



# First international article with a Self-Collected Veil

## "High prevalence of cervical high-risk human papillomavirus infection mostly covered by Gardasil-9® prophylactic vaccine in adult women living in N'Djamena, Chad"

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**A B S T R A C T**

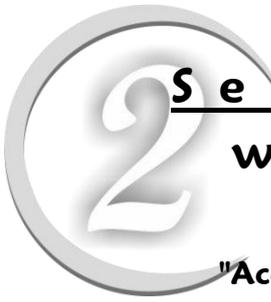
**Background:** We conducted in 2018 a descriptive, quantitative, population-based, cross-sectional survey estimating the prevalence of cervical high-risk human papillomavirus (HR-HPV) infection and associated risk factors among adult women living in N'Djamena, Chad.

**Methods:** Five of the 10 districts of N'Djamena were randomly selected for inclusion. Peer educators contacted adult women in community-churches or women association networks to participate in the survey and come to the clinic for women's sexual health "La Renaissance Plus", N'Djamena. Medical, socio-demographical and behavioral informations were collected. HPV DNA was detected and genotyped in endocervical swab using Anyplex™ II HPV28 genotyping test (Seegene, Seoul, South Korea).

**Results:** 253 women (mean age, 35.0 years; range, 25-65) including 3.5% of HIV-positive women were prospectively enrolled. The prevalence of HPV infection was 22.9%, including 68.9% of HR-HPV infection and 27.6% being infected with multiple genotypes, providing a total HR-HPV prevalence of 15.8% (95% CI%: 11.3-20.3). The most prevalent HR-HPV genotypes were HPV-58, HPV-35, HPV-56, HPV-31, HPV-16, HPV-45, HPV-52 and HPV-18. HPV types targeted by the prophylactic Gardasil-9® vaccine were detected in nearly 70% (67.5%) and HPV-58 was the most frequently detected. HIV infection was a risk factor strongly associated with cervical infection with any HPV [adjusted Odds ratio (aOR): 17.4], multiple types of HPV (aOR: 8.9), HR-HPV (aOR: 13.2) and cervical infection with multiple HR-HPV (aOR: 8.4).

**Conclusion:** These observations highlight the unsuspected high burden of cervical HR-HPV infection in Chadian women and point the potential risk of further development of HPV-associated cervical precancerous and neoplastic lesions in a large proportion of women in Chad. The high rate of preventable Gardasil-9® vaccine genotypes constitutes the rationale for introducing primary vaccine prevention against cervical cancer in young female adolescents living in Chad.

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- ✓ Study presented at 1 international congress: ICASA 2017, Abidjan, Côte d'Ivoire
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# Second international article with a Self-Collected Veil

## "Acceptability and Accuracy of Cervical Cancer Screening Using a Self-Collected Veil for HPV DNA Testing by Multiplex Real-Time PCR among Adult Women in sub-Saharan Africa"

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**A B S T R A C T**

**Background:** Cervical cancer is caused by high risk-HPV (HR-HPV) genital infections. Self-collection of genital specimens and HPV DNA testing are methods increasing screening rates. The cross-sectional GYNAUTO-CHAD study compared the acceptability and HPV DNA diagnostic accuracy of clinician-collected endocervical sample with swab (as reference collection) and genital self-collection method with a veil (V-Veil-Up Gyn Collection Device, V-Veil-Up Pharma Ltd., Nicosia, Cyprus) in adult African women.

**Methods:** Five of the 10 districts of N'Djamena were randomly selected for inclusion. Peer educators contacted adult women in in community churches and mosques or women association networks to participate to the survey and to come to the clinic for women's sexual health "La Renaissance Plus". A clinician performed a pelvic examination and obtained an endocervical specimen using flocked swab. Genital secretions were also obtained by self-collection using veil. Both clinician- and self-collected specimens were tested for HPV and HR-HPV DNA using multiplex real-time PCR. Acceptability of both collection methods was assessed; test positivity was compared by assessing methods agreement, sensitivity and specificity.

**Results:** A total of 253 women (mean age, 35.0 years) was prospectively enrolled. The prevalence of HPV infection was 22.9%, including 68.9% of HR-HPV, with unusual HRHPV genotypes distribution and preponderance ( $\approx 70\%$ ) of HR-HPV targeted by Gardasil-9<sup>®</sup> vaccine. Veil-based genital self-collection showed high acceptability (96%), feasibility and satisfaction. Self-collection by veil was non-inferior to clinician-based collection for HR-HPV DNA molecular testing, with "good" agreement between both methods, high sensitivity (95.0%; 95%CI: 88.3-100.0%) and specificity (88.2%; 95%CI: 83.9-92.6%). Remarkably, the rates of HPV DNA and HR-HPV DNA positivity were significantly higher (1.67- and 1.57-fold, respectively) when using veil-based collected genital secretions than clinician-collected cervical secretions by swab.

**Conclusions:** These observations highlight the unsuspected high burden of cervical oncogenic HRHPV infection in Chadian women. Self-collection of genital secretions using the V-Veil-Up Gyn Collection Device constitutes a simple, highly acceptable and powerful tool to collect genital secretions for further molecular testing and screening of oncogenic HRHPV that could be easily implemented in the national cervical cancer prevention program in Chad.

