

Research article

# Anxiety as a stressor to treatment in women with Human Papillomavirus

## Ansiedad como factor estresor al tratamiento en mujeres con Virus del Papiloma Humano

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### Abstract

**Introduction:** Sexually transmitted infections are a serious public health problem, such as Human Papillomavirus Infection, which has acquired a peculiar relevance due to its high incidence. **Methodology:** correlational, cross-sectional, 80 women were surveyed, the Trait-State Anxiety Inventory IDARE was used, prior informed consent, Pearson's r was applied. **Results:** Age  $31.89 \pm 7.9$  years, 65% catholic, 53% married; 76% did not accept the treatment, of which 36% presented state anxiety and 39% presented trait anxiety; 24% accepted the treatment, of which 8% had state anxiety and 6% had trait anxiety. **Discussion:** It was observed that anxiety is not associated with the acceptance or rejection of treatment for Human Papillomavirus infection in the women in this sample. **Conclusions:** No statistical significance was found between state and trait anxiety with the acceptance or rejection of treatment for Human Papillomavirus infection in women ( $p > .05$ ).

**Keywords:** women; stress; systems; nursing; anxiety; Human Papillomavirus; care; public health.

**Resumen:**

**Introducción:** Las infecciones de transmisión sexual son un grave problema de salud pública, como la infección por el Virus del Papiloma Humano, que ha adquirido una relevancia peculiar por su alta incidencia. **Metodología:** Correlacional, transversal, se encuestaron a 80 mujeres, se utilizó el inventario de Ansiedad de Rasgo-Estado IDARE, previo consentimiento informado, se aplicó la r de Pearson. **Resultados:** Edad  $31,89 \pm 7,9$  años, 65% católicas, 53% casadas, 76% no aceptaron el tratamiento de las cuales 36% presentaron ansiedad de estado y 39% ansiedad de rasgo, 24 % aceptaron el tratamiento, de las cuales 8% presentaron ansiedad de estado y 6 % ansiedad de rasgo.. **Discusión:** Se observó que la ansiedad no se asocia con la aceptación o rechazo del tratamiento para la infección por el virus del Papiloma Humano en las mujeres de esta muestra. **Conclusiones:** No se encontró significancia estadística entre la ansiedad de estado y rasgo con la aceptación o rechazo del tratamiento para la infección por el virus del Papiloma Humano en mujeres ( $p > .05$ ).

**Palabras clave:** mujeres; estrés; sistemas; enfermería; ansiedad; virus del Papiloma Humano; salud; salud pública.

## 1. Introduction

Sexually transmitted infections are among the main causes of morbidity worldwide, with health, economic and social consequences of great repercussion, this health situation continues to be a public health problem of great importance in most countries of the world (World Health Organization [WHO], 2024). It has been identified that failures in the diagnosis and treatment of this pathology can lead to serious complications and sequelae, including infertility, fetal loss, ectopic pregnancy, anogenital cancer and premature death, as well as infections in newborns and infants.

The peak incidence of the Human Papillomavirus occurs in adolescence, shortly after the initiation of sexual activity, and most infections resolve spontaneously within two years (Cárdenas et al., 2021), in addition, it has been shown that a considerable proportion of women infected by this virus have precancerous lesions of the cervix that can develop into cancer, this natural evolution of the disease offers opportunities for health personnel to address this problem throughout the life cycle.

Human Papillomaviruses are a diverse group of DNA viruses belonging to the Papovavirus family, about 100 different types of Human Papillomaviruses have been identified, which are denoted by numbers; about 40 of them infect the genital area and less than half of them can be oncogenic this means that they can cause cancer, so they are known as high risk viruses these types of viruses are isolated from cancer patients, the main types of high risk viruses, isolated in various parts of the world, are: 16,18,45,31,33,52,58,35,56,5. The most frequent low risk viruses are 6 and 11, all Human Papilloma viruses are transmitted by skin to skin contact, on the other hand, there are also low risk viruses, these viruses are the ones that are frequently found in lesions that have not progressed, these lesions are known as mild dysplasia (Lopez et al. , 2007).

