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RESEARCH ARTICLE (ORIGINAL)

Health beliefs about cervical cancer: A study with women

Crenças em saúde relacionadas com o cancro do colo do útero: Um estudo com mulheres

Creencias sobre la salud relacionadas con el cáncer de cuello uterino: Un estudio con mujeres

Ana Sofia de Assunção Fernandes [1]
https://orcid.org/0009-0003-2209-1476

Ana Maria Poço Santos [2]
https://orcid.org/0000-0001-6032-6721

Ana Bela de Jesus Roldão Caetano [2]
https://orcid.org/0000-0002-5601-2727

[1] Hospital and University Center of Coimbra, Maternity Hospital Bissaya Barreto, Coimbra, Portugal

[2] Health Sciences Research Unit: Nursing (UICISA: E); Nursing School of Coimbra (ESEnfC), Portugal

Corresponding author
Ana Sofia de Assunção Fernandes
E-mail: sophie.21@sapo.pt

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Abstract
Background: The nurse specialist in Maternal Health and Obstetric Nursing must prioritize the provision of anticipatory care, creating strategies that promote accessibility and motivation for cervical cancer screening.
Objective: To determine the influence of sociodemographic, sexual, and gynecological variables and knowledge about cervical cancer on health beliefs.
Methodology: From the question "What influences health beliefs about cervical cancer?", a quantitative, descriptive-correlational study was conducted with 55 women aged between 25 and 64 years. A questionnaire on beliefs and behaviors related to cervical cancer was applied.
Results: There is a statistically significant relationship between the total score of the Health Belief Model Scale and the variables of having undergone a cervical cytology and professional situation.
Conclusion: The findings suggest that nurse specialists in Maternal Health and Obstetric Nursing should implement interventions in occupational health and intervene autonomously and assume responsibility for performing a cervical cytology. A specialized nursing consultation should be created for the climacteric.

Keywords: nursing; health beliefs; screening; cancer; cervix

Resumo
Enquadramento: O Enfermeiro Especialista em Enfermagem de Saúde Materna e Obstétrica (EEESMO) deve privilegiar a prestação de cuidados antecipatórios, criando estratégias de acessibilidade e motivação para rastreio do Cancro do Colo do Útero.
Objetivo: Caracterizar e determinar a influência das variáveis sociodemográficas, sexuais, ginecológicas e conhecimentos sobre cancro do colo do útero (CCU), nas crenças em saúde.
Metodologia: A partir da questão "como são influenciadas as crenças em saúde relacionadas com o Cancro do Colo do Útero?", desenvolveu-se um estudo quantitativo, descritivo-correlacional, com 55 mulheres com idades entre 25 e 64 anos. Aplicou-se um questionário sobre crenças e comportamentos relativos ao CCU.
Resultados: Os resultados mostraramm relação estatisticamente significativa, no valor global da Escala de Crenças em Saúde, com realização de citologia e situação profissional.
Conclusão: Perante os resultados, torna-se importante a intervenção do EEESMO no contexto laboral das mulheres; o exercício da sua autonomia e competência na realização da citologia; e a criação de consulta de enfermagem direcionada ao climatério.

Palavras-chave: enfermagem; crenças em saúde; rastreio; cancro; colo do útero

Resumen
Marco contextual: Los enfermeros especialistas en salud materna y obstétrica (EEESMO) deben dar prioridad a la prestación de cuidados preventivos y crear estrategias de accesibilidad y motivación para el cribado del cáncer de cuello uterino.
Objetivo: Caracterizar y determinar la influencia de las variables sociodemográficas, sexuales y ginecológicas, y los conocimientos sobre el cáncer de cuello uterino (CC) en las creencias sobre la salud.
Metodología: A partir de la pregunta „¿cómo influyen las creencias sobre la salud relacionadas con el cáncer de cuello uterino?", se llevó a cabo un estudio cuantitativo, descriptivo-correlacional con 55 mujeres de entre 25 y 64 años. Se administró un cuestionario sobre creencias y comportamientos relacionados con el CC.
Resultados: Los resultados mostraron una relación estadísticamente significativa, en el valor global de la Escala de Creencias sobre la Salud, con la realización de citologías y la situación profesional.
Conclusión: Ante estos resultados, es importante la intervención del EEESMO en los contextos laborales de las mujeres; el ejercicio de su autonomía y competencia en la práctica de citologías, y la creación de una consulta de enfermería dirigida al climaterio.

