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Commentary

Reassessing Cervical Cancer Prevention: Evaluating the NHS Cervical Cancer Screening Programme Through the Health Belief Model and Global Health Promotion Strategies

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Michelle Owusua Appiah-Agyekum[1]

1. York St John University, York, United Kingdom

Cervical cancer remains a significant public health issue in the United Kingdom, with disparities in screening coverage and outcomes persisting despite robust national programs. This critical analysis evaluates the NHS Cervical Screening Programme (CSP) through the lens of the Health Belief Model (HBM) and global health promotion strategies, such as those outlined in the Ottawa Charter. The analysis explores how individual beliefs about susceptibility, severity, benefits, and barriers influence participation in cervical screening, while also critiquing the CSP's reliance on these factors to the potential exclusion of broader social determinants of health.
Key findings reveal that while the HBM provides a valuable framework for understanding individual health behaviors, its emphasis on personal responsibility may overlook significant socioeconomic and cultural barriers, leading to inequities in screening uptake. Furthermore, the CSP's approach, though well-intentioned, may inadvertently undermine patient autonomy by promoting a top-down model of health promotion. The analysis is supported by data from the 2022-2023 Cervical Screening Standards Data Report and other contemporary sources, highlighting the need for more culturally sensitive and equitable strategies.
Recommendations for policymakers include the enhancement of targeted interventions for high-risk groups, improved communication strategies, and the integration of a social model of health that considers the broader determinants of health. Future studies are encouraged to explore the sociocultural factors influencing screening behaviors and to evaluate the effectiveness of new screening technologies and integrated HPV vaccination programs. This analysis underscores the importance of rethinking cervical cancer prevention strategies to ensure they are inclusive, equitable, and aligned with the principles of health promotion.

Correspondence: papers@team.qeios.com — Qeios will forward to the authors

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Introduction

According to the World Health Organization[1], health promotion represents a critical component of public health as it empowers individuals and communities to place themselves in control of their health and personal welfare. Globally, cervical cancer is recognised as one of the most common cancers among women, particularly affecting those in low- and middle-income countries due to limited screening opportunities[2][3]. In the United Kingdom (UK), approximately 3,791 women are diagnosed with cervical cancer each year, and 1,121 die from the disease, making it the 12th most frequent cancer among women aged 15 to 44 years[4]. Additionally, about 79.0% of invasive cervical cancers are attributed to Human Papillomavirus (HPV) types 16 or 18, highlighting the critical role of HPV in cervical cancer cases in the UK[4].

According to Cancer Research UK, there were 3,200 incidences in the UK between 2016 and 2018. It is the "fourth most common female cancer worldwide and one of the top three cancers to affect women under the age of 45"[5][6]. In the United Kingdom (UK), it causes 850 deaths per year[7]. However, recent data highlight disparities in screening coverage and timeliness, which continue to pose challenges to early detection and prevention efforts[8][9].

Behaviour Change theory offers a framework for understanding why people behave in certain ways and the avenues available to ensure behaviours are geared towards positive lifestyles[10]. To combat cervical cancer, there is a need for early screening and HPV vaccination[11]. The Health Belief Model (HBM) offers a framework for understanding how beliefs and attitudes impact health behaviours. This essay examines it in the context of the NHS Cervical Screening Programme (CSP), a crucial health promotion strategy in the UK to address the public health issue of cervical cancer. The Health Belief Model will be used to analyse how perceptions of vulnerability, severity, benefits, and barriers influence women's participation in the program vis-à-vis the attainment of global health promotion targets as derived from the Ottawa Charter[1]. The article will also assess critically the cultural, sociological, and ethical ramifications of using the HBM in this situation. The analysis will be supported by data from recent reports, such as the 2022-2023 Cervical Screening Standards Data Report, to provide insights that can inform future health promotion activities.

