



Acceptability of the MenB Gonorrhoea Vaccine
Among GBMSM in the UK: The Role of Awareness
and Knowledge

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Abstract

Background:

Neisseria gonorrhoeae, the bacterium responsible for gonorrhoea, remains a significant public health concern within the United Kingdom (UK). Increasing diagnosis rates and rising antimicrobial resistance threaten the effectiveness of existing antibiotic treatments, highlighting the need for alternative prevention strategies such as vaccination.

Aims:

This study aimed to examine awareness, knowledge, and acceptability of the gonorrhoea (MenB) vaccine among gay, bisexual, and other men who have sex with men (GBMSM) in the UK.

Method:

A quantitative cross-sectional survey was conducted using an anonymous online questionnaire distributed through social media and LGBTQ+ networks. Data from GBMSM participants were analysed using Microsoft Excel, with descriptive statistics and chi-square tests being used to explore relationships between awareness of the vaccine and willingness to receive vaccination.

Results:

The findings showed moderate levels of awareness of the gonorrhoea vaccine among participants but consistently high willingness across the sample to receive vaccination. No statistically significant association was found between prior awareness and willingness to vaccinate, suggesting that willingness was not dependent on existing knowledge of the vaccine. Participants recognised the benefits of vaccination even

with partial protection, and recommendations from healthcare professionals were found to significantly increase willingness to vaccinate.

Conclusions:

Gonorrhoea vaccination appears to be highly accepted among GBMSM in the UK. Integrating vaccination into routine sexual health services, alongside clear communication from healthcare professionals, may support future public health strategies aimed at reducing gonorrhoea transmission and addressing the growing challenge of antimicrobial resistance.

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Keywords: Gonorrhoea, MenB vaccine, GBMSM, vaccine acceptability, antimicrobial resistance, sexual health services, United Kingdom, public health

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Declaration

'The results presented in this dissertation are based on my own research in the Faculty of Health, Liverpool John Moores University. All assistance received from other individuals and organisations has been acknowledged and full reference is made to all published and unpublished sources used. This dissertation has not been previously submitted for a degree at any other institution.'

Chapter 1: Introduction

Sexually transmitted infections (STIs) continue to pose a significant global and national public health challenge. Despite substantial advances in prevention, including condom use and biomedical interventions such as HIV pre-exposure prophylaxis (PrEP) STI incidence continues to rise (Fernández-Romero et al., 2015). This trend highlights the limitations of existing strategies and underscores the need for additional innovative, and targeted approaches to STI prevention control. STIs comprise a wide range of bacterial, viral, and parasitic infections primarily transmitted through vaginal, oral, and anal sexual contact, although transmission can also occur through perinatal exposure and contact with infected blood (Piot, Goilav and Kegels, 1990). More than 30 pathogens are known to be sexually transmissible, contributing to substantial global morbidity and mortality (Newman et al., 2015). When untreated, STIs can lead to serious long-term outcomes, including infertility, chronic pelvic inflammatory disease, increased HIV susceptibility, and adverse pregnancy and neonatal outcomes (Rowley et al., 2019).

The scale of this burden is reflected in global surveillance data. The World Health Organisation (WHO) estimates that over one million curable STIs are acquired each day worldwide, with gonorrhoea, chlamydia, syphilis, and trichomoniasis accounting for approximately 374 million new cases annually (WHO, 2024). Persistently high rates indicate that current prevention methods are insufficient and highlights the need for complementary interventions that are accessible, acceptable and sustainable. Vaccination represents a constructive strategy, particularly focusing on bacterial STIs such as gonorrhoea, where treatment is increasingly challenged by antimicrobial resistance. These challenges are reflected by figures seen in 2023, 401,800 STI

diagnoses were recorded in the UK (UKHSA, 2024). Gonorrhoea diagnoses increased by 7.5% from 2022 to 2023, reaching 85,223 cases, evidencing the highest figures since national surveillance began in 1918 (Iacobucci, 2024) becoming the second most common STI in the UK. The economic and healthcare burden of these infections is substantial, with repeated clinic visits, treatment costs, and potential hospitalisations adding pressure to an already stretched National Health Service (NHS) (Jacobsson et al., 2025).

A key contributing factor of this increase is due to antimicrobial resistance (AMR). *Neisseria gonorrhoeae* has developed resistance to multiple antibiotics, including penicillin, fluoroquinolones, and extended-spectrum cephalosporins (Unemo and Shafer, 2014; Wi et al., 2017). As treatments become less effective, there is a growing concern that gonorrhoea will become harder to treat, leading to longer lasting infections, increased transmission, and a greater risk of health problems such as infertility and enhanced susceptibility to HIV. Consequently, the WHO has classified AR gonorrhoea as a major global public health threat (WHO, 2024). Because of this, vaccination is therefore seen as a vital long term prevention strategy, offering a potential solution where treatment by itself is not sufficient. However, the effectiveness of vaccination programmes depends not only on biological efficacy but also on public awareness, acceptability, and equitable uptake, particularly among populations who are at elevated risk of infection.

Within the UK, GBMSM experience a disproportionate burden of STIs, particularly bacterial infections such as gonorrhoea (Mohammed et al., 2026). Surveillance data indicates that GBMSM account for almost half of all gonorrhoea diagnoses, despite representing a much smaller proportion of the population, with infection rates

accounting for over half (54%) of diagnoses (Montemayor, DeLeon and Owens, 2025). High prevalence of infections such as gonorrhoea, syphilis, HPV, and hepatitis further highlights structural, behavioural, and social vulnerabilities within this population (Davies et al., 2025). These factors create a context in which repeated exposure to STIs is common, reinforcing the importance of preventive interventions that are both accessible and socially acceptable.

Evidence from previous STI vaccination programmes provides important insight into how a gonorrhoea vaccine may be received by GBMSM. Prior vaccination experiences shape beliefs about personal risk, vaccine safety and effectiveness, stigma, and trust in healthcare systems, all of which are key determinants of vaccine acceptance (Wheldon et al., 2016). Quantitative and qualitative studies indicate moderate to high acceptability of STI vaccines among GBMSM (Nadarzynski et al., 2021). For instance, a meta-analysis of 20 studies reported mpox vaccine willingness of 77%, suggesting strong openness to STI vaccination within this population (Liu et al., 2024). However, qualitative research identifies key barriers, including limited awareness of HPV and its association with anal cancer, low perceived personal risk, difficulties accessing services, and discomfort discussing same-sex behaviour with healthcare professionals (Nadarzynski et al., 2017). Additionally, during the 2022–2023 mpox epidemic, vaccine uptake was influenced by knowledge, perceived risk, and social connectivity, with younger, bisexual, and socioeconomically marginalised men less likely to be vaccinated (May et al., 2023; Ogaz et al., 2022).

Health behaviour theories help explain patterns of vaccine uptake. The Health Belief Model (HBM) proposes that health decisions are shaped by perceived susceptibility, disease severity and perceived barriers (Limbu, Gautam and Pham, 2022). This is

relevant to STIs, as vaccination is more likely when individuals recognise personal risk and the potential consequences of infection. However, despite higher infection risk, GBMSM may underestimate vulnerability when STIs are asymptomatic or perceived as easily treatable (Balán et al., 2019). Similarly, the Theory of Planned Behaviour (TPB) highlights the role of attitudes, social norms and perceived behavioural control in shaping vaccination intentions (Limbu, Gautam and Zhou, 2022). Within GBMSM communities, peer influence, interactions with healthcare professionals and trust in health institutions can shape vaccine confidence, while concerns around privacy and stigma may reduce willingness to access STI vaccination.

The COVID-19 vaccination programme provides a broader context for understanding vaccine hesitancy toward new biomedical interventions. Although uptake was high overall (NHS, 2024), younger adults, individuals with lower education, and ethnic minority groups were more likely to hesitate or decline vaccination (Robertson, 2021). Reduced trust in public institutions and concerns about vaccine safety and effectiveness were central drivers of hesitancy (Chaudhuri et al., 2022; Lalot et al., 2022). Over time, misinformation and changing social norms further lowered vaccine acceptance (Wang et al., 2022; Skafle et al., 2022). These findings illustrate that vaccine hesitancy is a complex issue, influenced by demographic, structural, informational and psychosocial factors. Such dynamics are especially important to consider for a gonorrhoea vaccine aimed at GBMSM, a population already at higher risk of STIs and facing similar barriers related to healthcare access and trust (Nadarzynski et al., 2021).

1.1 Aims and Objectives

The aim of this study is to examine awareness, knowledge, and acceptability of the gonorrhoea (MenB) vaccine among gay, bisexual, and other men who have sex with men (GBMSM) in the United Kingdom. To achieve this aim, a quantitative cross-sectional survey was employed to assess key dimensions of vaccine acceptability, including knowledge of gonorrhoea, prior awareness of the vaccine, willingness to vaccinate, perceived benefits and safety, trust in healthcare services, stigma, and structural access barriers. The study also explores how these factors vary across sociodemographic characteristics, including age, sexual identity, education, ethnicity, relationship status, and sexual health behaviours. By identifying key determinants of vaccine acceptability, this research aims to generate empirical evidence to inform the development of effective, equitable, and accessible gonorrhoea vaccination strategies for populations at increased risk.

Objectives:

1. To assess the level of awareness and knowledge of gonorrhoea and the gonorrhoea vaccine among GBMSM in the UK.
2. To examine attitudes toward the gonorrhoea vaccine, including perceived benefits, safety, and overall acceptability.
3. To measure willingness to receive the gonorrhoea vaccine and determine the proportion of participants likely to accept vaccination.
4. To explore the relationship between vaccine acceptability and key psychosocial factors, including perceived risk, trust in healthcare services, and perceived stigma.

5. To investigate whether awareness, attitudes, and vaccine acceptability vary across sociodemographic characteristics, including age, sexual identity, education level, ethnicity, relationship status, and sexual health behaviours.
6. To identify potential structural and informational barriers to vaccine uptake, including access to services and availability of accurate information.

This dissertation is situated at the intersection of public health, sexual health, and health equity, examining awareness and attitudes toward the gonorrhoea vaccine among GBMSM in the UK. While vaccination research has expanded in relation to other STIs including mpox and human papillomavirus (HPV), there remains limited quantitative evidence exploring awareness and acceptability of a gonorrhoea vaccine within this population. This gap informed the use of a quantitative survey to assess attitudes and identify key predictors of vaccine acceptability.

More broadly, this research reflects an increasing academic and public health focus on addressing sexual health inequalities, particularly among populations disproportionately affected by STIs. The study is informed by both academic and personal motivations. As a member of the LGBTQ+ community, with close connections to individuals within the GBMSM population, the researcher has had direct awareness of the sexual health inequalities experienced within this group. These include barriers to accessing healthcare, experiences of stigma within clinical settings, and a disproportionately high burden of sexually transmitted infections within this community. This positionality has informed the focus of the research, while maintaining a commitment to methodological rigour and critical analysis. The dissertation therefore aims to contribute empirical evidence to support the development of inclusive, effective, and equitable public health interventions.

This dissertation is structured into six chapters. Chapter One introduces the research topic, outlines the study aims and objectives, and provides the public health context and significance of the research. Chapter Two presents a critical review of the literature, examining the epidemiology of gonorrhoea, the growing challenge of antimicrobial resistance, and the development of the MenB vaccine as a potential preventive strategy. It also explores vaccine acceptability within sexual health contexts, particularly among GBMSM, and identifies key gaps in the existing evidence base.

Chapter Three outlines the methodological approach, including the research design, sampling strategy, data collection, questionnaire development, and ethical considerations. Chapter Four presents the findings from the quantitative survey, reporting descriptive and inferential analyses relating to awareness, knowledge, and willingness to receive the gonorrhoea vaccine. Chapter Five discusses these findings in relation to existing literature and relevant public health frameworks, considering their implications for sexual health practice and vaccination strategies. Finally, Chapter Six summarises the key findings, reflects on study limitations, and outlines recommendations for future research and public health practice.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviews the literature on awareness, attitudes, and acceptability of the MenB vaccine for gonorrhoea among GBMSM in the UK. Following its introduction into UK sexual health services in 2025, empirical research examining how this population understands and engages with the vaccine remains limited. This literature review therefore integrates epidemiological, behavioural, and vaccine acceptability literature to establish current knowledge and identify key gaps.

The chapter outlines the epidemiology and public health significance of gonorrhoea, including escalating infection rates, antimicrobial resistance, and the disproportionate burden among GBMSM. It then examines the development of the gonorrhoea vaccine, focusing on evidence of partial protection from the MenB vaccine. Given the limited direct evidence on gonorrhoea vaccine perceptions, the review also draws on research from the HPV and Mpox vaccination to explore determinants of vaccine acceptability, including perceived risk, trust in healthcare services, social norms, and access. The review is informed by the Health Belief Model and stigma theory to contextualise how individual beliefs and social factors may influence vaccination decisions. It focuses on UK evidence and identifies clear gaps in understanding awareness, attitudes, and acceptability of the gonorrhoea vaccine among GBMSM, providing the rationale for this study.

2.2 Epidemiology of Gonorrhoea and Public Health Importance

Gonorrhoea, caused by *Neisseria gonorrhoeae*, remains a significant public health concern globally and in the UK. An estimated 86.9 million cases occur annually worldwide (Unemo et al., 2019), with UK diagnoses increasing gradually over recent decades (Fountain et al., 2024). Although symptoms such as urethral discharge and dysuria may occur, many infections are asymptomatic, facilitating ongoing transmission. If untreated, gonorrhoea can lead to serious complications including infertility, pelvic inflammatory disease, and increased susceptibility to HIV (Unemo et al., 2019). The growing challenge of antimicrobial resistance (AMR) further limits treatment options, reinforcing the need for preventive strategies beyond antibiotic therapy.

Epidemiological data in England demonstrate a continuous rise in diagnoses, reaching over 82,000 cases in 2022 being the highest since national surveillance commenced (Ladhani et al., 2024). This burden is unevenly distributed, with GBMSM accounting for approximately half of all cases. Higher incidence is also observed among younger men and some ethnic minority groups, reflecting broader health inequalities and sexual network dynamics (Risley et al., 2007). Transmission is often sustained within interconnected sexual networks, while asymptomatic infections particularly at pharyngeal and rectal sites contribute to delayed diagnosis and continued spread (Whittles et al., 2018; Unemo et al., 2019).

