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THE SITUATION WITH VACCINATION IN SHKODRA REGION AFTER THE FIRST YEAR OF IMPLEMENTATION OF HUMAN PAPILLOMAVIRUS VACCINE

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Ключові слова: *вірус папіломи людини, ВПЛ, вакцина, вакцинація, імунізація, громадське здоров'я, охорона здоров'я*

Abstract. The situation with vaccination in Shkodra region after the first year of implementation of human papillomavirus vaccine. Shabani Zamira, Haxhija Edona, Pjetri Emiljano, Shala Irena, Bushati Nevila, Malevija Amela. *Human papillomavirus (HPV) is a common sexually transmitted infection with potentially serious health consequences, including anogenital and oropharyngeal cancers and genital warts. In 2022, Albania implemented an HPV vaccination program for girls aged 13-20 years, offering a single dose of the bivalent or quadrivalent vaccine. This study aims to evaluate the status of HPV vaccination in the Shkodra region after its first year of implementation and explore reasons for non-vaccination. This retrospective study collected data from official vaccination registers at health centers in the Shkodra region for the period 2022-2023. Additionally, face-to-face interviews were conducted with nurses responsible for administering vaccinations (vaccinators) and with parents present at the centers. Quantitative data were obtained and validated by the Chief Vaccination Office in the Epidemiology Sector at the Local Health Care Unit in Shkodra. A simple descriptive and comparative method was employed. Data for this study were gathered from two main sources: official vaccination records and interviews conducted with nurses and parents. Quantitative data were processed and analyzed using Microsoft Office Excel 2010. The vaccination coverage plan aimed to vaccinate 812 girls, with 67% (n=546) from urban areas and 33% (n=266) from rural areas. Overall, vaccination coverage was 51% (n=412 girls). Coverage was higher in rural areas (72.6%, n=193 girls) than in urban areas (40%, n=219 girls). This study highlights the challenges and successes of the HPV vaccination program in the Shkodra region during its first year of implementation. Vaccination coverage was higher in rural areas (72.6%) compared to urban areas (40%). Key barriers to vaccine uptake included parental refusal, lack of information, and fear of side effects.*

Реферат. Ситуація з вакцинацією в Шкодерському регіоні після першого року впровадження вакцини проти папіломавірусу людини. Шабані Заміра, Хаджія Едона, Емільяно П'єтрі, Шала Ірена, Бушаті Невіла, Малевія Амела. *Вірус папіломи людини (ВПЛ) є поширеною статевою інфекцією, яка може призвести до серйозних наслідків для здоров'я, зокрема аногенітальних та орофарингеальних раків, а також генітальних бородавок. У 2022 році Албанія впровадила програму вакцинації проти ВПЛ для дівчат віком від 13 до 20 років, пропонуючи одну дозу бівалентної або квадривалентної вакцини. Метою цього дослідження є оцінювання стану вакцинації проти ВПЛ у Шкодерському регіоні після першого року реалізації програми та вивчення причин відмови від вакцинації. Це ретроспективне дослідження, у якому зібрано дані з офіційних реєстрів вакцинації в медичних центрах Шкодерського регіону за період 2022-2023 років. Крім того, було проведено інтерв'ю з медсестрами, які відповідають за проведення вакцинацій (вакцинаторами), а також з батьками, присутніми в центрах. Кількісні дані були отримані та перевірені за допомогою Головного офісу вакцинації в секторі епідеміології при місцевій медичній службі в Шкодрі. Були використані простий описовий та порівняльний методи. Дані для цього дослідження були зібрані з двох основних джерел: офіційних записів про вакцинацію та інтерв'ю, проведених з медсестрами та батьками. Кількісні дані оброблялися та аналізувалися за допомогою Microsoft Office Excel 2010. План вакцинації передбачав вакцинування 812 дівчат, з яких 67% (n=546) були з міських районів і 33% (n=266) із сільських районів. Загальний рівень охоплення вакцинацією становив 51%*

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(n=412 дівчат). Охоплення в сільській місцевості (72,6%, n=193 дівчинки) було вищим, ніж у міській місцевості (40%, n=219 дівчаток). Це дослідження висвітлює виклики та досягнення програми вакцинації проти ВПЛ у Шкодерському регіоні під час першого року її реалізації. Охоплення вакцинацією в сільських районах (72,6%) було вищим порівняно з міськими районами (40%). Основними бар'єрами для отримання вакцини були відмова батьків, відсутність інформації та страх перед побічними ефектами.