The incubation period of infection by the human papillomavirus is variable and can extend from two to three months, even up to 15-20 years, most of the lesions are inapparent and also disappear without leaving evidence of infection, a very small percentage, about 10% persist for a certain time, it is important to mention that these lesions could evolve into precancerous lesions, so that the virus can be latent for up to 20 years., in relation to treatment, the most used therapies currently used in symptomatic disease by human papillomavirus are based

on the destruction or excision of infected tissue, the available methods such as cryotherapy, electrosurgery and laser surgery are the most used (Sendagorta et al., 2019).

Electrosurgery consists of the use of high frequency alternating electric current to excise the transformation zone and the lesion with a depth of no less than 5 mm, electrosurgery is the generation and application of radiofrequency currents between an active electrode and another dispersion electrode, this with the purpose of raising the temperature in the tissues in an adequate and controlled manner that allows a pure cut in them, as well as complementing the secondary phenomena of desiccation and coagulation. In order to perform this therapeutic procedure, a previous colposcopy exploration is necessary with a directed exocervical biopsy and complemented with endocervical curettage.

The dimensions of the loops used depend on the size and site of the lesion, the cutting technique used will be after identifying the entire cervix to avoid causing tissue injury outside the field of view, for which a colposcope magnification between 3. 5-6x, the cutting techniques can be performed in different ways, starting from top to bottom, from left to right or vice versa, the procedure is complemented with a coagulation effect of the bleeding vessels with a spherical electrode of 3-5 mm, in addition to sweeping the surgical bed, which destroys 1-2 mm more, which self-limits or suppresses the dysplastic or neoplastic cells that are in residual form by this phenomenon, always respecting the endocervical canal to avoid stenosis of the same (Canul et al., 2013).

Cryotherapy, is a freezing treatment that has proven to be a safe and effective way to eliminate abnormal cells that may appear in the cervix, in cryotherapy an extremely low temperature is used to destroy the abnormal tissue, cryotherapy is considered a simple procedure since it does not require cutting the affected tissues, because only its use lies in the application of low temperature which is generally between  $-80^{\circ}\text{C}$  or  $-90^{\circ}\text{C}$ , to the tissue until reaching the freezing point of intracellular water thereby producing cell death.

Cryotherapy is used primarily in patients whose lesions are confined to the epithelial portion, because the depth of destruction rarely exceeds 5 mm, the healing rates depend on the size of the lesion, generally averages 90% for lesions a quadrant, often patients treated with cryotherapy may have mild pain during the procedure, after cryosurgery, about 20% of women have profuse watery discharge, some patients have slight blood staining, particularly 12 to 15 days after cryotherapy, when the eschar begins to separate from the treated areas, long-term complications are minimal and consist mostly of cervical stenosis or narrowing in 1% of patients (Lopez et al. , 2007).

Human Papillomavirus Infection has acquired a peculiar relevance due to its high level of incidence and its relationship with cervical cancer; the different types of viruses that cause this disease affect both men and women, causing the risk of causing cancer-associated lesions (Clavo, 2022), morbidity related to sexually transmitted diseases ranges from local or mild lesions to more severe conditions, in fact, it is estimated that 25% of women infected with Human Papillomavirus show changes to lesions that may be cervical intraepithelial neoplasia of which they are remitted in 60% of cases, persist in 30%, and of these progress in 10% and 1% to invasion (WHO, 2016), so it is important to consider prevention and detection methods such as the pap smear as well as the treatment of lesions.

Anxiety is a transient and rapid response that many individuals encounter when receiving any adverse health-related news. As part of a screening programmed, women will face the consequences of the test on a recurring basis throughout their lives, like what happens with cytology. Anxiety is an alert system that is activated in anticipation of a danger or future

threat as an intense response that is, it is very easy to be associated with different stimuli or situations, generates a marked activation of the body that serves to put in place behaviors such as escape, avoidance or struggle with the threatening elements; therefore, when it becomes problematic (because it is disproportionate to the stimulus that generates it, because it occurs repeatedly and/or is prolonged in time), it is treated by teaching skills to reduce this activation, it is also common that the physiological activity is also manifested at a psychological level, producing a greater number of distractions, hypervigilance, apprehension, irritability, insecurity, etc. , thoughts and evaluations are related to threat, overestimation of risk and underestimation of one's own resources, etc. Anxiety, therefore, is focused on prevention with respect to the future so that certain unpleasant consequences that are presupposed do not occur (Chacón et al., 2021).