A key driver of gonorrhoea's public health significance is the rapid emergence of AMR. Since the introduction of antibiotics, *N. gonorrhoeae* has developed a resistance to multiple classes, including penicillin, fluoroquinolones, and extended spectrum cephalosporins (Unemo, 2015). Therefore, the Centres for Disease Control and

Prevention known as the CDC has identified gonorrhoea as an urgent AMR threat (Bäumler, 2024). The potential for untreatable infection highlights the limitations of treatment-based approaches and underscores the importance of preventive strategies, including vaccination.

2.3 Gonorrhoea Vaccination: Development and Current Evidence

Evidence over the last decade posits that the MenB vaccine provides partial protection against gonorrhoea, with estimated effectiveness of approximately 30–40% (O'Neill, 2016; WHO, 2021; Raccagni et al., 2023). This evidence has informed UK policy, with the Joint Committee on Vaccination and Immunisation (JCVI) recommending its use in 2023 for individuals at higher risk, including GBMSM. Originally developed to prevent invasive meningococcal disease, the MenB vaccine is thought to present cross protection due to genetic and antigenic similarities between both *Neisseria Meningitidis* and *Neisseria gonorrhoeae* (Mahase, 2022). However, developing a targeted gonorrhoea vaccine remains challenging due to the pathogen's high antigenic variability, which enables immune evasion and limits the potential for long lasting, wide protection (Vincent & Jerse, 2019).

Empirical evidence supporting MenB effectiveness has been reported across multiple settings. Ecological studies in Quebec, Cuba, and Norway observed reductions in gonorrhoea diagnoses following large-scale vaccination campaigns (Whelan et al., 2016; Longtin et al., 2017; Alderson et al., 2022). A case-controlled study in New Zealand estimated 31% effectiveness among individuals vaccinated in childhood (Petousis-Harris et al., 2017), while US data reported up to 40% effectiveness following two doses, with lower protection observed for a single dose (Abara et al., 2022). These findings suggest that vaccine exposure may influence the degree of

protection and support its role as a complementary public health intervention. Overall, while MenB vaccination does not provide complete or long-term protection, even moderate effectiveness may reduce transmission, reinfection, and antibiotic use, particularly in high-risk populations such as GBMSM. However, uncertainty regarding duration of protection and optimal dosing remains, reinforcing the importance of understanding awareness and acceptability of this emerging intervention.

2.4 Vaccine Acceptability and Uptake in Sexual Health

Vaccine acceptability is a key determinant of uptake and is therefore central to the success of vaccination programmes and wider public health outcomes (Mathur, Yadav and Kumar, 2026). Given the limited research examining attitudes toward the gonorrhoea vaccine, evidence from broader sexual health contexts provides important insight into likely patterns of uptake. Vaccination represents a proactive preventive strategy that can reduce transmission, prevent long-term complications, and relieve pressure on healthcare systems. Within sexual health, vaccines prevent conditions such as HPV-related cancers, genital warts, infertility, and chronic liver disease, making them particularly relevant for populations disproportionately affected by STIs, including GBMSM. Existing research indicates that vaccine uptake is shaped by a combination of perceived risk, trust in healthcare services, stigma, accessibility, and social norms (Nadarzynski et al., 2021b; Pow et al., 2025; Moran, Garcia-Iglesias & Kerr, 2025).

Evidence from HPV vaccination studies among GBMSM highlights a disconnect between awareness and acceptability. While knowledge is often limited, willingness to vaccinate is generally high, suggesting that knowledge deficits do not necessarily translate into hesitancy (Nadarzynski et al., 2017). Barriers to uptake include limited

access to services, lack of targeted information, and discomfort disclosing same-sex behaviour to healthcare professionals. Demographic differences have also been detected, with younger, gay-identified, and more highly educated individuals more likely to be vaccinated (Grewal et al., 2020). Collectively, these findings suggest that structural and social determinants, rather than hesitancy alone, play a central role in shaping vaccination behaviour.

Research on mpox vaccination further demonstrates the influence of social context and perceived risk. During the 2022 UK outbreak, vaccine uptake among GBMSM was high, largely driven by perceived severity and concerns about transmission within sexual networks (Ogaz et al., 2024). Public health responses emphasising risk communication and rapid access to vaccination supported strong engagement. However, broader determinants also influenced uptake. Evidence indicates high willingness when vaccination is accessible and supported by clear, consistent information (Dukers-Muijters et al., 2023), although stigma remained a significant barrier. Fear of judgement and association with STIs discouraged some individuals from seeking vaccination, while stigma also contributed to experiences of discrimination and reduced engagement with services (Shukla et al., 2022; Turpin et al., 2023; Sekaran & R. Sekar, 2023).

Together, this evidence indicates that vaccine uptake among GBMSM is shaped by the interaction of individual, social, and structural factors. While willingness to vaccinate is often high, barriers related to access, stigma, and social context may limit uptake, underscoring the importance of addressing both behavioural and structural determinants within vaccination strategies. Vaccination may also be understood within a harm reduction framework, which recognises that interventions offering partial

protection can still produce meaningful reductions in risk and transmission (Capasso et al., 2024). Within sexual health, this approach is well established, as strategies such as condom use and pre-exposure prophylaxis (PrEP) are valued for reducing, rather than eliminating, infection risk. In this context, even moderate vaccine effectiveness may be sufficient to support individual protection and contribute to reductions in transmission within the targeted population.

2.5 Structural and Accessibility Barriers to Vaccine Uptake Among GBMSM

While vaccine acceptability is an important determinant of uptake, it does not operate in isolation. Evidence from sexual health research demonstrates that vaccination behaviour among GBMSM is shaped by a combination of structural, social, and behavioural factors, including access to services, stigma, trust in healthcare systems, and social norms (Zimet & Rosenthal, 2010; Nadarzynski et al., 2021b; Pow et al., 2025; Moran, Garcia-Iglesias & Kerr, 2025). Research on HPV vaccination among GBMSM highlights a consistent gap between willingness and actual uptake. Although willingness to vaccinate is often high, engagement is limited by structural barriers such as restricted access to services, lack of targeted information, and discomfort disclosing same-sex behaviour to healthcare professionals (Nadarzynski et al., 2017). Uptake also varies across demographic groups, with higher engagement among younger, gay identified, and more highly educated individuals (Grewal et al., 2020), indicating that broader social inequalities influence access to vaccination.

Evidence from the mpox vaccination programme further illustrates the importance of accessibility and social context. During the 2022 UK outbreak, high uptake among

GBMSM was supported by rapid public health responses, clear risk communication, and accessible vaccination services. However, barriers persisted. Stigma associated with sexually transmitted infections discouraged some individuals from seeking vaccination, while fear of judgement and discrimination reduced engagement with sexual health services (Shukla et al., 2022; Turpin et al., 2023; Sekaran & R. Sekar, 2023). Research also suggests that willingness is highest when vaccination is delivered through accessible, low-threshold services and supported by clear, consistent information (Dukers-Muijrers et al., 2023). Overall, this evidence indicates that high willingness to vaccinate does not necessarily translate into uptake. Structural barriers, including service accessibility, stigma, and inequalities in healthcare engagement, play a central role in shaping vaccination behaviour. Addressing these factors is therefore essential to ensure that vaccination programmes are both effective and equitable within GBMSM populations.

2.6 Identified Gaps in the Literature

As the gonorrhoea vaccination programme in the UK remains in its early stages, there is a limited body of empirical research examining awareness, perceptions, and attitudes toward the vaccine among GBMSM. This represents a significant gap, particularly given that vaccine uptake is shaped not only by vaccine effectiveness but also by social, psychological, and structural determinants. Existing UK based research provides only partial insight into these factors. For example, a mixed method study exploring GBMSM participation in a gonorrhoea human challenge model identified anticipated stigma as a key barrier (Firth et al., 2025). Although vaccination was not the primary focus, these findings suggest that stigma may similarly influence

engagement with gonorrhoea vaccination by discouraging information seeking and limiting open discussion of sexual health.

Similarly, a cross-sectional survey conducted prior to the introduction of the MenB vaccine assessed awareness and hypothetical willingness to receive a gonorrhoea vaccine (Ogaz et al., 2024). While this study provided early insight, it was limited to behavioural intention and did not capture real-world uptake or access. Furthermore, its primary focus on antibiotic post-exposure prophylaxis (PeP) meant that vaccination-related findings were secondary (Ehsan et al., 2024).

Overall, there remains a clear lack of UK based empirical research examining awareness, attitudes, and acceptability of gonorrhoea vaccination among GBMSM following its implementation within sexual health services. Key behavioural determinants outlined in the Health Belief Model such as perceived susceptibility, severity, benefits, and barriers including stigma have not yet been analytically explored in this context. This gap limits the ability of public health strategies to be effectively tailored to this population. Addressing this gap is essential for understanding how GBMSM interpret and engage with gonorrhoea vaccination, and for informing the development of equitable and effective public health implementation strategies.

Chapter 3: Methodology

3.1 Introduction

This chapter outlines the methodological approach used to address the research aims of this dissertation. It details the research design, data collection methods, questionnaire development, sampling and recruitment procedures, data analysis, ethical considerations, and potential sources of bias. Supporting materials are provided in the appendices chapter (Appendices 1-5). The chapter also critically reflects on the strengths and limitations of the chosen methods to ensure transparency and methodological rigour.

3.2 Research Design and Methods

The study aimed to examine awareness of and attitudes toward the gonorrhoea vaccine among GBMSM in the UK. Both qualitative and quantitative approaches were considered, with a quantitative cross-sectional survey selected as the most appropriate design.

Cross-sectional surveys are widely used in public health research to assess knowledge, attitudes, and behavioural intentions within defined populations (Smith et al., 2023). This design enables the collection of standardised data from larger samples and supports statistical analysis to identify patterns and relationships between variables (Wang and Cheng, 2020; Slater and Hasson, 2024). In this study, it facilitated the examination of awareness of gonorrhoea and the vaccine, willingness to receive vaccination, and factors influencing vaccine acceptability among GBMSM in the UK.

A key strength of quantitative surveys is their ability to generate systematic and comparable data suitable for statistical analysis (Kaplan, Chambers and Glasgow, 2014). In contrast, qualitative methods such as interviews typically involve smaller samples and prioritise depth of understanding rather than focusing on generalisable trends (Safdar et al., 2016). Therefore, given the limited research on gonorrhoea vaccine awareness and acceptability among GBMSM in the UK, a survey-based approach enabled the identification of broader attitudinal trends relevant to public health planning.

The study was also informed by established health behaviour theories, including the Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB), which are widely used to understand vaccination behaviour (Rosenstock, 1974; Ajzen, 1991). These frameworks conceptualise making decisions through constructs such as perceived risk, attitudes, and social influences, which can be operationalised using survey measures. Previous studies have applied these models to predict vaccination intentions, including during the COVID-19 pandemic (Shmueli, 2021).

As a cross-sectional design, this study captures data at a single point in time and therefore cannot establish causal relationships; however, it is well suited to identify associations and providing an initial snapshot of attitudes and behaviours (Baumeister et al., 2026). This was particularly appropriate given the recent introduction of the gonorrhoea vaccination programme in the UK and the limited existing evidence in this area. The approach therefore enabled the generation of preliminary, population level insights to inform future research and public health interventions.

3.3 Data collection tools

Data was collected through an anonymous online questionnaire administered via Microsoft Forms (see Appendix 3 for full questionnaire). Online surveys are particularly suitable for sensitive research topics such as sexual health, as anonymity allows participants to respond privately and reduces social desirability bias (Gnambs and Kaspar, 2015; Jones et al., 2016). An anonymous design was particularly important given the sensitive nature of sexual health research and the potential for stigma to influence disclosure among GBMSM participants. This is especially relevant when researching sexual health behaviours and vaccination decisions that individuals may be reluctant to discuss in face-to-face research settings (Montemayor, DeLeon and Owens, 2025).

Further, online questionnaires also offer practical advantages as they enable recruitment across geographically dispersed populations, reduce participant burden, and provide a cost-effective method of data collection (Wright, 2005). However, while online surveys improve accessibility and privacy, they may exclude individuals with lower digital engagement or limited access to relevant online networks (Chadwick et al., 2022). Consequently, this method was considered both ethically appropriate and methodologically suitable for collecting quantitative data on this topic.

3.4 Questionnaire Design

Data were collected using a structured online questionnaire developed specifically for this study. Questions were informed by existing literature on STI vaccine acceptability and sexual health behaviours (Firth et al., 2025; Abara et al., 2021; Wayal et al., 2019).

Previous surveys examining awareness and attitudes toward HPV vaccination and mpox vaccination were also reviewed to guide questionnaire development (Pelullo, Di Giuseppe and Angelillo, 2012; Smith et al., 2023). The questionnaire design was guided by the HBM and TPB which are widely applied in public health research to examine behavioural determinants of vaccination uptake (Rosenstock, 1974; Ajzen, 1991; Brewer et al., 2007). Where possible, items were adapted from previously validated survey instruments to improve methodological robustness and support comparability within already existing research. The use of these theoretical frameworks strengthened coherence by ensuring that survey questions were aligned with established predictors of vaccine acceptability.

Questions were mapped to key theoretical constructs including perceived susceptibility, severity, perceived benefits and barriers, attitudes toward vaccination, subjective norms, and behavioural control. Items were adapted where necessary to ensure relevance to the newly introduced gonorrhoea vaccine in the UK (Ladhani et al., 2025). Additional questions were developed to capture constructs particularly relevant to this context, including trust in healthcare services, perceived vaccine effectiveness, stigma, and access barriers. The questionnaire consisted of seven sections aligned with the research objectives:

- **Eligibility screening:** Confirmed participants identified as GBMSM, were aged 18 years or older, and resided in the UK.
- **Demographics:** Collected data on age, sexual identity, ethnicity, education level, and relationship status.
- **Sexual health behaviours:** Assessed sexual health clinic attendance and preventative practices.

