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**Challenges of Cervical Cancer Screening and the Human
Papillomavirus Vaccination (HPV) in the UK.**

Abstract

Cervical cancer is one of the most common cancers in women worldwide, despite being identified as one of the most preventable and successfully treatable forms of cancers. The majority of deaths could be avoided if women had regular cervical screening along with the Human Papillomavirus (HPV) vaccination. Poor education, lack of resources, fear and embarrassment, along with cultural traditions, have been identified as challenges that prevent women from having the HPV vaccination and cervical screening. This report will provide an overview of cervical cancer, whilst acknowledging health disparities and the innovations used to tackle these health inequalities in the struggle to eradicate cervical cancer.

Key Words: Cervical Cancer, Cervical Screening, Cancer, Human Papillomavirus (HPV), Vaccination, Prevention, Challenges, Health Inequalities, Innovations

Introduction

This report will identify the causes of cervical cancer, its signs, symptoms, and the current preventative and educational strategies available. The report will analyse innovations, and exploring the challenges women face which may inhibit them from attending cervical screenings or receiving the Human Papillomavirus (HPV) vaccination. The aim is to promote women's health through contemporary research and address these challenges to significantly reduce premature deaths.

Background

Cervical cancer is identified as a global public health issue with over half a million women diagnosed in 2018, with mortality from developing or under developed countries accounting for an estimated 85% of deaths, (Small et al., 2017). Factors contributing to the prevalence of cervical cancer have been identified as: failure to comply with cervical screening programmes, lack of access, unvaccinated individuals, socioeconomic status, healthcare access and cultural beliefs (Hull et al., 2020). The World Health Organization (WHO) (2020) acknowledged cervical cancer as the fourth most common cancer among women worldwide, despite the effective preventable vaccination and cervical screening programme.

In 2017, there were more than eight new cases of cervical cancer every day in United Kingdom (UK), and it is identified as the second most common cancer in women aged 15-44, (Office for National Statistics [ONS], 2019). The HPV vaccination has been highlighted as a primary preventative approach, reducing cervical cancer cases by over 70% (PHE, 2019a). In England, the HPV programme has seen a reduction in

HPV types 16 and 18, between the ages of 16-24, from 8.2% in 2010 to 1.6% in 2016 (Meshar et al., 2018).

Figures suggest that a health promotion programme including both the HPV vaccination and cervical screening can dramatically reduce the prevalence of developing cervical cancer and significantly improve life expectancy (Arbyn et al., 2019). The WHO (2018) estimates that no single intervention strategy such as the HPV vaccination can eliminate disease on its own and would only achieve a 0.01% reduction in cervical cancer mortality rates by 2030.

Causes of Cervical Cancer

Over 99% of all cases of cervical cancer are due to infections caused by HPV (Garg et al., 2020). HPV is predominantly a result of any skin-to-skin contact of the genital area, through vaginal, anal or oral sex, but can be transmitted from an infected person via non-sexual means or from mother to child through delivery (Boda et al., 2018, Sabeena et al., 2017). There are over 150 types of HPV, of which around 13 can be identified as high risk as they are connected to cervical cancer, with HPV 16 and 18 the leading variants (Lindsay et al., 2020). Over time, HPV can lead to abnormal cells in the cervix and when left untreated can develop into cervical cancer, despite 90% of cases clearing up independently within two years, without harm (Schiffman et al., 2016).

Women who were exposed to diethylstilboestrol (DES) medication before birth are also at risk of cervical cancer (National Institutes of Health, 2011). DES was licensed to prevent miscarriages over 40 years ago, but was later found to cause a high risk of

developing abnormal cells in the cervix in female offspring and annual screenings are recommended (Verloop et al., 2010).

Signs and Symptoms

Symptoms of cervical cancer are vaginal bleeding during or after sex, in between periods or after menopause, experiencing pain or discomfort during or after sex, vaginal discharge with a strong odour, unexplained weight loss and lower back or persistent pelvic pain (Al-Darwish et al., 2014). These symptoms highlight the need to attend screening since they are not always present, and it is reported that 49% of UK women diagnosed with cervical cancer when screened had previously reported symptoms to a health professional, (Aasbo et al., 2019). Consequently, a third of women who reported symptoms faced follow-up and treatment delays of around three months resulting in poor patient satisfaction (Lim et al., 2014). Experience has improved with research, enhancing health professionals' understanding of the symptoms, thereby encouraging them to investigate when previously they may have been overlooked (Funston et al., 2018).

Cervical Screening

Cervical screening first occurred in 1964, with women receiving opportunistic screening and those who were found to have cervical cancer received substandard follow-ups (Raffle and Muir Gray, 2020). The National Health Service (NHS) produced a more effective cervical screening programme in 1988, in order to reduce the rising number of cervical cancer diagnoses and mortality rates dropped by approximately 50% (Albrow et al., 2012).

