



**Australian Government**  
**Department of Health**

# COMMUNICABLE DISEASES INTELLIGENCE

2020 Volume 44  
<https://doi.org/10.33321/cdi.2020.44.41>

## **Risk perceptions, misperceptions and sexual behaviours among young heterosexual people with gonorrhoea in Perth, Western Australia.**

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# Communicable Diseases Intelligence

ISSN: 2209-6051 Online

This journal is indexed by Index Medicus and Medline.

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Communicable Diseases Intelligence (CDI) is a peer-reviewed scientific journal published by the Office of Health Protection, Department of Health. The journal aims to disseminate information on the epidemiology, surveillance, prevention and control of communicable diseases of relevance to Australia.

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## Original article

# Risk perceptions, misperceptions and sexual behaviours among young heterosexual people with gonorrhoea in Perth, Western Australia.

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## Abstract

### Background

Notification rates of gonorrhoea in Australia for heterosexual young adults rose by 63% between 2012 and 2016. In Western Australian major cities, there was a 612% increase among non-Aboriginal females and a 358% increase in non-Aboriginal males in the ten-year period 2007–2016. A qualitative public health investigation was initiated to inform appropriate action.

### Methods

Eighteen semi-structured telephone interviews were conducted with non-Aboriginal heterosexual young adults aged 18–34 years living in Perth, Western Australia, who had recently been notified to the Department of Health with gonorrhoea, to explore the context of their sexual interactions and lifestyles which could have predisposed them to contracting gonorrhoea. Data were thematically analysed.

### Results

Common themes were having several casual sexual partners, limited communication between sexual partners about condom use or sexual history prior to engaging in sexual activity, inconsistent condom use, normalisation of some sexually transmissible infections amongst young people, and poor understandings and assessment of sexually transmissible infection risk.

### Conclusions

The findings support public health interventions that focus on communication between sexual partners and shifting of risk perceptions in sexual health education programs, ensuring accessibility of quality sexual health information, increasing condom accessibility and acceptability, and on strategies for addressing misperceptions of young people in relation to sexually transmitted infections.

**Keywords:** Heterosexual; Australia; Sexually Transmitted Infections; Gonorrhoea; Sexual Behaviour; Qualitative; Non-Aboriginal; Young adults

## Introduction

This investigation was initiated and funded by the Western Australia (WA) Department of Health in response to a gonorrhoea outbreak in Perth, WA, in 2016. Gonorrhoea is a common sexually transmissible infection (STI) caused by the bacterium *Neisseria gonorrhoeae*. Notification rates of gonorrhoea in Australia rose 63%, from 61.9 per 100,000 in 2012 to 100.8 per 100,000 in 2016.<sup>1</sup> Of the 23,887 gonorrhoea cases in Australia in 2016, a total of 3,362 cases (14.1%) were notified in WA.<sup>1</sup> From 2007 to 2016, the gonorrhoea notification rate in the metropolitan area of WA increased by 612% among non-Aboriginal females and by 358% among non-Aboriginal males; no increase was seen among metropolitan Aboriginal people (unpublished data, WA Department of Health 2016). In 2016, seventy percent of gonorrhoea notifications in WA were in non-Aboriginal males and females, 64% (1,521) among people aged 20–34 years. These people are of childbearing age and therefore would be affected by the adverse reproductive consequences of gonorrhoea, i.e. infertility. Gonorrhoea notifications in WA for heterosexual adults in 2016 were 64% higher than in 2015.<sup>2</sup>

Changing sexual practices, individual perceptions of risk, number of sexual partners, condom usage, travel, ethnicity, use of digital dating technologies or location for meeting sexual partners, smoking and substance use, age and bisexuality have all been identified as possible risk factors for gonorrhoea in young heterosexual people.<sup>3–9</sup> Ethnicity and/or country of birth is sometimes associated with risk factors such as differing socio-economic status and levels of education.<sup>6,10</sup> These factors may increase the risk of contracting gonorrhoea for some ethnic groups.<sup>3,10</sup> Cultural factors, such as reluctance to discuss matters relating to sex, may also reduce the likelihood of individuals from non-English speaking backgrounds (NESB) from receiving STI testing and treatment.<sup>6</sup>

The aim of this investigation was to characterise the potential drivers of the gonorrhoea outbreak in young adults in Perth, aged 18–34 years, to help inform the public health response.