According to Toro et al (2018), anxiety is not a unitary phenomenon, it manifests itself in a similar way to other emotions, combining three response systems or dimensions: the subjective cognitive, the physiological somatic and the motor-behavioral, from which the statement that anxiety is initially an adaptive behavior that benefits and that becomes maladaptive due to the intensity and duration of the symptoms, as well as the inability to respond because the subject considers that he/she does not possess the appropriate elements to comply satisfactorily with the symptoms, an adaptive behavior that benefits and that becomes maladaptive due to the intensity and duration of the symptoms, as well as the inability to respond because the subject considers that he does not have the appropriate elements to satisfactorily meet the requirements of the demand. In other words, the subjective appreciation of the other dimensions is what allows a given person to know that there is an anxious disturbance.

Some studies have described that the anxiety experienced by women with Human Papillomavirus disease in some of the phases of prevention, detection or treatment is mainly related to the time that elapses between taking the exam, delivering and interpreting the results, as it constitutes a decisive period for many of the feelings experienced to remain or disappear, many women describe this time as "difficult" or "terrible" (Wiesner, et al., 2009), even for some women, this feeling is so marked that it limits their functioning in daily life.

Meza et al., (2008) carried out a research entitled "Influence of coping styles, depression and anxiety on adaptation to the disease in women with Human Papillomavirus infection", whose objective was to determine if the coping styles used by women with this infection constitute a risk or protective factor for psychological distress, studied 70 women of whom 40% had psychological distress, of these 84,6% presented trait anxiety, 80,0% state anxiety; of the group without psychological distress 60%, 27,3% had trait anxiety, 31,8% state anxiety and 36,4% depression symptoms.

In Mexico, various studies have been carried out on the Human Papillomavirus and its effects on women, however, most of these studies focus on organic causes, which has generated a merely physiological vision of the problem and therefore limited actions in the management of the disease, there is currently little research on the anxiety caused by the Human Papillomavirus in women, but no research has been carried out that associates the anxiety of these women with the decision to undergo a corresponding treatment, which can be electrosurgery and cryotherapy.

On the other hand, nursing research aimed at promoting women's stability is transcendental, since knowing if anxiety is associated with the decision to accept treatment is crucial to develop strategies that help restore optimal well-being in these women; statistics show that there are still a large number of women who may be at risk of dropping out of treatment or

refusing treatment, a situation that could put their lives and well-being at risk; in nursing there is little research dedicated to studying the association of these factors in women with Human Papillomavirus infection.

In all nursing research it is important to have a comprehensive approach to the person that allows increasing the knowledge of the phenomenon that is investigated, so this research was based on the systems model of Neuman, this model adapts well to the problem due to its central focus on the well-being of women and their relationships with environmental stressors. therefore, the objective was to determine the relationship between anxiety as a stressor and treatment in women with Human Papillomavirus infection, based on the hypothesis that anxiety as a stressor is related to treatment in women with Human Papillomavirus infection.

### *1.1. Neuman's Systems model*

Dr. Betty Neuman's Systems model is a framework that views the person as part of a comprehensive and multifaceted system, it comprises various key concepts, with the first one being the person, the person is considered a client or client system, which can refer to an individual, a family, a group, or a community, the person is composed of five variables that interact with each other in a reciprocal manner.