Health Promotion Strategy: NHS Cervical Screening Program (CSP)

The Cervical Screening programme organised by the NHS in the UK is a preventative health promotion strategy that prioritises early detection and treatment of a potentially dangerous disease while it is still curable[12]. The programme was introduced in 1988 to protect women against cervical cancer by regularly inviting women between the ages of 25 and 64 to participate in cervical screenings called smear tests[13]. In recent years, coverage rates have shown variability, with only 65.8% of women aged 25 to 49 and 74.1% of women aged 50 to 64 being adequately screened within the recommended timeframes[14][15]. To guarantee that the offer of screening and follow-up appointments reached women, health authorities were mandated to implement a computerised call and reminder system. These examinations are essential for the early identification

and management of precancerous cells, which, if untreated, may turn into cervical cancer[13]. From a public health perspective, the CSP focuses on early detection and prevention, significantly reducing morbidity, mortality, and incidence rates associated with cervical cancer[16][17].

The Health Belief Model (HBM) is a psychological framework that explains health behaviours based on individuals' beliefs about the illness's susceptibility, severity, benefits, barriers, cues to action, and self-efficacy and serves as the theoretical foundation for the CSP[18][19]. In the context of the CSP, the HBM helps to understand women's motivations and barriers to participating in cervical screening, while perceived barriers such as fear and lack of awareness can deter participation. Champion and Skinner[20] emphasise that an individual's willingness to participate in health-related behaviours, such as screening and vaccination, is influenced by their perceptions of the disease's threat, perceived severity, perceived barriers such as pain and lack of awareness, perceived benefits, such as the early detection and treatment of the disease, cues to action, such as reminders from healthcare professionals, and self-efficacy, which is the individual's belief in their own ability to handle the situation[20][21]. For example, the high prevalence of HPV types 16 and 18 among cervical cancer cases in the UK highlights the importance of perceived susceptibility and severity in motivating women to participate in screening programmes[4]. By identifying and reducing screening obstacles, including lack of knowledge or access to healthcare services, participation rates can be increased.

The use of the HBM assists with understanding women's experiences with the screening process. This analysis can help with future screening procedures and address barriers to boost participation rates[22]. The HBM makes it easier to explain the dangers and advantages of cervical cancer to certain audiences. Ilozumba et al.[23] evaluated the effect of combining health education and Short Messaging Service (SMS) reminders to promote HPV vaccination uptake. The World Health Organization's efforts to promote cervical cancer screening, vaccination, and prevention on a global scale have an impact on the CSP. By offering free and convenient screening services to the intended audience, the program encourages equity by lowering financial barriers to participation.

Methodology

For this critical analysis, a systematic study and comparative analysis of several academic papers and reports related to cervical cancer, with a particular focus on the NHS Cervical Screening Programme (CSP), were used. The analysis explored the current state of cervical cancer prevention and management, with an emphasis on the application of the Health Belief Model (HBM) and alignment with global health promotion strategies such as the Ottawa Charter. A comprehensive literature search was initiated using specific keywords such as "Cervical cancer prevention", "NHS Cervical Screening Programme", "Health Belief Model", "Global health promotion strategies", "HPV vaccination", and "Cervical cancer disparities". The search was conducted across multiple academic databases and search engines, including Google Scholar, the European Society for Medical Oncology, and PubMed. Grey literature from reputable organisations such as the WHO and NHS was also used.

The inclusion criteria for this study were 1) Cervical cancer prevention strategies, 2) Human papillomavirus (HPV) immunization, 3) Health disparities related to

cervical cancer, 4) Application of the Health Belief Model to cervical cancer screening, and 5) English language publications.

The exclusion criteria included: 1) Irrelevant subject matter, 2) Technical issues that prevented access to the full text, 3) Articles that required payment for access and could not be sourced through institutional subscriptions, and 4) Non-English language publications.

Data Analysis

The selected literature was systematically analysed to assess the effectiveness of the NHS Cervical Screening Programme in preventing cervical cancer, with a particular focus on screening coverage, timeliness, and the impact of sociocultural factors. The Health Belief Model was applied as a theoretical framework to understand the individual-level factors influencing participation in the CSP. Additionally, the CSP's alignment with the principles of the Ottawa Charter for Health Promotion was evaluated to examine how well the program supports community action, creates supportive environments, and addresses health disparities. Data from the 2022-2023 Cervical Screening Standards Data Report and the ICO/IARC Information Centre were also incorporated into the analysis to provide contemporary insights and support the critique of the CSP. The analysis aimed to identify gaps in the current screening program and propose recommendations for improving its effectiveness and equity.