Human papillomavirus (HPV) is a very common sexually transmitted infection [1, 2, 3]. This infection has potentially serious health consequences in men and women, including anogenital and oropharyngeal cancers and genital warts [4-9]. HPV vaccination is a very effective way to prevent this infection [10, 11]. The vaccination coverage in many countries has not been very satisfactory [12]. Many scientific researchers have focused on identifying the factors that have influenced the reception of this vaccine [13]. According to these studies, some of the many factors related to non-vaccination are information deficits and lack of knowledge about HPV infection and vaccination, such as: the HPV vaccine provoke sexual disorders, vaccines are unsafe, ineffective and insufficiently studied [14].

The HPV vaccination has been recommended for females and males aged 11-12 years since 2006 and 2011, respectively [15, 16]. Compared to other adolescent immunizations, HPV vaccine coverage is significantly lower [17]. For the prevention of HPV related disease three prophylactic HPV vaccines are currently available: Bivalent HPV vaccine licensed in 2007, quadrivalent in 2006 and nonavalent HPV vaccine – in 2014. These vaccines are indicated for use in females and males from the age of 9 years for the prevention of premalignant lesions and cancers affecting the cervix, vulva, vagina and anus caused by high-risk HPV types, and anogenital warts causally related to specific HPV types [18]. All of these vaccines are intended to be administered if possible before the onset of sexual activity, before first exposure to HPV infection.

According to Zimet et al. 2013, there is no evidence of sexual disorders after vaccination, HPV vaccines are quite safe and they can't be considered "new". Studies show that the main problem lies in misinformation about this vaccine and poor communication with parents and patients about the safety and benefits of vaccination and the risks associated with non-vaccination [19].

Another study concluded that the COVID-19 pandemic led to a significant decline in HPV vaccination rates among young adults. The disruption caused by the pandemic, including healthcare access restrictions and a shift in priorities within healthcare systems, contributed to a decrease in vaccination initiation. This finding highlights the vulnerability of vaccination programs to disruptions, especially in the context of a global health crisis like COVID-19 [20].

The meta-analysis by Dorji et al concluded that HPV vaccination uptake in low- and middle-income countries remains suboptimal despite the availability of vaccines. Several key factors that contribute to the low vaccination rates in these regions were identified, including limited access to healthcare, lack of awareness about the HPV vaccine, misinformation, and cultural barriers. Additionally, the study highlighted that economic constraints, inadequate healthcare infrastructure were significant barriers to the successful implementation of HPV vaccination programs [21].

Vaccinating both genders could have a greater public health impact by preventing HPV transmission and reducing the overall prevalence of HPV infections. The benefits of gender-neutral vaccination, could reduce the future burden on healthcare systems caused by HPV-related cancers [22].

HPV vaccination is a highly effective tool in preventing HPV-related cancers, particularly cervical cancer, and that expanding vaccination coverage is essential for reducing the global burden of these cancers. This study emphasized that while HPV vaccination programs have been successful in many countries, there is still significant underutilization, especially in low- and middle-income countries, due to barriers such as limited access, lack of awareness, and misinformation [23].

The study by Pojani et al emphasized the need for targeted education and awareness campaigns to improve understanding and increase HPV vaccination uptake among women in Albania [24].

Albanian university female students have limited knowledge about cervical cancer and HPV, with a low level of awareness about HPV as a risk factor and the availability of the vaccine. Despite positive attitudes toward vaccination, the study found that vaccination rates were very low. The authors highlighted the need for educational interventions to improve awareness and encourage vaccination among young women in Albania [25].