Women aged 20 were invited to attend their first cervical cancer screening and every three to five years thereafter until the age of 64, whereby the risk is thought to reduce (Albrow et al., 2012,). Castanon et al. (2014) advised screening over 64 is not cost effective, believing that only women who have a high risk or show symptoms are appropriate candidates for screening. Yost and Hoekstra (2018) however, identified that 20% of cervical cancer cases are women over 65, advocating that screening should continue and that vaccinating this group would prove cost effective in the long-term to reduce cases.

European guidelines for quality assurance (QA) in cervical cancer screening led to a more robust UK cervical screening programme in 2004, introducing an organised call and recall system for women aged 25-64. Screening was required every three years, until the age of 50 where it extended to every five years, until the programme was updated in 2012, inviting women from the age of 24.5 to ensure all women were screened by the age of 25 (Chrysostomou et al., 2018, Castanon, Tataru and Sasieni, 2020). This increase in age caused a public concern, with cervical cancer rates rising in women aged 20-24 years, there were allegations that younger women were overlooked, creating inequity in care which went against the ethos of the public health strategy for cervical screening (PHE, 2019a, Moscicki et al., 2018). Despite this, the policy remains unchanged with studies confirming that screening earlier can cause more harm than good by over-diagnosis and over-treatment (Castanon and Sasieni, 2018).

Quality in Screening

Quality control (QC) and QA are vital in order to instil excellent and reliable standards in care, requiring regular monitoring through all the stages of protocols and organisations to ensure they are current, safe and effective (Manghani, 2011). All steps should be taken in line with trusts' local policies and procedures whilst adhering to national guidelines to eliminate risks and deliver outstanding care (Jhugrsing, Dimmock and Mulchandani, 2017). The accuracy of cervical screening is of the utmost importance, a liquid based cytology (LBC) test was developed in an improvement to the original Papanicolaou (PAP) and now accounts for 90% of the cytology tests taken today (Gibb and Martens, 2011). The LBC was also designed to improve detection of cancerous cells, in line with QC, preventing false-negatives in order to initiate appropriate treatment and avoid false-positives to avert unnecessary investigations (Lim and Woo Yoo, 2019). There is an increased risk of developing cervical cancer should a patient receive a false negative. However false positives can also be harmful, leading to unnecessary investigations and treatment that not only impact patients' wellbeing but, in some instances, can affect their sexual life and reproductive system (Schiffman and Sanjose, 2019).

Studies have found the quality of the initial PAP test was thwarted by blood, mucus and poor cell distribution, leading to errors in detecting and interpreting abnormal cells sensitivities (Gibb and Martens, 2011, Jeong et al., 2017). This highlights that women must attend screening mid menstrual cycle, to prevent the propensity for false results and rescheduling of appointments, (NICE,2020). QA procedures such as staff training, evaluation, auditing and reviews of the screening programme can ensure it is safe and in line with best evidence-based practice (Chryostomou et al., 2018).

Barriers to screening

Barriers that prevent women from attending cervical screening are thought to be anticipation of pain or embarrassment, fearing the outcome, accessibility and poor patient-nurse relationship (Cooper, 2011). It is stated the current programme is invasive and uncomfortable, resulting in low patient satisfaction and participation (Williams et al., 2017). Traditional beliefs, poor understanding, lack of education and communication barriers were also identified as challenges to cervical screening among Black, Asian and Minority Ethnic (BAME) groups (Ferdous et al., 2018). Certain cultures discourage unmarried women from undertaking cervical screening believing it will bring dishonour and stigma to the family, due to HPV's association with sexually transmitted infections (STIs) (Kim, 2014). Some cultural customs forbid women from having nurses of the opposite gender attend to them, highlighting the need for cultural competence practice (Davies and Thate, 2017). Being aware of cultural customs with influenced by religion, older generations or societal beliefs, enables nurses to deliver high standards of care to patients and providing women with the appropriate gender practitioner to conduct their cervical screening (NHS, 2014).

A good patient-nurse rapport is also said to encourage women to attend cervical screening and avoiding jargon can overcome communication barriers with patients (McMunn 2019, Payton, 2018).

Media influence

Current cervical screening invitations are sent to women with patient information leaflets (NICE, 2020). Screening is at a 20-year low, falling below the national target

for cervical screening coverage by nearly 10% (NHS Digital, 2020). Therefore, in order to promote cervical screening, new innovations are explored with the aim to encourage and support more women to take part.

PHE (2019c) launched a national multimedia campaign called 'Cervical Screening Saves Lives', in order to promote and encourage more women to attend cervical screening by providing information and highlighting the risks of cervical cancer. The media has previously had a positive effect and was responsible for a significant increase in cervical screening following the publicised story of celebrity Jade Goody, who was diagnosed and later died of cervical cancer at the age of 27 in 2008 (Marlow et al., 2012). Known as the Jade Goody effect, the following year, attendance in England increased to over half a million, but consequently decreased, mirroring the pattern of the media coverage (Lancucki et al., 2012). This highlights the success and importance of the role the media plays in promoting health and wellbeing, by spreading awareness and education (Sharma and Gupta, 2017).