Study Limitations

The study primarily relied on secondary data and existing literature, which may limit the ability to capture real-time changes or the most current programmatic adjustments.

Global Health Promotion Targets and the NHS Cervical Screening Programme: A Critique

Global health promotion goals, as set forth in the Ottawa Charter for Health Promotion, provide a road map for comprehensive health promotion programs. The Charter identifies five action pillars, namely, boosting community action, establishing supportive environments, enhancing public policy, improving individual skill development, and reorienting health care[1]. According to Potvin and Jones[24], these strategies promote a comprehensive approach to health promotion that highlights the socio-environmental determinants of health rather than taking a disease-centric approach. The NHS Cervical Screening Programme (CSP), a disease-specific effort, adheres to these principles. The concept of developing healthy public policies is expressed in the law requiring all eligible women to have yearly cervical screenings. Such proactive, policy-driven actions are in line with the Ottawa Charter's request for activities that promote health via policy. For example, the CSP policy is reviewed by the UK National Screening Committee every three years to ensure the strategy is in line with updated research[8]. However, the NHS Cervical Screening Programme (CSP) faces significant challenges in its efforts to build personal skills through information distribution, which are constrained by insufficient health literacy and cultural sensitivities. Cultural stigma and misunderstandings, particularly among ethnic minorities, further complicate participation in cervical screening. For example, many women, especially younger individuals and non-English

speakers, often lack adequate information or face language barriers that prevent them from understanding the importance of screening[25][26][27].

Misconceptions, such as the belief that screening is only for sexually active individuals, and religious beliefs further deter participation[28]. According to a study by Wearn and Shepherd[28], some Muslim and Somalian women do not find they need to participate in the CSP due to the belief that they have protection from cancer from their religion. While the CSP aims to create supportive environments by offering flexible appointment times and free tests, socioeconomic and cultural hurdles still significantly impact participation. Practical barriers, such as difficulties in booking appointments, accessing services, and fear of discomfort or embarrassment, particularly among those with disabilities or a history of trauma, are prevalent[29]. These issues are compounded by a lack of trauma-informed care and the unavailability of necessary accommodations, such as height-adjustable beds for wheelchair users, which discourage eligible women from taking part in screening[29]. The social model is also evident in the acknowledgement of social determinants of health, such as socioeconomic position and access to healthcare[30]. For instance, to increase screening uptake, the CSP has launched targeted interventions such as counselling and education promotion in communities with lower socioeconomic status[31]. The CSP's alignment with the social model of health might be improved if there were a larger emphasis on addressing these socioeconomic factors.

Moreover, the CSP's support for strengthening community action remains limited. There is a notable shortage of female sample takers and a lack of community-based interventions that could otherwise increase acceptance and participation. Community-led initiatives, like peer education, have shown promise in boosting screening uptake among disadvantaged populations[32]. The CSP has made strides in acknowledging social determinants of health, such as socioeconomic status and access to healthcare, by launching targeted interventions in low-income communities. However, persistent coverage disparities across different socioeconomic groups suggest a need for more robust approaches to address these inequalities[30][33]. More proactive strategies, including at-home self-sampling and mobile screening units, could enhance accessibility and reduce the barriers faced by underserved populations, moving closer to National Health Service England's (NHSE) ambition to eliminate cervical cancer by 2040[15].

A Social, Cultural, and Ethical Critique of the Health Belief Model

Given these limitations, the Ottawa Charter's holistic view of health promotion, which emphasises the importance of fostering supportive environments, reorienting health services, as well as developing personal skills[1], does not fully align with the CSP and its underlying behaviour change theory, such as the HBM. Additionally, the program's impact may be diminished by several factors, including socio-economic factors and cultural barriers to screening.

