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Ph.D. THESIS SUMMARY

THE ROLE OF PSYCHOLOGICAL FACTORS IN CERVICAL CANCER PREVENTION

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Table of Contents

CHAPTER I. THEORETICAL FRAMEWORK

1.1. The Role of Psychological Factors in Primary and Secondary Prevention

Over the years, many models have strived to explain the onset of disease, culminating with the Biopsychosocial Model (BPSM). It positioned biological, social, and psychological factors as key determinants of health (Engel, 1977).

Several frameworks have been developed through this comprehensive lens to explain health-related behaviors, including preventive ones. Despite the undisputable advantages of preventive medicine, uptake of such methods usually relies on the population's intention. Thus, it is of utmost importance to identify the factors that could influence one's intention to engage in preventive health behaviors.

Previous studies have highlighted the importance of demographics (e.g., age, gender, education, income, ethnicity), health literacy, cultural norms, and access to healthcare, as well as social and psychological factors in the decision-making process (Bhuiya, Hanifi, Hossain, & Aziz, 1999; Koelen & Ban, 2023). The Health Belief Model (HBM) was one of the first frameworks used to explain health-related behaviors and individuals' intentions to engage in preventive strategies (Rosenstock, 1974). It comprises 6 constructs: perceived susceptibility, perceived severity, perceived benefits, barriers, self-efficacy, and cues to action (Alyafei & Easton-Carr, 2025). All constructs appeared to influence the intention to immunize (Fitriani, Mudigdo, & Andriani, 2018; Oyedeji et al., 2024). Regarding secondary preventive methods, such as screening, high perceived benefits and recommendations to undergo these procedures were associated with higher intention (Ciucă, Moldovan, Pintea, Dumitrașcu, & Băban, 2020).

In addition, the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) (Fishbein & Ajzen, 1975) introduced a social component, subjective norms, which encompasses normative beliefs and motivations to comply with social expectations. Moreover, the TPB enhances the TRA by incorporating perceived behavioral control, thereby facilitating the shaping of intentions to engage in a behavior and ultimately performing it (Glanz, Rimer, & Viswanath, 2015). Attitudes, subjective norms and perceived behavioral control have been shown to shape vaccination intention (Fisher, Kohut, Salisbury, & Salvadori, 2013; Lee, 2014; Yi et al., 2023).

Considering these cognitive and social models, emotional reactions proved crucial in shaping health-related behaviors, especially preventive ones (Conner, Conner, Sandberg, McMillan, & Higgins, 2006; Cooke, Sniehotta, & Schuz, 2007; Sandberg & Conner, 2008). Anticipated emotions are represented by a palette of emotional reactions that can arise when

facing a future event (Feil, Weyland, Fritsch, Wäsche, & Jekauc, 2022). Anticipated regret is a prospective emotion signaling that the outcomes could have been different from the current ones if another decision had been made. The last one implies a cognitive component, including the assessment of a situation and its consequences. Anticipated regret could motivate preventive behaviors, whereas a strong emotional reaction could lead to avoidance. Anticipated regret could also influence vaccination intention, especially when individuals prospectively think that they will not engage in such actions (Penţa, Crăciun, & Băban, 2020).

These multiple models demonstrate that preventive behaviors are not solely influenced by demographic and individual characteristics, but are deeply rooted in cognitive biases, social influences and emotional responses.

1.2. Primary and Secondary Prevention of Cervical Cancer

The HPV infection the most common sexually transmitted infection (STI) (Kombe et al., 2021), while the persistence of high-risk oncogenic strains can lead to precancerous lesions that may evolve into cancer (Della Fera, Warburton, Coursey, Khurana, & McBride, 2021), including cervical cancer (CC). CC ranks 2nd worldwide in terms of incidence and mortality among women (WHO, 2025a, 2025b). Primary and secondary preventive methods have demonstrated their efficacy through HPV vaccination, which protects against 90% of HPV-related cancers (Centers for Disease Control and Prevention, 2025), and cervical cancer screening (CCS), which helps early diagnosis of precancerous lesions or HPV strains. The WHO Initiative to Eliminate CC by 2030 proposes to fully vaccinate 90% of girls aged 15 against HPV, that 70% of women should be screened with high-performance tests by 35 years old, and by 45 and 90% of women with cervical lesions should be managed (WHO, 2020).

Despite recent endeavors by the WHO and its availability for almost two decades, only 107 countries out of 194 have introduced the HPV vaccine into their National Immunization Program (Bruni et al., 2021), while global coverage among girls aged 15 or younger reaches only 20% (WHO, 2025c). Within Europe, vaccination coverage ranges from 18% in Poland to 90% in Belgium, among the targeted population (Borowska, Koczkodaj, & Mańczuk, 2024).

The HPV vaccine was first introduced in Romania in 2008 but reached only 2% of the target population (Ministerul Sanatatii, 2009) before it was halted. It was shortly relaunched in 2009 and entered a hiatus for almost 10 years. Subsequently, it was relaunched in 2019, free of charge, targeting girls aged 11-14 (Institutul National de Sanatate Publica, 2024). It was later extended to the age of 18. In 2023, vaccination became gender-neutral, with 50% reimbursement for women aged 19-45 (Institutul National de Sanatate Publica, 2024). In 2025, the vaccination schedule was extended to 26 years old (Ministerul Sanatatii, 2025). Constant

changes in policies, recommendations, and reimbursement could influence Romanian women's intention to vaccinate, particularly given emotional, cognitive, and social factors. Fear of side effects or perceiving the vaccine as an experiment were the main reasons for child vaccination refusals among a sample of Romanian mothers, which was exacerbated by a lack of trust in the healthcare system (Craciun & Baban, 2012).

On the other hand, social norms such as providers' recommendations, parental consent, and social support could facilitate women's intention to vaccinate (Hofman et al., 2014). Cognitive factors, such as perceived safety, efficacy or benefits, and high susceptibility to the infection, were positively associated with HPV immunization intention (Ampofo, Mackenzie, & Boyes, 2023; Penţa et al., 2020; Thompson et al., 2021; Xu et al., 2021). High perceived susceptibility of developing the disease has been shown to be a determining factor for HPV vaccination intention in a Romanian sample (Penţa et al., 2020). Fear of being diagnosed with cancer (Di Giuseppe, Abbate, Liguori, Albano, & Angelillo, 2008) and regret about not being vaccinated (Hofman et al., 2014; Morison, Cozzolino, & Orbell, 2010) acted as motivating factors shaping the intention to vaccinate against HPV. In a sample of Romanian young adults, anticipated regret was among the emotional factors that positively influenced the intention to vaccinate against HPV (Penţa et al., 2020). The high cost of the HPV vaccine was noted in several studies, highlighting discrepancies in reimbursement policies (Grigore, Teleman, Pristavu, & Matei, 2018; Mammas et al., 2016; Marek et al., 2011). The financial burden represented a significant barrier, especially for young women who did not benefit from free vaccination due to a lack of parental consent (Forster, Waller, Bowyer, & Marlow, 2015).

Despite preventive methods being widely available, only 139 of 202 countries have implemented CCS recommendations, and only 40 have an active invitation system (Bruni et al., 2022). In addition to the WHO's strategies to eliminate CC as a public health problem, the WHO Guideline on Self-Care Interventions for Health and Well-Being proposes self-sampling as an HPV screening method for women aged 30–60 (WHO, 2021a). Self-sampling implies the self-collection of cervicovaginal sample, which is later analyzed for the detection of HPV strains (WHO, 2021a). In most Western and Central European countries, coverage of CCS ranges from 70%-100%, while in some Eastern European countries, coverage is around 35%-49%, the lowest in Europe (Bruni et al., 2022). Moreover, only a few European countries recommend self-sampling (Serrano et al., 2022).

Romania established a National Screening Program in 2012, which offers free testing for women aged 25-64. System-level barriers include the lack of a screening registry, an active invitation system, and a comprehensive national cancer registry, resulting in an opportunistic

process that relies on women's initiative (*HPV Information Centre*, n.d.). According to Bruni et al.'s study, CCS coverage among women aged 30-49 in Romania was 39% over the last 5 years (Bruni et al., 2022).

Cognitive, emotional and social factors influence the intention to undergo CCS. Among Romanian women, more than 30% reported never receiving a CCS recommendation from a HCP (Crăciun, Todorova, & Băban, 2020). This low screening attendance, in the absence of a CCS recommendation, could be attributed to a lack of knowledge or awareness of CCS (Covaliu et al., 2025; Marques, Nunes, Antunes, Heleno, & Dias, 2020; Simion et al., 2023). One study conducted among Bulgarian and Romanian women found that descriptive social norms, rather than attitudes, influenced screening uptake (Crăciun et al., 2020). Furthermore, low socioeconomic status may influence the intention to undergo CCS due to perceived lower benefits (Todorova, Baban, Alexandrova-Karamanova, & Bradley, 2009).

Emotional responses, such as embarrassment associated with the gynecological examination (Deguara, Calleja, & England, 2021), fear of performing the test (Deguara et al., 2021), perceiving the test as being painful (Marques et al., 2020), and fear of positive results (Marques, Geraldes, Gama, Heleno, & Dias, 2023) could act as a barrier towards CCS. Self-sampling procedures could help mitigate some of those emotional barriers (Bennett et al., 2018; Bosgraaf et al., 2014; Mao et al., 2017; Rosenbaum et al., 2014; Silva, Cerqueira, & Medeiros, 2017), together with time constraints, previous negative experiences (Bennett et al., 2018; Silva et al., 2017) and accessibility to screening, especially in vulnerable populations. Some concerns regarding the self-sampling could lead to a preference for clinician-collected samples (Arrossi, Ramos, Straw, Thouyaret, & Orellana, 2016; Esber, McRee, Turner, Phuka, & Norris, 2017).

To develop effective and inclusive national immunization campaigns, it is essential to consider the multiple, complex barriers individuals face. This requires a comprehensive focus on national policies, socio-economic and cultural differences, and individual characteristics, all of which ultimately shape women's intention to vaccinate and undergo CCS. Moreover, there is a research gap regarding specific barriers to CCS among vulnerable Romanian populations or potential methods to mitigate low addressability, especially for individual barriers. Understanding the factors that influence Romanian women's intentions to undergo CCS and exploring the acceptability of self-sampling procedures to mitigate the lower uptake is of utmost importance to ensure inclusive nationwide population screening. A more comprehensive and nuanced understanding, intricately weaving together health theories, emotional factors, and intention to engage in preventive behaviors, is essential to effectively enhance HPV vaccination rates and CCS coverage.

CHAPTER II. RESEARCH OBJECTIVES AND GENERAL METHODOLOGY

A restricted number of studies provided an extensive overview of the current barriers and facilitators affecting populations' intention to vaccinate against HPV and undergo CCS, aligning with country-specific policies. Few adequately addressed the community's specific needs, thereby enhancing vaccination rates and adherence to CCS and ultimately contributing to improved public health outcomes. An in-depth and nuanced approach is needed to identify key factors that could influence Romanian women's intention to vaccinate against HPV and undergo CCS while assessing their acceptability of self-sampling and preferences regarding screening procedures. To improve vaccination and CCS coverage, multiple studies were conducted to explore Romanian women's cognitions, emotions, and social factors that may influence their intentions to undergo vaccination and CCS. This was achieved through a complex design approach, offering the opportunity for methodological triangulations and by following specific objectives:

- To explore the main factors influencing the HPV vaccination uptake of women and adolescents at the European level
- To explore anticipated emotions, cognitions, and reproductive concerns that could influence Romanian women's intention to vaccinate against HPV, while considering the financial burden.
- To explore the emotional and cognitive perceptions of CCS and the acceptability of self-sampling for HPV in vulnerable Romanian women
- To identify emotional, cognitive and social factors associated with the intention to undergo CCS in Romanian women and explore the rationales for accepting or declining CCS and preferences regarding screening methods

The first objective was achieved by conducting a systematic review and meta-analysis that included women and adolescents from Europe. The second objective was accomplished by using an online questionnaire and targeting Romanian women aged 18-45 years. The third objective was achieved through a qualitative design, including semi-structured interviews and a Think Aloud Protocol in a sample of vulnerable Romanian women (living in remote or rural areas, lack of health insurance, low socio-economic status). The last objective was achieved through an online, mixed-method design involving Romanian women aged 18 or older.