Palabras clave: enfermería; creencias sobre la salud; cribado; cáncer; cuello uterino

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Introduction

In Portugal, cervical cancer (CC) showed a decrease in mortality in the 1970s. This decrease is related to profound changes in the National Health System (SNS), including an increase in the quality of treatment and access to early diagnosis.
In 2019, 288,695 women were invited for cervical cancer screening (CCS), of whom 253,884 were screened, reflecting a screening adherence rate of 87.9%. Of these, 12,565 positive cases were referred to hospital (Ministério da Saúde, 2019). However, an analysis of the annual indicator base in a Personalized Health Care Unit (UCSP) in central Portugal revealed that the CCS fell below the national average, where in 2019 only 40.88% of eligible women underwent CCS, and in 2020 this figure decreased to 41.73%.
This data reflects the need for nurses to intervene, especially nurse specialists in Maternal Health and Obstetric Nursing, whose range of competencies includes the commitment to design, plan, coordinate, supervise, implement, and evaluate screening programs, projects and interventions to promote gynecological health; inform and guide women about gynecological health; and inform and guide women about community resources in the field of gynecological health, facilitating informed decision-making (Ordem dos Enfermeiros, 2019).
To achieve this, it is essential to have a clear understanding of the population being served in order to implement suitable strategies and promote adherence. One area that could help in this regard is the study of human beliefs as these provide a vital bridge between socialization and behavior.
With this in mind, a study was conducted to answer the question: what influences health beliefs about CC?

Background

Oncological diseases have an increasing impact on society, becoming the second leading cause of death in Portugal and the first before the age of 65 (Ministério da Saúde, 2019). Cancer prevention, diagnosis, and treatment require a coordinated response from the various structures of the SNS and the combined efforts of multiple entities and multidisciplinary teams (Ministério da Saúde, 2019).
The geographical coverage rate of the CCS is 100% in mainland Portugal and 98.4% nationally, with only the Autonomous Region of Madeira not implementing the CCS (Ministério da Saúde, 2019).
Early detection of cervical intraepithelial neoplasia-grade 2 or 3 allows for timely intervention and more frequent surveillance. Cervical cytology is the preferred method for primary CCS (Teixeira et al., 2019).
The World Health Organization (2020) defined the Global Strategy to Accelerate the Elimination of CC as a Public Health Problem, establishing three targets to be met by 2030: vaccinate more than 90% of girls, screen more than 70% of eligible women and provide 90% of women with precancer and invasive cancer with access to treatment and palliative care. Simply allocating resources to CC prevention does not seem to be enough. In fact, the adherence process is a multifactorial phenomenon that depends on a wide range of sociodemographic and psychosocial variables (Pereira & Lemos, 2019).
As these sociodemographic and psychosocial variables cannot be modified by health education alone, the focus must be placed on other potentially modifiable individual characteristics associated with health behavior, promoting behavioral changes (Abraham & Sheeran, 2015). Behavioral theories emerge as an alternative, where the Health Belief Model postulates that the patient's engagement in a certain behavior results from the interaction between their personal beliefs about whether they are at risk of developing a disease, their perception of that behavior's benefits, and the barriers to adopting that behavior, perfecting strategies to reduce the likelihood of developing a disease condition (Katz & Bosworth, 2016).

Research question

What influences health beliefs about CC?