- **Knowledge:** Measured understanding of gonorrhoea using true/false statements.
- **Attitudes and perceptions:** Used Likert-scale items to examine attitudes toward the gonorrhoea vaccine, including perceived effectiveness, stigma, and social norms.
- **Trust and perceived benefits:** Explored trust in healthcare professionals and perceived benefits of vaccination.
- **Awareness and feedback:** Assessed prior awareness of the vaccine and included an optional open-ended question for additional comments.

The questionnaire primarily used closed-ended questions and Likert-scale response formats to facilitate quantitative analysis and ensure consistency across responses. Likert scales are widely used in public health research to measure attitudes and perceptions as they allow respondents to express varying degrees of agreement (Sullivan and Artino, 2013). The survey was designed to take approximately 5–10 minutes to complete to minimise participant burden and reduce survey fatigue (Ghafourifard, 2024).

3.5 Sampling and Recruitment

Participants were recruited via social media using a researcher designed recruitment social media post (see Appendix 4). The study targeted GBMSM aged 18 years or older residing in the UK. Eligibility criteria required participants to identify as male, report sexual activity with men, and provide informed consent prior to participation. The survey was voluntary and anonymous, and no personally identifiable information was collected. Eligibility screening was implemented using conditional branching within Microsoft Forms. Participants who did not confirm that they met the inclusion

criteria were automatically redirected to the end of the survey and prevented from proceeding further.

A non-probability sampling strategy combining convenience and snowball sampling was employed, which is commonly used when recruiting hard-to-reach populations (Kim et al., 2026). Recruitment was initially conducted through the researcher's personal networks, with participants encouraged to share the survey link with eligible peers. The researcher's positionality as a member of the LGBTQ+ community facilitated access to GBMSM networks and supported targeted recruitment.

Recruitment posts were also shared within LGBTQ+ community groups on social media platforms such as Facebook and Instagram. Gatekeepers within LGBTQ+ organisations and Pride groups were contacted and invited to distribute the study information and survey link. Although non-probability sampling limits the generalisability of findings, it is widely recognised as an effective strategy when researching marginalised populations who may be difficult to reach through probability-based sampling methods (Ting et al., 2025). While this approach limits representativeness, it was considered proportionate and appropriate to the research given the practical and ethical challenges of recruiting a dispersed and potentially stigmatised population through traditional sampling methods.

3.6 Data Analysis

Survey responses were exported from Microsoft Forms into Microsoft Excel for analysis. Descriptive statistics were calculated to summarise participant characteristics and responses. Frequencies and percentages were used to examine

key variables including awareness of the gonorrhoea vaccine, perceived effectiveness, and willingness to receive vaccination.

To explore relationships between variables, chi-square tests of independence were conducted. This statistical test was used to examine associations between categorical variables, such as prior awareness of the gonorrhoea vaccine and willingness to receive vaccination. This approach was appropriate because the study variables were primarily categorical and the analysis aimed to identify associations rather than causal relationships. Statistical significance was assessed using a standard p-value threshold of <0.05 .

3.7 Ethical Considerations

Ethical approval for this study was obtained from the Liverpool John Moores University Public Health Institute Research Ethics Committee prior to data collection (see appendix 5). Ethical considerations are fundamental in public health research, particularly when addressing sensitive topics such as sexual health, as they ensure the protection of participant rights, wellbeing, and dignity while maintaining the integrity of the research process (Shahriari et al., 2018)

Fundamental ethical principles, including informed consent, confidentiality, participant autonomy, and minimisation of harm, were embedded throughout the study design. Given the sensitive nature of the research and the potential for stigma associated with sexual health among GBMSM, the study was designed to be fully anonymous, with no collection of personally identifiable information. This approach is consistent with best practice for research involving potentially stigmatised populations, where anonymity

can reduce social desirability bias and encourage honest disclosure (Gnambs and Kaspar, 2016)

Participants were provided with a detailed participant information sheet (see Appendix 1) outlining the purpose of the study, eligibility criteria, voluntary nature of participation, and intended use of the data. Informed consent was obtained electronically prior to participation (see Appendix 2), ensuring that individuals could make an informed decision about involvement. Participants were also made aware that some questions related to sexual health behaviours and could cause discomfort. To minimise potential harm, the information sheet included a content warning and signposted participants to appropriate sexual health support services. These implemented measures reflect a commitment to conducting ethically responsible research, ensuring that participant welfare was prioritised while enabling the collection of valid and reliable data within a sensitive research context.

3.8 Limitations and Bias

Several limitations should be acknowledged within this research. The use of non-probability sampling may have limited the representativeness of the sample, as recruitment primarily occurred through social media networks and LGBTQ+ community groups. Individuals engaged with these networks may be more interested in sexual health issues or more supportive of vaccination, potentially introducing selection bias. Consequently, the findings may not be fully generalisable to the wider GBMSM population in the UK. The cross-sectional design represents a further limitation, as data were collected at a single point in time. This restricts the ability to assess changes in attitudes or behaviours over time and prevents the establishment of causal relationships (Maier et al., 2023).

Self-reported data may also introduce recall bias and social desirability bias, particularly for sensitive behaviours such as condom use or sexual health clinic attendance (Althubaiti, 2016). However, steps were taken to enhance reliability and reduce response bias, including the use of anonymous data collection and neutral question wording, which are recognised strategies for improving the consistency and honesty of responses.

In terms of measurement validity, the questionnaire was informed by existing literature and established theoretical frameworks, including the Health Belief Model and the Theory of Planned Behaviour. Where possible, questions were adapted from previously used survey instruments, supporting content validity by ensuring that key constructs such as knowledge, attitudes, and vaccine acceptability were appropriately captured. However, as the gonorrhoea vaccine is a relatively new public health intervention, some items were developed specifically for this study, which may limit construct validity and comparability with existing research.

Reliability may also be influenced using single-item measures for some constructs, such as willingness to vaccinate, which may not capture the full complexity of attitudes toward the vaccine. Future research could strengthen reliability using multi-item scales and validated measurement tools. Lastly, timing bias should be considered, as data were collected during the early stages of the gonorrhoea vaccination programme, when public awareness was still emerging. While these limitations do not invalidate the findings, they indicate that the results should be interpreted as indicative rather than fully generalisable. Furthermore, the research relies on intentions rather than observed behaviour reflects a broader limitation when looking at behavioural research, where the intention behaviour gap could result in overestimation of real-world uptake.

3.9 Summary

Despite the limitations that have been acknowledged, the methodological approach used in this study was appropriate for addressing the research objectives. The cross-sectional survey facilitated the systematic examination of awareness, attitudes, and perceptions of the gonorrhoea vaccine among GBMSM in the UK. While the findings represent an early snapshot of perceptions rather than having definitive conclusions, it provides valuable insight into vaccine acceptability and highlights important areas for future research and public health intervention.

Chapter 4: Results

4.1 Introduction

This chapter presents the findings from the quantitative survey conducted to address the research objectives. Results are reported using descriptive statistics and chi-square analyses to examine patterns of awareness, attitudes, and vaccine acceptability among GBMSM in the UK. The final analytical sample encompassed 95 participants. Respondents varied across key sociodemographic characteristics, including age, sexual identity, ethnicity, education level, and relationship status. The majority identified as gay, were of white ethnicity, and held undergraduate or postgraduate qualifications (see Table 1).

1. To align with the research objectives, the findings are organised into the following themes:
 - (1) Awareness and knowledge of gonorrhoea and the vaccine,
 - (2) Attitudes toward the vaccine,
 - (3) Willingness to receive vaccination,
 - (4) Psychosocial influences,
 - (5) Variation by sociodemographic characteristics,
 - (6) Perceived benefits and barriers.

4.2 Participant Demographic Characteristics

Table 1 presents the demographic characteristics of the study sample (N = 95). Most participants identified as gay (85.3%) and were of White ethnic background (82.1%). Participants were distributed across age groups, with the largest proportions aged 25–34 years (33.7%) and 45 years and over (33.7%).

In relation to education, most participants held either an undergraduate (35.8%) or postgraduate qualification (33.7%). Relationship status varied, with 42.1% of participants reporting being single, followed by those in monogamous (29.5%) and open relationships (27.4%).

Table 1: Demographic characteristics of participants (N = 95)

	n	%
Age group:		
18–24	7	7.4
25–34	32	33.7
35–44	24	25.3
45+	32	33.7
Ethnicity:		
White	78	82.1
Minority ethnic groups	17	17.9
Highest level of education:		
GCSEs or equivalent	7	7.4

A-level or equivalent	10	10.5
Vocational qualification (e.g., NVQ, BTEC)	11	11.6
Undergraduate degree	34	35.8
Postgraduate degree	32	33.7
No formal qualifications	1	1.1
Sexual identity:		
Gay	81	85.3
Bisexual	8	8.4
Other	6	6.3
Relationship status:		
Single	40	42.1
In a monogamous relationship	28	29.5
In an open relationship	26	27.4
Prefer not to say	1	1.1

*Minority ethnic groups include Asian/Asian British, Black/African/Caribbean/Black British, Mixed/Multiple ethnic groups, and other ethnic backgrounds.

*Other sexual identities include androsexual, queer, heterosexual, and other self-described identities.

4.3 Awareness and Knowledge of the Gonorrhoea Vaccine

Figure 1 demonstrates that just over half of participants (57.9%) reported prior awareness of the gonorrhoea vaccine, while the remainder indicated having no awareness or uncertainty. This suggests moderate awareness within the sample. In contrast, Figure 2 demonstrates substantial knowledge of gonorrhoea transmission, with 99% of participants correctly identifying how the infection is spread. This indicates a strong baseline level of sexual health knowledge.

However, Figure 3 highlights a clear gap in vaccine specific knowledge. Over half of respondents reported uncertainty regarding vaccine effectiveness, while smaller proportions identified the statement as true (22%) or false (approximately one quarter). This indicates uncertainty and highlights potential misconceptions regarding vaccine effectiveness. Taken together, these findings demonstrate a clear distinction between general sexual health knowledge and vaccine specific awareness. While understanding gonorrhoea transmission is high, knowledge of the vaccine remains limited. These findings address **Objective 1**, indicating that although baseline sexual health knowledge is strong, there is a clear information gap regarding the gonorrhoea vaccine.

Figure 1: Participant awareness of the gonorrhoea vaccine

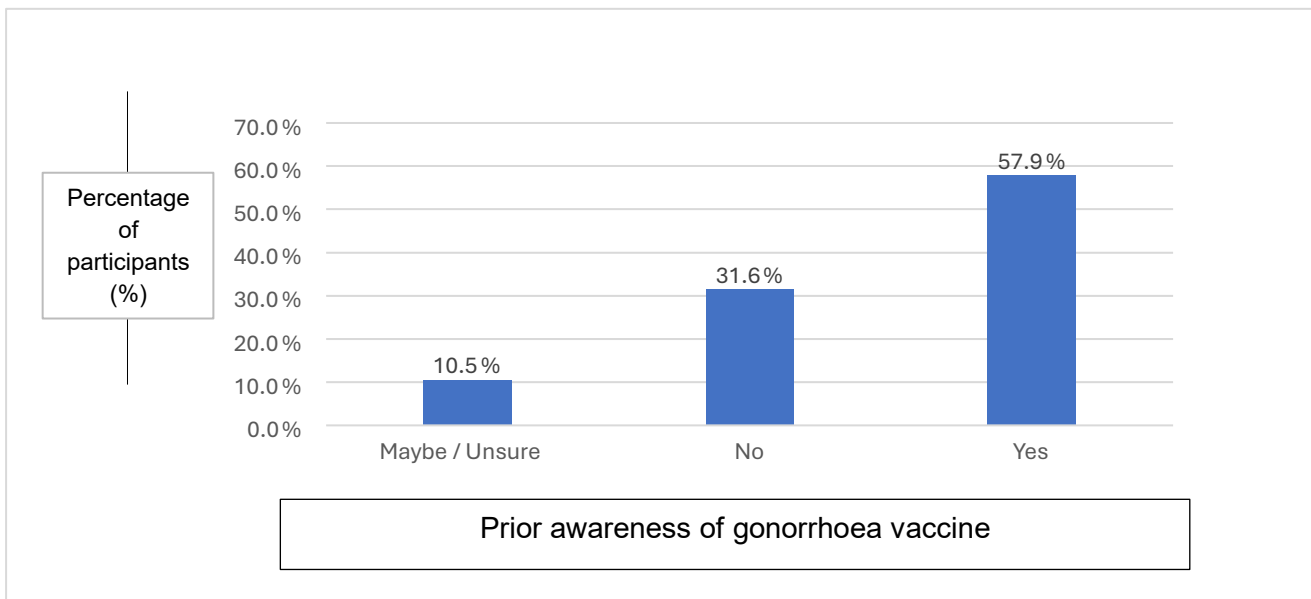


Figure 2: Knowledge of gonorrhoea transmission

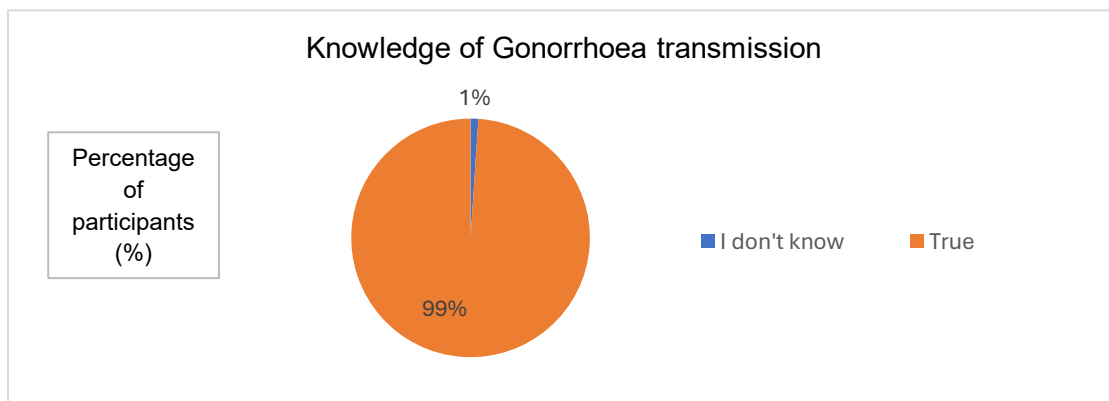
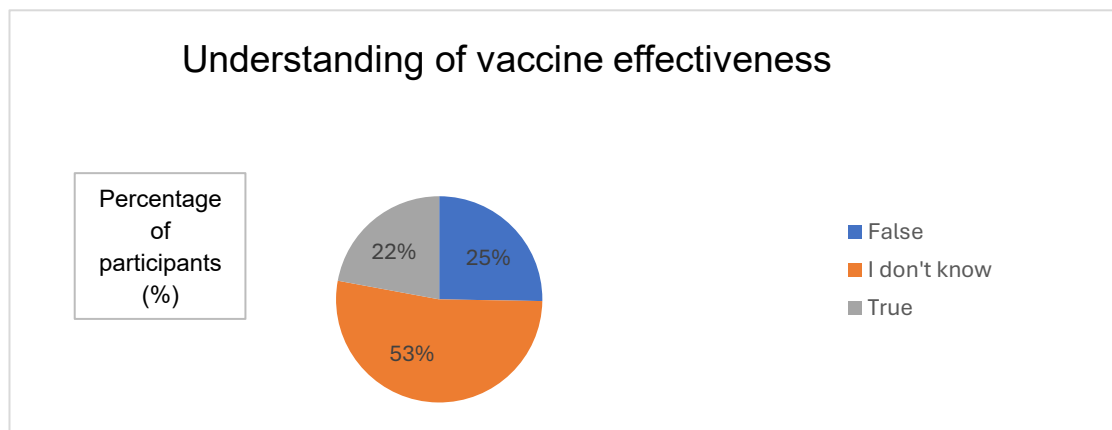