CHAPTER III ORIGINAL RESEARCH CONTRIBUTIONS

3.1. Study 1: Factors Influencing Human Papillomavirus Vaccination Uptake in European Women and Adolescents: A Systematic Review and Meta-Analysis

3.1.1 Introduction

HPV immunization has been widely available since 2006, when the first vaccine was approved by the Food and Drug Administration (FDA) (Singhal & Marfatia, 2009). Despite this, only 15% of girls aged 15 years worldwide were fully vaccinated (WHO, 2021b). Significant inter-country disparities at the European level have been uncovered regarding implementation timings, targeted populations, reimbursement, and the compulsory nature of the vaccine (Nguyen-Huu et al., 2020). Therefore, this systematic review and meta-analysis were conducted to explore psychological factors (emotional, behavioral, and cognitive) among European women and adolescents that may influence vaccination uptake.

3.1.2. Methods

As of September 2022, a systematic search was conducted across four databases PubMed, EMBASE, Scopus, and Web of Science using predefined inclusion and exclusion criteria. This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Quality assessment, risk of bias across studies and sensitivity analyses were performed. Eligible articles were screened by two independent reviewers and included in the systematic review, and relevant data were extracted.

Odds Ratio (OR), with a 95% Confidence Interval (CI), and $p < .05$ were used for the analysis. A random effect (RE) was used for high heterogeneity and a fixed effect (FE) for low heterogeneity. Forrest plots were used to assess the overall effect of the analysis. Z values were considered statistically significant if $p < .05$. Data were analyzed using Review Manager (RevMan) software, 5.4 version (*RevMan5.4*, n.d.).

3.1.3 Results

The search returned 4948 publications. After filtering studies using inclusion and exclusion criteria and reading the full-texts, 18 studies were included in the systematic review and meta-analysis, totaling 18611 participants.

Results indicated that knowledge about HPV infection could positively influence vaccination rates with an Odds Ratio (OR) of 1.82 and a confidence interval (CI) between 1.27 and 2.61, showing statistical significance at a Z value of 3.24 with a p-value of .001 (Firenze et al., 2015; Grandahl et al., 2017; Gualano, Stillo, Mussa, & Zotti, 2016; Michail et al., 2014; Mollers et al., 2014; Restivo et al., 2018; Sopracordevole et al., 2013).

Neither knowledge about the HPV vaccination (Firenze et al., 2015; Grandahl et al., 2017; Mollers et al., 2014; Pelucchi et al., 2010; Sopracordevole et al., 2013) nor knowledge about CC screening (Michail et al., 2014; Restivo et al., 2018; Sopracordevole et al., 2013) seemed to influence vaccination uptake. Intention to undergo CCS (OR=1.68) was associated with vaccination intention (Bowyer, Dodd, Marlow, & Waller, 2014; Grandahl et al., 2017; Restivo et al., 2018). Other factors affecting vaccination uptake included fear of side effects, insufficient information, and the belief that the risk of infection is low. Religious belief was not correlated with vaccination intention as shown by the meta-analysis (Bowyer et al., 2014; Donadiki et al., 2012; Mollers et al., 2014; Pelucchi et al., 2010; Zahumensky et al., 2021).

Other factors that negatively impacted immunization were: parents educational level (Grandahl et al., 2017; Tsagkas et al., 2019; Zahumensky et al., 2021), fear of side effects (Charalambous et al., 2020; Gualano et al., 2016; Michail et al., 2014; Remschmidt et al., 2014; Restivo et al., 2018; Stöcker, Dehnert, Schuster, Wichmann, & Deleré, 2013; Tsagkas et al., 2019; Zahumensky et al., 2021), the belief that the vaccine is too new or experimental (Firenze et al., 2015; Gualano et al., 2016; Stöcker et al., 2013), believing the vaccine is unsafe of dangerous (Di Giuseppe et al., 2008; Michail et al., 2014; Sopracordevole et al., 2013; Stöcker et al., 2013), perceiving the vaccine expensive or having to pay for it (Charalambous et al., 2020; Marra et al., 2017; Tsagkas et al., 2019; Zahumensky et al., 2021), being discouraged by doctors (Grandahl et al., 2017; Gualano et al., 2016) and perceiving more barriers regarding HPV vaccination (Restivo et al., 2018; Tsagkas et al., 2019).

Conversely, believing the vaccine is effective (Firenze et al., 2015; Grandahl et al., 2017; Michail et al., 2014; Remschmidt et al., 2014; Restivo et al., 2018), perceiving more benefits, perceived high susceptibility (Di Giuseppe et al., 2008; Grandahl et al., 2017; Pelucchi et al., 2010; Tsagkas et al., 2019), and severity (de Visser, Waites, Parikh, & Lawrie, 2011; Grandahl et al., 2017; Restivo et al., 2018) heightened intention.

3.1.4 Discussion

To our knowledge, this is the first systematic review and meta-analysis to examine factors that could influence European women and adolescents to vaccinate against HPV. Results highlighted that women with higher knowledge about HPV infection are 1.82 times more likely to be vaccinated than those with low knowledge. Several studies highlight the need for trustworthy information sources (Karafillakis et al., 2019; López et al., 2020; Patel, Jeve, Sherman, & Moss, 2016).

Interestingly, knowledge about HPV vaccination and CCS did not influence vaccination intention. This could be attributed to vaccine's novelty (Braaten & Laufer, 2008) or to varying health policies (Nguyen-Huu et al., 2020), highlighting the need for a deeper understanding of the mechanisms. Perceived benefits and efficacy of the vaccine were positively associated with women's intention to vaccinate (Di Giuseppe et al., 2008; Firenze et al., 2015; Grandahl et al., 2017; Michail et al., 2014; Remschmidt et al., 2014; Restivo et al., 2018; Tsagkas et al., 2019). Those findings reinforce the idea that awareness alone does not influence the decision; it must be accompanied by detailed information. Women who tended to evaluate their risk based on their sexual activity were less likely to vaccinate (Di Giuseppe et al., 2008; Pelucchi et al., 2010; Restivo et al., 2018; Stöcker et al., 2013; Zahumensky et al., 2021). Therefore, self-risk assessment should be based on scientifically proven evaluations.

Causes of vaccine refusal included fear of side effects, novelty, insufficient information, being discouraged by a doctor (Di Giuseppe et al., 2008; Gualano et al., 2016; Michail et al., 2014; Stöcker et al., 2013) and costs especially in LMICs. To overcome this, many countries implemented free vaccination (Nguyen-Huu et al., 2020).

Limiting factors of the current review were the search formula and language restrictions. Furthermore, the choice and number of databases could represent a significant limitation of the current study.

Future directions should focus on more qualitative, well-designed studies that investigate cognitive factors influencing vaccination decisions. While RCTs are desirable, well-designed prospective studies, such as adequately followed cohorts, are feasible and could further analyze some of the findings highlighted here.

The present systematic review and meta-analysis included 18 studies, totaling 18611 participants and showed that knowledge of HPV infection and a history of CCS could positively influence vaccination rates. Neither knowledge of the HPV vaccine nor knowledge of CCS appeared to influence vaccination rates. Other factors affecting vaccination uptake included fear of side effects, insufficient information, costs, and perceived greater barriers to vaccination.

3.2. Study 2 –Anticipated Emotions and Cognitions Associated with Romanian Women's Intention to Vaccinate Against HPV

3.2.1. Introduction

Immunization has demonstrated its efficacy, saving more than 154 million lives since its implementation (Shattock et al., 2024). Newer vaccines are meeting hesitancy among targeted populations while facing discrepant policies worldwide. Despite the HPV vaccine

being available for almost 20 years (FDA, 2018), only 30% of girls aged 15 years have completed the vaccination scheme in Europe (WHO, 2021b).

In Romania, a National immunization program targeting HPV vaccination was implemented in 2008, with modest results (Ministerul Sanatatii, 2009). Since then, multiple policy changes regarding targeted population and reimbursement methods have taken place. These continuous changes alongside a generalized mistrust in the healthcare system negatively influence the intention to vaccinate against HPV, as shown by Penţa and Băban's study (Penţa & Băban, 2014a). Moreover, only a limited number of publications investigated the emotional, cognitive and reproductive concerns regarding HPV immunziation. To address this research gap, the current study aimed to explore anticipated emotions, cognitions and reproductive concerns that could influence Romanian women's intention to vaccinate against HPV, while considering the financial burden.

3.2.2. Methodology

A cross-sectional design was used to administer an online questionnaire to Romanian women aged 18–45 years between January 2023 and January 2025.

Data was analysed using JASP Statistics (Wagenmakers, 2022). Odds Ratio (OR) was used to assess the association between variables, with a 95% Confidence Interval (CI) and a p-value of .05.

3.2.3. Results

212 women completed the questionnaire, of whom 25 were excluded for not meeting age criteria. The final analysis encompassed 187 women with a mean age of 31.037 (SD = 7.609).39.037% were married, had a Master's degree (41.711%) and were employed. More than 50% had undergone a gynaecological examination in the last year, and 76.471% participated in CCS.

3.2.3.1. Factors associated with intention to vaccinate against HPV if the vaccine was free

3.2.3.1.1. Medical history, HPV knowledge, and vaccination intention.

A previous history of CCS or a diagnosis of HPV strains (OR=13.56) were associated with intention to vaccinate. A past diagnosis of cancer had the opposite effect. Awareness regarding HPV infection and CC, and knowing that CC can be detected through CCS, were positively associated with women's intention to vaccinate.

3.2.3.1.2. The HPV vaccine, HPV infection and vaccination intention.

Some cognitive and emotional factors were negatively correlated with vaccination intention: the non-mandatory character, perceiving more risks of vaccination, lack of awareness

regarding benefits, fear of side effects, and having other worries or health concerns, as well as difficulties in making decisions, including health-related ones. A high perceived susceptibility of getting infected (OR=9.35) and a doctor's recommendation (OR=5.97) were positively associated with immunization intent.

3.2.3.1.3. Anticipating an HPV infection/cervical cell changes and vaccination intention.

When anticipating an HPV infection or cervical cell changes, only the fear of a cancer diagnosis (OR=.09) was inversely associated with HPV vaccination intention.

3.2.3.1.4. Anticipating a diagnosis of cervical cancer and vaccination intention.

When anticipating a diagnosis of CC, believing that CC is treatable was positively associated with vaccination intention, whereas believing that communication with their partner will become difficult had the opposite effect.

3.2.3.2. Factors associated with intention to vaccinate against HPV if the vaccine was not reimbursed

3.2.3.2.1. Medical history, HPV knowledge, and vaccination intention.

A previous history of screening (OR=2.15), HPV strains (OR=2.35), awareness of HPV infection or CC and a history of HPV vaccination positively influenced intention. Conversely, believing that only people who have more sexual partners can be infected (OR=.35) had the opposite effect.

3.2.3.2.2. The HPV vaccine, HPV infection and vaccination intention.

The non-mandatory character of HPV vaccination (OR=.34), lack of knowledge regarding the benefits, perceived high self-efficacy in getting infected (OR=.37), social support, fear of side effects, other concerns and challenges associated with decision-making were negatively associated with vaccination intention. Perceived a high susceptibility of getting infected (OR=3.18), lack of vaccine availability was associated with intention.

3.2.3.2.3. Anticipating an HPV infection/cervical cell changes and vaccination intention.

No cognitive, emotional, social or sexual factors were associated with vaccination intent.

3.2.3.2.4. Anticipating a diagnosis of cervical cancer and vaccination intention.

Shame of being diagnosed with cancer, anticipating a painful sexual intercourse (OR=.42) and believing that CC treatment affects fertility (OR=.38) negatively influenced vaccination intent.

3.2.4. Discussion

The results highlighted the factors that could shape Romanian women's intention to vaccinate against HPV, showing a critical interplay between financial constraints, cognitive appraisal and emotional reactions.