Targeted educational efforts are necessary to improve knowledge and increase vaccination uptake among male students in Albania. The results showed that 79.0% knew that men can acquire HPV, and 38.7% were willing to receive the HPV vaccination. Factors such as age, region, and major were related to their knowledge and willingness to vaccinate [26].

Based on the findings from the literature reviewed, which highlight the importance of HPV vaccination for

cancer prevention and other health consequences, as well as the barriers that impact low vaccination rates, this study aims to assess the status of HPV vaccination in the Shkodra region after its first year of implementation and exploring the reasons for non-vaccination. Various studies have identified factors such as lack of information, misconceptions about vaccine safety, and cultural and economic barriers as contributors to low vaccination coverage, particularly in low- and middle-income countries. This study aims to analyze these factors and contribute to raising awareness and improving vaccination rates in the Shkodra region.

MATERIALS AND METHODS OF RESEARCH

A simple descriptive and comparative method was employed. Data for this study were gathered from two main sources: official vaccination records and interviews conducted with nurses and parents.

This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee. Ethical approval for this study was reviewed and granted by the Ethics Committee of the Faculty of Natural Sciences, Department of Clinical Subjects, University of Shkodra (protocol No. 60/2, dated 12.12.2023, Shkodër, Albania).

This retrospective study collected data from official vaccination registers across health centers in the Shkodra region for the period 2022-2023. This study aims to explore the situation with vaccination in Shkodra Region after the first year of implementation and the reasons for not getting vaccinated. Additionally, to gain qualitative insights, face-to-face interviews were conducted with nurses responsible for vaccinations (vaccinators) and with parents present at the centers. This approach aimed to understand vaccination challenges and reasons for non-vaccination. Quantitative data were obtained and confirmed by the Chief Vaccination Office in the Epidemiology Sector at the Local Health Care Unit, Shkoder. Data were gathered from 19 health centers in Shkodra District, including 10 centers in urban areas and 9 in rural areas. The dataset includes HPV vaccination records from 2023, marking the first year of the vaccine's implementation. All quantitative data were processed and analyzed using Microsoft Office Excel 2010.

Data for this study were obtained from two sources: official vaccination registers and interviews with parents and nurses.

Quantitative Data: Quantitative data were collected from official vaccination registers (paper format) maintained by health centers in the Shkodra region. These registers document the HPV vaccination status of eligible girls from 2022 to 2023, providing a comprehensive record of vaccination coverage during the designated period.

Qualitative Data: Face-to-face, semi-structured interviews were conducted with two participant groups:

1. Parents

Parents present at health centers during the study were interviewed regarding their reasons for refusing the HPV vaccine for their daughters. They were asked open-ended questions to elaborate on social, cultural, or informational factors influencing their decision.

Parents from all health centers participated in the study, except those from Postrribë and Bërdicë, where vaccination coverage was 100%, and from Shalë, Shosh, Pult, Ana Malit, and Shirokë, where the number of eligible girls was minimal.

The sample included three parents from each rural health center (Guri i Zi, Dajç, and Velipojë, N=9) and three parents from each urban health center (N=27), totaling 36 parents (N=36).

The open-ended questions asked included:

- "Can you tell us some reasons why you refused to vaccinate your daughter?"
- "Can you name any effects of this vaccine?"
- "Did the nurses inform you about the vaccine?"

2. Nurses

Nurses working in the participating health centers were interviewed to gain insights into their interactions with parents, the reasons parents provided for refusing vaccination, and the strategies they employed to address these concerns.

Additionally, nurses were asked about their perceptions of parental awareness regarding the HPV vaccine and the challenges they faced in promoting vaccination.

A total of 18 nurses participated in the study. The nurse from Postribë was excluded due to the 100% vaccination coverage in that center.

The open-ended questions asked included:

- "What are the reasons parents refused to vaccinate their daughters?"
- "What is your opinion about the information parents have regarding this vaccine?"
- "Can you describe some challenges related to this vaccination process in your center?"

The interviews aimed to capture direct feedback from both groups to identify key factors influencing vaccination decisions and explore strategies to improve vaccine uptake.