In the model the person is written as a client which is made up of five variables, a physiological variable that refers to the physical and chemical structure together with the function of the organism in its biological structure, biological functions, physical appearance, the second is the psychological variable which refers to the mental and emotional processes in the interaction with the environment understood as the mental processes and interaction of the environmental effects, internally and externally, the mental status, perceptions, self-concept, level of anxiety, feelings, defense mechanisms and self-esteem; the third variable is the sociocultural variable which refers to the effects and influences of social and cultural conditions arising from the combination of societal effects, cultural conditions and influences, family background, culture, racial background, educational, family, lifestyles and occupation; the fourth variable is the developmental variable referring to age-related processes and activities, related to the relative timing of environmental processes and activities, chronological age, developmental stages, maturational crisis as well as the different levels of maturation of each individual; finally there is the spiritual variable referring to spiritual beliefs and influences including personal beliefs, values, happiness, power, love, hope, meaning, purpose (Neuman and Fawcett, 2002).

The five variables are incorporated into the client structure, which consists of a flexible line of defense, normal lines of defense, flexible lines of defense, and the fundamental structure, the primary purpose of the lines of defense and resistance is to serve as shield mechanisms, providing protective support to prevent stressors from compromising the integrity of the system; when a stressor breaches any of the lines of defense or resistance, a reconstitution takes place, which refers to the amplification of energy in response to the level of stress reaction, the process of reconstitution can occur at any point following the commencement of treatment for stresses, it has the potential to strengthen the body's defense mechanisms beyond their original level, stabilize the system at a lower level, or restore it to its before the disease (Neuman and Fawcett, 2002).

## 2. Methodology

A quantitative, correlational, non-experimental and prolective study involved 80 women with a confirmed diagnosis of Human Papillomavirus infection from a first-level care unit in Mexico, the sampling was by availability, two groups were formed, the first with women who were in treatment and the second group with those who did not accept the treatment, the selection was random according to order and day of consultation.

The Trait-State Anxiety Inventory (IDARE) is a self-evaluative inventory, designed to evaluate two relatively independent forms of anxiety: anxiety as a state (transient emotional condition) and anxiety as a trait (relatively stable anxious propensity), each of them has 20 items. In the IDARE-E, there are 10 positive anxiety items (i.e., the higher the score, the greater the anxiety) and 10 negative items, on the trait scale there are 13 positive and 7 negative items, the response options range from 0 to 4 in both subscales.

In the State Scale, the subject is guided to respond how he or she feels at the present time in relation to the items formulated, and how he or she generally feels in relation to the items of the Anxiety Scale as a trait (Spilberger et al., 2002). This instrument is validated for use in the Mexican population and has been used in multiple studies, reporting a reliability coefficient of 0.90 and showing a high degree of internal consistency (Izquierdo, 2021).

For the statistical analysis of the data, descriptive statistics were used with frequencies, percentages for categorical variables and for the numerical variables mean and standard deviation, frequencies, percentages, Pearson's correlation ( $r$ ) and contingency tables were used to describe the study variables; for the hypothesis test, the  $\chi^2$  chi-square test was used to see the relationship between the variables, with a significance level of  $p < 0.05$ , the data were analyzed in the statistical software SPSS (Statistical Package for the Social Sciences) version 25, the results were presented in tables and graphs.

Ethical considerations: ethical considerations were addressed with the request for informed consent from the women participants, the research was adhered to the principles of the Declaration of Helsinki, the design and execution were formulated in a protocol that was presented to a scientific committee for consideration, it was considered risk-free research (WMA, 2008).

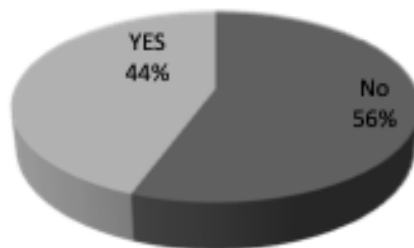
## 3. Results

The results of the 80 women who participated in the research who had a diagnosis of Human Papillomavirus Virus (HPV) infection are described, two groups were formed; group A women with treatment ( $n=19$ ) and group B women without treatment ( $n=61$ ). The ages of the women who participated in the study were in the age range of 18 to 53 years, with a mean of  $31.8 \pm 7.9$  years. The predominant schooling in both groups was the middle level, represented 37% in group A and 49% in group B respectively, both groups profess the catholic religion mostly, 53% group A and 69% group B, regarding marital status, the majority were married 58% (group A), and 51% group B.