Figure 3: knowledge of the gonorrhoea vaccine effectiveness



4.4 Attitudes to Receive the Gonorrhoea Vaccine

- Figure 4 highlights that most participants perceived the vaccine to be safe, with 69% agreeing or strongly agreeing. Only a small minority (3%) expressed concerns.
- Figure 5 demonstrates strong perceived public health benefit, with 85% agreeing that vaccination would reduce community transmission. 14% neither agreed nor disagreed. No participants disagreed.
- Figure 6 further indicates that participants generally accepted partial effectiveness. Around three in five disagreed that a moderately effective vaccine would not be worth receiving, while approximately one quarter were neutral.
- Figure 7 demonstrates that most participants (79%) rejected the statement that the vaccine is unnecessary, reinforcing positive attitudes toward its value.
- Figure 8 highlights strong perceived reassurance, with 95% agreeing that they would feel safer having some level of protection.

Overall, these findings indicate highly positive attitudes toward the gonorrhoea vaccine, particularly in relation to safety, perceived public health benefit, and acceptance of partial protection. Notably, the absence of disagreement in relation to community level benefits and the high levels of reassurance associated with partial protection suggest that participants recognise vaccination as both an individual and collective preventive strategy. These findings address **Objective 2**, demonstrating strong acceptability and favourable attitudes toward vaccination.

Figure 4: Perceived safety of the gonorrhoea vaccine

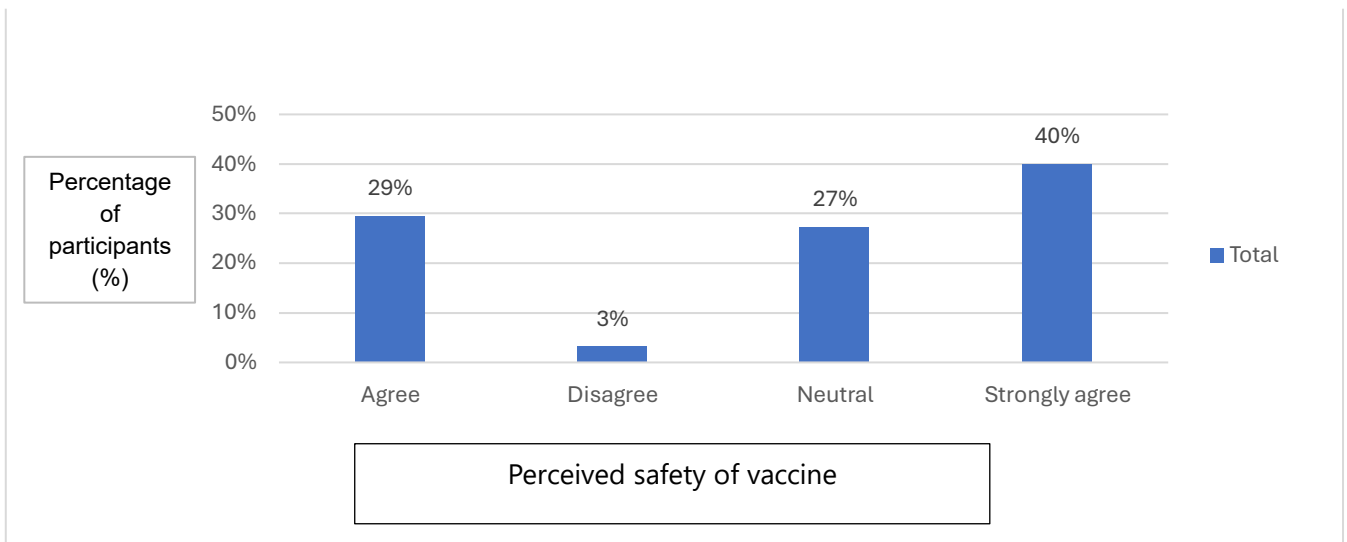


Figure 5: Perceived public health benefit of the gonorrhoea vaccine

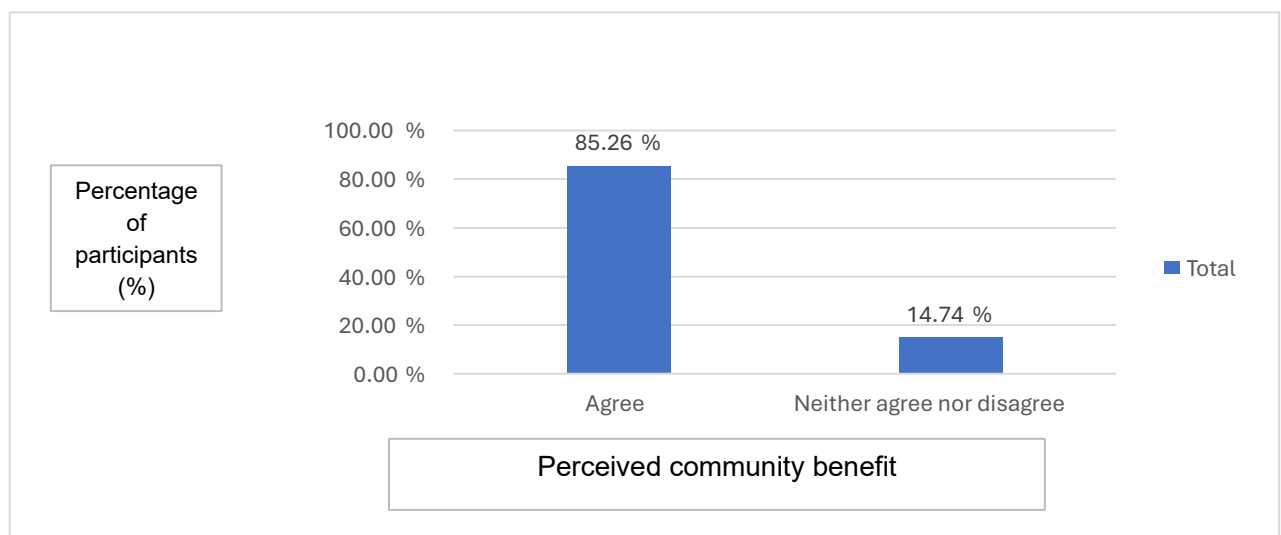


Figure 6: Perceptions of partial effectiveness of gonorrhoea vaccine

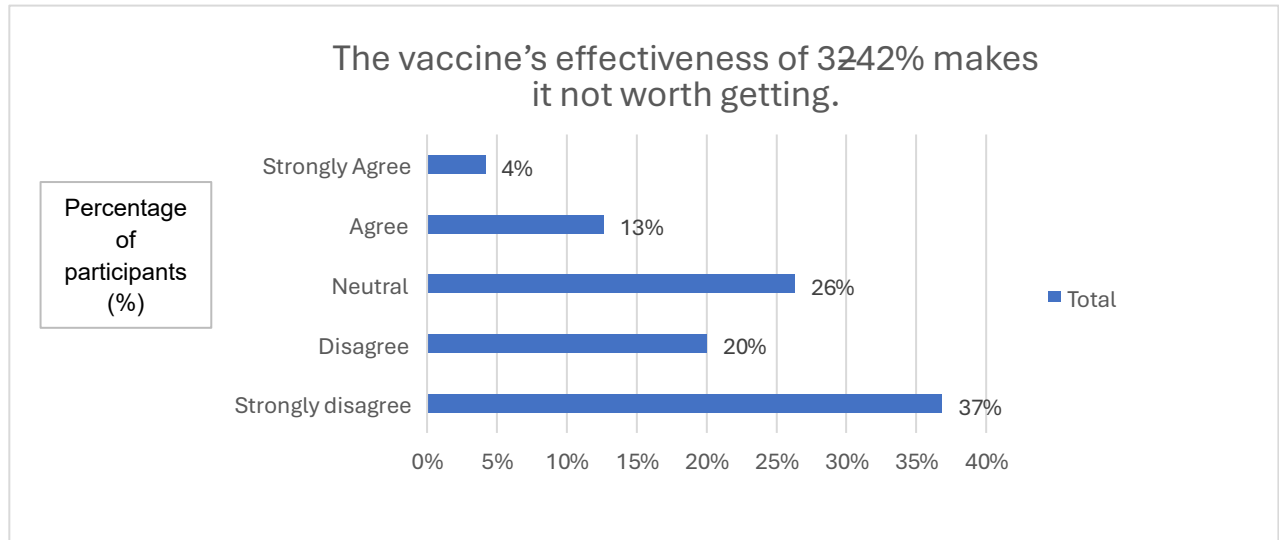


Figure 7: Perceived necessity of the gonorrhoea vaccine.

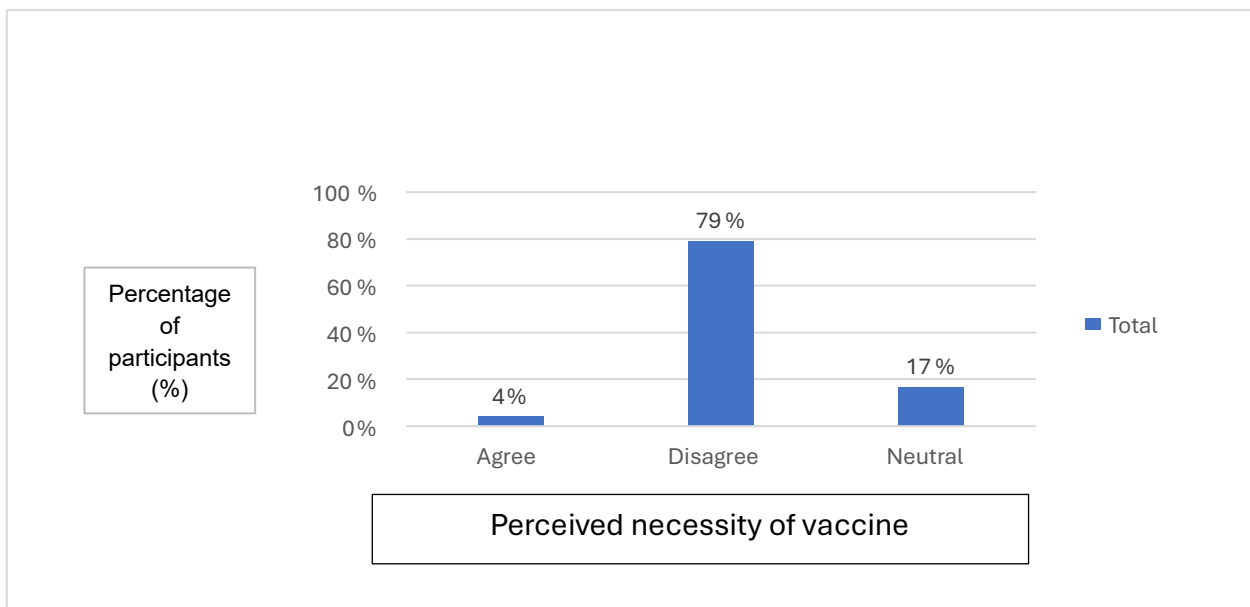
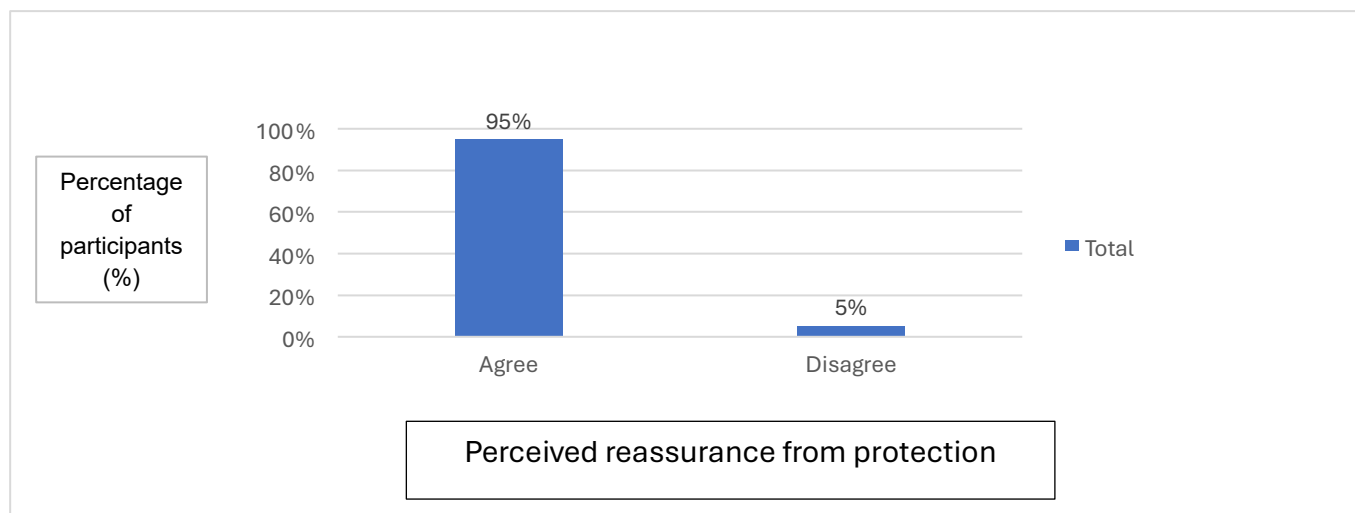