The 'Lifesaving Wax campaign' is partnered with Treatwell (2020), a leading hair and beauty company which has targeted over 1.2 million women between the ages of 25-34 who use salons to maintain pubic hair. It has promoted cervical screening during intimate appointments and encouraged women to overcome fear and embarrassment, with more than 86,000 more cervical screenings recorded since the campaign started, (Gwynn, 2019, Stubbs and Pearmain, 2019).

Innovations in Cervical Screening

NHS England (2021) is trialling YouScreen, a HPV home testing self-sampling kit that will be available to over 31,000 women in England, aged between 25-64. YouScreen will be offered to women whose screening is overdue by 6-15 months often as a consequence of COVID, to improve uptake as part of a study in North Central and North East London, (NHS England, 2021). Castanon et al (2020) acknowledged COVID-19 delays and emphasised that there must be equity in care for those affected by screening delays in addition to extra screening capacity. YouScreen may be an innovation to help address this imbalance by increasing uptake. However, Wong et al., (2018) suggests home tests could be financially ineffective and unsafe, leading to inaccurate results or unnecessary investigations. The effectiveness of YouScreen is unclear, although a developing evidence base from predominantly high-income countries suggests self-sampling can increase screening uptake compared with standard care, yet more evidence is needed to establish accuracy and reliability of results (Yeh et al 2019, Chao and McCormack, 2019).

Another innovation is ZedScan, a new diagnostic tool designed to be less-invasive during colposcopy (Peron et al., 2018). Its probe is used to capture images of the cervix in real time, allowing healthcare professionals to make a real time accurate and informed decision by identifying any precancerous cells (NICE, 2018). ZedScan has been seen to reduce unnecessary biopsies and improve patient satisfaction. The early detection can support positive patient outcomes although there is a high risk of misinterpretation which can cause distress (Byrom et al., 2020, NICE, 2018).

HPV Vaccination

HPV is responsible for nearly all cases of cervical cancer and the prophylactic vaccination protects against the main strains of HPV 16 and 18, plus HPV 6 and 11, which are responsible for 90% of anal, genital, head and neck cancers (Cubie, 2013). The HPV vaccination programme was introduced in 2008, targeting girls in England aged 12-13 years, therefore the full impact of the vaccine and its effects on cancer survival rates may not be realised for years to come, (Cervantes and Doan, 2018) . Since its introduction cervical cancer cases have fallen but not all strains of HPV are covered and it is important women still attend cervical screenings (Henderson et al., 2011).

The rate of girls having the HPV vaccination fell in 2017-2018 to 86.9%, compared to 89.4% in 2014-2015 (PHE, 2018b). The vaccination may have triggered ethical dilemmas for parents because of the age it is administered to children. Some parents believe that by promoting the HPV vaccination, they are encouraging sexual relationships and risky behaviour at an inappropriate age, but studies dispute this (Donken et al., 2018). Cross sectional and longitudinal surveys in England highlighted that neither receiving the vaccine nor being offered it affected a girl's sexual behaviour (Forster et al, 2012). In England, the programme is rolled out in schools with a health education and promotion focus, which may account for a significantly higher uptake than alternative non-school-based schemes (Hopkins and Wood, 2013). Promoting awareness to parents about HPV and its link to different cancers and genital warts

enables parents to make an informed decision regarding the vaccination (Ganczak, Owsianka and Korzeń, 2018). Furthermore, poor education in parents appeared to be a common factor, as to why parents did not allow their children to have the HPV vaccination (Griffioen et al., 2012). It had been suggested that BAME communities have a lower vaccine uptake, with parents not agreeable to the HPV vaccination due to strong religious beliefs about sex outside of marriage (Forster et al., 2017). Research demonstrates these communities would benefit from tailored education to promote vaccination (Netfa et al., 2020).

The vaccination engages more people when dual prevention of both HPV and cervical cancer is promoted and it was announced that the HPV vaccination would be available to boys from the age of 12-13 years, in England, from 2019 (Merriel et al., 2018), Cartmell et al., 2018). The strategy of extending the HPV vaccination programme to boys acknowledges the value of prevention and early intervention, yet the results of this development will not be determined for some time, (Every Child Matters, 2003, NHS long term plan, 2019b)..

Conclusion

The HPV vaccination has been acknowledged as a primary preventative innovation in reducing the risk of cervical cancer. Cervical screening is a proven invaluable tool in preventing cervical cancer in women, with both the NHS and WHO having identified the programme as a primary strategy to eradicate cervical cancer.

Challenges to the success of both cervical screening and HPV vaccination uptake have been highlighted as a lack of education in some communities. Healthcare

professionals require cultural competence in order to effectively address parental concerns and encourage uptake of cervical screening and HPV vaccination. Moving forward it is clear that many barriers to cervical screening need to be overcome. Patient focused strategies are key, such as ensuring privacy and dignity, offering a chaperone to all women as standard practice, demonstrating responsiveness within the assessment process to reassure and actively address patient concerns. Further encouragement to engage and overcome practical challenges such as the introduction of self-testing home kits show potential for increasing screening participation, as do the introduction of vaccinations to boys. These will inevitably require research to establish its impact on cervical and associated cancer rates across all populations.

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