Data collection occurred between 2022 and 2023. This study includes data on 812 girls, as Albania's HPV vaccination program, implemented in 2022, targets girls aged 13-20.

Both quantitative and qualitative data were analyzed using appropriate statistical methods to ensure reliable and meaningful findings.

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Quantitative Data Analysis

Descriptive Statistics:

- Frequencies (%) were calculated for categorical variables (e.g., vaccination status, urban vs. rural distribution).

- Means (M) and Standard Deviations (SD) were used for continuous variables (e.g., age distribution).

Comparative Analysis:

- Chi-square tests (χ^2) were applied to examine differences in vaccination rates across urban and rural areas and to identify significant disparities in vaccination uptake based on location and demographic factors.

- Independent samples t-tests were conducted to compare mean differences between groups where applicable.

- Statistical significance was set at $p<0.05$, indicating that observed differences were unlikely due to chance.

Qualitative Data Analysis:

Responses from semi-structured interviews were analyzed using thematic analysis to identify patterns in parental concerns and nurse observations.

Thematic analysis involved:

1. Familiarization with the data (reading transcripts multiple times).

2. Coding responses to identify recurring ideas.

3. Categorizing themes (e.g., misinformation, religious/cultural beliefs, logistical barriers).

4. Cross-checking themes to ensure reliability and consistency in interpretation.

Software and Licensing:

- Descriptive statistics and data visualization were performed using Microsoft Excel 2010, ensuring a structured approach to organizing and summarizing data.

- Inferential statistical tests (chi-square and t-tests) were conducted using IBM SPSS Statistics 26 for accuracy in hypothesis testing and comparative analysis.

This approach ensures that both quantitative and qualitative findings contribute to a comprehensive understanding of HPV vaccination trends, parental attitudes, and intervention strategies.

RESULTS AND DISCUSSION

This study analyzed data on 812 girls eligible for HPV vaccination under Albania's national program, which began in 2022 and targets girls aged 13-20. Based on statistics from the Shkodra Regional Hospital, 934 girls were born in 2009, providing a benchmark for the 2023 vaccination efforts.

Vaccination Coverage Overview

The 2023 vaccination plan aimed for 33% coverage in rural areas and 67% in urban areas. However, actual vaccination rates showed a significant contrast:

- Urban Areas: Out of the targeted 546 girls, only 219 (40%) were vaccinated.

- Rural Areas: From the targeted 266 girls, 193 (73%) received the vaccine.

These findings indicate a significantly higher vaccination rate in rural areas (73%) compared to urban areas (40%). A chi-square test was conducted to determine the statistical significance of this difference, yielding $\chi^2=74.04$, $p=7.64 \times 10^{-18}$, confirming that the variation in vaccination rates between urban and rural settings is highly significant.

Overall, the regional vaccination rate stands at 49%, highlighting the need for enhanced public health efforts, particularly in urban centers.

Vaccination Distribution by Health Center

A detailed breakdown of vaccination coverage by health center is presented in Table, distinguishing between urban and rural facilities. This table accounts for the number of resident girls per center, excluding some cases due to emigration or internal migration.

The total number of girls born in 2009 is not included here due to reasons of emigration or migration.

Key Findings and Observations

1. Higher Coverage in Rural Areas.

Rural health centers reported notably high vaccination rates, with:

- 100% coverage in Bërdica and Postribë.

- Over 80% coverage in Anë e Malit and Velipojë.

Several factors may explain this higher vaccine uptake:

- Stronger Community Engagement and Trust in Healthcare Workers.

- In rural areas, community nurses play a central role in healthcare delivery, often maintaining direct, long-term relationships with families. These fosters trust and compliance with vaccination programs.

- School nurses have also contributed significantly by educating parents and students, reinforcing the importance of HPV vaccination.

Lower Exposure to Misinformation:

- Studies suggest that misinformation and vaccine hesitancy are more prevalent in urban areas, were social media and diverse, conflicting information sources shape attitudes.

- Rural populations, with less access to anti-vaccine narratives, may exhibit greater trust in healthcare professionals.

