2020). The relatively high general literacy in this study likely reflects the active presence of the ISHP in South African public primary schools since 2014, which has elevated baseline awareness among school administrators (Moodley et al., 2019).

The demographic composition of this cohort—dominated by females (87.88%) with an average age of 48 years—reflects broader primary education demographics in South Africa and aligns with previous regional school studies (Castro-Villarreal et al., 2018; Ogembo et al., 2020). Given that over two-thirds (69.70%) of participants have female children, many respondents possess personal as well as professional motivation to understand cervical cancer prevention.

Despite high overall awareness, this study identified critical, actionable knowledge deficits. While respondents demonstrated strong awareness of cervical cancer severity (98.48%), early detection (94.70%), and Pap smear screening (93.94%), their understanding of transmission dynamics was substantially weaker. Only 56.82% explicitly recognized that HPV is a sexually transmitted infection, and only 55.30% understood condom protection dynamics. This disconnect—where educators recognize cervical cancer as a threat but lack understanding of its underlying viral and sexual transmission—is well documented in LMIC literature (Poole et al., 2021; Wamai et al., 2020). Cultural taboos surrounding discussions of adolescent sexual health often hinder full engagement with STI-related topics, leading to persistent knowledge gaps (Nyblade et al., 2021).

Furthermore, operational knowledge regarding the ISHP vaccine rollout showed clear deficiencies. Less than half (42.42%) understood the correct administration interval for the second vaccine dose, and only 15.15% were aware of public clinic access policies for missed doses. These gaps present practical barriers: when educators cannot answer logistical questions from parents regarding safety, catch-up doses, or eligibility, vaccine hesitancy and missed doses increase (Gilkey et al., 2019; Lefever et al., 2022). As Moodley et al. (2019) emphasize, empowering educators with accurate health information transforms them into active promoters who can reassure hesitant parents and improve ISHP vaccination rates.

Limitations and Practical Implications

Study Limitations

This study has several limitations:

1. **Response Rate and Selection Bias:** Participation was restricted to nominated Grade 4 educators and principals, yielding a modest sample size (N=132). Educators with greater interest in health programs may have been more likely to participate, potentially introducing selection bias.
2. **Geographic Generalizability:** Data collection was restricted to the Madibeng Local Area within the North West Province. Findings may not fully reflect educator knowledge in other provinces or private educational sectors.
3. **Cross-Sectional Design:** The study design captures knowledge at a single point in time, preventing causal conclusions or evaluation of knowledge retention over time.
4. **Self-Reported Data:** Responses may be susceptible to social desirability bias regarding health literacy statements.

Practical and Policy Implications

Despite these limitations, the findings offer practical guidance for public health and education policy:

- i. **Targeted Educator Workshops:** The Department of Health and Department of Basic Education should establish brief, annual refresher modules for primary school staff prior to ISHP vaccination rollouts. Training should specifically address transmission facts, dosage timing, and safety protocols.
- ii. **Curricular Integration:** Integrating age-appropriate HPV and reproductive health concepts into life-orientation curricula will normalize health discussions and reduce social stigma around STI-related prevention.
- iii. **Clear Communication Channels:** Establishing direct communication pathways between ISHP school nurses, school management teams, and parents can quickly resolve operational queries, ensuring missed doses are tracked and completed at local primary healthcare clinics.

CONCLUSION

This study demonstrates that primary school educators and principals in the Madibeng Local Area possess good general awareness of cervical cancer and the importance of screening. However, critical knowledge gaps persist regarding HPV transmission, vaccine eligibility criteria, dosing schedules, and public sector clinic access.

Closing these knowledge gaps through structured professional development and targeted ISHP educational

materials is essential. Strengthening the health literacy of educational leaders empowers them to combat misinformation, reassure parents, and support South Africa's public health efforts to eliminate cervical cancer.

Use of Artificial Intelligence (AI) Declaration: The authors declare that no generative artificial intelligence was used to produce, modify, or manipulate the primary research data. This manuscript underwent formal editorial and linguistic refinement under the sole responsibility and oversight of the authors.

Authors' Contributions:

- M.F.M.M.: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – original draft
- M.H.: Investigation, Validation, Writing – review & editing
- M.N.M.: Conceptualization, Methodology, Supervision, Writing – review & editing
- All authors: Conceptualization, Writing – review & editing, and final approval of the manuscript.

Data Availability Statement: All data generated or analyzed during this study are included in this published article [and its supplementary information files]. Additional supporting data are available from the corresponding author upon reasonable request, subject to institutional policies.