Methodology

The main variable in this study corresponds to health beliefs about CC, while the influencing variables include sociodemographic, sexual, and gynecological variables and knowledge about CC. The study aims to characterize and determine the influence of sociodemographic variables on women's health beliefs about CC; to characterize and determine the influence of sexual and gynecological variables on women's health beliefs about CC; and to characterize and determine the influence of knowledge about CC on women's health beliefs. A quantitative, non-experimental, descriptive-correlational study using a cross-sectional approach was conducted with a convenience sample of 55 participants. The inclusion criteria were women eligible for the CCS, aged between 25 and 64 years old, registered in a UCSP in central Portugal, regardless of the type of consultation they attended. Women diagnosed with CC were excluded due to the risk of bias in the results, as well as women who attended consultations at this UCSP without being registered in it.
The data collection instrument was based on a questionnaire drawn up and adapted by Patrão and Leal (2001) for similar studies on the subject in question. The authors authorized the questionnaire. Only language updates were made to the sociodemographic, sexual, and gynecological characterization, and questions irrelevant to the study were removed.
The questionnaire consists of two parts. The first part includes sociodemographic, sexual, and gynecological information, including age, residence, education and profession, contraception method used, number of children, family history of CC, and healthcare-seeking habits. The second part consists of two questions on knowledge about CC and two questions on knowledge about cervical cytology. Subsequently, the Health Belief Model

Scale (HBMS) was applied. The scale was adapted to Portuguese, revised, improved, applied in the context of breast cancer, and reformulated for the subject in question (Champion, 1993; Champion & Scott, 1997 as cited by Patrão & Leal, 2001). This is a Likert-type scale, in which all the items are in a positive direction and the rating is given as follows: *totally disagree*, *disagree*, *neither agree nor disagree*, *agree*, *totally agree*. The instrument consists of 27 items organized into four dimensions: Susceptibility, Seriousness, Benefits, and Barriers.

The data collection took place between 1 April 2022 and 30 June 2022. The women were randomly approached while waiting in the health unit's waiting room.

The study was approved with a favorable opinion (P819_11_2021 from the Health Sciences Research Unit: Nursing and Opinion 11/2022 from the Regional Health Administration of Central Portugal, I.P.). Data confidentiality and participant anonymity were ensured. The IBM SPSS Statistics program, version 28.0.1.1, was used for data characterization, description, and inferential analysis, and a digital database was created.

Results

The sociodemographic characterization of the sample was carried out. Participants had a mean age of 40.87 years (Table 1).

Table 1

Characterization by age

Age	***n***	**%**
25 - 39 years	26	47.3
40 - 49 years	18	32.7
50 – 64 years	11	20
Total	**55**	**100**

Note. *n* = Number of participants; % = Percentage.

With regard to residence, most participants live in urban areas (50.9%), and the predominant education level is elementary school (38.2%). A decision was made to group elementary education into one category for a more realistic analysis by education level (1st grade-9th grade).

With regard to marital status, the majority of participants are married (54.5%), followed by 30.9% who are single and 14.5% who are divorced.

With regard to professional situation, most participants are employed (76.4%). A decision was made to group active workers and workers on sick leave into one category "employed" because both have the same professional situation.

The vast majority of participants (96.4%) are sexually active, with sexual activity beginning more than 3 years ago. The largest percentage of participants do not have children (30.9%), while 29.1% have one child, 21.8% have two children, and 18.2% have three or more.

With regard to the presence of gynecological problems, 23.6% reported having problems, 30.8% of whom had lesions caused by the human papillomavirus (HPV). Of the participants with HPV-related lesions, 3.6% reported having family members with CC.

More than half of the sample attended family planning consultations every year (63.6%) and 87.3% of the participants had undergone a cervical cytology at some point. Data shows that 41.9% of the participants were advised by their doctor to undergo a cervical cytology, while 1.8% were advised by their nurse.

Regarding the participants' knowledge about CC, knowledge is considered satisfactory when there are nine or more correct answers out of a total of 19 questions (Patrão & Leal, 2001). To the question "A woman has a higher risk of developing CC if . . . ", 83.6% of the participants answered correctly.

The data relating to the question "The possibility of developing CC increases in women aged…" revealed that 9.1% of the participants answered this question correctly, considering that the correct question is "Younger than 18, if the woman is sexually active", according to the Directorate-General for Health (DGS) guidelines.

The analysis of the answers to the questions "A cervical cytology is a test that . . ." and "Cervical cytology should be performed . . ." reveal that people know the importance of cervical cytology, with a percentage of over 60% correct answers.