The HBM has several shortcomings when addressing cultural and social determinants of health. Its emphasis on individual beliefs and decisions may unintentionally place too much responsibility on women and individuals while failing to consider the socioeconomic and cultural constraints that may affect

their choices[34]. Marlow et al.[27]; Wearn and Shepherd[28] discovered that sociocultural factors, such as a lack of trust in healthcare systems and concerns about privacy, risk beliefs, embarrassment, prioritising competing demands, unfamiliarity with screening practitioners, and the interpersonal skills of practitioners, hindered minority women's participation in cervical screening.

The HBM does not adequately account for the ethical challenges associated with health promotion, particularly the balance between promoting public health and respecting individual autonomy[35][34]. The National Health Service (NHS) Cervical Screening Programme mandate, although well-intentioned, may lead to a top-down approach where women feel coerced rather than empowered to participate[36]. For example, the emphasis on high participation rates may overshadow the need for informed choice, where women understand the risks and benefits of screening and feel empowered to make their own decisions. Furthermore, recent data from the 2022-2023 Cervical Screening Data Report suggest that the timeliness of result communication is an area where the CSP falls short, with only 76.5% of women receiving their screening results within 14 days[8].

Recommendations for Policymakers

Policymakers should focus on developing targeted interventions aimed at increasing cervical screening rates among high-risk groups, such as younger women, ethnic minorities, and those from lower socioeconomic backgrounds. This could involve culturally tailored health communication strategies, community outreach programs, and the provision of more accessible screening options, including at-home self-testing kits and mobile clinics. Data from the 2022-2023 Cervical Screening Standards Data Report highlight significant disparities in screening coverage, particularly among younger women and disadvantaged communities.

Moreover, policies that ensure the timely communication of screening results to participants must be implemented, including setting stricter performance targets for result processing and communication, as well as investing in more efficient IT systems to reduce delays. The 2022-2023 Cervical Screening Standards Data Report indicated that only 76.5% of women received their results within the recommended 14-day timeframe, which may undermine trust in the program.

Additionally, policymakers should reconsider the CSP's heavy reliance on the HBM, which emphasizes individual responsibility. There should be a shift towards incorporating a social model of health that acknowledges the broader social and cultural factors influencing health behaviors, such as socioeconomic status, education, and access to healthcare. The HBM's focus on individual perceptions may obscure the structural barriers that prevent participation in screening, as discussed by Low, E.L. et al.[37]. Addressing these factors is crucial for improving equity and effectiveness in cervical cancer prevention. Assessing and mitigating the potential ethical concerns associated with the CSP's authoritative approach, which may compromise patient autonomy, would be beneficial. Policies should be designed to empower women by providing them with the necessary tools and information to make informed health decisions without feeling coerced. The CSP's current implementation may inadvertently reinforce power imbalances between healthcare providers and patients, as

outlined in Beattie's[38] health promotion model and further supported by Edberg[39].

Recommendations for Future Studies

Economic studies should be conducted to compare the cost-effectiveness of different screening intervals and methods (e.g., HPV testing versus cytology) to determine the most efficient use of resources in the Cervical Screening Program. Cost-benefit analyses are essential for optimizing resource allocation in public health programs. Longitudinal studies are also needed to assess the long-term impact of integrating HPV vaccination with cervical screening programs. These studies should track incidence rates, vaccination uptake, and screening participation over time to evaluate the effectiveness of combined prevention strategies. The ICO/IARC Information Centre's report highlights the critical role of HPV in cervical cancer, suggesting that integrated approaches could significantly reduce incidence rates.

Research should focus on evaluating the effectiveness of new screening technologies, such as at-home self-sampling kits and HPV primary screening, in increasing coverage and reducing the burden on healthcare facilities. This research could inform future policy decisions about the integration of these technologies into national programs. Advances in screening technology offer the potential to increase accessibility and convenience for women who may be reluctant to attend traditional screening appointments.

Future studies should investigate the specific sociocultural barriers that affect cervical screening uptake among different demographic groups in the UK. This could include qualitative research into cultural attitudes, trust in healthcare systems, and the influence of socioeconomic status on health behaviors. The disparities in screening coverage highlighted in recent reports suggest that sociocultural factors play a significant role in participation rates.