The presence of anxiety in the total sample was estimated at 44% of the participating women who had anxiety (Figure 1).

**Figure 1.**

*Anxiety distribution of all women with Human Papillomavirus Infection*



**Source:** Own elaboration (2024).

To identify if there is a relationship between age and state anxiety and trait anxiety, Pearson's correlation coefficient was calculated (Table 1), the results showed that age is not related to trait anxiety in both groups, group A ( $r=0.5$   $p=0.52$ ), group B ( $r=-0.2$   $p=0.07$ ), with respect to state anxiety only group B showed a low negative correlation ( $r=-0.3$ ,  $p=0.01$ ).

**Table 1.**

*Correlation between anxiety levels and age of women with Human Papillomavirus Infection*

Group	State Anxiety		Trait Anxiety	
	r	p	r	p
Group A With treatment	0,2	0,24	0,1	0,52
Group B Without treatment	-0,3	0,01	-0,2	0,07

**Source:** Own elaboration (2024).

When evaluating the relationship between HPV and the presence of anxiety, it was observed that in group A, 31.6% of women presented anxiety, unlike group B, where 47.5% of women presented state anxiety (Table 2).

**Table 2**

*State Anxiety for Groups of Women with Human Papillomavirus Infection*

State Anxiety	Group A		Group B	
	f	%	f	%
No	13	68,4	32	52,0
Yes	6	31,6	29	48,5
Total	19	100	61	100

**Source:** Own elaboration (2024).

**Table 3.**

$\chi^2$  Chi-square test for state anxiety - treatment group of women with Human Papillomavirus Infection

State Anxiety	gl	P
$\chi^2$ 1,500	1	0,22

Source: Own elaboration (2024).

Stable 4 shows that 26.3% and 50.8% of the women with and without treatment, respectively, presented trait anxiety.

**Table 4.**

Trait Anxiety by Treatment Group in Women with Human Papillomavirus Infection

State Anxiety	Group A		Group B	
	f	%	f	%
No	14	73,7	30	49,2
Yes	5	26,3	31	50,8
Total	19	100	61	100

Source: Own elaboration (2024).

When applying the  $\chi^2$  chi-square test (Table 5), a statistically significant association was observed between the presence of trait anxiety and being treated for HPV ( $p > .05$ ).

According to the results shown, it can be inferred that anxiety as a stressor is related to treatment in women with Human Papillomavirus infection"  $p > .05$ .

**Table 5.**

$\chi^2$  Chi-square  $\chi^{\text{test}}$  for trait anxiety - treatment group in women with Human Papillomavirus Infection

State Anxiety	gl	P
$\chi^2$ 3,515	1	0,04

Source: Own elaboration (2024).

## 4. Discussion

80 women were surveyed, the age range of the study population was  $3.89 \pm 7.9$  years, with a predominance of women aged 30 years with 10%, these results are similar to those described in other studies, which indicates that the incidence of Human Papillomavirus infection (HPVI) is higher in women aged 20 to 30 years, as mentioned in the research by Heredia et al., (2018) in their study prevalence and typification of Human Papillomavirus genotypes in women in the metropolitan area of the valley of Mexico, where they reveal that the prevalence of Human Papillomavirus infection in women occurred within 35 to 55 years.

According to the results of this research, Human Papillomavirus virus infection is more frequent in married women, this also coincides with what was found in the work of Hernández et al., (2006) who reported that 67% of women with Human Papillomavirus infection were married, with respect to the educational level in the present research, women with a medium level of education predominated, unlike Hernández et. al. (2006) who found the basic level to be the most prevalent.



Regarding anxiety in the women studied, it was found that 56% did not present anxiety, which agrees with the study carried out by Meza y Morales (2008), in their study, the presence of emotional alterations associated with Human Papillomavirus infection was detected, within the emotional alterations anxiety was studied, finding that out of a total of 70 women (60%) did not present psychological distress within their contributions, the description that In women who presented anxiety, there was a trend towards trait anxiety, similar to that found in the present study, where of the total of 44 women who presented anxiety, 55% presented trait anxiety.