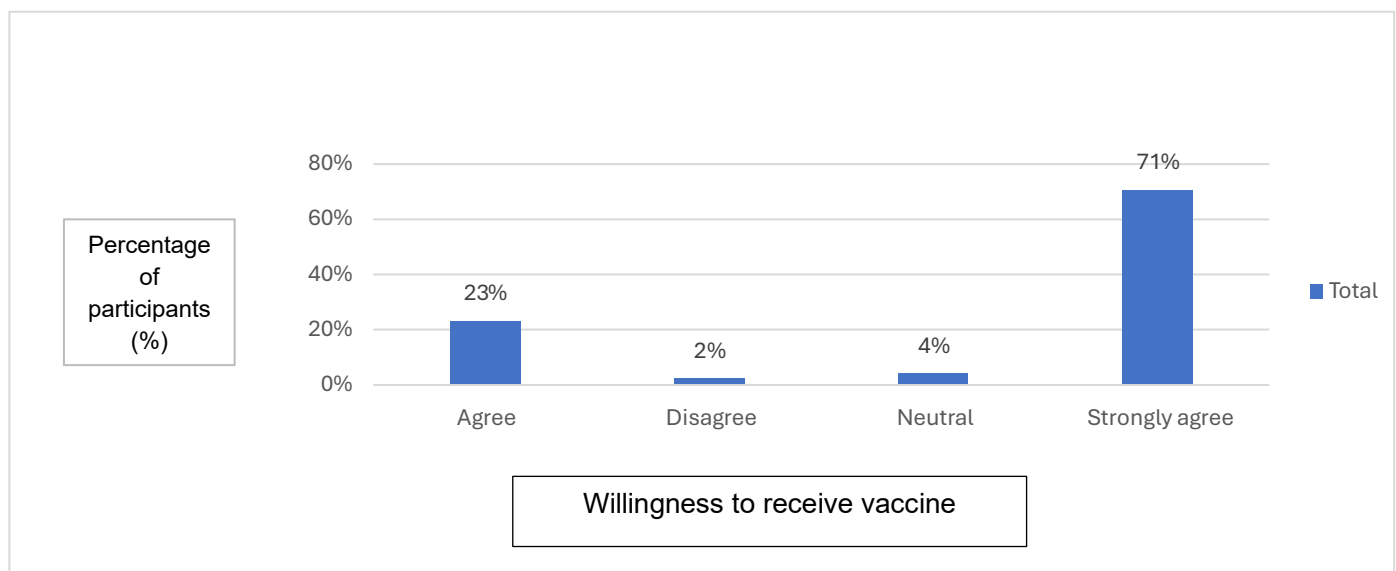
Figure 8: Perceived reassurance from partial protection



4.5 Willingness to Receive the Gonorrhoea Vaccine

Figure 9 demonstrates that willingness to receive the vaccine was high, with 94% of participants agreeing or strongly agreeing that they would accept vaccination if offered during a routine sexual health check-up. This suggests strong behavioural intention within the sample. These findings address **Objective 3**, demonstrating a high proportion of participants willing to accept vaccination. This demonstrates strong behavioural intention within the sample, particularly when vaccination is integrated into routine sexual health services.

Figure 9: Willingness to receive the gonorrhoea vaccine



4.6 Psychosocial Influences on Vaccine Acceptability

Figure 10 indicates that perceived community norms influenced willingness, with approximately half of participants reporting they would be more likely to vaccinate if others in their community did so. Around one third responded neutral.

Figure 11 demonstrates a particularly strong influence of healthcare professionals on vaccination intentions. Almost nine in ten participants reported increased willingness to receive the vaccine following a recommendation from a trusted sexual health professional. This suggests that both social norms and professional endorsement play important roles in shaping vaccination behaviour. However, the stronger influence of healthcare professionals indicates that institutional trust may be a particularly important driver of vaccine acceptability within this population. These findings address **Objective 4** by highlighting the significance of social and institutional factors in shaping vaccine acceptability.

Figure 10: Influence of perceived community uptake on willingness to receive the gonorrhoea vaccine

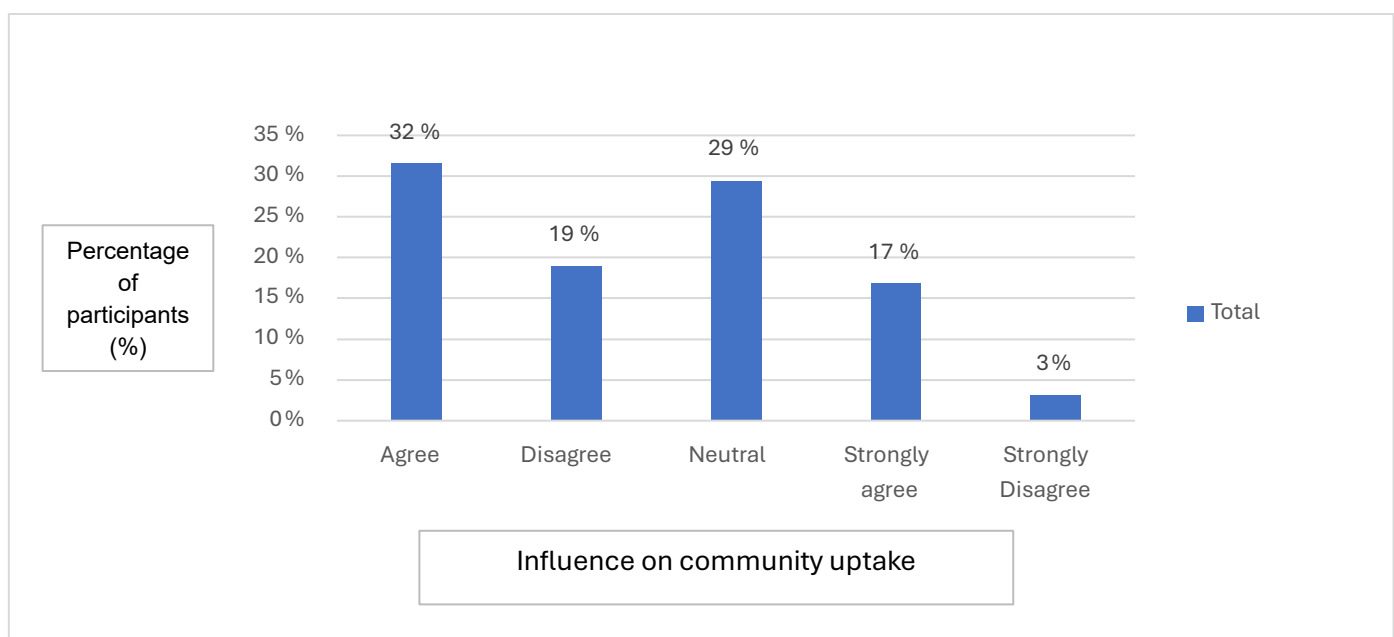
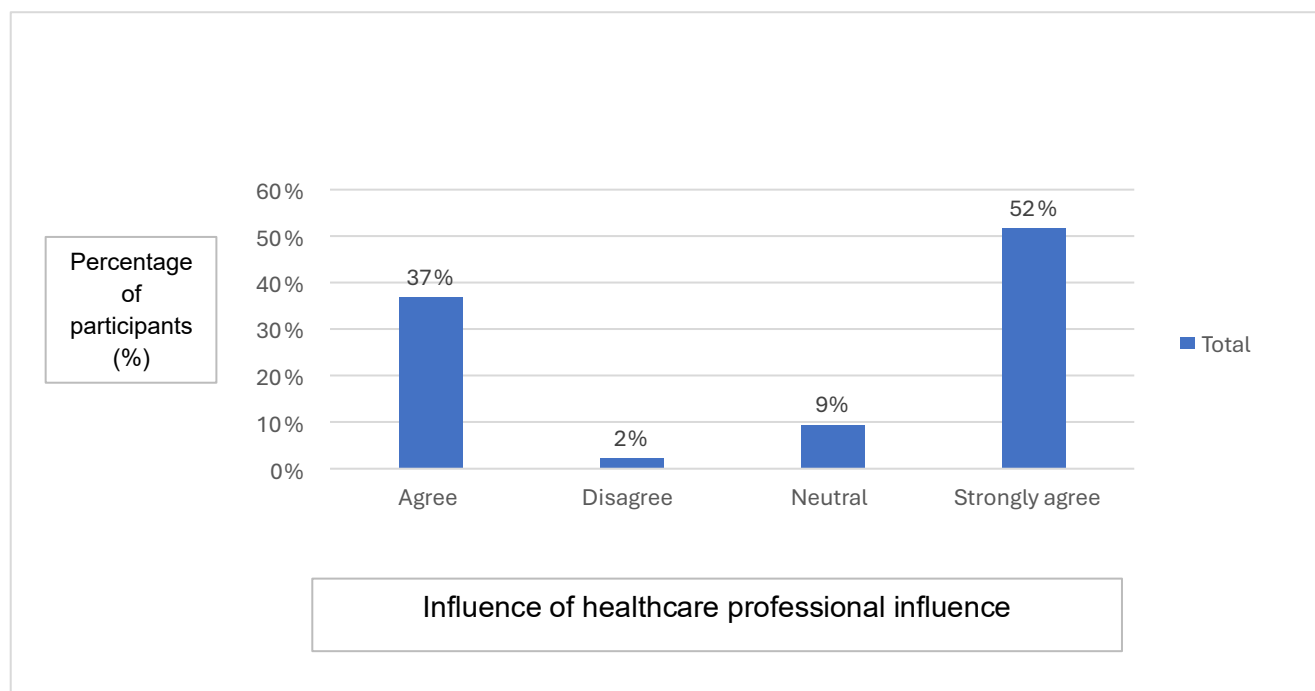


Figure 11: Influence of healthcare professional recommendation on vaccine willingness



4.7 Social Demographic Variation

- Figure 12 demonstrates that awareness of the vaccine varied by age, with the highest awareness among participants aged 25–34 and the lowest among those aged 45+.
- Figure 13 indicates consistently high willingness across all age groups. While minor variation was observed, agreement remained high overall.

This suggests that willingness to vaccinate is broadly consistent across age groups, despite variation in prior awareness. These findings therefore address **Objective 5**, indicating limited variation in acceptability across demographic groups.

