

### Syphilis Risk Perceptions Among Repeatedly Infected Men Who Have Sex with Men in Beirut-Lebanon



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**Background and purpose:** The aim of this study is to gain a better understanding of the knowledge, attitudes, motivations and behaviors with regard to syphilis and syphilis risk among men who have sex with men (MSM) in Beirut who are repeatedly infected.

**Methodology:** Interviews were conducted with 17 MSM diagnosed with syphilis at least twice within the previous 5 years in a sexually transmitted infections (STI) clinic and checkpoint in Beirut. The focus of the interviews was on participants' general attitudes, personal concern, risk perceptions and self-reported sexual behaviors in relation to syphilis. Data were analyzed using Qualitative Thematic Analysis.

**Results and discussions:** The number of early syphilis infections ranged from 2 to 3 and participants had a high level of knowledge about syphilis transmission, symptoms, health consequences if untreated. Most of the participants attributed their syphilis infections to their high number of sex partners and to a lack of consistent condom use with sexual partners. The majority attributed their infection to oral sex. The majority did not express concerns about getting syphilis again, and none appeared to be aware of the connection between syphilis and HIV risk. Conversely, almost all participants expressed concerns about infecting others. There was evidence of significant stigma in relation to syphilis in the Lebanese MSM community.

**Conclusion:** The significant stigma associated with syphilis translates into decreased discussion and, thus, awareness of the infection. Syphilis risk was associated with multiple sexual partners and to periods of especially high-risk behavior. Knowledge about syphilis risk, and especially about the relationship between syphilis risk and HIV risk, was lacking. There appears to be little willingness to modify high-risk behaviors, suggesting that an awareness-raising campaign to change attitudes and behaviors in Lebanese MSM could be fruitful.

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### HIV, sexually transmitted infections, and sexual health screening in men who have sex with men in Lebanon: a retrospective study



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**Background and purpose:** The aim of this study was two-fold: first, to determine the prevalence of HIV and other sexually transmitted infections (STIs) in a large sample of men who have sex with men (MSM) attending a sexual health clinic in Beirut, Lebanon; and second, to identify the predictors of HIV/STI screening, in order to understand motivations for screening in a context where rates of sexual health screening are low.

**Methodology:** Data were obtained from the medical records of 1364 MSM who visited a sexual health clinic in Beirut between 2014 and 2018. Socio-demographic and diagnostic information, and quantitative data concerning sexual risk behavior and HIV/STI screening behavior were collected.

**Results and discussion:** The prevalence of HIV (5.95%) and other STIs (57.32%) in the participant sample was similar to that of other European countries. 58.22% of the sample reported used alcohol or

drugs during/ before sex; 69.59% reported having used cellphone applications for sex; 33.09% considered their HIV risk to be high while 21.34% did not know their level of risk. On the whole, there was a high prevalence of these risk behaviors in MSM who had been screened for HIV/STIs before than those never tested. A binary logistic regression model showed that condom use, and infection with HPV, Chlamydia, and Gonorrhoea were significant predictors of having had an HIV/STI screen.

**Conclusion:** These findings demonstrate an urgent need to encourage sexual health promotion and HIV prevention awareness in Lebanese MSM and, most importantly, to promote STI/HIV screening in this high-risk population.

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### The use of atomic force microscopy to assess anti-inflammatory activity of magnetic nanosystems containing PIP<sub>2</sub>-binding domain of plasma gelsolin



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**Background and Purpose:** Bacterial sepsis remains a critical health problem with high morbidity and mortality. PBP10 peptide synthesized based on PIP<sub>2</sub> binding sequence from plasma gelsolin (160-169AA), have the anti-inflammatory potential due to its ability to bind and inactivate bacterial wall molecules such as LPS and LTA. The purpose of this study was to investigate the capability of magnetic nanoparticles to enhance PBP10 anti-inflammatory properties in nanosystems composed of MNP@NH<sub>2</sub>, MNP@Au and PBP10 attached to their surface.

**Methodology:** Lung epithelial cells were stimulated with LPS to induce pro-inflammatory response. Changes in cortical stiffness of the cells due to treatment with MNP@NH<sub>2</sub>, or PBP10 was assessed using atomic force microscopy (AFM) to determine nanosystems' potential to prevent LPS effects. Stiffness measurements were taken with AFM working in force spectroscopy mode in liquid conditions, 2nN force and 300 nm indentation depth. The statistical significance was determined using the two-tailed Student's t-test ( $P < 0.05$ ). The viability of tested cells upon treatment with PBP10 and tested nanosystems were determined using MTT assay.

**Results:** Our experimental setting shows the potential of AFM to determine anti-LPS potential of tested compounds based of recorded changes in cells' mechanical properties. Observed decrease in Young's modulus from  $5.0 \pm 0.2$  kPa in control to  $4.3 \pm 0.1$  kPa in LPS stimulated cells, indicates that lung epithelial cells became softer. Simultaneous treatment of cells with PBP10 in free and immobilized form resulted in the reverse of the LPS effect and a partial increase in cell stiffness. A visible effect was noted for treatment with PBP10. Young's moduli increased to  $4.9 \pm 0.1$  kPa, which was comparable with values recorded for unstimulated control cells.

**Conclusions:** Nanosystems based on PBP10 have a potential to be used as anti-inflammatory agents. AFM can be used as a tool to assess anti-inflammatory potential of tested drugs.

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