The characterization of health beliefs about CC based on the HBMS dimensions shows a moderate belief in the Susceptibility and Seriousness dimensions (2.70 and 2.64, respectively). The Benefits dimension revealed a strong belief (3.84), while the Barriers dimension showed a weak belief (2.06).

Inferential analysis, after exploring the correlations between the variables, revealed a statistically significant correlation between age and HBMS ($p < 0.05$) only in the Susceptibility dimension with $p = 0.03$ (Table 2), meaning that older people feel more vulnerable to contracting CC.

Table 2

Spearman's test between age and the Health Belief Model Scale

	Age	
	R	***p***
Susceptibility	0.301	**0.03**
Seriousness	-0.085	0.54
Benefits	-0.198	0.15
Barriers	-0.009	0.95
Total score	0.096	0.49

Note. R = Spearman's correlation; *p* = Significance.

Table 3 shows a statistically significant correlation ($p < 0.05$) between education level and the HBMS in the Benefits dimension.

Table 3

Kruskal-Wallis test between education level and the Health Belief Model Scale

Education level	**Elementary School**		**Secondary School**		**Higher education**		χ^2	***P***
	N	Mean Rank	N	Mean Rank	N	Mean Rank		
Susceptibility	21	30.00	19	27.74	15	25.53	0.692	0.71
Seriousness	21	26.26	19	28.92	15	29.27	0.405	0.82
Benefits	21	20.86	19	30.16	15	31.47	6.971	**0.03**
Barriers	21	30.02	19	28.97	15	21.13	4.164	0.13
Total score	21	27.86	19	30.74	15	24.73	1.180	0.55

Note. χ^2 = Chi-square; *p* = Significance; *N* = Number of participants.

There was no statistically significant correlation ($p > 0.05$) between residence and the HBMS.
Nevertheless, a statistically significant correlation ($p < 0.05$) was found between the professional situation and the HBMS in the Susceptibility dimension and the total score (Table 4).

Table 4

Correlation between professional situation and Health Belief Model Scale

Professional situation	Employed		Unemployed		Retired		Other		χ^2	***p***
	N	Mean Rank	*N*	Mean Rank	*N*	Mean Rank	*N*	Mean Rank		
Susceptibility	42	30.21	6	19.75	1	52.00	6	16.75	7.641	**0.05**
Seriousness	42	29.68	6	25.00	1	36.50	6	17.83	3.383	0.34
Benefits	42	30.83	6	21.58	1	3.00	6	18.75	6.833	0.08
Barriers	42	29.69	6	28.67	1	39.50	6	13.58	5.871	0.12
HBMS	42	31.07	6	22.17	1	28.00	6	12.33	8.077	**0.04**

Note. χ^2 = Chi-square; *p* = Significance; N = Number of participants

Table 5 shows the results of comparing the variables of having undergone a cervical cytology and the HBMS. A statistically significant relationship ($p > 0.05$) was found in the Seriousness and Benefits dimensions and the total score. This indicates that people who underwent a cervical cytology have high beliefs about Susceptibility and Benefits, recognizing that it can be a health problem.

Table 5

Mann-Whitney test between having undergone a cervical cytology and the Health Belief Model Scale

Having undergone cervical cytology	Yes		No		*Z*	*p*
	N	Mean Rank	*N*	Mean Rank		
Susceptibility	48	29.02	7	21.00	-1.241	0.22
Seriousness	48	29.63	7	16.86	-1.974	**0.05**
Benefits	48	30.20	7	12.93	-2.688	**0.01**
Barriers	48	28.85	7	22.14	-1.037	0.30
Total score	48	29.85	7	15.29	-2.248	**0.03**

Note. Z = Standard deviation; *p* = Significance; *N* = Number of participants.

The correlation between the presence of gynecological problems and attending family planning consultations and the HBMS was not statistically significant ($p > 0.05$). In other words, the presence of gynecological problems does not influence health beliefs about CC.

A statistically significant correlation ($p > 0.05$) was found in the Benefits dimension (Table 6) between undergoing a cervical cytology in the next 5 years and the HBMS.

