Challenges on HPV awareness and immunization coverage in the Brazilian scenario: a review

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Abstract. Human papillomavirus is a group of viruses transmitted sexually and can affect the skin, genital area and throat. HPV in most cases is asymptomatic or leads to warts. On the other hand, the major complications of the virus are the association with neoplasia, as it is the principal cause of cervical cancer in women and also has the potential to cause other types of cancer on men. In Brazil, the vaccination rate of the virus still is extremely low and has decreased over the last few years. It is known that a higher knowledge on the dynamics of the HPV infection leads to a higher tendency to take the vaccine. The Brazilian population in general shows a deficient comprehension of HPV-related complications and vaccination. Nonetheless, various factors have different impact on the level of understanding of social groups in Brazil, such as age group, social class and gender. Furthermore, acute strategies of vaccination campaigns are needed in Brazil, as the current scenario shows a lack of proper attainability on the general population. Therefore, the implementation of new strategies on the means of communication and inclusion of healthcare agents on public policies is crucial to increase the immunization coverage in Brazil.

Keywords. HPV, Vaccination, Awareness, Public health.

1. Introduction

Human papillomavirus (HPV) is a group of viruses wherein some are considered as high-risk (HR) types heavily associated with neoplasia. The virus is transmitted sexually and can affect the skin, genital area and throat. The infection is common among the sexually active population, being asymptomatic in most cases. However, HPV can also lead to either warts or carcinogenesis. The frequent carcinoma-related HR-HPV strains are types 16, 18, 31, 33, 34, 35, 39, 45, 51, 52, 56, 58, 59, 66, 68, and 70 (1). Commonly, in women HPV is linked to cervical cancer, whereas the persistent untreated HPV infection of the cervix leads to 95% of cervix carcinomas (2). Worldwide, cervical cancer is the fourth most common cancer in women and also the fourth cancer-related cause of female death in Brazil (Fig.1) (3).

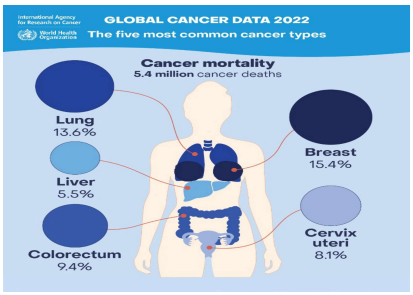

Fig. 1 - Most common cancers in women 2022. Source: (3).

Among men, penile cancer has HPV infection as a high risk factor (1). Moreover, HPV is also associated as a cause for head and neck cancers in both sexes, thus being related to up to 70% of oropharyngeal cancers (4).

HPV-related complications can be prevented through safe sexual practice. However, the most effective method to prevent complications related to HPV infection is vaccination. Being first developed in Australia, the vaccine has been distributed worldwide since 2006. Nevertheless, the vaccine was only implemented in the Brazilian National

Immunization Program in 2014. At the start of the vaccination campaign, the vaccination was only directed for girls, whereas boys were included in the program afterwards. Today, the vaccine is offered free of charge through the Brazilian Unified Health System (SUS) for girls and women from the ages of 9 to 26 years old and boys between 9 and 14 years old (5).

Even after more than 10 years since the settlement of the HPV vaccine in Brazil, the country still presents a low immunization coverage (44.64%) (6). Not only that, a decrease in adherence to vaccination has been observed over the last few years. In 2019, the first dose immunization coverage for brazilian girls eligible for the vaccine was 87.08%; but had a lower percentage in 2022, with a rate of 75,81%. In addition, the boys also had a highly risky decrease: the coverage went from 61.55% in 2019 to 52.16% in 2022 (7).

The low immunization rates in Brazil may be due to different factors, such as cultural behaviours and lack of knowledge. Since the arrival of the vaccine in Brazilian territory, several rumors have been spread throughout the media (8). Some beliefs involve claiming the vaccine isn't safe and not needed since the virus infection is cleared naturally by the immune system. Nonetheless, it is scientifically proven that these allegations are false (9).

It is known that a higher knowledge on the dynamics of the HPV infection leads to a higher tendency to take the vaccine (10; 11). Therefore, a clear understanding of the missing information and the characteristics of the target audience is crucial for conducting effective public campaigns on HPV infection awareness.

2. Information gaps

When evaluating the level of knowledge of different age groups, all populations demonstrate a lack of awareness of the relationship between HPV and its complications, even between interviewees who had already taken the first dose of the vaccine (12; 13; 14). In a study among Brazilian adolescents and parents, only 35.35% of the complete sample understood correctly the relationship between HPV and genital warts. In the same research, few of the participants knew about HPV's influence on the Pap smear test. In addition, more than half of the participants answered that they believe the HPV vaccine causes infection. Furthermore, there were similar results when asked if the HPV vaccine is harmful to people's health (6). These findings probably originate from the sensationalized news spreaded during the first establishment of the HPV vaccine in Brazil, which may be related to the low rate of vaccination.

Another survey showed the lack of knowledge of HPV's relation with head and neck and oral cancers. These findings are extremely concerning, as Brazil has the largest HNSCC incidence rate in South America, with an estimated risk of 120 thousand new cases until 2025 (3). These results alert the urgency of the implementation of healthcare awareness campaigns.

3. Gaps of knowledge between populations

3.1 Social class

Cervical cancer death has a high incidence in low and middle-income countries, which reflects inequities of social and economic determinants (2). In Brazil, studies show that knowledge about HPV infection and related neoplasms tends to be larger in groups with higher socioeconomic status and schooling (13; 12). This could be due to the fact that individuals with higher socioeconomic status tend to have more access to information, and therefore be more conscious regarding HPV infection and prevention methods (12).