Figure 12: Awareness of the vaccine by age group

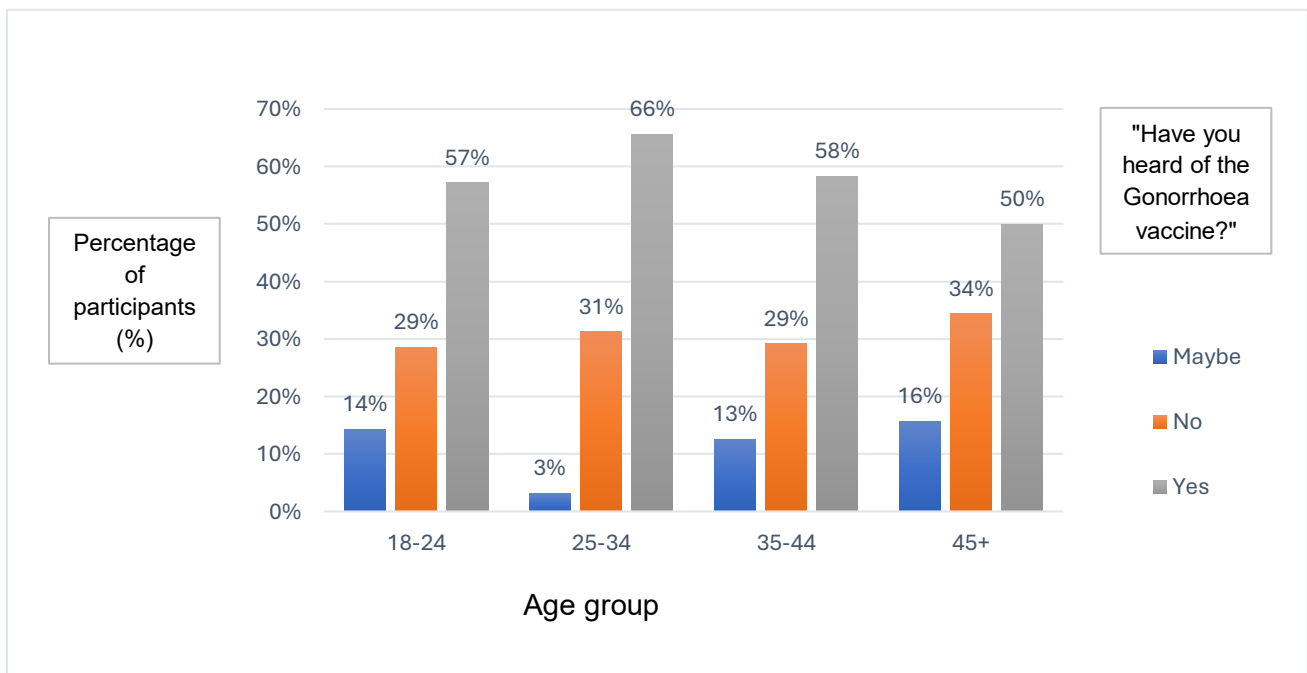
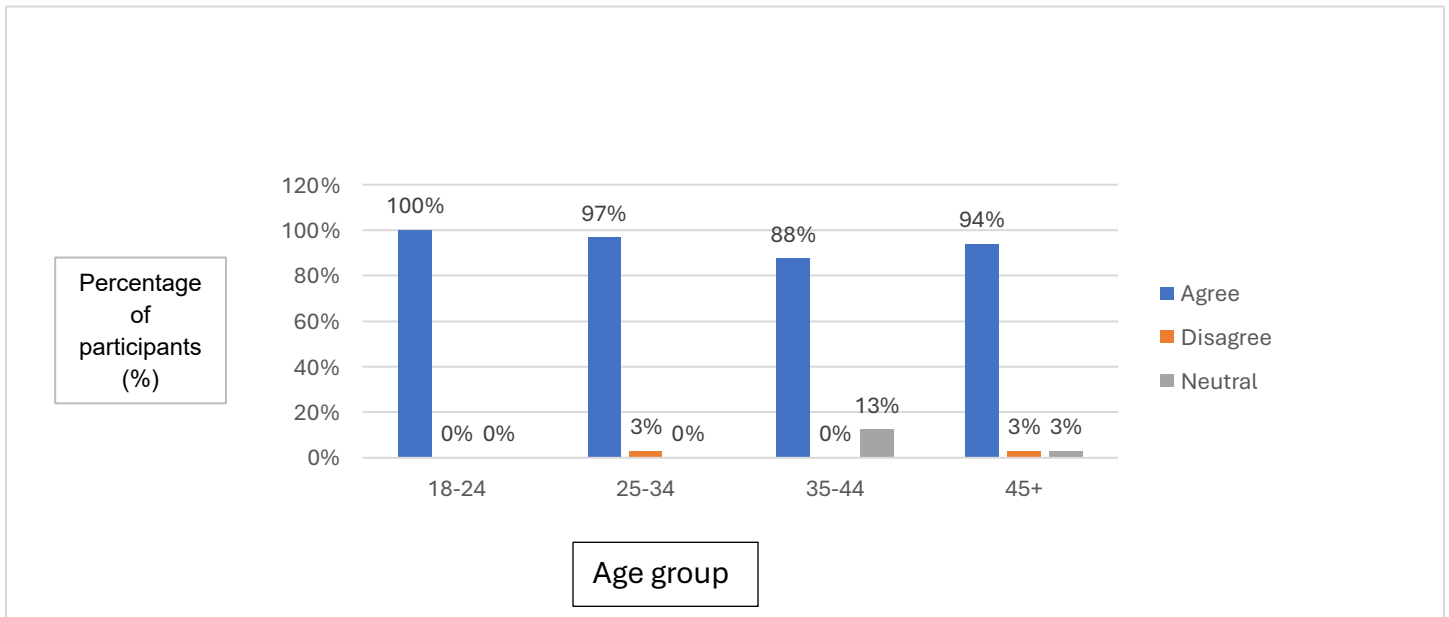


Figure 13: Willingness to vaccinate by age group



4.8: Relationship Between Awareness and Vaccine Attitudes

Figure 14 highlights that willingness to vaccinate was consistently high regardless of having prior awareness. No statistically significant association was identified ($\chi^2(4, N = 95) = 2.40, p = .663$). Figure 15 indicates a similar pattern for perceived safety, with no statistically significant association between awareness and confidence in vaccine safety ($\chi^2(6, N = 95) = 5.23, p = .515$). These findings suggest that prior awareness does not significantly influence willingness or safety perceptions.

These findings further support **Objectives 3 and 4**, indicating that vaccine acceptability may be shaped more by broader attitudes than prior knowledge. In conclusion, these findings suggest that prior awareness of the gonorrhoea vaccine does not significantly influence willingness to vaccinate or perceptions of safety. This indicates that vaccine acceptability may be shaped more strongly by broader attitudinal and contextual factors rather than by prior knowledge alone.

Figure 14: Willingness to vaccinate by prior awareness

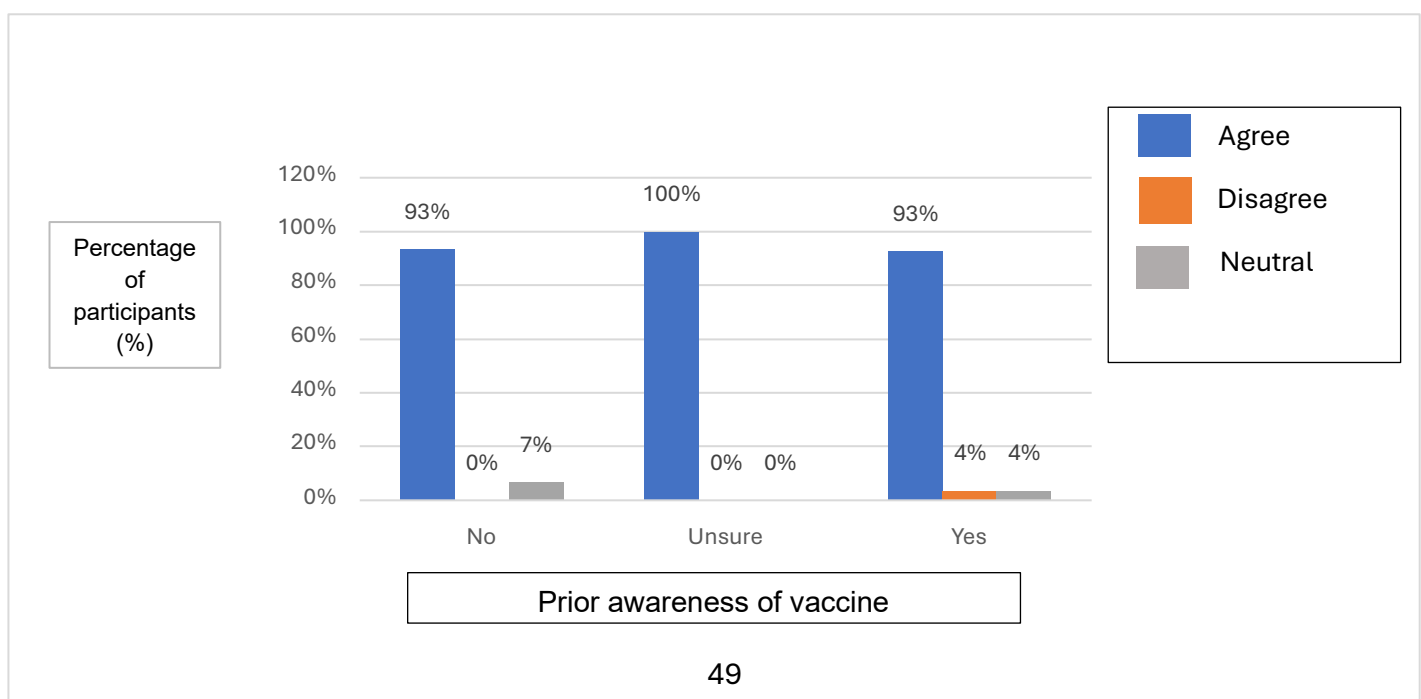
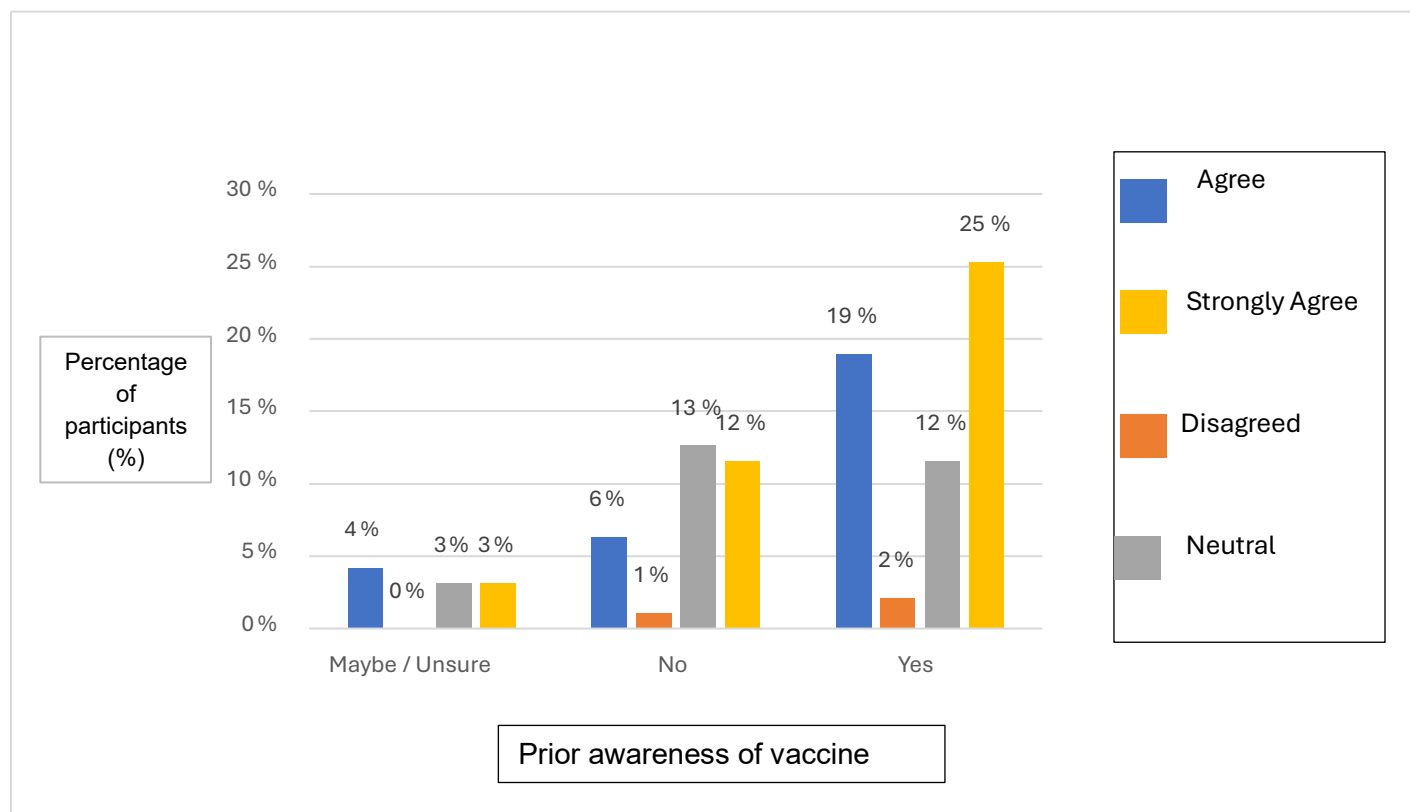


Figure 15: Confidence in the safety of the gonorrhoea vaccine by prior awareness of the vaccine



4.9 Summary of Findings

- Overall, the findings demonstrate high acceptability of the gonorrhoea vaccine among GBMSM participants. While awareness and knowledge of the vaccine were moderate, participant willingness to vaccinate was consistently high across all groups.
- Attitudes toward the vaccine were strongly positive, with participants recognising its benefits, accepting partial effectiveness, and expressing confidence in its safety. Psychosocial factors, particularly professional healthcare recommendation and perceived community norms, were shown to highly influence willingness.
- Notably, no statistically significant associations were identified between prior awareness and either willingness to vaccinate or perceived safety. This suggests that vaccine acceptability may be driven more by trust, perceived benefit, and social context than by prior knowledge alone.

Chapter 5: Discussion

5.1 Introduction

This research provides quantitative evidence addressing the limited understanding of gonorrhoea vaccine awareness and acceptability among GBMSM in the UK.

5.2 High acceptability despite moderate awareness

The findings indicate high levels of vaccine acceptability, among participants despite only moderate prior awareness of the gonorrhoea vaccine. This finding challenges the assumption that knowledge is the primary driver of vaccine uptake, highlighting instead the role of trust, perceived benefit, and social context. Just over half of participants reported prior awareness of the vaccine before completing the survey, yet willingness to receive the vaccine during a routine sexual health check-up was extremely high. Importantly, there was no statistically significant association between prior awareness and willingness to vaccinate. This suggests that intention to vaccinate was not primarily determined by existing knowledge of the vaccine. The distinction between awareness and willingness is particularly important.

Although uncertainty regarding vaccine effectiveness was evident, this did not appear to translate into rejection of vaccination. While over a quarter of participants (26%) reported a neutral position on whether a vaccine with 32–42% effectiveness would be worthwhile, the majority (approximately three out of five participants) disagreed with the statement that such a vaccine would not be worth receiving. In contrast, only a minority (around one in six) expressed agreement.

This pattern implies that most participants were receptive to vaccination even when effectiveness was moderate, suggesting that partial protection was still perceived as valuable. This is further reflected in the high proportion of participants who reported that they would feel safer having some level of protection rather than none. Together, these findings suggest that uncertainty around vaccine effectiveness should be understood primarily as an information gap rather than a barrier driven by mistrust or hesitancy. From a public health perspective, this indicates that improving communication around vaccine effectiveness and its benefits may be more important than addressing vaccine resistance within this population.

This distinction challenges traditional assumptions that knowledge is a prerequisite for vaccine acceptance and instead highlights the importance of trust, perceived benefit, and social context in shaping vaccination behaviour. These findings suggest that vaccine acceptability within this population may not be primarily knowledge driven, but instead shaped by having trust in healthcare services, perceived collective benefit, and established engagement with sexual health practices.

5.3 Interpretation through the Health Belief Model

The Health Belief Model (HBM), introduced by Rosenstock (1974), provides a useful framework for interpreting these findings, proposing that health behaviours are shaped by perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.

Perceived susceptibility may be relatively high among GBMSM due to the well-documented disproportionate burden of sexually transmitted infections within this population. This aligns with existing evidence demonstrating high levels of

engagement with sexual health services and frequent STI testing among GBMSM in the UK (Blomquist et al., 2020). In the present study, participants demonstrated strong knowledge of gonorrhoea transmission, suggesting an established foundation of sexual health awareness. This may indicate that both individual and community-level risk are recognised, which in turn could increase openness to preventive interventions such as vaccination.