Table 6

Mann-Whitney test between undergoing a cervical cytology in the next 5 years and the Health Belief Model Scale

CCS in the next 5 years	Yes		No		*Z*	*p*
	N	Mean Rank	*N*	Mean Rank		
Susceptibility	48	28.32	7	25.79	-0.393	0.69
Seriousness	48	28.51	7	24.50	-0.620	0.54
Benefits	48	29.95	7	14.64	-2.383	**0.02**
Barriers	48	28.20	7	26.64	-0.240	0.81
Total score	48	28.79	7	22.57	-0.960	0.34

Note. *Z* = Standard deviation; *p* = Significance; *N* = Number of participants.

There was no statistically significant relationship between the variable of knowledge about CC and HBMS.

Discussion

The analysis of the relationships between the variables revealed that the participants in this study globally recognize their Susceptibility (2.70) and Seriousness (2.64) about CC, as well as the Benefits (3.84) of adhering to CCS. However, the participants did not attach much importance to Barriers to CC, which received a lower mean response (2.06). This is in line with the results of other studies, such as the one conducted by Ribeiro (2017).

The percentages for the above age groups are in line with the study by Teixeira et al. (2019), where women under the age of 40 are more likely to be screened, as they have more contact with healthcare during the perinatal period. The percentage of participants was lower in the 50-64 age group, which is in line with the study by Wang et al. (2017), in which the occurrence of CC in women aged 50 to 60 is influenced by adherence to screening, with a greater likelihood of contracting CC in those who were not adequately screened. In addition, the age of the participants influences beliefs about CC, and these data are supported by studies conducted by Ferreira (2014) and Ribeiro (2017).

An international study inferred that women with a perception of high susceptibility were more likely to be screened for CC than those with a perception of low susceptibility (Nigussie et al., 2019).

Residence did not show a statistically significant correlation with HBMS, that is, people have varying health beliefs about CC, regardless of where they live. However, it was possible to observe that women residing in rural areas obtained higher belief scores, results that are similar to those found in the study by Nelas et al. (2020).

Women with secondary education had higher beliefs about CCS in its score than those with other education levels. A strong correlation was found in the Benefits dimension between the education level and health beliefs about CC. In other words, women with higher education levels have higher beliefs in the benefits of CCS. This result is corroborated by the studies of Nigussie et al. (2019) and Desta et al. (2021).

Elementary education was the predominant education level, with 38.2% of the participants, contrary to the study conducted by Ferreira et al. (2014), where the majority had completed secondary school (38.5%).
Concerning professional status, there was again a statistically significant correlation ($p < 0.05$) in the Susceptibility dimension and the total score. Retired participants showed higher beliefs in the Susceptibility dimension and lower beliefs in the Benefits dimension. Furthermore, these participants showed higher beliefs in the Barriers dimension and, consequently, lower adherence to CCS. A systematic review conducted in Ethiopia found that perceived susceptibility to CC was an important predictor of adherence to CCS, increasing the likelihood of adherence by 5.5 times (Desta et al., 2021). No statistically significant correlation was observed between the presence of gynecological problems and the HBMS. However, the participants who reported having gynecological problems had higher overall health beliefs about CC. These results are similar to those found in a Portuguese study by Chaves (2018).
There was a statistically significant correlation between having undergone a cervical cytology and the HBMS, with women who had undergone a cervical cytology showing higher beliefs in the Seriousness and Benefits dimensions. These women recognize that CC can be a health problem and are committed to its prevention.
Conversely, they have lower beliefs in the Susceptibility and Barriers dimensions, indicating that they do not recognize their susceptibility to contracting CC and do not consider the constraints of screening or the cost in time or money as barriers. These results are corroborated by the study conducted in Portugal by Chaves (2018).
It was possible to conclude that 41.9% of the participants were advised by their physician to undergo a cervical cytology, while only 1.8% received this advice from their nurse. This suggests a need for a paradigm shift in the care provided by nurse specialists in Maternal Health and Obstetric Nursing.
The correlation between the variable of undergoing a cervical cytology in the next 5 years and the HBMS was statistically significant in the Benefits dimension. This suggests that people adhere to CCS mainly because they recognize its benefits.
In the sample, 12.3% of women have never undergone a cervical cytology and do not intend to do so in the next 5 years, while 9.1% should have undergone more than one. Although this is a small percentage, strategies need to be developed to increase outreach and adherence. One approach, as suggested by Pieters et al. (2021) and Colling (2024), is to promote positive experiences of undergoing a cervical cytology, including clearly explaining the procedure, deconstructing fear, minimizing discomfort, and implementing organized screening.
Regarding the knowledge presented by the sample under study, it was noted that a satisfactory level of knowledge was evident among participants who had already undergone a cervical cytology, with a correct response rate of more than 60% and results comparable to those documented in the study by Ribeiro (2017). Data analysis revealed that the participants had little knowledge about HPV and its risk factors.
International studies indicate that women's literacy is a significant predictor of adherence to CCS and, without this education, it can decrease by 67% (Desta et al., 2021). Advances in CCS are encouraging, especially regrading innovative strategies aimed at younger populations. A study conducted in Portugal by Garcia (2018) found that HPV testing with self-collection resulted in an increase of more than 40% in the participation rate compared to traditional cervical cytology. In addition, it was determined that a 1% increase in the participation rate is associated with savings of around €43. Cervical screening self-collection has been adopted in several countries as an effective alternative for increasing coverage and adherence to screening programs (Souza & Sena, 2022).