Between adolescents, school can be a considerable source of information regarding health knowledge. Studies performed with public school students tend to show a lower education level on HPV infection (13, 11). These findings show the impact of the lack of public policies for the awareness of accessible knowledge among public school students (13).

It is important to highlight the racial impact on HPV infection and information. In an educational aspect, there is predominance of Afro-descendents in public schools, which directly influences the knowledge of this population on HPV-related matters (13). Beyond that, there is a relevant effect on racial disparities of HPV: vulnerable populations of black women have a higher incidence of mortality from cervical cancer (15).

Residency is another aspect that influences HPV awareness. Populations resided in secluded areas are prone to have less access to health information, and therefore less HPV knowledge. Quilombola communities can be served as an example: Quilombola populations located near local health units are more likely to have direct sources of health information. On the other hand, communities residing in more remote areas, such as the Jenipapo's, lean towards lower rates of HPV awareness (16). These observations only highlight the urgency of specific public strategies to reach vulnerable populations.

3.2 Age groups

Observations suggest that all brazilian age groups commonly have low knowledge of HPV. However, cohorts included in the vaccination program usually have less understanding of the subject in comparison to older generations (12, 14). Attention to the younger populations is crucial since not only they are the ones incorporated in the vaccination cohort, but

also because this is a vulnerable demographic. Adolescents experience a period of major physical and emotional changes, which makes them more susceptible to contact with HPV and other STDs through unprotected sexual relations (6).

Parents and guardians are more aware about HPV and cervical cancer, conversely, their children do not show the same level of comprehension (12, 6). This shows a reflection of the reality of Brazilian families: parents and guardians do not talk about subjects related to sexual relations with their children (6). This may be due to cultural and religious taboos, which directly influences knowledge and attitudes towards HPV prevention and other STD's (13). As a result, brazilian parents/guardians transfer the responsibility of sex education to school, due to the fact that they do not know how to approach the problem with their children (6). Nonetheless, it has already been discussed that schools lack effective sexual education, so consequently adolescents are left with no guidance and therefore more prone to HPV infection.

3.3 Gender differences

Disparities of HPV knowledge have been observed between genders. Women show more knowledgeable characteristics of HPV-related topics and concern about health care when in comparison to the male population (6; 13; 11). The motives for the low interest between men and boys is not yet clear, however, this may be a result of the initial HPV vaccination campaign, which initially only focused on girls and their parents. This shows a significant risk for men's health, as HPV also presents clinical aftermaths of genital warts and penile, anus and oropharynx cancer (13).

Between parents, gender disparities of awareness of HPV also have been reported: Fathers tend to have a lack of information about their children's vaccination in contrast to mothers. This suggests a pattern of imbalance of childcare responsibility in Brazilian households, where mothers often take on the duty (16). These showages prove that the Brazilian HPV vaccination issue has a huge influence of social determinants, and for that reason demand strategic public policies.

4. Awareness strategies

4.1 Means of communication

Traditional media such as TV, radio and the internet has a major influence on people 's HPV knowledge, especially among the Brazilian young audience (12; 16; 6). Accordingly, this may happen as a consequence of insufficient public campaigns, which contributes to the population turning to the media for information.

The use of mass communication for HPV discussion exhibits two sides: Firstly, it can be a viable source of information for reaching different age groups (6). On the other hand, this type of source presents huge risks of dissemination of unreliable knowledge, especially fake news (12). Brazilians already reveal a low level of HPV infection and prevention awareness, indicating that these current major communications methods are being ineffective in circulating consolidated facts.

4.2 Healthcare agents

During the establishment of the quadrivalent HPV vaccine implementation in the Unified Health System (SUS), Brazil reached a high vaccination coverage at the first phase of the campaign but then had a significant and progressive drop. This occurrence is assumed to be the outcome of the first dose being applied in public and private schools, whereas the second dose was administered in the Basic Health Units, as it is currently. Since then, the majority of health professionals refrained from going to the target audience to encourage and administer the second dose in schools (11). This picture shows the importance of a strong presence of health care professionals on the process of HPV awareness dissemination and how much its absence impacts the vaccination charts.

Recent studies also point out the omission of health care professionals on communicating about HPV with the general public: When interviewing adolescents, very few of them reported health caregivers as their main source of information (12; 16; 6). This situation only leaves this population more vulnerable to unreliable sources of information, and consequently more susceptible to not develop adequate HPV prevention actions.

5. Conclusion

In May 2018, the WHO Director General announced a global alarm in order to eliminate cervical cancer. For that, three key pillars should be established until 2030: at least 90% of girls should be fully vaccinated with the HPV vaccine by the age of 15; 70% of women screened utilising a high-performance test by the age of 35, and again at the age of 45; 90% of women with pre-cancer ought to be treated and 90% of women with invasive cancer managed (2).

Brazil has adopted the WHO goals, however, it still has a very long way to go in order to reach them. With a vaccination rate of only 57% for females and 37% for males in 2024 (5), the country lacks effective public immunization campaigns. In light of that, it is crucial to develop strategies that reach the populations that present major lack of knowledge, such as boys and people of low socioeconomic status. On top of that, campaigns on public and private schools are essential in order to reach the target age group of vaccination.

The action of health professionals as HPV education advocates is also indispensable at the dissemination

of knowledge for Brazilian citizens. Through that, only then will it be possible to educate the general public and prevent the influence of false vaccination rumors. Subsequently, a higher awareness shall have the potential to increase HPV immunization rates.

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