Our findings found that the financial burden affects vaccination intention, consistent with other publications (Andresen, Harris, Mauro, Zimet, & Rosenthal, 2022; Li, Li, Tucker, Geng, & Wu, 2025). Women with a previous history of CCS or HPV infection had a higher intention to vaccinate, regardless of costs, suggesting greater awareness of preventive methods. According to the HBM, these results reflect how perceived susceptibility and disease severity, combined with perceived benefits, encourage health-seeking behaviours (Rosenstock, 1974). Women's sexual and reproductive concerns appeared to motivate preventive behaviours.

When the vaccine was free, perceiving more risks lowered intention, suggesting that women weigh benefits and barriers differently. Interestingly, one study found that almost 75% of women would vaccinate for free, whereas paying for it accounted for 16% (Sallam et al., 2021). Fear of side effects and limited knowledge discouraged vaccination especially when perceiving more barriers (Gefenaite et al., 2012; Grigore et al., 2018; Maier et al., 2015). Interestingly, perceived benefits or a doctor's recommendation did not influence vaccination intention when paying, underscoring the role of costs in decision-making.

To our knowledge, this is the first study investigating the role of anticipated emotions and cognitions that could shape Romanian women's intention to vaccinate against HPV. Fear of a CC diagnosis was negatively associated with vaccination intention when the vaccine was free, suggesting that the emotional burden may lead to anticipated emotions of inaction, as reported in previous publications (Penţa et al., 2020). When anticipating a diagnosis of CC or HPV infection, regret, shame, relational and reproductive concerns hindered vaccination.

Those findings highlight the need for informational campaigns that target specific information, positioning negative consequences, such as relationship concerns and the influence of a diagnosis on sexual and reproductive factors, which could enhance vaccination. This negative framing was also shown to be efficient in other vaccination campaigns (Gerend & Shepherd, 2007; Prakash, Nathan, Kini, & Victor, 2022).

This study has some limitations, such as a small sample size (n=187), due to its sampling method; the response rate could not be calculated; and the questionnaire length, which could prompt abandonment before completion.

Future research should focus on longitudinal and interventional studies examining the effects of financial incentives, education, communication strategies, and emotional support on the decision-making and in case of an anticipated diagnosis.

The present study highlighted that knowledge and previous personal experience (CCS or HPV strains) increased vaccination intention. On the contrary, emotional distress, distorted risk perceptions and decisional issues deter women from vaccination.

3.3. Study 3 – Exploring Emotional and Cognitive Perceptions of Cervical Cancer Screening and The Acceptability of Self-Sampling among Vulnerable Romanian Women: A Qualitative Study

3.3.1. Introduction

Despite having a national CCS program since 2012, Romania ranks first in Europe for CC incidence and mortality ("Cancer Today," n.d.-a; "Cancer Today," n.d.-b; *HPV Information Centre*, n.d.). A significant portion of the under-screened or never-screened population stems from vulnerable communities. Several strategies have been tested to improve adherence to CCS, and many European countries have explored or implemented self-sampling testing, particularly among vulnerable women (Serrano et al., 2022). Research on the acceptability of self-sampling and the underlying barriers among vulnerable Romanian women remains limited. This study aimed to address this research gap by exploring the emotional and cognitive perceptions of CCS, with a focus on self-sampling for HPV by vulnerable Romanian women.

3.3.2 Methods

18 semi-structured individual interviews were conducted with a sample of vulnerable women, face-to-face or by phone, between December 2022 and March 2023. An additional Think Aloud protocol was implemented in a subsample (N = 6) to capture participants' problem-solving process as they navigated the task (self-sampling) and shared their thoughts with the interviewer (Wolcott & Lobczowski, 2021). Participants were recruited using snowball sampling. The interview guide was developed from the determinants of health behaviors described in the Health Belief Model (HBM) (Rosenstock, 1974) and adapted to include questions about participants' feelings and experiences with the healthcare system, general, obstetrical, and gynecological history. Reflexive thematic analysis was used to interpret the data (Braun and Clarke, 2021).

3.3.3 Results

Most participants were married, with a mean age of 42.33, and resided in rural areas of Cluj and Maramureș counties; they were unemployed, with one-third lacking health insurance.

Four main themes were identified from the interviews, while one emerges from the Think Aloud Protocol.

3.3.3.1. Risk, fear, and other emotional experiences

Many women found it challenging to assess their risk of developing CC, with perceptions varying from low to high. This difficulty brought negative emotional reactions, such as fear or dread of cancer. Divinity was mentioned by women arguing for their low-risk evaluations.

Anticipating undergoing CCS triggered fear attributed to a cancer diagnosis, anxiety about the burden of accessing healthcare, in the absence of health insurance and financial constraints, conveyed in feelings of helplessness and hopelessness. On the contrary, for some women, the fear of a threatening diagnosis served as a motivating force.

Shame and embarrassment emerged intertwined with societal norms regarding age and body exposure as a deterrent in CCS participation.

3.3.3.2. Women's perception of barriers

Insufficient financial resources led to a reprioritization of daily needs over prevention.

The referral system was seen as confusing, requiring multiple consultations, long waiting times, while the dismissive attitude of HCPs often leave women frustrated and discouraged. The referral system was seen as a mark of low SES.

3.3.3.3. Knowledge, personal control, and cues to action

Only symptom-driven prompted women's engagement in health-related behaviors. Intriguingly, a subgroup of women challenged the idea and emphasized the importance of preventive methods and regular check-ups for proactive health management.

Family and HCPs empowered women and create a sense of security, acting as a motivating force when considering CCS, often accompanied by fear and uncertainty.

The intersection of geographical isolation, limited education, and low awareness levels poses significant challenges, often deterring women from CCS.

3.3.3.4. Exploring self-sampling

Uncertainty emerged when asked about their willingness to perform self-sampling. Hesitancy emerged from a lack of medical knowledge and the belief that such procedures require professional skills, leading to view medical training as a prerequisite for self-collection.

Polarized responses were observed regarding support, ranging from high self-efficacy to guidance from HCPs. Participants recognized several benefits of self-sampling including time efficiency, reduced pressure, no appointments, and diminished shame or embarrassment.

Think Aloud Protocol

3.3.3.1. Women's perception of self-sampling

The initial reaction was fear of the unknown, but it was acknowledged the need to overcome it through repeated attempts. Additionally, another participant expressed concerns about waiting for the results and the emotional burden of a potential diagnosis.

Instructions served as a motivating force, especially visual aids, were essential for transitioning from emotional reservations to a more instrumental approach.

Despite the initial concerns, participants were willing to try self-sampling when provided with explicit guidance such as clear instructions and visual aids.

3.3.4. Discussions

This analysis offers an in-depth exploration of cognitive and emotional factors influencing CCS in vulnerable Romanian women and of the acceptability of self-sampling.

Logistical barriers impacting CCS participation rates were previously uncovered (Azerkan et al., 2015; Marlow, McBride, Varnes, & Waller, 2019; Salad, Verdonk, de Boer, & Abma, 2015). The financial limitations led to a reprioritization of needs and to symptom-driven consultations rather than preventive check-ups. This perspective underscores the need for a shift from symptom-based care to preventive health practices. Previous research unveiled an intricate relationship between knowledge and CCS attendance (Pașca, Taut, Pintea, & Băban, 2025). A lack of knowledge often breeds fear, with some participants expressing anxiety when anticipating a positive result and deterring women from participating in CCS (Azerkan et al., 2015; Blomberg, Ternestedt, Törnberg, & Tishelman, 2008; Waller, Bartoszek, Marlow, & Wardle, 2009). Limited knowledge can distort women’s risk evaluations, leading to feelings of helplessness and low self-efficacy.

The interview results indicated that women with perceived lower medical knowledge were less likely to prefer self-sampling. Despite their reluctance to perform self-sampling, multiple benefits were observed: time efficiency and fewer appointments. Shame or embarrassment prompted women to pursue self-sampling, consistent with previous research (Crăciun et al., 2020; Szarewski, Cadman, Ashdown-Barr, & Waller, 2009; Waller, Jackowska, Marlow, & Wardle, 2012). Many expressed a need for support from HCPs or family members, illustrating the intricate interplay between emotional, rational and informational factors in their decision. (Bosgraaf et al., 2014; Drysdale, Marlow, Lim, Sasieni, & Waller, 2022; Marlow et al., 2019; Nishimura, Yeh, Oguntade, Kennedy, & Narasimhan, 2021; Sultana et al., 2015).

A limitation of the current analysis is the relatively small sample size, 18 participants. This was partly due to the chain-referral sampling method used, which limits researchers'

control over recruitment beyond the initial participants. Another limiting factor could be represented by the underrepresentation of certain marginalized groups, such as women experiencing addiction, chronic mental illness, homelessness, incarceration or sexual and physical violence. Mixing face-to-face with telephone interviews allowed investigators to reach a diverse range of participants. Face-to-face interviews facilitate richer emotional expression through non-verbal cues and deepen rapport. Telephone interviews helped broaden access by removing transportation barriers and reducing the financial strain of travel to in-person interviews, and it provided greater anonymity, which encouraged more open emotional expression. However, this method limited the interviewer's ability to observe non-verbal cues and made it more challenging to build rapport.

Future research should focus on implementing specialized screening centers, deploying mobile units for outreach, creating clear, accessible instructional pathways, and offering adequate support during self-sampling. Mixed-methods research can provide a deeper and more comprehensive understanding of the barriers and facilitators to CCS and self-sampling. Longitudinal studies that track changes over time in trust toward HCPs, perceived risk, emotional responses, and sustained use of self-sampling. Evaluating the long-term impact of targeted educational interventions on health literacy, screening intentions, and participation rates will provide valuable insights for designing effective, inclusive strategies. Finally, regional initiatives should consider introducing self-sampling in isolated, vulnerable communities, particularly among ethnic minorities in Romania and culturally sensitive interventions that address specific beliefs directly (Jackson et al., 2016).

This study identified the multifaceted challenges hindering vulnerable Romanian women's engagement in CCS, including logistical barriers, financial constraints, limited access to information, emotional reactions, and challenges associated with self-sampling. The Think Aloud Protocol offered valuable, granular insights into vulnerable women's initial apprehension and subsequent growing confidence with self-sampling. Clear instructions were essential in reducing fear and building self-efficacy, with support from HCPs and family members playing a crucial role.

3.4. Study 4 - Emotional, Cognitive and Social Factors Influencing Romanian Women's Intention to Undergo Cervical Cancer Screening and Self-Sampling. A Mixed-Method Study

3.4.1 Introduction

Socio-demographic factors appear to affect CCS addressability (Bozhar et al., 2022; Suurna, Orumaa, Ringmets, & Pärna, 2022; Williams et al., 2021), although they offer very limited insight into individual barriers. The concept of anticipated emotion refers to an emotion that one is expected to experience when faced with a future event (Feil et al., 2022). Emotional reactions such as fear, anxiety, and embarrassment sway women away from screening (Brennan & Reay, 2024; Dsouza, Broucke, Pattanshetty, & Dhoore, 2022; Fulane, Major, Lorenzoni, & Munguambe, 2024). Most studies examining CCS behaviors in Romania have taken a predominantly epidemiological or system-level perspective, with limited exploration of psychological dimensions that influence women's decisions and the acceptability of self-sampling. Therefore, the present study aimed to identify emotional, cognitive, and social factors associated with Romanian women's intention to undergo CCS and preferences regarding screening methods (self-sampling vs clinician-collected).

3.4.2 Methods

An online, cross-sectional, mixed-method survey was conducted among Romanian women aged 18 or older, between January 2023 and January 2025. The questionnaire was developed based on existing literature and included both close-ended and open-ended questions (Akpinar & Tosun, 2023; Coifman et al., 2021; Jiboc, Paşca, Tăut, & Băban, 2024; McBride et al., 2020; Young & Robb, 2021).

Data analysis was performed using Odds Ratio (OR) to ascertain the association between the dichotomous variables, with a Confidence Interval (CI) of 95% and a p-value of .5. Fisher's exact test was used when expected frequencies were <5 in >20% of the cases. Completed, open-ended responses were analyzed using an inductive content analysis.