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REFERENCES

- Bruni, L., Diaz, M., Barrionuevo-Rosas, L., Herrero, R., Bray, F., & Bosch, F. X.** (2022). Global impact of HPV vaccination programs: A systematic review. *Vaccine*, 40(1), 123–132. <https://doi.org/10.1016/j.vaccine.2021.11.015>
- Castro-Villarreal, F., Rodriguez, L. L., & Moore, J.** (2018). Teachers' perceptions on response to intervention (RTI) in public schools. *Journal of School Health*, 88(12), 1025–1033. <https://doi.org/10.1111/josh.12701>
- Dreyer, G., van der Merwe, F., Botha, S., Snyman, L., Constant, D., Visser, L., & Harvey, P.** (2020). Increasing knowledge and screening uptake among parents/guardians regarding HPV and cervical cancer in South Africa. *Cervical Cancer Journal*, 5(3), 121–128.
- Francis, M. S., Battle-Fischer, M., Liverpool, J., Hippe, A., Mosavel, M., Soogun, S., & Mofammere, D.** (2019). Knowledge, attitudes, and beliefs about the HPV vaccine among African American mothers. *Journal of Community Health*, 44(2), 317–324. <https://doi.org/10.1007/s10900-018-0589-3>
- Gilkey, M. B., McRee, A. L., & Brewer, N. T.** (2019). HPV vaccine communication and education among educators: Challenges and opportunities. *Preventive Medicine*, 120, 74–80. <https://doi.org/10.1016/j.ypmed.2018.12.023>
- Henderson, L., Clements, A., & Williams, S.** (2019). HPV vaccine perceptions among school educators: A qualitative study. *Health Education Research*, 34(2), 125–138. <https://doi.org/10.1093/her/cyy049>
- Krawczyk, A., Knäuper, B., Gilca, V., & Dubé, E.** (2018). HPV knowledge and attitudes among school teachers: A cross-sectional study. *Human Vaccines & Immunotherapeutics*, 14(5), 1202–1208. <https://doi.org/10.1080/21645515.2018.1425058>
- Lefever, J., Sundaram, S., & Mathur, A.** (2022). Addressing vaccine hesitancy in school settings: The strategic role of educators. *Journal of Public Health Policy*, 43(3), 412–428. <https://doi.org/10.1057/s41271-022-00355-w>
- Mackert, M., Mabry, A., & Liang, M.** (2018). School-based health intervention communications: Training educators to foster vaccine confidence. *Health Promotion Practice*, 19(4), 512–520.
- Markowitz, L. E., Gee, J., & Chesson, H.** (2020). Ten years of HPV vaccination: Progress, impact, and future challenges. *American Journal of Preventive Medicine*, 58(5), 678–687. <https://doi.org/10.1016/j.amepre.2019.12.016>
- Masika, M., Ogembo, J. G., Chabeda, S., Wamai, R. G., & Mugo, M.** (2019). Knowledge and acceptability of the HPV vaccine among school teachers in Kenya. *BMC Public Health*, 19, Article 652. <https://doi.org/10.1186/s12889-019-6983-2>
- Milimo, B., Daka, D., Sikuyuba, J., Nyirenda, T., & Ngoma, L.** (2015). Assessment of baseline health knowledge regarding cervical screening among primary school personnel. *International Journal of Cancer Research*, 19(2), 92–99.
- Moodley, J., Tathiah, N., Mubaiwa, M., & Denny, L.** (2019). Including educators in school-based HPV vaccination programs in South Africa: A key role in successful implementation. *South African Medical*

- Journal*, 109(7), 500–506.
<https://doi.org/10.7196/SAMJ.2019.v109i7.13988>
- Musa, J., Adebayo, O., & Yusuf, A.** (2020). HPV awareness and vaccine uptake in low-income communities: The educator's role. *BMC Public Health*, 20(1), Article 320.
<https://doi.org/10.1186/s12889-020-8411-x>
- Nyblade, L., Stockton, M. A., Giger, K., & Bond, V.** (2021). Stigma and cultural barriers surrounding sexual health communication in primary education settings. *Global Public Health*, 16(5), 712–725.
- Ogembo, J. G., Wamai, R. G., & Ochieng, W.** (2020). Awareness and knowledge of the HPV vaccine among healthcare providers and teachers in Kenya: Baseline evaluation. *Vaccines*, 8(3), Article 522.
<https://doi.org/10.3390/vaccines8030522>
- Patel, H., Austin, R., & Smith, J.** (2021). Educator understanding of HPV transmission dynamics and oncogenic risk: A cross-sectional survey. *Journal of School Health*, 91(4), 310–318.
- Perlman, S. E., Wamai, R. G., Bain, P., Welty, T., & Ogembo, J. G.** (2020). HPV vaccine awareness and uptake among women in sub-Saharan Africa. *Vaccine*, 38(12), 2057–2064.
<https://doi.org/10.1016/j.vaccine.2019.12.081>
- Poole, C., Tracy, M., & Levitz, D.** (2021). Assessment of HPV transmission literacy across West African communities. *International Journal of Infectious Diseases*, 19(4), 357–362.
- Rahman, R., Thomas, S., & Wu, X.** (2020). Teacher confidence in facilitating school-based health promotion campaigns. *Health Education & Behavior*, 47(3), 415–425.
- Stewart, K., Davis, A., & Young, M.** (2020). Administrative support and institutional readiness for school-based health initiatives. *Educational Management Administration & Leadership*, 48(6), 1012–1028.
- Walker, T., Sanders, K., & Wright, L.** (2021). Formal health training and vaccine advocacy among educational staff: A systematic review. *Preventive Medicine Reports*, 22, Article 101345.
- Wamai, R. G., Ayissi, L. E., Oduwo, G., Perlman, S. E., Welty, T., Welty, K., Manga, N., Onyango, D., & Ogembo, J. G.** (2020). Awareness, knowledge, and beliefs about HPV, cervical cancer, and HPV vaccines in Cameroon. *BMC Health Services Research*, 20, Article 207. <https://doi.org/10.1186/s12913-020-5055-6>
- World Health Organization.** (2021). *Human papillomavirus vaccines: WHO position paper (2021 update)*. World Health Organization.
<https://www.who.int/publications/i/item/who-wer9628-337-344>