## Methods

Eligible interview participants were aged 18–34 years, non-Aboriginal, heterosexual, residents in the Perth metropolitan area, and had been notified to the Department of Health with gonorrhoea between 1 May and 13 August 2018.<sup>11</sup> Notification data for 321 eligible participants (102 females, 219 males) were extracted from the Western Australian Notification of Infectious Diseases Database (WANIDD). In this study the term ‘heterosexual’ is used to include men who have sex with women only and women who have sex with men only. Individuals were excluded if they were men who had sex with men in the last six months, were sex workers, or had chlamydia co-infection. Pregnant women were also excluded due to a reported low incidence of STIs amongst pregnant women in Australia.<sup>12</sup>

After applying the exclusion criteria, 251 individuals were excluded. Purposeful sampling of the 70 remaining individuals involved working through the list to identify individuals from a wide geographical area and from different types of clinics (general practice, non-government organisations, and sexual health clinics). An even spread of males and females across the 18–34 years age group was also sought.

Ethics approval was not required since the investigation was part of a wider governmental public health surveillance in response to the gonorrhoea outbreak. However, the investigation adhered to the National Statement on Ethical Conduct in Human Research.<sup>13</sup> Before contacting a patient, the investigator contacted the notifying clinician to explain the purpose of the investigation and to ensure the patient was aware of their gonococcal diagnosis. The investigator also confirmed that the phone number recorded in WANIDD was correct or obtained a current phone number from the practice’s records. Patients were to be excluded if they had

insufficient spoken English to provide informed consent for participation, or if the referring clinician advised against contacting the patient due to factors such as extreme distress around notification. This is identical to the process followed in the public health investigation of other infectious disease outbreaks for which a timely public health response is required, e.g. *Salmonella* or measles. Contact with eligible patients was attempted by telephone at different times of day; 37 patients were contacted multiple times and did not respond.

If patients answered a telephone call, the investigator explained to the patient why they had been contacted, and that any information they provided would be combined with information provided by other patients, would not be linked to their name, and would be stored securely in a password protected file. Patients were informed that the interview was expected to last 15–20 minutes and that they could opt out of the interview at any point. Finally, patients were asked if they had any questions. Patients who agreed to participate in the interview provided verbal consent. If a patient did not agree to participate ( $n = 15$ ), the investigator attempted to contact the next eligible patient. Interviews continued until a point of data saturation (no new information emerging) was reached.

Semi-structured, qualitative telephone interviews were used to encourage participants to feel more comfortable sharing intimate details of their sexual behaviour.<sup>14</sup> Consolidated criteria for reporting qualitative research (COREQ)<sup>15</sup> guided data collection, analysis and reporting.

The interview guide used open-ended questions and explored domains identified by previous gonorrhoea research studies and the WA Department of Health as possible risk factors for gonorrhoea transmission. These were: sexual practices and partners, individual perceptions of risk, condom usage, travel, ethnicity, use of dating applications, location of meeting sexual partners, and smoking or substance use.<sup>3–9</sup> The interview script was tested with two patients and refined. As a qualitative study, no outcomes

measures were identified, allowing the investigator to remain open and identify key themes in patients' narratives. The investigator was a WA Health department employee with skills in qualitative research. De-identified audio recordings were transcribed by an external agency.

Interview transcripts were thematically analysed using NVivo 12 data management software and guidelines recommended by Braun & Clarke.<sup>16</sup> This involved reading each interview transcript several times and assigning labels or codes to small sections of content related to participants' sexual practices and networks. The codes were then clustered into key themes and related themes grouped into broad areas. A sample of the coded transcripts was reviewed independently to confirm the codes assigned were meaningful and unambiguous. Finally, all transcripts were read again to ensure that all data had been coded and the codes were used consistently.

## Results

Data saturation was reached after 18 interviews and data collection ceased at this point. Participants comprised ten males (56%) and eight females (44%) aged 21 to 33 years (mean = 27 years; median = 28.5 years) and from 17 metropolitan suburbs within a 65 km radius of Perth city. Participants answered all questions and no participants withdrew from the investigation during the interview. The median duration of interviews was 23 minutes, 3 seconds.