Perceived severity may also influence vaccination attitudes. Although this study did not directly measure perceptions of disease severity, the high willingness to vaccinate observed across the sample, alongside recognition of community-level benefits, suggests an awareness of the potential consequences of ongoing transmission. This perception may be reinforced by public health messaging surrounding rising gonorrhoea diagnoses and increasing antimicrobial resistance. Similar patterns have been observed in previous vaccination campaigns, such as the mpox outbreak, where heightened perceptions of risk and severity contributed to high vaccine uptake among GBMSM (Haywood et al., 2025).

Perceived benefits were particularly evident in the findings. Most participants recognised that vaccination could reduce transmission and reported reassurance from having partial protection, indicating that even moderate effectiveness was viewed as worthwhile. This reflects a pragmatic understanding of harm reduction, which has been observed in other areas of sexual health within GBMSM communities. For example, high uptake of HIV prevention strategies, including regular testing and PrEP use, has been linked to both individual and collective motivations to reduce transmission (Maxwell, Shahmanesh and Gafos, 2022). Similarly, strong community engagement and norms of collective responsibility have been identified as key drivers of mpox

vaccine uptake, highlighting the role of social solidarity in shaping health behaviours (Dukers-Muijters et al., 2023).

Perceived barriers to vaccination appeared relatively low within this sample. Most participants reported confidence in vaccine safety, and only a small proportion pronounced concerns, suggesting that barriers to uptake may be limited. Previous research indicates that trust in sexual health services and positive healthcare experiences among GBMSM can support engagement with preventive interventions (Ogaz et al., 2022c).

According to the Health Belief Model, individuals are more likely to adopt preventive behaviours when perceived benefits outweigh perceived barriers (Handayani, Perwitasari and Purba, 2025). The findings of this study align with this, as strong perceived benefits alongside low perceived barriers appear to underpin the high willingness to vaccinate observed. However, the Health Belief Model may not fully capture the influence of social and institutional trust, which appears to play a particularly important role in this context.

5.4 Interpretation Through the Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) offers further insight into how vaccination decisions are formed. According to this theory, behavioural intention is shaped by three key factors: attitudes toward the behaviour, perceived social norms, and perceived behavioural control (Bosnjak, Ajzen and Schmidt, 2020). Individuals are more likely to intend to vaccinate if they hold positive attitudes toward the vaccine, perceive that important others support vaccination, and believe they can readily access it.

In this study, most participants expressed encouraging attitudes toward the gonorrhoea vaccine, describing it as necessary and beneficial to both individual and community health. However, perceived social norms appeared particularly influential. Willingness to vaccinate increased substantially when the vaccine was framed as being recommended by a trusted sexual health professional, with most participants indicating greater intention under this context. This highlights the importance of professional endorsement in shaping vaccination decisions. Healthcare professionals not only provide information but also signal what constitutes responsible behaviour within sexual health settings. High levels of engagement with sexual health services among GBMSM, including routine testing and preventative care, may further strengthen trust in healthcare providers and increase receptiveness to vaccination (Wayal et al., 2019).

Community norms also appeared to influence behavioural intentions. Nearly half of participants reported that they would be more likely to vaccinate if others within their community were also vaccinated, suggesting that social expectations may shape decision making. Although this influence was not universal, it indicates that vaccination behaviours may be embedded within wider social networks. This aligns with existing research on Mpox and HPV vaccination, which demonstrates that collective responsibility, community expectations, and trust in sexual health services can significantly influence engagement with vaccination programmes (Jongen et al., 2023; Dukers-Muijters et al., 2023).

Perceived behavioural control, while not directly measured, may also be inferred. The high levels of willingness to vaccinate, particularly when offered within routine sexual health services, suggest that participants perceived few barriers to access. This is

consistent with evidence that accessible, integrated sexual health services facilitate engagement with preventive interventions among GBMSM.

Overall, the findings suggest that vaccination decisions should not be conceptualised solely as individual health behaviours, but rather as actions embedded within broader social and institutional contexts. Within sexual health settings, health professional recommendation and community expectations function as powerful behavioural cues, positioning vaccination not only as a responsible individual choice but also as a collective public health practice. While the Theory of Planned Behaviour accounts for the influence of social norms, it may insufficiently capture the role of structural factors, including access to services and healthcare system dynamics, in shaping vaccination behaviour.

5.5 Comparison with existing literature

The findings of this study are consistent with previous research examining STI vaccination among GBMSM. Studies investigating HPV and mpox vaccination have similarly reported high levels of willingness to vaccinate despite limited prior awareness or detailed knowledge. For example, qualitative research by May et al. (2023) identified trust in healthcare professionals, the normalisation of vaccination within sexual health services, and perceived convenience as key facilitators of uptake. While such studies provide valuable insight into the motivations underpinning vaccination decisions, the present study contributes quantitative evidence demonstrating that this disconnect between awareness and acceptability can be observed at a population level. These findings are consistent with previous research, reinforcing the importance of trust, service engagement, and social context in shaping vaccination behaviour.

These findings are also consistent with earlier research, such as Tian et al. (2018), which found that high vaccine acceptability can exist even when awareness is limited. However, the present study extends this literature by demonstrating that willingness to vaccinate may occur independently of prior awareness. This represents an important contribution, as much of the existing literature has positioned knowledge deficits as a central barrier to vaccine uptake. In contrast, the findings presented here suggest that behavioural intentions may be more strongly shaped by trust in sexual health services and perceived community benefit than by detailed prior knowledge of the vaccine itself.

This shift in emphasis has important implications for public health practice. Rather than focusing solely on increasing awareness, interventions may be more effective if they prioritise strengthening trust in healthcare providers, embedding vaccination within routine sexual health services, and reinforcing the collective benefits of vaccination within GBMSM communities. These findings challenge the assumption that increasing knowledge alone is sufficient to drive vaccine uptake, suggesting that trust, perceived benefit, and social context may be more influential determinants of vaccination behaviour.

5.6 Structural barriers and Health Equity Implications

Although willingness to receive the gonorrhoea vaccine was high, behavioural intention does not necessarily translate into actual uptake (Conner and Norman, 2022). Structural barriers such as limited appointment availability, inflexible clinic hours, and experiences of stigma within healthcare settings may prevent individuals from acting on their intentions. These barriers are particularly significant within sexual

health services, where access can be shaped by both logistical constraints and concerns around confidentiality and discrimination.

Existing research demonstrates that such barriers disproportionately affect individuals who are less connected to LGBTQ+ networks, from minority ethnic backgrounds, or experiencing socioeconomic disadvantage (Baldry et al., 2024). These groups may face additional challenges, including reduced access to culturally appropriate services, lower levels of trust in healthcare institutions, and fewer opportunities to engage with targeted health promotion. As a result, high overall willingness to vaccinate may mask important inequalities in who is able to access vaccination in practice.

Furthermore, stigma remains a key barrier within sexual health contexts. Concerns about judgement, disclosure of sexual behaviour, and negative healthcare experiences may discourage engagement with vaccination services, particularly among individuals who are less openly connected to GBMSM communities. This suggests that even where vaccination is available, uptake may be uneven across different subgroups.

From a public health perspective, these findings highlight the importance of ensuring that gonorrhoea vaccination programmes are not only acceptable but also accessible and equitable. Strategies such as flexible appointment systems, outreach beyond traditional clinic settings, and culturally sensitive communication may be necessary to support uptake among underserved groups. Without such approaches, there is a risk that vaccination programmes may inadvertently reinforce existing sexual health inequalities.

5.7 Public Health and Implementation Implications

The findings of this study carry several important implications for public health practice. High levels of willingness to vaccinate suggest that the G vaccine is likely to be well received among GBMSM, particularly when delivered within routine sexual health services. The strong influence of healthcare professional recommendation highlights the central role of sexual health services in shaping vaccination intentions and reinforcing vaccination as a normative component of care. The findings also indicate that perceptions of partial protection do not appear to undermine vaccine acceptability. Instead, participants demonstrated an understanding of vaccination as a harm reduction strategy, suggesting that clear and transparent communication around vaccine effectiveness may be important in supporting uptake.

In addition, the findings highlight the importance of accessibility and trust in translating willingness into actual uptake. Although behavioural intention was high, structural barriers within sexual health services may still limit engagement, suggesting that the way vaccination is delivered is as important as attitudes toward the vaccine itself. In the context of rising gonorrhoea incidence and increasing antimicrobial resistance, even modest reductions in transmission through vaccination could produce meaningful public health benefits.

Overall, these findings highlight that successful implementation will depend on delivering vaccination through accessible, trusted, and well-integrated sexual health services. This suggests that public health strategies focusing solely on increasing awareness may be insufficient, and that embedding vaccination within trusted healthcare interactions may be more effective in improving uptake.

5.8 Limitations

Several limitations should be considered when interpreting the findings of this study. First, the use of convenience and snowball sampling through online recruitment may limit the representativeness of the sample (Etikan, Musa and Alkassim, 2016). Participants engaged with LGBTQ+ online networks may demonstrate higher levels of sexual health engagement and trust in healthcare services, meaning the findings may not fully reflect the views of GBMSM who are less connected to these networks or who experience greater barriers to accessing care. However, the relatively small and non-representative sample limits the extent to which these findings can be generalised to the wider GBMSM population. Moreover, the relatively small sample size may limit statistical power and the detection of associations between variables.

Second, the study relied on self-reported data, which may introduce social desirability bias (Piedmont, 2023). Although anonymity was used to minimise this, participants may have overstated their willingness to vaccinate. The cross-sectional design also limits the ability to infer causal relationships or assess how attitudes may change over time (Guerrero et al., 2024). Additionally, the sample was predominantly White and highly educated, which may influence attitudes toward vaccination and limit the generalisability of the findings. Previous research indicates disparities in sexual health service engagement across demographic groups, suggesting that some perspectives may be underrepresented (Nicholls et al., 2022).

Finally, this study examined vaccination intentions rather than actual behaviour. While willingness to vaccinate was high, existing evidence suggests that intention does not always translate into uptake due to practical, social, and structural barriers (Bagherzadeh et al., 2025). Therefore, the findings should be interpreted with caution,

as real-world uptake may differ. Despite these limitations, the study provides valuable quantitative insight into awareness and acceptability of the gonorrhoea vaccine among GBMSM in the UK and offers a foundation for future research and public health implementation.

Chapter 6: Conclusion

6.1 Summary

This study provides quantitative insight into awareness, knowledge, and acceptability of the gonorrhoea (MenB) vaccine among GBMSM in the UK. The findings indicate that, despite only moderate awareness of the vaccine, willingness to receive vaccination was consistently high, with no significant association between prior awareness and vaccination intention. This suggests that acceptability is not primarily driven by existing knowledge of the intervention. Participants demonstrated a clear recognition of vaccination as a form of harm reduction, valuing partial protection and its potential to reduce transmission within the community. In addition, trust in healthcare professionals emerged as a key influence on vaccination intentions, highlighting the central role of sexual health services in supporting uptake.

Overall, these findings suggest that the main challenge for gonorrhoea vaccination programmes may not be overcoming vaccine hesitancy, but ensuring that vaccination is delivered through accessible, trusted, and well-integrated sexual health services. In the context of rising gonorrhoea incidence and increasing antimicrobial resistance, this provides important early evidence to support the equitable implementation of vaccination strategies in the UK.

The study also demonstrates that vaccine acceptability among GBMSM in the UK is high, even where prior awareness is limited. These findings challenge the assumption that knowledge alone drives vaccination behaviour, instead emphasising the importance of trust, social context, and healthcare engagement. Together, these

findings offer valuable early insights to inform the development of effective and equitable vaccination strategies within sexual health settings.

6.2 Recommendations

Based on the findings of this study, the following recommendations are proposed for public health practice and future research:

Public Health Practice

- Integrate the gonorrhoea vaccine within routine sexual health services (e.g. during standard appointments and walk-in clinics) to maximise uptake and reduce access barriers.
- Strengthen the role of healthcare professionals in promoting vaccination, recognising their significant influence on vaccination intentions.
- Provide training for sexual health practitioners to support clear, consistent, and confident communication about vaccine benefits and effectiveness.
- Develop public health messaging that emphasises the value of partial protection, framing vaccination as a harm reduction strategy within sexual health.
- Improve accessibility of vaccination services by addressing logistical barriers (e.g. appointment availability, clinic access) and ensuring culturally sensitive delivery.
- Implement targeted outreach strategies to engage underrepresented or underserved GBMSM groups.

Future Research

- Examine real-world uptake of the gonorrhoea vaccine following implementation within NHS sexual health services.
- Explore differences in vaccine uptake across diverse demographic groups, particularly among individuals who may face greater barriers to accessing care.
- Investigate structural, social, and behavioural barriers that may influence the translation of willingness into actual vaccination uptake.

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Appendices

Appendix 1 – Participant Information Sheet

PARTICIPANT INFORMATION SHEET

Title of Project: Attitudes and perceptions toward the gonorrhoea vaccine among gay, bisexual and other men who have sex with men (GBMSM)

You are being invited to take part in a research project. Before you decide, it is important for you to understand why the project is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

Why is the project being conducted?

This study is being carried out as part of an undergraduate dissertation project. gonorrhoea is one of the most common sexually transmitted infections (STIs), and rates are especially high among gay, bisexual and other men who have sex with men (GBMSM). With the recent introduction of the gonorrhoea vaccine by the NHS, little is known about the attitudes and perceptions of this community toward it. This project aims to understand awareness and attitudes toward the gonorrhoea vaccine, providing insights into the behavioural and social factors that may influence vaccine uptake and informing future public health strategies.

Why have I been invited to take part?

The study is being advertised through LGBTQ+ community organisations and social media platforms. men who identify as gay, bisexual, or other men who have sex with men (GBMSM) and meet the eligibility criteria are invited to participate.