Conclusion

This research makes a significant contribution to the provision of healthcare services for women within the context of family and community, particularly in the areas of family planning and prenatal care. It emphasizes the importance of implementing intervention and health education programs with the aim of fostering healthier families.
Nurse specialists in Maternal Health and Obstetric Nursing play a fundamental role in this domain and must decentralize care and intervene directly in the community, which not only enhances the quality of the intervention but also reinforces recognition of their role and promotes women's health. They should promote the development of strategies targeting women at risk, such as the creation of a specialized nursing consultation for the climacteric. The implementation of multimedia dissemination strategies, such as mobile phone messages or even radio broadcasts, has the potential to increase awareness and, consequently, adherence to screening. It is crucial to dispel the notion that CC is a disease exclusively affecting young women. Specialized intervention in health education can be implemented in the context of occupational health, in collaboration with companies, to increase literacy about CC. An effective approach would be to create a weekly after-work period dedicated to promoting health surveillance.
Sex education and literacy in schools, with a simple, engaging, and well-structured language, has the potential to significantly impact the promotion of healthy behaviors. Adopting a socio-ecological approach to prevention not only enhances the learning experience but also fully engages the school community, fostering an environment conducive to the adoption of healthy practices.
A significant finding of this study is the confirmation of the autonomous performance guaranteed by Opinion no. 142/2009 (Ordem dos Enfermeiros, 2009). This opinion recognizes the authority of nurse specialists in Maternal Health and Obstetric Nursing to make decisions autonomously within the scope of specialized nursing care. These professionals are better positioned to assume responsibility for performing cervical cytology

as an intervention included in the woman's care plan, in accordance with DGS recommendations.
Recently, women's health has been overlooked in favor of focusing on preventive care for COVID-19. Primary health care must be given its rightful role back in health surveillance.
Prevention cannot neglect HPV vaccination, an aspect that is recognized as a limitation of this study and should be addressed in future research. In addition, a study examining the perceptions and behaviors of women who do not use health care services would provide valuable insights into this population's attitudes towards this issue.

Author contributions

Conceptualization: Fernandes, A.
Data curation: Fernandes, A.
Formal analysis: Fernandes, A., Santos, A. M., Caetano, A. B.
Funding acquisition: Fernandes, A.
Investigation: Fernandes, A.
Methodology: Fernandes, A., Santos, A. M., Caetano, A. B.
Project administration: Fernandes, A., Santos, A. M., Caetano, A. B.
Resources: Fernandes, A.
Software: Fernandes, A.
Supervision: Santos, A. M., Caetano, A. B.
Validation: Fernandes, A., Santos, A. M., Caetano, A. B.
Visualization: Fernandes, A., Santos, A. M., Caetano, A. B.
Writing – original draft: Fernandes, A.
Writing – review & editing: Fernandes, A., Santos, A. M., Caetano, A. B.

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