The themes arising from the qualitative interviews could be grouped into six broad areas: meeting a sexual partner; communicating about and deciding to have sexual intercourse; reasons for not using condoms; reasons for testing, response to diagnosis and risk perception; knowledge of gonorrhoea; and future sexual behaviour.

### Meeting a sexual partner

A common theme was an increased number of sexual partners following a long-term relation-

ship breakup. Many participants described an emotional trigger to their increased sexual activity and number of casual partners.

*“I was upset and just wanted to meet other people. I reckon I had sex with— from the break up till now, I reckon let’s say, five people. One was with a condom. These were all one-night stand[s]...”*

*Female, 22 years*

Participants appeared to be equally if not more likely to meet their sexual partners through friends, at a party, or at an entertainment venue such as a pub or nightclub, rather than through using dating applications (Tinder, Facebook etc).

Participants who used terms such as ‘one-night stand’, ‘random’, ‘hook-up’ or ‘casual’ were asked if they considered the partner to be casual in nature. The majority reported engaging in sexual activity with more than one casual partner. None reported having group sex in the previous six months, i.e. sexual activity with more than one person at the same time. The number of different sexual partners in the six-month period preceding a gonorrhoea notification usually varied between one to approximately nine partners with the exception of one male participant who reported he had between 10 and 20 sexual partners in the preceding six months. The number of times having sexual intercourse with each partner also varied and was frequently only once.

### **Communicating about and deciding to have sexual intercourse**

Participants reported limited communication about sex prior to engaging in sexual activity. This included for example, discussion of preferred sexual activities, condom use, past sexual history, or time and result of most recent sexual health check-up/testing. Male participants, especially, seemed to find it difficult to articulate how they moved from initial communication to having sex, with the most common response being ‘I don’t know’ or ‘it just happened’. Most

participants made assumptions about their partner/s or the sexual activity which was to occur, without explicit discussion.

*“Just because it was Tinder, and he was like, ‘Come over’. It was like kind of obvious [that we were going to have sex].”*

*Female, 22 years*

Several participants reported having sex in public spaces such as parks or in cars. Reasons given were convenience or lack of another appropriate place to have sex, or the ‘excitement’ factor of potentially being seen by someone else while having sex.

While most participants cited consuming little to no alcohol in association with sexual interactions, two reported consuming in excess of 20 standard drinks prior to having sexual intercourse, which they believed resulted in them contracting gonorrhoea. Perceptions as to whether alcohol use impacted sexual decision-making varied, with some participants suggesting it had not impacted their behaviours, and others believing it had.

A minority of participants reported illicit substance use prior to having sexual intercourse, with most of these stating that they would have engaged in the same sexual activity with or without having used substances.

### **Reasons for not using condoms**

No participants reported consistent condom use for oral, vaginal or anal sex in the six-month period preceding their gonorrhoea notification. Although three participants reported never using condoms for any sexual activity during this period, the remainder reported sometimes using condoms for vaginal sex. Only two male participants reported using condoms when receiving oral sex and this was inconsistent between sexual interactions. Three participants reported instances of unprotected anal sex in the six-month period preceding their gonorrhoea notification.

No participants mentioned cost as a factor for not using condoms and none cited difficulties or embarrassment at purchasing condoms as a reason for lack of use. While many participants had condoms at home, few carried condoms outside of the home during times when sexual activity might occur, for example when going to entertainment venues or parties. This appeared to be partly due to participants not consciously acknowledging that they would be engaging in sexual activity.

*Participant: "He said, 'Just come over to my house, and we can have a drink there'. I was like, 'Okay', and so I came over, and that was pretty much it."*

*[Interviewer: "Did you take condoms with you?"]*

*Participant: "No, I didn't..."*

*Female, 22 years*

Another participant, a 31 year old male, stated:

*"Well, I tend to not think I am going out to have sex..."*

Several participants chose not to use condoms, citing reduced sensation as a motivator. However, there were also other social and psychological reasons cited for not using condoms.

*"It feels better if you like, you can connect with that person more... So much so that you trust the person more."*

*Female, 27 years*

*"I did take condoms... I did pull it out and I put it on. That's when she goes, 'Oh'... Basically, was offended that I put it on. So I took it off."*

*Male, 31 years*

One participant cited lack of knowledge around how to use condoms as a barrier to using con-

doms and multiple female participants cited their use of contraceptives as a reason for not using condoms.