3.4.3 Results

3.4.3.1. Descriptive analyses

317 women with a mean (M) age of 35.02 completed the questionnaire; most were married (n = 144) and held a Master's (n = 112). More than 20% had never undergone CCS, and almost 1 in 10 (9.14%) had never consulted a gynecologist. More than 25% of women reported a previous diagnosis of cervical cell changes or HPV strains, but only 16.08% of respondents were vaccinated against HPV. Most women were aware of the HPV infection, CC,

CCS and the HPV vaccine. Over 90% believed that the infection could cause CC and that it is asymptomatic in early stages, while 46.05% perceived that they had little information regarding CCS and 62.77% about the HPV vaccine.

3.4.3.2 Factors associated with CCS intention

3.4.3.2.1. Medical history, HPV knowledge, and screening intentions.

A prior history of screening was strongly associated with CCS intention (OR=7.564) and a diagnosis of HPV strains (OR=30.176). Awareness of the HPV vaccine and specific knowledge were positively associated with screening intent, while contemplating the HPV vaccine's adverse effects was inversely associated with women's intention to screen.

3.4.3.2.2 CCS, the HPV infection and screening intention.

Perceived benefits of screening (OR=7.634) and perceived high susceptibility to HPV infection (OR=3.380) positively correlated with CCS. Conversely, indecisiveness and difficulty making health-related decisions (OR=.296) was negatively associated with CCS.

Emotional factors associated with women's intention to screen were the fear of having lesions that could potentially develop into cancer, the fear of receiving a cancer diagnosis and feeling discouraged by the need to screen repeatedly, shame and concerns about privacy. Support from others and a doctor's recommendation were also associated with CCS intention.

3.4.3.2.3 Anticipating an HPV infection/cervical cell changes and intention to screen.

In anticipating an HPV infection, only the partner's support was positively correlated with women's willingness to screen (OR=6.016).

3.4.3.2.4 Anticipating a diagnosis of CC and CCS intention.

When a diagnosis of CC is anticipated, perceived severity, believing CC is treatable, guilt of being diagnosed (OR=2.557), fear of dying (OR=2.253) and partner's support correlated with CCS intention.

3.4.3.3 Qualitative analysis of barriers and facilitators to CCS

Among barriers, the most frequently themes were financial constraints (n=41), limited knowledge or awareness (n=24), and time constraints (n=21). Fear of the procedure or its outcome (n=16), such as fear of a potential cancer diagnosis; shame or embarrassment (n=13), passive delay (n=7) and health neglect or low prioritization (n=14) were important barriers. Other deterrents were healthcare system challenges (n=9) and unrealistic optimism (n=4).

The facilitating factors were represented by a prevention-oriented mindset (n=58) and health responsibility and prioritization (n=42), in which women expressed an internal drive to

take care of their bodies, which positively influenced CCS. Cues to action (n=43), such as previous abnormal results, symptoms, or family history, played a crucial role in motivating women to participate in CCS. Fear of illness, particularly fear of developing CC (n=29) and risk perception (n=25), emerged as motivators.

3.4.3.4 Preferences regarding screening procedures: Conventional screening vs self-sampling

3.4.3.4.1 Medical history, HPV knowledge, and screening preferences.

A history of CCS (OR=9.389) and a diagnosis of HPV strains (OR=8.878) were associated with a preference for conventional screening. Perceiving having little information regarding CCS correlated with a preference for self-sampling, while knowing that CCS should continue after vaccination was associated with women's preference for conventional screening.

3.4.3.4.2 CCS, the HPV infection and screening preferences.

Cognitive factors like lack of need to screen if sexually inactive, having a hard time deciding and finding it easier to make daily decisions than those health-related were associated with a preference toward self-sampling, while knowing the benefits of screening correlated with a preference towards conventional screening.

Emotional factors such as shame (OR=.093), fear of going to the gynecologist (OR=.277) and discomfort when thinking about the gynecological examination, were associated with a preference for self-sampling. Social factors such as a doctor's recommendation, were associated with a preference for conventional screening.

3.4.3.4.3 Anticipating an HPV infection/cervical cell changes and preferences regarding screening procedures.

Believing being diagnosed with HPV infection/ cervical cell changes was a terrible thing (OR=.367) and feeling less feminine were associated with a preference for self-sampling. Emotional factors like guilt, shame and guilt about infecting their partner were associated with a preference for self-sampling procedures. Perceived partner's support (OR=2.289) was associated with a preference towards conventional screening, while a lack of desire from their partner to be intimate was associated with self-sampling.

3.4.3.4.4 Anticipating a diagnosis of CC and preferences regarding screening procedures.

When anticipating a diagnosis of cancer, shame about being diagnosed (OR=.212), perceiving communication as more difficult with their partner (OR=.325) and believing their

partner will leave because she cannot have children were associated with self-sampling preference.

3.4.4 Discussion

This mixed-methods study examined factors influencing Romanian women's intention to undergo CCS and screening preferences. Both qualitative and quantitative analyses revealed that a personal history of CCS, HPV infection, or cancer predicted screening intention, consistent with prior findings (Alkhamis et al., 2023), reframing screening as a preventive method rather than a diagnostic one (Vallone et al., 2022).

The sample was highly educated, demonstrating high awareness of HPV, CC, and CCS, which did not correlate with screening intention, perhaps because knowledge was already widespread among respondents. This contrasts with studies linking awareness and uptake (Andreassen et al., 2018; Greenley et al., 2023). Nevertheless, detailed knowledge (e.g., that HPV can be asymptomatic, may cause CC) was associated with intention to screen, suggesting that nuanced understanding matters more than general awareness. Qualitative findings similarly indicated that limited knowledge about the CCS purpose and HPV deters screening participation.

Symptom presence had a dual effect: symptoms often prompted care-seeking (Waller et al., 2012), whereas recognizing that CC can be asymptomatic motivated preventive behaviors. Fear of a cancer diagnosis was the predominant emotion deterring screening, potentially fostering fatalism (Blomberg et al., 2008; Greenley et al., 2023; Marques et al., 2023; Stuart & D'Lima, 2022). Perceived susceptibility increased screening intent, while unrealistic optimism, procrastination and low prioritization reduced it.

Social influences were important: partner, family, and HCP support shaped intention (Alkhamis et al., 2023; Azerkan et al., 2015; Stuart & D'Lima, 2022). Shame and embarrassment regarding gynecological exams hindered attendance and increased interest in self-sampling (Brown, Muller, & Olsen, 2019; Greenley et al., 2023; Marlow, Waller, & Wardle, 2015; Marques et al., 2023; Shrestha et al., 2022). Women with greater CCS/HPV knowledge or prior screening/HPV diagnosis tended to prefer conventional screening; self-sampling was more acceptable among low-knowledge or vulnerable groups (Chepkorir et al., 2025; Grigore et al., 2022). Other barriers included financial and time constraints, limited reimbursement, challenges with system navigation; qualitative data highlighted a lack of trust in HCPs and the need for clearer pathways.

Targeted educational campaigns should emphasize specific, actionable knowledge (e.g., asymptomatic HPV and vaccine dosing), clarify that screening targets asymptomatic individuals, and reduce fear through accurate messaging. Strengthening primary care engagement and implementing organized invitation systems, registries, and free or low-cost screening could mitigate system-level barriers. Self-sampling may augment coverage among vulnerable or embarrassed women but should be implemented with clear recommendations and support for decision-making.

CHAPTER IV. GENERAL DISCUSSIONS AND CONCLUSIONS

The purpose of this thesis was to investigate psychological determinants of HPV vaccination uptake, intention to participate in cervical cancer screening, and the acceptability of self-sampling. The scope was met by deploying a methodological triangulation across diverse samples of European women and adolescents, Romanian women, and vulnerable subgroups as study populations. This was achieved by conducting 4 studies: the first two focused on HPV vaccination, while the lasts focused on cervical cancer screening.

4.1 General Findings and Specific Contributions

The first study, a systematic review and meta-analysis, identified psychological factors influencing HPV vaccination among European women and adolescents. The meta-analysis revealed that HPV-related knowledge and prior CCS positively influenced vaccination. However, HPV vaccination and CCS knowledge did not. Qualitative synthesis identified barriers such as fear of side effects, perceived barriers, perceived vaccine as too new/unsafe, high self-efficacy in avoiding infection, and financial costs. Facilitators included perceived vaccine effectiveness, benefits, susceptibility to HPV, and disease severity.

Regarding specific **contributions**, this is the first systematic review and meta-analysis focusing on European populations that identified psychological and social factors as determinants of HPV vaccination intention, offering a solid theoretical framework. It uncovered substantial geographic disparities in vaccination uptake rooted in differences in national policies, reimbursement, age recommendations and implementation timelines. The study also emphasized the interplay between primary and secondary prevention of CC, explained through a psychological model. Financial costs emerged as a recurrent deterrent, especially in low-income regions, highlighting the intersection of structural and psychological factors.

The second study explored the roles of anticipated emotions and cognition in influencing vaccination intent, while considering the financial costs (free or paid) among Romanian women. When the vaccine was free, intention was enhanced by prior CCS, HPV strains, awareness of the HPV and CC, HPV knowledge, perceived susceptibility and physician recommendation. Barriers included fear of side effects, perceived risks, unawareness of benefits, non-mandatory status, and decisional difficulties. When anticipating an HPV infection, only the fear of a cancer diagnosis reduced intention. Anticipating a CC diagnosis, belief in treatability increased intention, while anticipated communication challenges with their partner decreased it. When vaccination required personal payment, cognitive distortions increased. Women overestimate their ability to avoid the infection, non-mandatory, or minimize their susceptibility. When anticipating a CC diagnosis, shame of diagnosis, painful sexual intercourse, and concerns about fertility diminished intention.

As a significant **contribution**, this is the first study to examine anticipated emotions and cognitions among Romanian women across different financial scenarios. It also highlighted how repeated policy changes, combined with negative mass-media messages, may have eroded trust and deterred uptake (Penţa & Băban, 2014a, 2014b). Cognitive distortions surrounding susceptibility, due to a limited number of sexual partners, emerged as a substantial barrier. Findings further emphasized the importance of healthcare professionals' recommendations. Emotional barriers such as fear of side effects recurred across analyses and were reinforced by the non-mandatory nature of HPV vaccination (Jiboc et al., 2024; Mlakar, Valenčak Oštrbenk, Kežar, Beseničar-Pregelj, & Poljak, 2023; Restivo et al., 2018).

The third study aimed to explore emotional and cognitive perceptions of CCS and self-sampling acceptability among vulnerable Romanian women through qualitative interviews (N=18) and a Think-Aloud protocol (N=6). Four themes emerged from the interviews and one from the Think-Aloud. 1. **Risk, fear, and other emotional experiences** - emotions, religion and societal norms shaped risk appraisal. Fatalism, concerns for their children, guilt or helplessness linked to financial or access barriers enhanced emotional reactions. Fear of a cancer diagnosis acted both as a deterrent and a motivator, while societal norms related to age and bodily exposure heightened shame and embarrassment that hindered CCS. 2. **Women's perception of barriers** – low income and lack of insurance, led women to prioritize basic needs over prevention. The referral system was viewed as confusing, and HCPs' dismissive attitudes undermined trust. Referrals were also perceived as markers of low SES, reinforcing inequalities. 3. **Knowledge, personal control, and cues to action** – care seeking was largely symptom-driven. Low education and rural residence shaped awareness and hindered CCS.

Social support from family and HCPs facilitated CCS. 4. **Exploring self-sampling** – women expressed mixed reactions, including fear of self-harm, limited anatomical knowledge and concerns about results accuracy, contrasted with benefits such as reduced embarrassment and convenience. Medical guidance increased confidence. From the Think-Aloud, one theme emerged, **Women's Perception of Self-Sampling**, showing emotional reactions ranging from curiosity to fear and emphasizing that clear, especially visual, instructions and social or medical support improve confidence.

