ISRCTN12972432 https://doi.org/10.1186/ISRCTN12972432

Effect of a multivitamin supplement in patients with cervical squamous intraepithelial lesions and human papillomavirus

Submission date
24/07/2025

Recruitment status
No longer recruiting

Registration date
25/07/2025

Overall study status
Completed

Last Edited
28/07/2025

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
This study aimed to find out whether taking a daily multivitamin could help women with early cervical lesions fight the human papillomavirus (HPV) and reduce the chances of these lesions getting worse. Cervical cancer often starts with small changes in the cervix caused by HPV. Strengthening the immune system through vitamins may help the body clear the virus more effectively.

Who can participate?
Women between 20 and 60 years old, diagnosed with low-grade cervical lesions (early changes in the cervix) confirmed by a colposcopy (a medical exam using a special magnifying device) and a biopsy. Only women who tested positive for HPV and agreed to participate by signing a consent form were included.

What does the study involve?
Participants were randomly divided into two groups:
One group took a daily multivitamin with vitamins A, C, D, and E for three months, took a three-month break, and then restarted, for a total of six months.
The other group did not take the vitamins during the same period.

Doctors monitored the size and changes in the lesions using colposcopy at the beginning and after six months. HPV viral load (how much virus was present) was measured using a molecular technique called PCR (Polymerase Chain Reaction). This test works like a “copy machine” for DNA, making millions of copies of the virus’s genetic material so it can be detected and measured. The amount of virus was estimated by comparing the intensity of the PCR bands in a gel (like checking how dark a line appears).

What are the possible benefits and risks of participating?
The vitamins might help strengthen the immune system, lower HPV levels, and reduce the risk of lesions getting worse. Risks were minimal, as the doses were safe and approved, but some vitamins (especially A, D, and E) can build up in the body, so the intake was carefully controlled.

Where is the study run from?
The study was carried out at the Colposcopy Clinic of Sanitary Jurisdiction II (Ministry of Health) in Ciudad Juárez, Chihuahua, Mexico.

When is the study starting and how long is it expected to run for?
The study started in 2018 and lasted six months for each participant.

Who is funding the study?
The study was funded by the Programa para el Desarrollo Profesional Docente (PRODEP) under the project agreement UACJ-PTC-364/Folio 511-6/17-7605.

Who is the main contact?
Dr Arellano-Ortiz, ana.arellano@uacj.mx

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Dr Ana Lidia Arellano-Ortiz

ORCID ID
https://orcid.org/0000-0002-0985-9191

Contact details
Av. Plutarco Elías Calles #1210, Fovissste Chamizal
Juárez
Mexico
32310
+52 6566881800
ana.arellano@uacj.mx

Additional identifiers

Protocol serial number
RIPI2019ICB19

Study information

Scientific Title
Multivitamin supplementation versus no supplementation for HPV viral load reduction and lesion progression in cervical squamous intraepithelial lesions

Study objectives
To evaluate the effect of a multivitamin supplement on reducing the progression of cervical squamous intraepithelial lesions.

Specific Objectives:
1. To evaluate the nutritional status of a group of patients with LSIL (Low-Grade Squamous Intraepithelial Lesions) from the Colposcopy Clinic of Sanitary Jurisdiction II in Ciudad Juárez, Chihuahua.
2. To supplement a group of patients with a multivitamin to cover more than 75% of the daily requirements for vitamins A, C, D, and E.
3. To determine the serum and dietary concentrations of these specific nutrients at baseline and after six months of supplementation.
4. To monitor lesion progression through colposcopic analysis and HPV presence at baseline, six, and twelve months after diagnosis.
5. To evaluate the effect of multivitamin supplementation on the regression, progression, or persistence of HPV, comparing it with a group of patients who did not receive supplementation.

Hypothesis
Multivitamin supplementation in patients with low-grade cervical intraepithelial lesions will show a reduction in the progression of squamous intraepithelial lesions compared to those who did not receive supplementation.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 21/08/2017, Comité Institucional de ética y bioética de la UACJ (Av. Plutarco Elías Calles #1210 Fovissste Chamizal, Juárez, 32310, Mexico; +52 6566881800; investigacionicb@uacj.mx), ref: CIBE-2017-1-43

Primary study design
Interventional

Study design
Randomized pilot study

Study type(s)
Prevention, Treatment

Health condition(s) or problem(s) studied
Prevention of progression in cervical intraepithelial lesions in patients with HPV

Interventions
A randomized pilot study was conducted between 2018 and 2019 to evaluate the effect of multivitamin supplementation in women with LSIL and HPV. Ethical approval was obtained from the Ethics Committee of the Autonomous University of Ciudad Juárez, and the study complied with the Declaration of Helsinki and national health regulations.