Most participants reported attempting some informal risk assessment prior to their sexual encounters. Often participants were aware that they themselves could have an STI without symptoms, but still appeared to view a lack of symptoms in their sexual partner/s as a sign of being STI-free. The term 'clean' was used frequently:

*"She seemed very clean to me... [she was] pretty, wearing clean clothes, takes care of herself... as opposed to someone who [doesn't] take good care, hygiene-wise and all that, then I'd be sceptical."*

*Male, 31 years*

### **Reason for testing, response to diagnosis and risk perception**

Most participants reported that they did not engage in routine STI testing. Of those who had previously undergone STI testing, males were more likely to report being symptomatic as the prompt to have STI testing, while females were more likely to undergo testing after being informed by a current or former sexual partner that they had been exposed to an STI.

Despite reporting that they knew infections could be transmitted sexually, and acknowledging that they had engaged in risky sexual behaviour, most participants said they experienced shock at testing positive. Two participants noted feelings of anger following their diagnosis. Other participants expressed feelings of surprise, followed by shame, embarrassment, and feeling 'dirty' or 'not clean'.

Several participants reported that people in their social networks had normalised contracting an STI. This appeared to be related to a perception that the infections are relatively common, easy to treat and have few long-term health consequences.

*“Like I said, majority of people that I know, every single person has had an STI...”*

*Female, 27 years*

*“...that one [gonorrhoea] and chlamydia are pretty low-key... you can get rid of them really easily. I know so many people that have had an STI... so everyone is pretty relaxed about getting them...”*

*Female, 22 years*

## Knowledge of gonorrhoea

All participants stated they were aware that infections could be contracted through penetrative sexual intercourse, however few participants knew the infection could be transferred through oral sex. The information participants knew prior to contracting gonorrhoea tended to come from sexual health education at school and from informal discussions within friendship groups. No participants cited discussions with their family members or having researched the infection online, prior to testing positive. Awareness of chlamydia appeared to be higher than that of gonorrhoea.

After testing positive, participants often searched for information online, sometimes asked their clinician for more information, and, less frequently, discussed the infection with friends. Knowledge of the infection increased amongst most participants after having tested positive.

*“After that [gonorrhoea diagnosis], I went online; I studied about it, what it is, how it happens and what are the symptoms. Is it something serious for your health, how it will get cured and how things are going to happen?”*

*Female, 32 years*

## Future sexual behaviour

Some participants stated they intended to use condoms for vaginal sex with casual partners

but none stated that they would use condoms or dams for oral sex in future. Several participants suggested they would be more selective with their casual partners. These participants explained they intended to sleep with people they knew more closely or who appeared more ‘clean’. Some participants stated that having tested positive for gonorrhoea increased the likelihood of them keeping condoms on their person in future. Only one participant said their positive result would not influence future sexual behaviour.

*“I definitely use condoms now. I have condoms in my car, in my wallet. If I’m in a position where I want to be with someone, I do it the safe way now... If you don’t have them you don’t use them. It’s that simple.”*

*Female, 27 years*

However, none stated that they had actually used condoms or changed their sexual behaviour after their recent gonorrhoea infection.

Communication about sex also improved between partners after having tested positive for gonorrhoea. Participants described discussions with their sexual partners around how and in which site in the body the infection had been acquired, as well as who it may have been acquired from. Several participants mentioned being more open with current or new sexual partners after their latest gonorrhoea infection.

## Discussion

This qualitative study of 18 non-Aboriginal, heterosexual 18–34 year olds in Perth, WA, who had tested positive for gonorrhoea, identified risk perceptions, misperceptions and sexual behaviours which may have contributed to increased gonorrhoea notification rates in this group.