Effective Outreach and Door-to-Door Campaigns:

- Rural vaccination efforts frequently rely on door-to-door immunization programs and community mobilization, ensuring direct access to vaccines.

2. Lower Coverage in Urban Areas.

In contrast, urban health centers exhibited lower vaccination rates, with the highest coverage recorded in:

- V. Shanto and P. Rexhepi (60%)

- A. Haxhija (55%)

Possible reasons for lower urban uptake include:

- Greater Parental Skepticism and Vaccine Hesitancy:

– While urban parents typically have higher education levels, this does not always correlate with higher vaccination rates.

– Access to diverse information sources can lead to increased skepticism, fueled by social media debates, misinformation, and safety concerns.

- Perceived Lower Risk of HPV Infection:

– Some urban parents and adolescents underestimate the risk of HPV infection, assuming that lifestyle choices or delayed sexual activity reduce the urgency of vaccination.

- More Healthcare Options, Less Urgency:

– Urban families often have access to multiple private healthcare providers, which may lead to delays in participation in public vaccination programs.

- Migration and Mobility Issues:

– Higher internal migration in urban areas can disrupt vaccine follow-ups, as some individuals may not update their healthcare records when moving.

These findings highlight a distinct challenge in urban areas, where vaccination uptake remains lower despite higher population density and healthcare access.

Contributing Factors

- Success in Rural Areas. The higher coverage in rural areas can be attributed to the proactive work of community nurses and the supportive information provided by school nurses, which has positively influenced both parents and the target age group. The effective communication and trust in healthcare providers appear to play a critical role in rural vaccination acceptance.

- Challenges in Urban Areas. Urban areas face more resistance to vaccination, with greater opposition, doubts, and refusals. This resistance may stem from various factors, including misinformation, differing socio-cultural attitudes, and potential skepticism toward the vaccination program. These findings underscore the need for targeted public health strategies to address misconceptions and improve acceptance in urban settings.

In summary, while rural vaccination efforts have been relatively successful, the lower rates in urban areas suggest that further intervention and tailored communication strategies are essential to increase overall coverage in the Shkodra region.

Interview Results

- Interviews with Parents.

Most parents who refused the vaccine for their daughters cited misinformation and cultural attitudes against vaccination. The primary concerns included:

– Fear that the vaccine could cause cancer rather than prevent it.

– Concerns about potential side effects on fertility.

– A belief that the vaccine is unnecessary for their daughters.

Despite efforts by healthcare professionals, many parents remained firm in their decision, relying more on social media, peer opinions, and non-medical sources rather than expert recommendations.

- Interviews with Nurses.

All interviewed nurses reported that parental refusal was primarily due to fear of cancer and uncertainty about the vaccine's long-term effects. Nurses emphasized that:

– Parents had been provided with accurate information, regardless of their education level or place of residence.

– Despite these efforts, parents were more inclined to believe social media narratives and peer influence rather than medical professionals.

– There were no logistical barriers to vaccine availability in health centers.

While rural vaccination efforts have been relatively successful, urban areas continue to experience low vaccination rates due to misinformation, vaccine hesitancy, and perceived lower risk. These findings underscore the urgent need for tailored communication strategies, community engagement, and public health campaigns to improve overall HPV vaccine uptake in the Shkodra region.

During interviews with vaccinators and some parents, several reasons for incomplete vaccination were identified, including parental refusal to vaccinate, lack of information about the vaccine, fear of potential side effects, and emigration or migration. These findings are consistent with studies from other regions, where vaccine hesitancy, misinformation, and concerns about vaccine safety have been identified as major barriers to HPV vaccination [27]. Misinformation and fear of side effects are common reasons for vaccine refusal, especially in areas with lower healthcare engagement [28].

Given these reasons, it is crucial to emphasize the role of nurses in cancer prevention. Nurses can actively contribute by encouraging HPV vaccination during routine immunizations and ensuring that HPV vaccination becomes a standard practice in healthcare settings.

Previous studies by Kong et al have highlighted the importance of healthcare professionals, especially nurses, in promoting vaccination through education and trust-building with families [29].