A total of 82 women aged 20–60 years with LSIL confirmed by colposcopy at the Colposcopy Clinic of Sanitary Jurisdiction II in Ciudad Juárez, Chihuahua, were initially recruited. Exclusion criteria included HSIL, cervical cancer, condylomas, pregnancy, baseline HPV-negative results, or refusal to sign informed consent. LSIL diagnosis was confirmed through colposcopy with 5% acetic acid and histopathological biopsy. Cervical samples were collected for HPV detection and

DNA extraction, performed using phenol-chloroform-isoamyl alcohol, and HPV was identified by endpoint PCR targeting the L1 capsid gene. Viral load was quantified as relative units (RU/PC) using optical density analysis with ImageJ®.

Sixty-three HPV-positive patients were randomly assigned to an experimental group (n = 31), receiving multivitamin supplementation, or a control group (n = 32) without supplementation. Both groups underwent baseline and six-month evaluations, including dietary assessment, gynecological examination, and viral load measurement.

The experimental group received a multivitamin solution (vitamins A, C, and D) and vitamin E capsules to meet >75% of daily requirements: vitamin A 1200 µg/day, vitamin C 291.3 mg/day, vitamin D 18.75 µg/day, and vitamin E 57.1 mg/day, administered for three months with a three-month washout. Colposcopic outcomes were classified as regression, partial regression, persistence, or progression. Statistical analysis included Student's t-tests, ANOVA, and Chi-square tests with significance set at $\alpha = 0.05$.

Randomisation:
Patient recruitment was carried out at the Colposcopy Clinic of Sanitary Jurisdiction II in Ciudad Juárez. Participants were evaluated and assessed by the gynecologist-obstetrician in charge of the clinic, Dr Cecilia Díaz Hernández. Once low-grade squamous intraepithelial lesions were diagnosed, patients were personally invited to participate in the study. Detailed information about the project was provided, and participation was entirely voluntary. Written informed consent was obtained from all participants prior to enrolment. Patients were randomly selected and assigned an identification number. Only the principal investigator was aware of the group allocation for each participant. Neither the gynecologist-obstetrician nor the students involved in the study were informed of the group assignments.

Intervention Type
Supplement

Primary outcome(s)
Regression, persistence, or progression assessed by colposcopic evaluation before and after six months of supplementation measured using patient records

Key secondary outcome(s)
Viral load measured by endpoint PCR and optical densitometry before and after six months of supplementation

Completion date
13/06/2019

Eligibility

Key inclusion criteria
1. Women diagnosed with low-grade cervical intraepithelial lesions (LSIL) confirmed by colposcopy and histopathological biopsy
2. Age ≥20 years
3. Positive for human papillomavirus (HPV) infection

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
20 Years

Upper age limit
60 Years

Sex
Female

Total final enrolment
43

Key exclusion criteria
1.Patients with High-Grade Squamous Intraepithelial Lesions (HSIL) , Cervical Cancer, and condylomas
2.Pregnant patients
3. Those who only attended at the beginning and did not return
4. HPV-negative patients at baseline
5. Those who did not sign the informed consent

Date of first enrolment
08/02/2018

Date of final enrolment
10/05/2018

Locations

Countries of recruitment
Mexico

Study participating centre
Colposcopy Clinic of Sanitary Jurisdiction II (Ministry of Health) (Clínica de Colposcopía de la Jurisdicción Sanitaria II (Secretaría de Salud))
Paseo Triunfo de La República 3530
Juárez
Mexico
32330

Sponsor information

Organisation
Universidad Autónoma de Ciudad Juárez

ROR
https://ror.org/05fj8cf83

Funder(s)

Funder type
University/education

Funder Name
Fondo Programa para el Desarrollo Profesional Docente (PRODEP)

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study will be published as a supplement to the results publication

IPD sharing plan summary
Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	in Spanish		25/07/2025	No	Yes