Consistent with other studies,<sup>3,6</sup> interview participants reported having several casual sexual partners prior to being diagnosed. In this sample, an increase in casual sexual partners was common following the breakdown of a

long-term relationship. The role of casual sexual partners in the rise of gonorrhoea infection in Perth requires further investigation. In a US case-control study of gonorrhoea among young males aged 15–29 years,<sup>7</sup> Mertz et al. found that cases were twice as likely to have had one or more casual partners in the month prior to attendance at the clinic as controls. Having a new casual partner in the preceding month was also strongly and significantly associated with gonorrhoea infection. The association lessened amongst those who had been sexually engaged with their most recent casual partner for more than one month. Not knowing your most recent casual partner's sexual history was also strongly associated with gonorrhoea infection.<sup>7</sup>

Participants in the current investigation reported little to no discussion with their sexual partner about condom use, sexual risk factors and preferred sexual activities prior to engaging in sexual intercourse. Strategies to support improved communication between casual sexual partners would be worth exploring by public health professionals and could include online technologies, which may provide a platform to discuss safer sex, prior to meeting in person.

Previous studies have reported younger age as a risk factor for gonorrhoea<sup>7,10</sup> and younger females at higher risk.<sup>3</sup> Our investigation excluded minors and was unable to recruit any participants aged 18–20 years. However, the small number of individuals in this age group who were eligible to participate in the investigation suggests that younger age is unlikely to be contributing significantly to gonorrhoea transmission in Perth. Few of the cases interviewed reported recent travel overseas or having sex while travelling overseas, and those that did had protected sex. No female patients could be recruited from a sexual health clinic to explore the previously reported link<sup>8</sup> between having sex while travelling overseas and increased gonorrhoea infection in females attending a sexual health clinic.

The evidence relating to electronic dating applications or to meeting one's sexual partner on the

internet as risk factors contributing to increases in gonorrhoea is inconclusive.<sup>3,4,17</sup> In the current study, some participants met their sexual partners through dating applications, while others met sexual partners through friends or at entertainment venues like nightclubs.

Consistent with available evidence,<sup>3,18</sup> most interview participants had consumed little to no alcohol prior to engaging in sexual activity. Furthermore, few participants used illicit substances prior to engaging in sexual intercourse; of those who did, most perceived that they still would have engaged in the same sexual behaviour with or without substance use.

Inconsistent condom use has been linked to increasing gonorrhoea notifications,<sup>6</sup> however the evidence is mixed. In this investigation, although many participants kept condoms in their homes, they did not carry them on dates, or when going to nightclubs or parties. Participants gave a variety of reasons for not using condoms, including a lack of sensation or reduced pleasure; risk assessment (partner seemed 'clean'); social factors (partner did not suggest, partner seemed offended); use of contraceptives (and therefore low risk of pregnancy); and lack of concern (STIs are common and easy to treat). The latter view is consistent with studies conducted in England amongst 360 young people aged 15–24 years which suggested that young people may be less inclined to use condoms and employ safer sex practices because they see sexually transmitted infections as easy to test for and treat. This is combined with a lack of awareness of antibiotic-resistant gonorrhoea.<sup>5</sup> The perception of condom use primarily as a barrier method to preventing pregnancy is also consistent with other studies.<sup>19,20</sup>

The current investigation provides further evidence that condoms are more likely to be used if easily accessible at the time of sexual intercourse. The relationship between normalisation of STIs and sexual risk-taking behaviours would also be valuable to explore in more depth given prevailing attitudes that STIs are common and easy to test and treat, resulting in reduced condom use.

## Limitations

Excluding cases due to chlamydia co-infection did not allow comparison of the experiences of those who had tested positive for gonorrhoea and chlamydia at the same time with the experiences of those who had tested positive for gonorrhoea only.

This investigation did not include travellers or people from non-English speaking backgrounds who may experience issues including eligibility for and cost of healthcare. Additional sociodemographic data (e.g. income, ethnicity) were not collected and would have enabled further analysis.

## Conclusions

Qualitative inquiry methods provide rich insights to support the planning of public health responses to STI notifications data and should be included in public health investigations. Clinicians diagnosing gonorrhoea in young adults have an opportunity to discuss safe sex practices and risk misperceptions. The findings support public health interventions that focus on communication and shifting of risk perceptions in sexual health education programs, ensuring accessibility of quality sexual health information, increasing condom accessibility and acceptability, and strategies for addressing misperceptions of young people related to sexually transmitted infections.

## Acknowledgements

The authors acknowledge the assistance of the staff at the clinics in confirming the eligibility of patients for the study.

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