A significant contribution of this study is the investigation of vulnerable populations that face multilayered barriers, such as financial, geographic, educational, and social (Mallafré-Larrosa et al., 2023). Those factors, together with the lack of employment and lack of healthcare insurance (due to unemployment), hinder women further, causing a chain reaction where women feel trapped in their vulnerabilities. The study also showed that family doctors, or general practitioners, could play a pivotal role in implementing primary and secondary preventive measures (Chaw, Lee, Ja'afar, Lim, & Sharbawi, 2022). The analysis revealed two categories of women: those with an internal locus of control who take responsibility for their health and engage in adequate preventive behaviors, and those with an external locus of control who attribute their low risk of infection to divinity or other causes. Avoidance emerged as a coping mechanism that protected women from emotional reactions, but led to inaccurate self-assessment of risk, hindering participation. The investigation added novel insights into self-sampling, noting the importance of visual instruction and physician support.

The fourth study, which used a mixed-methods design, aimed to identify emotional, cognitive, and social determinants of CCS and preferences for conventional versus self-sampling among Romanian women. Intention to undergo CCS was elevated among women with prior CCS, HPV-strain diagnosis, knowledge about benefits, and physicians' recommendations showing a preference for conventional screening. Other factors that enhance intention were HPV knowledge (asymptomatic infection can cause CC) perceived severity, and fear of diagnosis. Barriers included shame, financial constraints, limited knowledge, high self-efficacy in avoiding the infection, symptom-based screening and decisional difficulties. Women who preferred self-sampling tended to have limited information regarding CCS, decisional difficulties, fear, shame, discomfort and privacy concerns. When anticipating an HPV infection, partners' support increased intention and the preference for physician-collected samples, while shame, guilt, or guilt about infecting their partner, lack of partner intimacy, increased preference for self-sampling. When anticipating a CC diagnosis, perceived severity, beliefs regarding treatability, guilt, fear of death and partners' support were motivators. Shame,

communication challenges with their partner and fear of abandonment due to infertility led women toward self-sampling. The qualitative analysis identified additional motivators such as a prevention-oriented mindset and health responsibility, alongside barriers such as passive delay and unrealistic optimism.

As an **original contribution,** the fourth study investigated the role of anticipated emotional and social support in the decision-making process for CCS participation, overcoming fear, and boosting self-efficacy. Interestingly, sexual and relationship concerns appeared only when addressing preferences rather than screening intention.

4.2 Implications

The first study *Practical implications.* Educational campaigns must go beyond information dissemination to address emotional reactions, cognitive biases and perceived susceptibility. The strong relationship between HPV vaccination and CCS suggests that reinforcing one behavior can encourage the other due to motivated reasoning or a health-oriented identity. Cost played a central role in diminishing intention, reflecting the need for affordable or free vaccination and stable policies. *Theoretical Implications* Findings highlight important gaps between awareness and deeper knowledge showing that deeper understanding could enhance perceived behavioral control, susceptibility, and self-efficacy. The relationship between CCS and vaccination could be attributed to health responsibility, perceived susceptibility, and familiarity with HCPs or the healthcare system. *Methodological Implications.* Future research should develop comprehensive knowledge scales that encompass factual, conceptual, and procedural knowledge. Standardized instruments that capture emotional and cognitive reactions are needed. Longitudinal studies should consider perceived behavioral control and locus of control as moderators to offer causal inferences. Qualitative studies could offer a more in-depth exploration of barriers and facilitators, while vignettes could highlight participants' beliefs and emotional reactions. *Policies Implications.* Policies must prioritize stable national vaccination strategies, free or subsidized vaccines, clear communication campaigns, improved healthcare navigation and facilitate health-related decision-making. School-based vaccination and increased availability in clinics could reduce avoidance. Campaigns should explicitly address fear and distrust.

Second study *Practical implications.* Future studies should focus on developing interventions that account for anticipated emotions and provide strategies for emotional management. Furthermore, relational, sexual and reproductive concerns should be addressed systematically to highlight the consequences, possibly using negative framing messages, regret based. Educational interventions should counter cognitive distortions about susceptibility and

risk, while offering free vaccination could help mitigate them. *Theoretical Implications.* This study highlighted how anticipated emotions, cognitive processes, sexual and reproductive concerns, financial burden and interpersonal dynamics combine to shape vaccination decision-making. Avoidance mechanisms or defensive cognitive processes become more prominent under financial constraints, offering insights for risk appraisal theories. *Methodological Implications.* The developed questionnaire serves as a foundation for future research on anticipated emotions. Studies should compare emotional responses across financial scenarios and use longitudinal designs to track change. *Policy Implications.* Stable and transparent policies are essential for rebuilding trust. Communication campaigns must address emotional reactions directly. Incorporating sexual and reproductive concerns into interventions are crucial.

Third study *Practical implications.* Interventions should address fear, shame, fatalism and embarrassment through a stigma-sensitive CCS communication approach. Training HCPs in empathetic and supportive communication is essential, especially in vulnerable groups. Self-sampling materials should include detailed visual instructions. Future studies should focus on comparing different instruction materials and women's self-efficacy in performing the procedure. Future research should explore how religion, fatalism and emotional coping interact. *Theoretical Implications.* Locus of control could help integrate control beliefs and fatalisms into preventive behaviors. The emotional burden around risk appraisal emphasized emotion-driven risk distortion and decision-making. The findings reinforce the need for models integrating social, cultural and relational dynamics into preventive health theories. *Methodological Implications.* The Think Aloud protocol provided insights into real-time cognitive processes and should be used more widely. Vulnerable groups remain underrepresented in research and should be prioritized. *Policies Implications.* Policies should confront structural barriers through mobile clinics, simplified pathways, and local healthcare mediators. Self-sampling should be integrated into national programs, especially in vulnerable populations.

Fourth study *Practical implications.* Interventions and communication strategies should be tailored to women's psychological profiles and screening preferences. Partner or family-based interventions may prove effective. Fear of diagnosis and unrealistic optimism should be addressed to offer adequate emotion regulation strategies and relevant risk assessment. *Theoretical Implications.* Introducing anticipated emotions into screening preferences enriches existing theoretical frameworks. Results show the duplicity of social support, perceiving it in both emotional and cognitive ways. Sexual and relational concerns

shape preferences for screening types. *Methodological Implications.* Future studies should focus on exploring anticipated emotions in different scenarios. *Policies Implications.* Self-sampling should be incorporated into national CCS policies. Informational campaigns must normalize emotional reactions and reduce stigma around sexual and reproductive health.

4.3. General Conclusions

This thesis demonstrates that cognitions, anticipated emotions, social norms, and relational dynamic are central to both HPV vaccination and CCS. Preventive behaviours are not shaped only by access or knowledge, but by a deeply psychological processes rooted in how women interpret risk, regulate fear, negotiate vulnerability, and locate themselves within social and relational contexts. Effective interventions must combine health literacy initiative with emotional attuned communication, accessible screening (including self-sampling), and structural supports that minimize cost and logistical barriers. Psychological theories must guide these approaches to correct misconceptions, reduce avoidance, and strengthen women's sense of agency. Ultimately, reducing the burden of cervical cancer requires strategies that address individual beliefs and emotions alongside broader systemic and policy changes.

REFERENCES

Akpinar, V. C., & Tosun, A. S. (2023). Knowledge and perceptions regarding Human Papillomavirus (HPV) and willingness to receive HPV vaccination among university students in a north-eastern city in Turkey. BMC Women's Health, 23(1), 299. doi: 10.1186/s12905-023-02455-4

Alkhamis, F. H., Alabbas, Z. A. S., Al Mulhim, J. E., Alabdulmohsin, F. F., Alshaqaqiq, M. H., & Alali, E. A. (2023). Prevalence and Predictive Factors of Cervical Cancer Screening in Saudi Arabia: A Nationwide Study. Cureus. doi: 10.7759/cureus.49331

Alyafei, A., & Easton-Carr, R. (2025). The Health Belief Model of Behavior Change. In StatPearls. Treasure Island (FL): StatPearls Publishing. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK606120/

Ampofo, A. G., Mackenzie, L., & Boyes, A. W. (2023). HPV vaccination: Intention to participate among female senior high school students in Ghana. Vaccine, 41(1), 159–169. doi: 10.1016/j.vaccine.2022.11.007

Andreassen, T., Melnic, A., Figueiredo, R., Moen, K., Şuteu, O., Nicula, F., Ursin G., Weiderpass, E. (2018). Attendance to cervical cancer screening among Roma and non-Roma women living in North-Western region of Romania. International Journal of Public Health, 63(5), 609–619. doi: 10.1007/s00038-018-1107-5

Andresen, J. A., Harris, J. N., Mauro, C., Zimet, G. D., & Rosenthal, S. L. (2022). The impact of financial incentives on COVID-19 vaccination intention among a sample of U.S. adults. Preventive Medicine Reports, 29, 101962. doi: 10.1016/j.pmedr.2022.101962

Arrossi, S., Ramos, S., Straw, C., Thouyaret, L., & Orellana, L. (2016). HPV testing: A mixed-method approach to understand why women prefer self-collection in a middle-income country. BMC Public Health, 16(1), 832. doi: 10.1186/s12889-016-3474-2

Azerkan, F., Widmark, C., Sparén, P., Weiderpass, E., Tillgren, P., & Faxelid, E. (2015). When Life Got in the Way: How Danish and Norwegian Immigrant Women in Sweden Reason about Cervical Screening and Why They Postpone Attendance. PLOS ONE, 10(7), e0107624. doi: 10.1371/journal.pone.0107624

Bennett, K. F., Waller, J., Chorley, A. J., Ferrer, R. A., Haddrell, J. B., & Marlow, L. A. (2018). Barriers to cervical screening and interest in self-sampling among women who actively decline screening. Journal of Medical Screening, 25(4), 211–217. doi: 10.1177/0969141318767471

Bhuiya, A., Hanifi, S. M. A., Hossain, M., & Aziz, A. (1999). Effects of an AIDS Awareness Campaign on Knowledge about AIDS in a Remote Rural Area of Bangladesh. International Quarterly of Community Health Education, 19(1), 51–63. doi: 10.2190/LY5C-UC58-C608-7D04

Blomberg, K., Ternestedt, B.-M., Törnberg, S., & Tishelman, C. (2008). How do women who choose not to participate in population-based cervical cancer screening reason about their decision? Psycho-Oncology, 17(6), 561–569. doi: 10.1002/pon.1270

Borowska, M., Koczkodaj, P., & Mańczuk, M. (2024). HPV vaccination coverage in the European Region. Nowotwory. Journal of Oncology, 74(3), 191–196. doi: 10.5603/njo.99853

Bosgraaf, R. P., Ketelaars, P. J. W., Verhoef, V. M. J., Massuger, L. F. A. G., Meijer, C. J. L. M., Melchers, W. J. G., & Bekkers, R. L. M. (2014). Reasons for non-attendance to cervical screening and preferences for HPV self-sampling in Dutch women. Preventive Medicine, 64, 108–113. doi: 10.1016/j.ypmed.2014.04.011

Bowyer, H. L., Dodd, R. H., Marlow, L. A. V., & Waller, J. (2014). Association between human papillomavirus vaccine status and other cervical cancer risk factors. Vaccine, 32(34), 4310–4316. doi: 10.1016/j.vaccine.2014.06.011

Bozhar, H., McKee, M., Spadea, T., Veerus, P., Heinävaara, S., Anttila, A., Senore, C., Zielonke, N., de Kok, I.M.C.M., van Ravesteyn, N.T., Lansdorp-Vogelaar, I., de Koning, H.J., Heijnsdijk, E.A.M.; EU-TOPIA consortium. (2022). Socio-economic inequality of utilization of cancer testing in Europe: A cross-sectional study. Preventive Medicine Reports, 26, 101733. doi: 10.1016/j.pmedr.2022.101733

Braaten, K. P., & Laufer, M. R. (2008). Human Papillomavirus (HPV), HPV-Related Disease, and the HPV Vaccine. Reviews in Obstetrics & Gynecology, 1(1), 2–10.

Braun, V. and Clarke, V. (2021). Thematic Analysis: A practical guide. London: SAGE Publications Ltd.