Conclusion

The NHS Cervical Screening Programme (CSP) remains a critical public health initiative in the UK, significantly contributing to the prevention and early detection of cervical cancer. However, this analysis highlights several areas where the CSP could be improved, particularly in addressing sociocultural barriers, enhancing the timeliness of results, and ensuring equitable access to screening across different population groups. Policymakers are urged to consider the recommendations outlined in this paper to strengthen the CSP's effectiveness and alignment with ethical health promotion principles. Furthermore, future studies should explore the impact of these interventions and technological advancements to continuously improve the reach and efficacy of cervical cancer prevention strategies.

References

1. ^a, b, c, d *World Health Organization (1986). The Ottawa Charter for Health Promoti on. Geneva: World Health Organization.*
2. ^ *Cohen PA, Jhingran A, Oaknin A, Denny L (2019). "Cervical cancer." Lancet.* ***393****(1 0167):169–82.*
3. ^ *Cubie HA, Campbell C (2020). "Cervical cancer screening—the challenges of co mplete pathways of care in low-income countries: focus on Malawi." Women's He*

alth. ***16****:1745506520910823.*

4. a, b, c*Bruni L, Albero G, Serrano B, Mena M, Collado JJ, Gómez D, Muñoz J, Bosch F X, de Sanjosé S (2023). "Human Papillomavirus and Related Diseases in the Worl d. Summary Report 10 March 2023." HPV Centre. https://hpvcentre.net/statistics/r eports/XWX.pdf.*
5. ^*Cancer Research UK (2024). "Cancer incidence by age [online]." Cancer Research UK. https://www.cancerresearchuk.org/health-professional/cancer-statistics/inci dence/age.*
6. ^*World Health Organization (2024). "Cervical cancer." World Health Organizatio n. https://www.who.int/health-topics/cervical-cancer#tab=tab 1.*
7. ^*Buskwofie A, David-West G, Clare CA (2020). "A review of cervical cancer: incide nce and disparities." J Natl Med Assoc.* ***112****(5):447–52.*
8. a, b, c*NHS England (2023). NHS population screening: Improving access for people with learning disabilities. London: NHS England.*
9. ^*NHS England (2019). Report of the independent review of adult screening progr ammes in England. London: NHS England.*
10. ^*Elder JP, Ayala GX, Harris S (1999). "Theories and intervention approaches to he alth-behavior change in primary care." Am J Prev Med.* ***17****(4):275–84.*
11. ^*Bedell SL, Goldstein LS, Goldstein AR, Goldstein AT (2020). "Cervical cancer scre ening: past, present, and future." Sex Med Rev.* ***8****(2):376–84.*
12. ^*Patnick J (2012). "Cervical cancer screening in England." Eur J Cancer.* ***48****(17):312 0–5.*
13. a, b*The Health Foundation (1988). NHS Cervical Screening Programme. London: T he Health Foundation.*
14. ^*NHS England Digital (2024). Cervical screening programme—coverage statistics [Management Information]. London: NHS England Digital.*
15. a, b*NHS England (2024). "NHS urges more women to take up cervical screening in vitations [online]." NHS England. https://www.england.nhs.uk/2024/06/nhs-urge s-more-women-to-take-up-cervical-screening-invitations.*
16. ^*Department of Health. Public Health England (2014). Annual Report. London: D epartment of Health.*
17. ^*Jallah JK, Anjankar A, Nankong FA (2023). "Public Health Approach in the Elimi nation and Control of Cervical Cancer: A Review." Cureus.* ***15****(9).*
18. ^*Carpenter CJ (2010). "A meta-analysis of the effectiveness of health belief model variables in predicting behavior." Health Commun.* ***25****(8):661–9.*
19. ^*Rosenstock IM (1974). "Historical origins of the health belief model." Health Edu c Monogr.* ***2****(4):328–35.*
20. a, b*Champion VL, Skinner CS (2008). "The health belief model." In: Glanz K, Rime r BK, Viswanath K, editors. Health Behavior and Health Education: Theory, Resea rch, and Practice. 4th ed. San Francisco: Jossey-Bass. p. 45–65.*
21. ^*Julinawati S, Cawley D, Domegan C, Brenner M, Rowan NJ (2013). "A review of th e perceived barriers within the Health Belief Model on Pap smear screening as a preventive measure against cervical cancer in Indonesia." Asian Pac J Cancer Pre v.* ***14****(12):8491–9.*
22. ^*Herrmann A, Hall AE, Proietto AM, Mansfield E, Mihalopoulos C, Bernhardt D, et al (2018). "The impact of personalized risk communication on screening behavio r: a systematic review." Arch Intern Med.* ***178****(3):387–99.*
23. ^*Ilozumba O, Dieleman M, Broerse JEW, Van Belle S (2021). "A realist approach to explaining the role of context in the implementation of a health system interventi*