- ✓ Submitted on March the 27<sup>th</sup> 2019 in **BMC women's health Journal** (Group BMC part of Springer Nature, London, UK)
- ✓ Study presented at 2 international congresses:
  - ICASA 2017, Abidjan, C te d'Ivoire (Best poster award Track B: clinical research study),
  - STI & HIV World Congress 2019, Vancouver, Canada
- ✓ Date of publication: 27 November 2019 <https://researchopenworld.com/acceptability-and-accuracy-of-cervical-cancer-screening-using-a-self-collected-veil-for-hpv-dna-testing-by-multiplex-real-time-pcr-among-adult-women-in-sub-saharan-africa/>



# **Third international article with a Self-Collected Veil**

## **"Accuracy of Curable Sexually Transmitted Infections and Genital Mycoplasmas Screening by Multiplex Real-Time PCR Using a Self-Collected Veil among Adult Women in sub-Saharan Africa"**

Co-authors: Zita Aleyo Nodjikuambaye, Fabrice Compain, Damtheou Sadjoli, Ralph-Sydney Mboumba Bouassa, H el ene P er e, David Veyer, Leman Robin, Chatt e Adawaye, Serge Tonen Wolyec, Ali Mahamat Moussa, Donato Koyalta and Professor Laurent BELEC from the Pominou Hospital – France ([prbelecl@yahoo.fr](mailto:prbelecl@yahoo.fr))

### **A B S T R A C T**

**Background:** Sexually transmitted infections (STIs) are highly prevalent in sub-Saharan Africa. Genital self-sampling may facilitate the screening of STIs in hard-to-reach remote populations far from large health care centers and may increase screening rates. The cross-sectional GYNAUTO-STI study was carried out to assess the performance of a novel genital veil (V-Veil-Up Gyn Collection Device, V-Veil-Up Pharma Ltd., Nicosia, Cyprus) as a genital self-sampling device to collect genital secretions to diagnose STIs by molecular biology as compared to reference clinician-collected genital specimens, in adult African women.

**Methods:** Adult women living in N'Djamena, the capital city of Chad, were recruited from the community and referred to the clinic for women's sexual health "La Renaissance Plus". A clinician obtained an endocervical specimen using flocked swab. Genital secretions were also obtained by self-collection using veil. Both clinician- and self-collected specimens were tested for common curable STIs (including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma genitalium* and *Trichomonas vaginalis*) and genital *Mycoplasma* spp. by multiplex real-time PCR (Allplex<sup>TM</sup> STI Essential Assay, Seegene, Seoul, South Korea). Test positivities for both collection methods were compared by assessing methods agreement, sensitivity and specificity.

**Results:** A total of 251 women (mean age, 35.1 years) was prospectively enrolled. Only seven (2.8%) women were found to be infected with at least one common STIs [*C. trachomatis*: 3 (1.2%), *N. gonorrhoeae*: 1 (0.4%), *M. genitalium*: 4 (1.6%) and *T. vaginalis*: 1 (0.4%)], while the prevalence of genital mycoplasmas was much higher (54.2%) with a predominance of *Ureaplasma parvum* (42.6%). Self-collection by veil was non-inferior to clinician-based collection for genital microorganisms DNA molecular testing, with "almost perfect" agreement between both methods, high sensitivity (97.0%; 95%CI: 92.5-99.2%) and specificity (88.0%; 95%CI: 80.7-93.3%). Remarkably, the mean total number of genital microorganisms detected per woman was 1.14-fold higher in self-collected specimens than in clinician-collected specimens.

**Conclusions:** Veil-based self-collection of female genital secretions constitutes a convenient tool to collect in gentle way cervicovaginal secretions for accurate molecular detection of genital bacteria. Such sampling procedure could be easily implemented in STIs clinics in sub-Saharan Africa.

- ✓ Submitted on March the 7<sup>th</sup> 2019 in: **Infectious Diseases in Obstetrics and Gynecology** (Partnership John Wiley & Sons, Inc., Hoboken, New Jersey, United States, et Hindawi Limited, London, United Kingdom)
- ✓ Accepted for publication on 20 May, 2019
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# Fourth international article with a Self-Collected Veil

## "Low prevalence of common sexually transmitted infections contrasting with high prevalence of mycoplasmas asymptomatic genital carriage: A community-based cross-sectional survey in adult women living in N'Djamena, Chad"

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## A B S T R A C T

**Background:** We herein report on a cross-sectional study prospectively enrolling from the community adult women living in N'Djamena, Chad, which aimed to estimate the burden of asymptomatic genital carriage of common curable sexually transmitted infections (STIs) (including *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, *Mycoplasma genitalium* and *Trichomonas vaginalis*) and genital *Mycoplasma* spp., as well as to assess their possible associated risk factors.

**Methods:** A total of 251 women were prospectively included and screened for common curable STIs as well as for genital mycoplasma carriage by multiplex real-time PCR.

**Results:** Only seven (2.8%) women were found to be infected with at least one common STI by multiplex real-time PCR: *C. trachomatis*, *N. gonorrhoeae*, *M. genitalium* and *T. vaginalis* were recovered from 3 (1.2%), 1 (0.4%), 4 (1.6%) and 1 (0.4%) women, respectively. No sociodemographic and behavioral characteristics could be associated in multivariate analysis with the genital carriage of the four common curable STIs detected. In contrast, the prevalence of genital mycoplasmas was much higher (54.2%) with a predominance of *Ureaplasma parvum* (42.6% of the total population).

**Conclusions:** Our study shows a low prevalence of common STIs in contrast with a high prevalence of mycoplasmas among asymptomatic adult women recruited on a community basis in Chad. These observations highlight the need for etiologic management of STIs relying on PCR-based techniques rather than a syndromic approach in resource-limited countries.

- ✓ Submitted on March the 7<sup>th</sup> 2019 in **The Open Microbiology Journal** (Groupe Bentham Science Publishers, Dubai, United Arab Emirates)
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