The results of this research indicate that anxiety is not the trend since only 34% of them presented anxiety, this was different from what was reported by Mendoza et al., (2017) who estimated that 99,3% in relation to the presence of Human Papillomavirus infection; although it is important to consider the psychological sphere in patients with Human Papillomavirus virus infection, it is also relevant to consider that there are other emotions manifested in these women such as anger and fear, shame.

It is undeniable that each woman responds uniquely and individually to the same stimulus, however, this is a stressful fact for women at this time it is transcendental to recognize the importance and effect that not undergoing medical treatment can have a precise understanding of anxiety as a stressor must serve as a basis for the comprehensive care they receive, since this stressor is linked to important emotional alterations, so it should be noted that if the woman does not achieve the reconstitution, which in this case is the treatment, there will be no way to protect the basic structure, resulting in the non-satisfaction of the needs of the system and with this loss of health or well-being.

## 5. Conclusions

The results obtained in the research show that there is no statistically significant association between the presence of anxiety and the association of treatment, however, according to the data provided, in relation to the groups it was identified that in both groups, these women are in a range of higher prevalence of Human Papillomavirus virus infection since it was identified that the mean age was 31.8 years for both groups, likewise, 34% of the women presented anxiety, which could suggest that anxiety is not associated with the decision to accept or reject treatment.

In the fight against Human Papillomavirus infection, early sexual education is one of the most essential elements that can be taken into consideration, it has been mentioned that one of the risk factors for acquiring the disease is having multiple sexual contacts or having had multiple sexual partners. In this research, although the number of sexual partners was not asked, it is striking that more than half of the sample reported being married, so it is recommended to strengthen the two main strategies in Mexico, screening, diagnosis and timely treatment of precursor lesions and strengthening prophylactic vaccination against HPV, it is considered that the strengthening of these two available actions are important to reduce the incidence and mortality of neoplastic diseases associated with Human Papillomavirus virus.

The central focus of the systems model is the well-being of the client system and its reactions in relation to the stressors of the environment that can be internal and external factors, which is constituted by internal environment, external environment, created environment. The internal environment is all the interactive forces that take place inside the client, an example of these are the responses conditioned by the external environment and all the interactive forces of an intrapersonal and extra-personal type produced outside the client, such as the

expectations of the role or patterns of communication (state anxiety), and the created environment that is intrapersonal in nature but also includes the external environment, this is developed subconsciously as a symbolic expression of the integration of the system.

According to the model that guided the present research, the person is considered as a system that is in constant contact with stressors that can be internal or external, crossing or not the lines of defense and modifying the basic structure of this leading to loss of stability, according to the present study it was found that state anxiety was mostly present in women without treatment. which indicates that the women's lines of defense were not affected by anxiety and that this in turn did not influence the fact of undergoing treatment for infection with the Human Papillomavirus.

Also, examine the impact of stressors on health and the directions of stress and stress reduction, where stressors are able to have a positive or negative effect on the client system, where a stressor is an environmental force that can affect the stability of the system which can be: Intrapersonal, interpersonal, extra-personal (trait anxiety).

The measurements provided in this study will broaden the panorama of the problem by facilitating its identification and management, specifically because it focuses on the study of the psychological variable of the system, which is undoubtedly affected in women who receive a positive diagnosis for Human Papillomavirus and who have to receive treatment.

In this way, the importance of the internal and external environments is highlighted, which are transferred to each other and are contained in the created environment, which makes the variables involved for the maintenance of the integrity and stability of the client system, on the other hand, the created environment works intrinsically providing a space or protective shield.

Finally, given the prevalence of Human Papillomavirus infections, it is important for nursing professionals to design and implement programs that promote the development of strategies aimed at sensitizing women with Human Papillomavirus infection to undergo treatment to prevent the infection from progressing to cervical cancer.

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