Brennan, K. J., & Reay, J. L. (2024). Emotional barriers pose the greatest threat to cervical cancer screening for young adult women in the United Kingdom. Preventive Medicine, 189, 108160. doi: 10.1016/j.ypmed.2024.108160

Brown, R. F., Muller, T. R., & Olsen, A. (2019). Australian women's cervical cancer screening attendance as a function of screening barriers and facilitators. Social Science & Medicine, 220, 396–402. doi: 10.1016/j.socscimed.2018.11.038

Bruni, L., Saura-Lázaro, A., Montoliu, A., Brotons, M., Alemany, L., Diallo, M.S., Afsar, O.Z., LaMontagne, D.S., Mosina, L., Contreras, M., Velandia-González, M., Pastore, R.,

Gacic-Dobo, M., Bloem P. (2021). HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010-2019. Preventive Medicine, 144, 106399. doi: 10.1016/j.ypmed.2020.106399

Bruni, L., Serrano, B., Roura, E., Alemany, L., Cowan, M., Herrero, R., Poljak, M., Murillo, R., Broutet, N., Riley, L.M., de Sanjose, S. (2022). Cervical cancer screening programmes and age-specific coverage estimates for 202 countries and territories worldwide: A review and synthetic analysis. The Lancet Global Health, 10(8), e1115–e1127. doi: 10.1016/S2214-109X(22)00241-8

Cancer Today. (n.d.-a). Retrieved October 27, 2024, from https://gco.iarc.who.int/today/

Cancer Today. (n.d.-b). Retrieved October 27, 2024, from https://gco.iarc.who.int/today/

Centers for Disease Control and Prevention. (2025, March 3). Cancers Caused by HPV. Retrieved March 22, 2025, from Human Papillomavirus (HPV) website: https://www.cdc.gov/hpv/about/cancers-caused-by-hpv.html

Charalambous, I., Ioannou, G., Nikolaou, S., Theologou, R., Yiallourou, A., Papatheodorou, S., Pantavou, K.G., Nikolopoulos, G.K. (2020). State of knowledge of human papillomavirus (HPV), HPV vaccine and testing: A cross-sectional study among female university students in Cyprus. Women & Health, 60(1), 26–42. doi: 10.1080/03630242.2019.1610825

Chaw, L., Lee, S. H. F., Ja'afar, N. I. H., Lim, E., & Sharbawi, R. (2022). Reasons for non-attendance to cervical cancer screening and acceptability of HPV self-sampling among Bruneian women: A cross-sectional study. PLOS ONE, 17(3), e0262213. doi: 10.1371/journal.pone.0262213

Chepkorir, J.; Perrin, N.; Kivuti-Bitok, L.; Gallo, J.J.; Gross, D.; Anderson, J.; Reynolds, N.R.; Wyche, S.; Kibet, H.; Kipkuri, V., Cherotich, A., Han, H.-R. (2025). Barriers and Opportunities for HPV Self-Sampling in Underserved Rural Communities: Insights from a Mixed Methods Study. International Journal of Environmental Research and Public Health, 22(5), 783. doi: 10.3390/ijerph22050783

Ciucă, A., Moldovan, R., Pintea, S., Dumitrașcu, D., & Băban, A. (2020). Screeners vs. Non-screeners for Colorectal Cancer among People over 50 Years of Age: Factual and Psychological Discriminants. Journal of Gastrointestinal and Liver Diseases: JGLD, 29(4), 529–537. doi: 10.15403/jgld-2263

Coifman, K. G., Disabato, D. J., Aurora, P., Seah, T. H. S., Mitchell, B., Simonovic, N., Foust, J.L., Sidney, P.G., Thompson, C.A., Taber, J.M. (2021). What Drives Preventive Health

Behavior During a Global Pandemic? Emotion and Worry. Annals of Behavioral Medicine, 55(8), 791–804. doi: 10.1093/abm/kaab048

Conner, M., Conner, M., Sandberg, T., McMillan, B., & Higgins, A. (2006). Role of anticipated regret, intentions and intention stability in adolescent smoking initiation. British Journal of Health Psychology, 11(1), 85–101. doi: 10.1348/135910705X40997

Cooke, R., Sniehotta, F., & Schuz, B. (2007). Prediciting Binge-Drinking Behaviour Using an Extended TPB: Examining the Impact of Anticipeted Regret and Descriptive Norms. Alcohol and Alcoholism, 42(2), 84–91. doi: 10.1093/alcalc/agl115

Covaliu, B. F., Forray, A. I., Tomic, M., Vlad, C., Cadariu, P. A., Ungurean, C., & Melnic, A. (2025). Understanding Cervical Cancer Screening Attendance: Barriers and Facilitators in a Representative Population Survey. Cancers, 17(4), 706. doi: 10.3390/cancers17040706

Craciun, C., & Baban, A. (2012). "Who will take the blame?": Understanding the reasons why Romanian mothers decline HPV vaccination for their daughters. Vaccine, 30(48), 6789–6793. doi: 10.1016/j.vaccine.2012.09.016

Crăciun, I. C., Todorova, I., & Băban, A. (2020). "Taking responsibility for my health": Health system barriers and women's attitudes toward cervical cancer screening in Romania and Bulgaria. Journal of Health Psychology, 25(13–14), 2151–2163. doi: 10.1177/1359105318787616

de Visser, R., Waites, L., Parikh, C., & Lawrie, A. (2011). The importance of social norms for uptake of catch-up human papillomavirus vaccination in young women. Sexual Health, 8(3), 330–337. doi: 10.1071/SH10155

Deguara, M., Calleja, N., & England, K. (2021). Cervical cancer and screening: Knowledge, awareness and attitudes of women in Malta. Journal of Preventive Medicine and Hygiene, 61(4), E584–E592. doi: 10.15167/2421-4248/jpmh2020.61.4.1521

Della Fera, A. N., Warburton, A., Coursey, T. L., Khurana, S., & McBride, A. A. (2021). Persistent Human Papillomavirus Infection. Viruses, 13(2), 321. doi: 10.3390/v13020321

Di Giuseppe, G., Abbate, R., Liguori, G., Albano, L., & Angelillo, I. F. (2008). Human papillomavirus and vaccination: Knowledge, attitudes, and behavioural intention in adolescents and young women in Italy. British Journal of Cancer, 99(2), 225–229. doi: 10.1038/sj.bjc.6604454

Donadiki, E. M., Jiménez-García, R., Hernández-Barrera, V., Sourtzi, P., Carrasco-Garrido, P., López de Andrés, A., Jimenez-Trujillo, I., Velonakis, E. G. (2014). Health Belief

Model applied to non-compliance with HPV vaccine among female university students. Public Health, 128(3), 268–273. doi: 10.1016/j.puhe.2013.12.004

Drysdale, H., Marlow, L. A., Lim, A., Sasieni, P., & Waller, J. (2022). Self-sampling for cervical screening offered at the point of invitation: A cross-sectional study of preferences in England. Journal of Medical Screening, 29(3), 194–202. doi: 10.1177/09691413221092246

Dsouza, J. P., Broucke, S. V. den, Pattanshetty, S., & Dhoore, W. (2022). A comparison of behavioural models explaining cervical cancer screening uptake. B_M_C_ _W_o_m_e_n_'s_ _Health, 22(1), 235. doi: 10.1186/s12905-022-01801-2

Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. Science (New York, N.Y.), 196(4286), 129–136. doi: 10.1126/science.847460

Esber, A., McRee, A.-L., Turner, A. N., Phuka, J., & Norris, A. (2017). Factors influencing Malawian women's willingness to self-collect samples for human papillomavirus testing. Journal of Family Planning and Reproductive Health Care, 43(2), 135–141. doi: 10.1136/jfprhc-2015-101305

FDA, (2018). FDA approves expanded use of Gardasil 9 to include individuals 27 through 45 years old. Retrieved March 21, 2025, from FDA website: https://www.fda.gov/news-events/press-announcements/fda-approves-expanded-use-gardasil-9-include-individuals-27-through-45-years-old

Feil, K., Weyland, S., Fritsch, J., Wäsche, H., & Jekauc, D. (2022). Anticipatory and Anticipated Emotions in Regular and Non-regular Exercisers – _A Qualitative Study. Frontiers in Psychology, 13. doi: 10.3389/fpsyg.2022.929380

Firenze, A., Marsala, M. G. L., Bonanno, V., Maranto, M., Ferrara, C., Giovannelli, L., & Restivo, V. (2015). Facilitators and barriers HPV unvaccinated girls after 5 years of program implementation. Human Vaccines & Immunotherapeutics, 11(1), 240–244. doi: 10.4161/hv.36158

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Addison-Wesley Publishing Company.

Fisher, W. A., Kohut, T., Salisbury, C. M. A., & Salvadori, M. I. (2013). Understanding Human Papillomavirus Vaccination Intentions: Comparative Utility of the Theory of Reasoned Action and the Theory of Planned Behavior in Vaccine Target Age Women and Men. The Journal of Sexual Medicine, 10(10), 2455–2464. doi: 10.1111/jsm.12211

Fitriani, Y., Mudigdo, A., & Andriani, R. B. (2018). Health Belief Model on the Determinants of Human Papilloma Virus Vaccination in Women of Reproductive Age in Surakarta,

Central Java. Journal of Health Promotion and Behavior, 3(1), 16–26. Retrieved from https://thejhpb.com/index.php/thejhpb/article/view/71

Forster, A. S., Waller, J., Bowyer, H. L., & Marlow, L. A. V. (2015). Girls' explanations for being unvaccinated or under vaccinated against human papillomavirus: A content analysis of survey responses. BMC Public Health, 15(1), 1278. doi: 10.1186/s12889-015-2657-6

Fulane, G., Major, M., Lorenzoni, C., & Munguambe, K. (2024). The Influence of Institutional Logics and Emotions on the Uptake of Cervical Cancer Screening: A Case Study From Xai-Xai, Mozambique. Health Services Insights, 17, 11786329231224619. doi: 10.1177/11786329231224619

Gefenaite, G., Smit, M., Nijman, H. W., Tami, A., Drijfhout, I. H., Pascal, A., Postma M.J., Wolters, B.A., van Delden, J.J.M, Wilschut, J.C., Hak, E. (2012). Comparatively low attendance during Human Papillomavirus catch-up vaccination among teenage girls in the Netherlands: Insights from a behavioral survey among parents. BMC Public Health, 12(1), 498. doi: 10.1186/1471-2458-12-498

Gerend, M. A., & Shepherd, J. E. (2007). Using message framing to promote acceptance of the human papillomavirus vaccine. Health Psychology, 26(6), 745–752. doi: 10.1037/0278-6133.26.6.745

Glanz, K., Rimer, B. K., & Viswanath, K. (2015). Health Behavior: Theory, Research, and Practice. John Wiley & Sons.