The first step toward improving parents' knowledge of the HPV vaccine is for nurses to adopt a family-centered approach, which involves sharing clear, evidence-based information, such as immunization guidelines. Research by Vahabi et al. suggests that family-centered approaches, where nurses

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engage directly with parents, significantly improve vaccine uptake [30]. While efforts are already underway, it is essential that nurses are equipped with comprehensive knowledge and the ability to speak confidently about the vaccine and its effects. This will help reassure parents, reduce fears, and educate future generations of parents.

The statistical data about the HPV vaccination

Nr.	Health centers	Resident area	Coverage plan (n)	The vaccination (n)	The coverage (%)
1	A Haxhija	Urban	31	17	55
2	Guerrile	Urban	91	27	30
3	V.Shanto	Urban	60	36	60
4	M.Alimani	Urban	57	25	44
5	N. Mazi	Urban	124	61	50
6	Perash	Urban	41	5	13
7	Skenderbeg	Urban	39	10	27
8	Partizani	Urban	89	30	34
9	P. Rexhepi	Urban	10	6	60
10	Shirokë	Urban	4	2	50
		Total	546	219	41.9%
11	Berdicë	Rural	37	37	100
12	Guri I Zi	Rural	125	67	54
13	Ana Malit	Rural	11	9	82
14	Postribë	Rural	56	56	100
15	Shalë	Rural	2	0	0
16	Shosh	Rural	0	0	0
17	Pult	Rural	3	2	67
18	Dajç	Rural	11	4	37
19	Velipoje	Rural	21	18	86
			266	193	58.2 %
	Total		812	412	51

Vaccination coverage in the Shkodra Region in the first year of implementation was reported at 40% in urban areas and 72.6% in rural areas, with rural areas showing higher vaccination rates. These findings align with national data from the Albanian HPV and Cancer Information Center [31] and other studies conducted in Albania [24-26], which highlight similar discrepancies in vaccination rates between rural and urban areas. The primary reasons for non-vaccination, as reported by parents, include refusal, lack of information, and concerns about potential side effects. The primary reasons for non-vaccination, as reported by parents, include refusal, lack of information, and concerns about side effects. Strengthening communication between healthcare providers and parents regarding the importance of HPV vaccination may help increase vaccination coverage and overcome these barriers. The role of healthcare providers

in delivering accurate, accessible, and culturally sensitive information is critical in addressing these challenges [32].

CONCLUSION

1. This study highlights the challenges and successes of the Human papillomavirus vaccination program in the Shkodra region during its first year of implementation. Vaccination coverage was higher in rural areas (72.6%) compared to urban areas (40%), reflecting significant urban-rural disparities.
2. Barriers to vaccine uptake were primarily linked to parental refusal, lack of information, and fear of side effects. These findings emphasize the need for targeted strategies to address these challenges.
3. The qualitative data gathered from interviews with vaccinators and parents underscores the importance of improving communication between healthcare providers and parents. Enhancing public awareness of the vaccine's benefits and safety is crucial for increasing vaccination rates.
4. Nurses play a pivotal role in promoting vaccination by adopting a family-centered approach. Providing accurate information, addressing parental concerns, and engaging with the community are essential components of this role.
5. Equipping nurses with up-to-date knowledge and effective communication skills is critical for improving vaccination coverage. Nurses must be supported to confidently engage with parents and dispel misconceptions about the vaccine.
6. Consistent outreach efforts and addressing vaccine-related misconceptions are necessary for overcoming barriers to vaccination. Such measures can lead to better public health outcomes and the prevention of HPV-related cancers.
7. This study provides valuable insights into the factors influencing Human papillomavirus vaccination uptake in the Shkodra region. These findings can inform future interventions to improve immunization rates and achieve equitable vaccination coverage in both urban and rural areas.

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Contributors:

Shabani Zamira, Malevija Amela – data curation, writing – original draft, conceptualization;

Haxhija Edona, Emiljano Pjetri, Shala Irena, Bushati Nevila – writing – review & editing, visualization.

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