*on: the case of a maternal health texting intervention in Malawi." BMC Health Serv Res. **21**(1):1–16.*

24. ^*Potvin L, Jones CM (2011). "Twenty-five years after the Ottawa Charter: The critical role of health promotion in the well-being of Indigenous peoples in Canada." Glob Health Promot. **18**(3):43–6.*
25. ^*Chandrakumar A, Hoon E, Benson J, Stocks N (2022). "Barriers and facilitators to cervical cancer screening for women from culturally and linguistically diverse backgrounds: a qualitative study of GPs." BMJ Open. **12**(11).*
26. ^*Chorley AJ, Marlow LA, Forster AS, Haddrell JB, Waller J (2017). "Experiences of cervical screening and barriers to participation in the context of an organised programme: a systematic review and thematic synthesis." Psychooncology. **26**(2):161–72.*
27. a, b*Marlow LA, Wardle J, Waller J (2015). "Understanding cervical screening non-attendance among ethnic minority women in England." Br J Cancer. **113**(5):833–9.*
28. a, b, c*Wearn A, Shepherd L (2024). "Determinants of routine cervical screening participation in underserved women: a qualitative systematic review." Psychol Health. **39**(2):145–70.*
29. a, b*Healthwatch (2024). "Barriers and inequalities in cervical screening [online]." Healthwatch. https://www.healthwatch.co.uk/blog/2024-01-22/barriers-and-inequalities-cervical-screening.*
30. a, b*Marmot M, Bell R (2010). "Fair society, healthy lives." Public Health. **124**(6):375–81.*
31. ^*Tin A, Oliffe JL, Bottorff JL, Robinson CA, Carey J, Sarbit G (2023). "Rethinking patient-centred care: Patient perspectives on its implementation in British Columbia cancer care." Health Expect. **26**(1):195–205.*
32. ^*Forbes LJ, Warburton F, Richards MA, Ramirez AJ (2020). "Risk factors for delay in symptomatic presentation: A survey of cancer patients." Br J Cancer. **122**(5):723–9.*
33. ^*Public Health England (2023). PHE Screening inequalities strategy. London: Public Health England.*
34. a, b*Ghorbani-Dehbalaei M, Loripoor M, Nasirzadeh M (2021). "The role of health beliefs and health literacy in women's health promoting behaviours based on the health belief model: a descriptive study." BMC Womens Health. **21**(1):1–9.*
35. ^*Abraham C (2015). "The Health Belief Model." Health Psychol Rev. **9**(1):1–7.*
36. ^*Brown K (2014). "Coercion in health promotion: ethical concerns in promoting public health goals." J Med Ethics. **40**(5):353–6.*
37. ^*Low EL, Simon AE, Lyons J, Romney-Alexander D, Waller J (2012). "What do British women know about cervical cancer symptoms and risk factors?" Eur J Cancer. **48**(2):300–8.*
38. ^*Beattie A (2002). "Health promotion: a study in complexity." Health Promot Int. **17**(1):35–42.*
39. ^*Edberg M (2007). Essentials of Health Behavior: Social and Behavioral Theory in Public Health. 2nd ed. Burlington: Jones & Bartlett Learning.*

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