Grandahl, M., Larsson, M., Dalianis, T., Stenhammar, C., Tydén, T., Westerling, R., & Nevéus, T. (2017). Catch-up HPV vaccination status of adolescents in relation to socioeconomic factors, individual beliefs and sexual behaviour. PLOS ONE, 12(11), e0187193. doi: 10.1371/journal.pone.0187193

Greenley, R., Bell, S., Rigby, S., Legood, R., Kirkby, V., McKee, M., & CBIG-SCREEN Consortium. (2023). Factors influencing the participation of groups identified as underserved in cervical cancer screening in Europe: A scoping review of the literature. Frontiers in Public Health, 11, 1144674. doi: 10.3389/fpubh.2023.1144674

Grigore, M., Teleman, S. I., Pristavu, A., & Matei, M. (2018). Awareness and Knowledge About HPV and HPV Vaccine Among Romanian Women. Journal of Cancer Education, 33(1), 154–159. doi: 10.1007/s13187-016-1130-2

Grigore, M., Vasilache, I.-A., Cianga, P., Constantinescu, D., Duma, O., Matasariu, R. D., & Scripcariu, I.-S. (2022). Acceptability of Human Papilloma Virus Self-Sampling for

Cervical Cancer Screening in a Cohort of Patients from Romania (Stage 2). Journal of Clinical Medicine, 11(9), 2503. doi: 10.3390/jcm11092503

Gualano, M., Stillo, M., Mussa, M. V., & Zotti, C. M. (2016). Cross sectional study investigating the differences in knowledge and behaviors about HPV between vaccinated and non-vaccinated girls. Journal of Preventive Medicine and Hygiene, 57(3), E121–E127. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5139606/

Hofman, R., van Empelen, P., Richardus, J. H., de Kok, I. M. C. M., de Koning, H. J., van Ballegooijen, M., & Korfage, I. J. (2014). Predictors of HPV vaccination uptake: A longitudinal study among parents. Health Education Research, 29(1), 83–96. doi: 10.1093/her/cyt092

HPV Information Centre. (n.d.). Retrieved from https://hpvcentre.net/statistics/reports/ROU.pdf

Institutul National de Sanatate Publica. (2024, January 3). Ianuarie 2024 – Campanie de prevenire a cancerului de col uterin – Institutul Național de Sănătate Publică. Retrieved March 23, 2025, from https://insp.gov.ro/2024/01/03/ianuarie-2024-campanie-de-prevenire-a-cancerului-de-col-uterin/

Jackson, C., Dyson, L., Bedford, H., Cheater, F. M., Condon, L., Crocker, A., Emslie, C., Ireland, L., Kemsley, P., Kerr, S., Lewis, H.J., Mytton, J., Overend, K., Redsell, S., Richardson, Z., Shepherd, C., Smith, L. (2016). UNderstanding uptake of Immunisations in TravellIng aNd Gypsy communities (UNITING): A qualitative interview study. Health Technology Assessment (Winchester, England), 20(72), 1–176. doi: 10.3310/hta20720

Jiboc, N.-M., Paşca, A., Tăut, D., & Băban, A.-S. (2024). Factors influencing human papillomavirus vaccination uptake in European women and adolescents: A systematic review and meta-analysis. Psycho-Oncology, 33(1), e6242. doi: 10.1002/pon.6242

Karafillakis, E. Simas, C., Jarrett, C., Verger, P., Peretti-Watel, P., Dib, F., De Angelis, S., Takacs, J., Ali, K.A., Pastore Celentano, L., Larson, H. (2019). HPV vaccination in a context of public mistrust and uncertainty: A systematic literature review of determinants of HPV vaccine hesitancy in Europe. Human Vaccines & Immunotherapeutics, 15(7–8), 1615–1627. doi: 10.1080/21645515.2018.1564436

Koelen, M. A., & Ban, A. W. van den. (2023). Health education and health promotion. BRILL.

Kombe, A. J., Li, B., Zahid, A., Mengist, H. M., Bounda, G.-A., Zhou, Y., & Jin, T. (2021). Epidemiology and Burden of Human Papillomavirus and Related Diseases, Molecular

Pathogenesis, and Vaccine Evaluation. Frontiers in Public Health, 8. doi: 10.3389/fpubh.2020.552028

Lee. K.E., (2014). Factors Associated with Intention to receive Human Papillomavirus Vaccine in Undergraduate Women: An Application of the Theory of Planned Behavior. Journal of Korean Academy of Fundamentals of Nursing, 21(4), 457–465. doi: 10.7739/jkafn.2014.21.4.457

Li, Y., Li, J., Tucker, J. D., Geng, E. H., & Wu, D. (2025). Pay-it-forward as a strategy to increase vaccine uptake. BMC Global and Public Health, 3(1), 32. doi: 10.1186/s44263-025-00151-z

López, N., Garcés-Sánchez, M., Panizo, M. B., de la Cueva, I. S., Artés, M. T., Ramos, B., & Cotarelo, M. (2020). HPV knowledge and vaccine acceptance among European adolescents and their parents: A systematic literature review. Public Health Reviews, 41(1), 10. doi: 10.1186/s40985-020-00126-5

Maier, C., Maier, T., Neagu, C. E., & Vlădăreanu, R. (2015). Romanian adolescents' knowledge and attitudes towards human papillomavirus infection and prophylactic vaccination. European Journal of Obstetrics and Gynecology and Reproductive Biology, 195, 77–82. doi: 10.1016/j.ejogrb.2015.09.029

Mallafré-Larrosa, M., Ritchie, D., Papi, G., Mosquera, I., Mensah, K., Lucas, E., Buus Bøje, R., Kirkegaard, P., Andersen, B., Basu, P., the CBIG-SCREEN Consortium. (2023). Survey of current policies towards widening cervical screening coverage among vulnerable women in 22 European countries. European Journal of Public Health, 33(3), 502–508. doi: 10.1093/eurpub/ckad055

Mammas, I. N., Theodoridou, M., Koutsaftiki, C., Bertsias, G., Sourvinos, G., & Spandidos, D. A. (2016). Vaccination against Human Papillomavirus in relation to Financial Crisis: The "Evaluation and Education of Greek Female Adolescents on Human Papillomaviruses' Prevention Strategies" ELEFTHERIA Study. Journal of Pediatric and Adolescent Gynecology, 29(4), 362–366. doi: 10.1016/j.jpag.2015.12.007

Mao, C., Kulasingam, S. L., Whitham, H. K., Hawes, S. E., Lin, J., & Kiviat, N. B. (2017). Clinician and Patient Acceptability of Self-Collected Human Papillomavirus Testing for Cervical Cancer Screening. Journal of Women's Health, 26(6), 609–615. doi: 10.1089/jwh.2016.5965

Marek, E., Dergez, T., Rebek-Nagy, G., Kricskovics, A., Kovacs, K., Bozsa, S., Kiss, I., Ember, I., Gocze, P. (2011). Adolescents' awareness of HPV infections and attitudes

towards HPV vaccination 3 years following the introduction of the HPV vaccine in Hungary. Vaccine, 29(47), 8591–8598. doi: 10.1016/j.vaccine.2011.09.018

Marlow, L., McBride, E., Varnes, L., & Waller, J. (2019). Barriers to cervical screening among older women from hard-to-reach groups: A qualitative study in England. BMC Women's Health, 19(1), 38. doi: 10.1186/s12905-019-0736-z

Marlow, L., Waller, J., & Wardle, J. (2015). Barriers to cervical cancer screening among ethnic minority women: A qualitative study. The Journal of Family Planning and Reproductive Health Care, 41(4), 248–254. doi: 10.1136/jfprhc-2014-101082

Marques, P., Geraldes, M., Gama, A., Heleno, B., & Dias, S. (2023). What is the role of attitudinal barriers on cervical cancer screening non-attendance? Findings from a cross-sectional study with migrant women in Portugal. BMC Women's Health, 23(1), 52. doi: 10.1186/s12905-023-02198-2

Marques, P., Nunes, M., Antunes, M. da L., Heleno, B., & Dias, S. (2020). Factors associated with cervical cancer screening participation among migrant women in Europe: A scoping review. International Journal for Equity in Health, 19(1), 160. doi: 10.1186/s12939-020-01275-4

Marra, E., van Dam, L., Kroone, N., Craanen, M., Zimet, G. D., Heijman, T., Hogewoning, A.A., Sonder, G.J.B., de Vries, H.J.C., Alberts, C.J., Paulussen, T.G.W.M., Schim van der Loeff, M.F. (2017). Determinants of Human Papillomavirus Vaccination Intention Among Female Sex Workers in Amsterdam, the Netherlands. Sexually Transmitted Diseases, 44(12), 756–762. doi: 10.1097/OLQ.0000000000000676

McBride, E., Tatar, O., Rosberger, Z., Rockliffe, L., Marlow, L. A. V., Moss-Morris, R., Kaur, N., Wade, K., Waller, J. (2020). Emotional response to testing positive for human papillomavirus at cervical cancer screening: A mixed method systematic review with meta-analysis. Retrieved July 1, 2025, from https://www.tandfonline.com/doi/full/10.1080/17437199.2020.1762106

Michail, G., Smaili, M., Vozikis, A., Jelastopulu, E., Adonakis, G., & Poulas, K. (2014). Female students receiving post-secondary education in Greece: The results of a collaborative human papillomavirus knowledge survey. Public Health, 128(12), 1099–1105. doi: 10.1016/j.puhe.2014.09.005

Ministerul Sanatatii. (2009). Ministerul Sănătăţii demarează campania de informare pentru prevenirea prin vaccinare a cancerului de col uterin. Retrieved March 23, 2025, from https://old.ms.ro/index.php?pag=62&id=6683&pg=1

Ministerul Sanatatii. (2025). Vaccinarea gratuită anti-HPV, extinsă la fete și băieți până la 26 de ani – lege adoptată de Camera Deputaților, for decizional – Edupedu.ro. Retrieved May 29, 2025, from https://www.edupedu.ro/vaccinarea-gratuita-anti-hpv-extinsa-la-fete-si-baieti-pana-la-26-de-ani-lege-adoptata-de-camera-deputatilor-for-decizional/

Mlakar, J., Valenčak Oštrbenk, A., Kežar, J., Beseničar-Pregelj, L., & Poljak, M. (2023). Assessment of Acceptability and Determinants of Uptake and Schedule Completion of Human Papillomavirus (HPV) Vaccine by 25 to 45 Years Old Women in Slovenia. Vaccines, 11(2), 423. doi.org/10.3390/vaccines11020423

Mollers, M., Lubbers, K., Spoelstra, S. K., Weijmar-Schultz, W. C., Daemen, T., Westra, T. A., van der Sande, M.A., Nijman, H.W., de Melker, H.E., Tami, A. (2014). Equity in human papilloma virus vaccination uptake? Sexual behaviour, knowledge and demographics in a cross-sectional study in (un)vaccinated girls in the Netherlands. BMC Public Health, 14(1), 288. doi: 10.1186/1471-2458-14-288

Morison, L. A., Cozzolino, P. J., & Orbell, S. (2010). Temporal perspective and parental intention to accept the human papillomavirus vaccination for their daughter. British Journal of Health Psychology, 15(1), 151–165. doi: 10.1348/135910709X437092

Nguyen-Huu, N.-H., Thilly, N., Derrough, T., Sdona, E., Claudot, F., Pulcini, C., & Agrinier, N. (2020). Human papillomavirus vaccination coverage, policies, and practical implementation across Europe. Vaccine, 38(6), 1315–1331. doi: 10.1016/j.vaccine.2019.11.081

Nishimura, H., Yeh, P. T., Oguntade, H., Kennedy, C. E., & Narasimhan, M. (2021). HPV self-sampling for cervical cancer screening: A systematic review of values and preferences. BMJ Global Health, 6(5), e003743. doi: 10.1136/bmjgh-2020-003743

Oyedeji, O., Kintziger, K. W., Springer, C. M., Ehrlich, S., Maples, J., Gatwood, J., & Barroso, C. S. (2024). Examining HPV vaccination behavior among young adults: Insights from applying the Health Belief Model. PLOS ONE, 19(11), e0312700. doi: 10.1371/journal.pone.0312700

Pașca, N.-M., Taut, D., Pintea, S., & Băban, A.-S. (2025). Emotional, Cognitive, and Social Factors Influencing Romanian Women's Intention to Undergo Cervical Cancer Screening: A Mixed-Method Study. Healthcare, 13(17), 2147. doi: 10.3390/healthcare13172147

Patel, H., Jeve, Y. B., Sherman, S. M., & Moss, E. L. (2016). Knowledge of human papillomavirus and the human papillomavirus vaccine in European adolescents: A

systematic review. Sexually Transmitted Infections, 92(6), 474–479. doi: 10.1136/sextrans-2015-052341

Pelucchi, C., Esposito, S., Galeone, C., Semino, M., Sabatini, C., Picciolli, I., Consolo, S., Milani, G., Principi, N. (2010). Knowledge of human papillomavirus infection and its prevention among adolescents and parents in the greater Milan area, Northern Italy. BMC Public Health, 10(1), 378. doi: 10.1186/1471-2458-10-378

Penţa, M. A., & Băban, A. (2014a). Dangerous Agent or Saviour? HPV Vaccine Representations on Online Discussion Forums in Romania. International Journal of Behavioral Medicine, 21(1), 20–28. doi: 10.1007/s12529-013-9340-z

Penţa, M. A., & Băban, A. (2014b). Mass media coverage of HPV vaccination in Romania: A content analysis. Health Education Research, 29(6), 977–992. doi: 10.1093/her/cyu027