You should only take part if the following conditions apply to you:

- If you are 18 years or older
- You identify as a man, including cisgender men and transgender men who has sex with men
- You are able to read and complete the survey in English.
- You are willing and able to provide informed consent to participate in this study.
- Reside in the UK

You cannot take part if the following conditions apply to you:

- You are under the age of 18 years.
- You do not identify as a man (cisgender or transgender)
- You do not have sex with men
- Unable to read or understand English
- Unwilling to provide informed consent

This is because including participants who do not meet these criteria could affect the accuracy of the study's findings. Ensuring participants meet the criteria helps the study accurately reflect the attitudes and the perceptions of the target community.

Do I have to take part?

No. It is up to you to decide whether to take part. You can ask questions about the project before deciding. You can stop being part of the project at any time, without giving a reason. You may withdraw from the project by pressing the 'Exit' button/ closing the browser / closing the app.

What will happen to me if I take part?

- If you choose to take part in this study, you will be asked to complete an online questionnaire. The questionnaire will take approximately 10 minutes to complete. You will first be asked to read the participant information sheet and provide your consent electronically.
- Questions will be asked about your awareness of the gonorrhoea vaccine, your attitudes and perceptions toward it, and factors that might influence your decision to receive it.
- The study is conducted entirely online, so you can complete it in a private and convenient location of your choice.
- You will be asked to tick a box. By submitting the questionnaire you are giving your consent to take part in this project.

Are there any possible disadvantages or risks in taking part?

Taking part in this project may cause some discomfort, as the survey includes questions that invite you to reflect on your sexual activity.

If you feel that this topic is likely to cause you distress, you are advised not to participate. We also wish to highlight that there are a number of free and accessible sources of advice and support available should you find them helpful.

These include:

- **NHS Sexual Health Services** – <https://www.nhs.uk/service-search/sexual-health>
- **Terrence Higgins Trust** – free, confidential sexual health information and support: 0808 802 1221 / <https://www.tht.org.uk>
- **Brook** – sexual health advice and services for people under 25: <https://www.brook.org.uk>
- **Sexual Health Helpline (NHS England)** – 0300 123 7123

Are there any benefits in taking part?

While there are no direct or immediate benefits for participants taking part in this study, it is hoped that the findings will contribute to a better understanding of attitudes and perceptions toward the gonorrhoea vaccine among gay, bisexual, and other men who have sex with men (GBMSM). This may help inform future public health strategies, sexual health education, and vaccine development or implementation.

What personal data will be collected and what will happen to this?

Taking part in this project **will not** involve the collection/use of personal data by the investigator.

Will the project be published? Could I be identified from any publications or other outputs?

The findings from the project will be written up in a student dissertation and potentially published. However, participants will not be identifiable in any publications or outputs.

The survey is anonymous, and no personal or identifying information will be collected. Only aggregated data will be reported, ensuring individual responses cannot be traced back to participants.

Who has reviewed this project?

This Project has received a favourable ethics opinion from an LJMU Research Ethics Committee.

Whom do I contact if I have a concern about the project or I wish to complain?

If you have a concern about any aspect of this project, please contact the research supervisor Dr Hannah Madden and we will do our best to answer your query. You should expect a reply within 10 working days. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Research Ethics Committee at Liverpool John Moores University who will seek to resolve the matter as soon as possible:

Chair, Liverpool John Moores University Research Ethics Committee;

Email: FullReviewUREC@ljmu.ac.uk; Tel: 0151 231 2121; Research Innovation

Services, Liverpool John Moores University, Exchange Station, Liverpool L2 2QP

Payments, reimbursements of expenses or any other benefit or incentive for taking part

There will be **no** payment or any benefit or incentive for taking part in this project.

Further information and Contact details

If you would like to discuss the research with someone beforehand (or if you have questions afterwards), please contact:

Principal Investigator: Mrs. Holly Craigwood LJMU undergraduate student

LJMU Email address: H.wood@2023.ljmu.ac.uk

LJMU School/faculty: Public and Allied Health

LJMU Central telephone number: 0151 231 2121

Supervisor Name: Dr. Hannah Madden

Supervisor's LJMU Email address: H.C.Madden@ljmu.ac.uk

Please consider retaining a copy of this information sheet for your future reference

*****Informed consent will be obtained via an electronic tick-box located at the end of the participant information sheet**

Appendix 2 – Consent Form

Section 1

1. I have read and understood the Participant Information Sheet. I understand that my participation is voluntary and anonymous. I am aware that I can skip any question I do not wish to answer and can exit the survey at any time before submission. By ticking the box below, I consent to take part in this Required to answer. Single choice.

I agree to take part in this study

Section 2

Appendix 3 – Questionnaire

Screening and Eligibility

2.Are you aged 18 or older? Required to answer. Single choice.

Yes

No

3. Do you identify as male? Required to answer. Single choice.

Yes

No

4.Do you have sex with men? Required to answer. Single choice.

Yes

No

5.Do you currently live in the UK? Required to answer. Single choice.

Yes

No

Section 3

Demographics

6.How old are you? Required to answer. Single line text.

Enter your answer

7.Which of the following best describes your sexual orientation?

Required to answer. Multiple choice.

Gay

Bisexual

Queer

Heterosexual

Prefer not to say

8.What is your current relationship status? Required to answer. Multiple choice.

Single

In a monogamous relationship

In an open relationship

Prefer not to say

9.What is the highest level of education you have completed? Required to answer. Single choice.

No formal qualifications

GCSEs or equivalent

A level or equivalent

Vocational qualification (e.g., NVQ, BTEC

Undergraduate degree

Postgraduate degree

10.What is your ethnic group? (Please select the option that best describes you) Required to answer. Single choice.

Select your answer

11.Other ethnic groups (please state) Single line text.

Enter your answer

Section 4

Sexual Health Behaviours

12. How often do you attend sexual health clinics for testing? Required to answer. Single choice.

Every 3 months

Every 6 months

Once a year

Less than once a year

Never

13. Do you use protection during sex (e.g., condoms, PrEP)? Required to answer. Single choice.

Yes, always

Sometimes

No

14. Please tell us why you do not use protection Multi Line Text.

Enter your answer

15. Before having sex with someone, do you usually have a conversation about sexual health? Required to answer. Single choice.

Yes, always

Sometimes

No

Section 5

Awareness and Understanding of gonorrhoea

This section includes several statements to assess your awareness and understanding of gonorrhoea. Please respond to each with **True**, **False**, or **I don't know**. You'll find correct answers and helpful resources at the end of the survey.

16.gonorrhoea is a virus that can be spread through the air through activities like coughing and sneezing Required to answer. Single choice.

True

False

I don't know

17.gonorrhoea is transmitted through unprotected vaginal, anal, or oral sex with an infected person. Required to answer. Single choice.

True

False

I don't know

18.In men, gonorrhoea can cause epididymitis (inflammation of the scrotum), which can lead to infertility Required to answer. Single choice.

True

False

I don't know

19.The vaccine offers between 75-80% protection against gonorrhoea. Required to answer. Single choice.

True

False

I don't know

Section 6

Perception and Attitude Barriers

(Scale: 1 = Strongly disagree → 5 = Strongly agree)

20.The vaccine's effectiveness of 32–42% makes it not worth getting.

Required to answer. Rating.

- 1
- 2
- 3
- 4
- 5

Strongly disagree Strongly agree

21.Condoms and STI testing provide enough protection. Required to answer. Rating.

- 1
- 2
- 3
- 4
- 5

Strongly disagree Strongly agree

22.A gonorrhoea vaccine isn't necessary. Required to answer. Rating.

- 1
- 2
- 3
- 4
- 5

Strongly disagree Strongly agree

23. **The gonorrhoea vaccine should be available to everyone.** Required to answer. Rating.

1

2

3

4

5

Strongly disagree Strongly agree

Section 7

Social and Stigma-Related Barriers

24. Required to answer. Likert.

Section 8

Access and Barriers

Facilitators to gonorrhoea vaccine uptake

25. Required to answer. Likert.

Section 9

Perceived Benefits and Protection

Agree / disagree

26. **Getting vaccinated would help reduce the spread in the community.**

Required to answer. Single choice.

Agree

Neither agree nor disagree

Disagree

27.The gonorrhoea vaccine would help protect me from infection.

Required to answer. Single choice.

Agree

Neither agree nor disagree

Disagree

28.Vaccination is an important part of preventing STIs. Required to answer. Single choice.

Agree

Neither agree nor disagree

Disagree

Section 10

Trust and Confidence

Strongly agree / agree / neutral / disagree / strongly disagree

29.I feel confident the gonorrhoea vaccine is safe.Required to answer.

Single choice.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

30.I would be more likely to get vaccinated if other men in my community did too.Required to answer. Single choice.

Strongly agree

Agree

Neutral

Disagree

Strongly Disagree

31.I would be more likely to get vaccinated if a trusted sexual health professional recommended it.Required to answer. Single choice.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

Section 11

Accessibility and Convenience

Strongly agree / agree / neutral / disagree / strongly disagree

32.I would get the vaccine if it were offered during a regular sexual health check-up.Required to answer. Single choice.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

33.Appointment reminders would help me complete both dosesRequired to answer. Single choice.

Strongly agree

Agree

Neutral

Disagree

Strongly disagree

Section 12

Personal Motivation and Responsibility

Agree / disagree

34.I would feel safer knowing I had some protection against gonorrhoea.

Required to answer. Single choice.

Agree

Disagree

35.If I received the gonorrhoea vaccine, I would no longer need to use condoms or get tested for other STIs Required to answer. Single choice.

Agree

Disagree

36.Getting vaccinated is an important way to protect both my own and others sexual health. Required to answer. Single choice.

Agree

Disagree

Section 13

Final Reflections...

37. Before this survey, had you heard about the gonorrhoea vaccine?

Required to answer. Single choice.

Yes

No

Maybe / Unsure

38. Where did you hear about it? (Select all that apply) Multiple choice.

NHS website or NHS services (e.g., GP, sexual health clinic)

Social media (e.g., Facebook, Instagram, TikTok, Twitter/X)

Friends or family

School or university sexual health education

TV, radio, newspapers, or online news sites

Public health campaigns

39. Do you have any additional comments about the gonorrhoea

vaccine? Ulti Line Text.

Enter your answer

Appendix 4 – Recruitment Materials

Social media post for recruitment

Are you a GBMSM aged 18+ living in the UK?

We're conducting a short, **anonymous online survey** as part of undergraduate dissertation research to explore **awareness, attitudes, and perceptions of the gonorrhoea vaccine**. Your insights will help shape future public health strategies.

- ✓ Takes only 10–15 minutes
- ✓ Completely anonymous
- ✓ Complete in a private setting

HAVE YOUR SAY ON THE GONORRHOEA VACCINE!

Are you:
Gay, bisexual or any other man who has sex with men (GBMSM)?
- 18 years or older?
- Living in the UK?



WE WANT YOUR INPUT!

Participate in a short, anonymous online survey

- Awareness of the gonorrhoea vaccine
- Attitudes and acceptance
- Potential barriers to vaccination

WHY PARTICIPATE?
Contribute to important public health research
University disser research



Completely anonymous and confidential

YOUR VOICE MATTERS - MAKE A DIFFERENCE IN SEXUAL HEALTH RESEARCH TODAY!

LIVERPOOL JOHN MOORES UNIVERSITY

I am seeking participants for my undergraduate dissertation: ***“Attitudes and perceptions toward the gonorrhoea vaccine among gay, bisexual and other men***

who have sex with men (GBMSM)". This study aims to explore awareness, acceptance, and potential barriers of the recently introduced gonorrhoea vaccine, generating insights to inform future public health strategies.

Participation involves completing a short anonymous online questionnaire (10 minutes). Eligible participants must be GBMSM, aged 18 or above, and residing in the UK. The questionnaire includes questions on vaccine awareness, attitudes, sexual health behaviours, and demographics. Due to the sensitivity of the topic, participants are encouraged to complete it in a private setting.

Your contribution will support important research in sexual health and public health policy.

If you would like to take part in this study, please follow the link provided.

Thank you.

Research Ethics Committee Reference Number: 251117LJMUPAHREC14

Principal Investigator: Holly Craigwood LJMU undergraduate student LJMU

LJMU Email address: H.wood@2023.ljmu.ac.uk

LJMU School/Faculty: Public and Allied Health

LJMU Central telephone number: 0151 231 2121

Supervisor Name: Dr. Hannah Madden

LJMU Email address: H.C.Madden@ljmu.ac.uk

Appendix 5 – Ethics Approval Confirmation Email

From: PAHREC <pahrec@ljmu.ac.uk>
Sent: 27 November 2025 10:35
To: Madden, Hannah <H.C.Madden@ljmu.ac.uk>
Cc: PAHREC <pahrec@ljmu.ac.uk>
Subject: FW: Final ethics application with provisos addressed. Holly Craigwood

Dear Hannah,

The amendments have now been addressed for the application from Holly Craigwood.
A copy of the final application will be kept on file for reference.

Regards
PAH REC

From: PAHREC <pahrec@ljmu.ac.uk>
Sent: 25 November 2025 15:13
To: PAHREC <pahrec@ljmu.ac.uk>
Subject: Final ethics application with provisos addressed. Holly Craigwood

Dear [School REC](#),

A student's supervisor has submitted the student's final ethics application with provisos addressed. Please check the following:

the details of the project included in the ethics application, which is attached to this email, correspond to the details included in this email. If the details do not correspond, instruct the supervisor to resubmit the [School REC Research Ethics Submission Tool](#) with the correct answers and correct ethics application.

whether the ethics application includes any supporting documents (participant information sheets, consent forms, recruitment material etc.). If no supporting documents have been appended, contact the supervisor to ask whether this is an error. If the ethics application has been submitted in error, instruct the supervisor to resubmit the [School REC Research Ethics Submission Tool](#) with the supporting documents.

When the checks are satisfied, produce file this email for reference purposes.

Project details:

Project title: A quantitative survey of attitudes and perceptions toward the gonorrhoea vaccine among gay, bisexual and other men who have sex with men (GBMSM)

Student name: Holly Craigwood

Student email: H.wood@2023.ljmu.ac.uk

Student status: Undergraduate

Supervisor name: Hannah Madden

Supervisor email: h.c.madden@ljmu.ac.uk