Penţa, M. A., Crăciun, I. C., & Băban, A. (2020). The power of anticipated regret: Predictors of HPV vaccination and seasonal influenza vaccination acceptability among young Romanians. Vaccine, 38(6), 1572–1578. doi: 10.1016/j.vaccine.2019.11.042

Prakash, A., Nathan, R. J., Kini, S., & Victor, V. (2022). Message framing and COVID-19 vaccine acceptance among millennials in South India. PLOS ONE, 17(7), e0269487. doi: 10.1371/journal.pone.0269487

Remschmidt, C., Walter, D., Schmich, P., Wetzstein, M., Deleré, Y., & Wichmann, O. (2014). Knowledge, attitude, and uptake related to human papillomavirus vaccination among young women in Germany recruited via a social media site. Human Vaccines & Immunotherapeutics, 10(9), 2527–2535. doi: 10.4161/21645515.2014.970920

Restivo, V., Costantino, C., Fazio, T. F., Casuccio, N., D'Angelo, C., Vitale, F., & Casuccio, A. (2018). Factors Associated with HPV Vaccine Refusal among Young Adult Women after Ten Years of Vaccine Implementation. International Journal of Environmental Research and Public Health, 15(4), 770. doi: 10.3390/ijerph15040770

RevMan5.4. (n.d.). Retrieved from https://training.cochrane.org/system/files/uploads/protected_file/RevMan5.4_user_guide.pdf

Rosenbaum, A. J., Gage, J. C., Alfaro, K. M., Ditzian, L. R., Maza, M., Scarinci, I. C., Felix, J.C., Castle, P.E., Villalta, S., Miranda, E., Cremer, M. L. (2014). Acceptability of self-collected versus provider-collected sampling for HPV DNA testing among women in rural El Salvador. International Journal of Gynecology & Obstetrics, 126(2), 156–160. doi: 10.1016/j.ijgo.2014.02.026

Rosenstock, I. M. (1974). The Health Belief Model and Preventive Health Behavior. Health Education Monographs, 2(4), 354–386. doi: 10.1177/109019817400200405

Salad, J., Verdonk, P., de Boer, F., & Abma, T. A. (2015). "A Somali girl is Muslim and does not have premarital sex. Is vaccination really necessary?" A qualitative study into the perceptions of Somali women in the Netherlands about the prevention of cervical cancer. International Journal for Equity in Health, 14(1), 68. doi: 10.1186/s12939-015-0198-3

Sallam, M., Al-Mahzoum, K., Eid, H., Assaf, A. M., Abdaljaleel, M., Al-Abbadi, M., & Mahafzah, A. (2021). Attitude towards HPV Vaccination and the Intention to Get Vaccinated among Female University Students in Health Schools in Jordan. Vaccines, 9(12), 1432. doi: 10.3390/vaccines9121432

Sandberg, T., & Conner, M. (2008). Anticipated regret as an additional predictor in the theory of planned behaviour: A meta-analysis. British Journal of Social Psychology, 47(4), 589–606. doi: 10.1348/014466607X258704

Serrano, B., Ibáñez, R., Robles, C., Peremiquel-Trillas, P., de Sanjosé, S., & Bruni, L. (2022). Worldwide use of HPV self-sampling for cervical cancer screening. Preventive Medicine, 154, 106900. doi: 10.1016/j.ypmed.2021.106900

Shattock, A. J., Johnson, H. C., Sim, S. Y., Carter, A., Lambach, P., Hutubessy, R. C. W., Thompson, K.M., Badizadegan, K., Lambert, B., Ferrari, M.J., Jit, M., Fu, H., Silal, S.P., Hounsell, R.A., White, R.G., Mosser, J.F., Gaythorpe, K.A.M., Trotter, C.L., Lindstrand, A., O'Brien, K.L., Bar-Zeev, N. (2024). Contribution of vaccination to improved survival and health: Modelling 50 years of the Expanded Programme on Immunization. The Lancet, 403(10441), 2307–2316. doi: 10.1016/S0140-6736(24)00850-X

Shrestha, A. D., Andersen, J. G., Gyawali, B., Shrestha, A., Shrestha, S., Neupane, D., Ghimire, S., Campbell, C., Kallestrup, P. (2022). Cervical cancer screening utilization, and associated factors, in Nepal: A systematic review and meta-analysis. Public Health, 210, 16–25. doi: 10.1016/j.puhe.2022.06.007

Silva, J., Cerqueira, F., & Medeiros, R. (2017). Acceptability of self-sampling in Portuguese women: The good, the bad or the ugly? Sexual Health, 14(3), 298–300. doi: 10.1071/SH16077

Simion, L., Rotaru, V., Cirimbei, C., Gales, L., Stefan, D.-C., Ionescu, S.-O., Luca, D., Doran, H., Chitoran, E. (2023). Inequities in Screening and HPV Vaccination Programs and

Their Impact on Cervical Cancer Statistics in Romania. Diagnostics, 13(17), 2776. doi: 10.3390/diagnostics13172776

Singhal, P., & Marfatia, Y. S. (2009). Human papillomavirus vaccine. Indian Journal of Sexually Transmitted Diseases and AIDS, 30(1), 51–52. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3168043/

Sopracordevole, F., Cigolot, F., Mancioli, F., Agarossi, A., Boselli, F., & Ciavattini, A. (2013). Knowledge of HPV infection and vaccination among vaccinated and unvaccinated teenaged girls—Sopracordevole. Retrieved March 19, 2025, from https://obgyn.onlinelibrary.wiley.com/doi/10.1016/j.ijgo.2013.02.011

Stöcker, P., Dehnert, M., Schuster, M., Wichmann, O., & Deleré, Y. (2013). Human papillomavirus vaccine uptake, knowledge and attitude among 10th grade students in Berlin, Germany, 2010. Human Vaccines & Immunotherapeutics, 9(1), 74–82. doi: 10.4161/hv.22192

Stuart, G., & D'Lima, D. (2022). Perceived barriers and facilitators to attendance for cervical cancer screening in EU member states: A systematic review and synthesis using the Theoretical Domains Framework. Psychology & Health, 37(3), 279–330. doi: 10.1080/08870446.2021.1918690

Sultana, F., Mullins, R., English, D. R., Simpson, J. A., Drennan, K. T., Heley, S., Wrede, C.D., Brotherton, J.M.L., Saville, M., Gertig, D. M. (2015). Women's experience with home-based self-sampling for human papillomavirus testing. BMC Cancer, 15(1), 849. doi: 10.1186/s12885-015-1804-x

Suurna, M., Orumaa, M., Ringmets, I., & Pärna, K. (2022). Inequalities in reported use of cervical screening in Estonia: Results from cross-sectional studies in 2004–2020. BMC Women's Health, 22(1), 545. doi: 10.1186/s12905-022-02123-z

Szarewski, A., Cadman, L., Ashdown-Barr, L., & Waller, J. (2009). Exploring the acceptability of two self-sampling devices for human papillomavirus testing in the cervical screening context: A qualitative study of Muslim women in London. Journal of Medical Screening, 16(4), 193–198. doi: 10.1258/jms.2009.009069

Thompson, E. L., Garg, A., Galvin, A. M., Moore, J. D., Kasting, M. L., & Wheldon, C. W. (2021). Correlates of HPV Vaccination Intentions Among Adults Ages 27–45 Years Old in the U.S. Journal of Community Health, 46(5), 893–902. doi: 10.1007/s10900-021-00968-3

Todorova, I., Baban, A., Alexandrova-Karamanova, A., & Bradley, J. (2009). Inequalities in cervical cancer screening in Eastern Europe: Perspectives from Bulgaria and Romania.

International Journal of Public Health, 54(4), 222–232. doi: 10.1007/s00038-009-8040-6

Tsagkas, N., Siafaka, V., Tzallas, A., Zerzi, C., Zografou, M., Bilirakis, E., Paraskevaidi, M., Kyrgiou, M., Paraskevaidis, E. (2019). Knowledge and beliefs about HPV infection and the relevant vaccination in Greek young population. European Journal of Gynaecological Oncology. 40(4); 557-562. doi: 10.12892/ejgo4738.2019

Vallone, F., Lemmo, D., Martino, M. L., Donizzetti, A. R., Freda, M. F., Palumbo, F., Lorenzo, E., D'Argenzio, A., Caso, D. (2022). Factors promoting breast, cervical and colorectal cancer screenings participation: A systematic review. Psycho-Oncology, 31(9), 1435–1447. doi: 10.1002/pon.5997

Wagenmakers, E.-J. (2022). JASP - A Fresh Way to Do Statistics. Retrieved March 19, 2025, from JASP - Free and User-Friendly Statistical Software website: https://jasp-stats.org/

Waller, J., Bartoszek, M., Marlow, L., & Wardle, J. (2009). Barriers to cervical cancer screening attendance in England: A population-based survey. Journal of Medical Screening, 16(4), 199–204. doi: 10.1258/jms.2009.009073

Waller, J., Jackowska, M., Marlow, L., & Wardle J. (2012). Exploring age differences in reasons for nonattendance for cervical screening: A qualitative study. BJOG: An International Journal of Obstetrics and Gynaecology, 119(1), 26–32. doi: 10.1111/j.1471-0528.2011.03030.x

WHO. (2020). Cervical Cancer Elimination Initiative. Retrieved March 19, 2025, from https://www.who.int/initiatives/cervical-cancer-elimination-initiative

WHO. (2021a). WHO Guideline on Self-Care Interventions for Health and Well-being (1st ed). Geneva: World Health Organization.

WHO. (2021b). WHO Immunization Data portal—Detail Page. Retrieved August 25, 2025, from Immunization Data website: https://immunizationdata.who.int/global/wiise-detail-page

WHO. (2025a). Cancer Today, Incidence of CC. Retrieved March 20, 2025, from https://gco.iarc.who.int/today/

WHO. (2025b). Cancer Today, Mortality CC. Retrieved March 20, 2025, from https://gco.iarc.who.int/today/

WHO. (2025c). Immunization and vaccine-preventable communicable diseases. Retrieved March 21, 2025, from https://www.who.int/data/gho/data/themes/immunization

Williams, J., Rakovac I., Jocelyn, V., Tatarinova, T., Corbex M., Barr B., Tanith, R. , Sturua 5 , Galina Obreja , Andreasyan, D., Shukurov, S., Gahraman, H. Mikkelsen, B., Berdzuli,

N., Breda J. (2021). Cervical cancer testing among women aged 30–49 years in the WHO European Region. European Journal of Public Health, 31(4), 884–889. doi: 10.1093/eurpub/ckab100

Wolcott, M. D., & Lobczowski, N. G. (2021). Using cognitive interviews and think-aloud protocols to understand thought processes. Currents in Pharmacy Teaching and Learning, 13(2), 181–188. doi: 10.1016/j.cptl.2020.09.005

Xu, Y., Bi, W., Liu, T., Jiang ,Y., Wang ,Q. & and Fan, R. (2021). Factors associated with intention of human papillomavirus vaccination among Chinese college students: Implications for health promotion. Human Vaccines & Immunotherapeutics, 17(12), 5426–5432. doi: 10.1080/21645515.2021.2007014

Yi, Y., Xiu, S., Shi, N., Huang, Y., Zhang, S., Wang, Q., Yang, L., Cui, T., Wang, Y., Shen, Y., Jin, H. (2023). Perceptions and acceptability of HPV vaccination among parents of female adolescents 9–14 in China: A cross-sectional survey based on the theory of planned behavior. Human Vaccines & Immunotherapeutics, 19(2), 2225994. doi: 10.1080/21645515.2023.2225994

Young, B., & Robb, K. A. (2021). Understanding Patient Factors to Increase Uptake of Cancer Screening: A Review. Future Oncology, 17(28), 3757–3775. doi: 10.2217/fon-2020-1078

Zahumensky, J., Psenkova, P., Melnikova, L., Drabiscakova, P., Nadzamova, A., Kacerovsky, M., Simetka, O., Dosedla, E. (2021). Religion Affects Future Female Doctors' Approach to HPV Vaccination in Czech and Slovak Republics. Journal of Cancer Education: The Official Journal of the American Association for Cancer Education, 36(4), 880–891. doi: 10.1007/s13187-021-01995-3