

**Assessing the Impact of International Travel Experiences on Sexual Health of Young
Canadian Adults**

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ABSTRACT

Over the past two decades, the popularity of international travel has increased dramatically, especially among young adults. The behaviours of travellers abroad may differ from their behaviours at-home, especially among young adults who tend to take more risks regarding their sexual health. This thesis therefore explored the impact of travel on the sexual health of young Canadian adults from the perspectives of young Canadian travellers themselves, as well as of the experiences of travel health sector key informants. Our results indicate that although young Canadian adults are less sexually active abroad, their sexual health remains at-risk, a perspective shared by interviewed key informants. This thesis reiterates the importance of sexual health promotion among young Canadian adults, particularly those travelling abroad, through comprehensive, positive and inclusive sexuality education as well as through pre- and post-travel interventions individually adapted to the needs and to the risk and protective factors of each traveller.

RÉSUMÉ

Au cours des dernières décennies, la popularité du voyage à l'international a augmenté de façon fulgurante, notamment chez les jeunes. Les comportements des voyageur.euse.s à l'étranger peuvent différer comparativement à leurs comportements chez eux/elles, particulièrement chez les jeunes qui ont tendance à prendre plus de risques par rapport à leur santé sexuelle. Cette thèse s'est intéressée à l'impact du voyage sur la santé sexuelle des jeunes canadien.ne.s à partir des perspectives des jeunes eux/elles-mêmes ainsi que celles des informateur.trice.s clés travaillant auprès d'eux/elles. Nos résultats indiquent que malgré que les jeunes canadien.ne.s soient moins sexuellement actif.ve.s à l'étranger, leur santé sexuelle n'en est pas moins à risque, une perspective partagée par les informateur.trice.s clés interviewé.e.s. Cette thèse permet de réitérer l'importance de la promotion de la santé sexuelle chez les jeunes canadien.ne.s, particulièrement ceux et celles voyageant à l'étranger.

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TABLE OF CONTENTS

<i>Abstract</i>	<i>ii</i>
<i>Résumé</i>	<i>iii</i>
<i>Acknowledgments</i>	<i>iv</i>
<i>Table of Contents</i>	<i>v</i>
<i>List of Tables and Figures</i>	<i>ix</i>
Tables	ix
Figures	ix
<i>List of Appendices</i>	<i>x</i>
<i>List of Abbreviations</i>	<i>xi</i>
<i>Chapter 1: Introduction</i>	<i>1</i>
Thesis Research Summary	1
Literature Review	1
Sexual Health	1
Travel and Sexual Health	6
Conceptual Framework	9
Rationale of the Approach Taken	14
Thesis Research Questions and Objectives	14
<i>Chapter 2: Methodology</i>	<i>16</i>
Design	16
Quantitative Component: Manuscripts 1 and 2	16
Rationale of the Study	16
General Methodology	17
Survey	17
Consent	17
Recruitment	17
Inclusion Criterion and Justification	18
Participants	18
Results	19
Manuscript 1: Data Analysis	19
Manuscript 2: Data Analysis	20
Qualitative Component—Manuscript 3	21
Rationale of the Study	21
General Methodology	22
Interview Guide	22
Interviews	22
Sampling and Recruitment	23
Consent	23
Inclusion Criterion and Justification	24
Data Analysis	24

Ethics	24
Chapter 3: Manuscript 1	25
Title Page.....	25
Introduction	27
Methodology	27
Data Collection	27
Participants	28
Data Analysis.....	28
Ethics	28
Results	28
Demographics	28
Sexual History	29
STBBI Precautionary Measures	29
Sexual Activity Abroad	29
Sexual Practices and Sexual Behaviours at Home vs. Abroad Comparison	29
Health and Sexual Health Advice given by Organizations/Groups/Associations	31
Discussion	31
Risky Behaviours Leading to Riskier Sexual Health	32
Sexual Health Promotion.....	33
Limitations	34
Conclusion.....	34
Tables	35
References	43
Chapter 4: Manuscript 2	47
Title Page.....	47
Introduction	49
Methodology	49
Data Collection	49
Participants	50
Data Analysis.....	50
Ethics	51
Results	51
Demographics	51
Regression	52
Discussion	53
Limitations	55
Conclusion.....	55
Tables	56
References	60
Chapter 5: Manuscript 3	63
Title Page.....	63

Introduction	65
Methods	66
Data Collection	66
Analysis	66
Results	67
Participant characteristics	67
Pre-Travel Interventions	67
Barriers to Sexual Health Promotion.....	69
Perceived impact of travel on young adults' sexual health risk perceptions.....	72
Recommendations	73
Discussion	74
Reported Barriers to Sexual Health Promotion	74
STBBI	75
Recommendations	75
Limitations	76
Conclusion and Recommendations.....	76
Tables	77
References	78
<i>Chapter 6: Discussion</i>	<i>83</i>
Summary of Findings.....	83
Sexual Health of Young Canadian Travellers	84
Improving Sexual Health of Young Travellers.....	86
Pre-Travel Interventions - Emphasis on Sexual Health Promotion.....	86
Sex-Positive Pre-Travel Interventions	89
Innovative Strategies for Pre-Travel Interventions.....	90
Post-Travel Interventions.....	91
Sexual Health Promotion and Education.....	92
Travel in a Post-COVID-19 World.....	93
Reflexivity	94
Limitations	95
Areas for Further Research	96
Conclusion.....	96
<i>Bibliography.....</i>	<i>98</i>
<i>Appendices</i>	<i>109</i>
Appendix 1-Permission authorization for WHO copyrighted material.....	109
Appendix 2 - Ethics Approval Notice	114
Appendix 3 - Complete Descriptive Data Collected From the Online Survey	116
Lifestyle Practices.....	116
Sexual and Reproductive Health	119
Travel.....	126
Perceptions.....	142
Demographics	155

Appendix 4 - Results Dissemination Infographic	161
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LIST OF TABLES AND FIGURES

TABLES

Chapter 1:

Table 1. Examples of common STBBIs.....	14
Table 2. Summary Table of the Reported Rates, Increases and Age Group Most Affected by the Three Most Common Bacterial STBBIs in Canada	16

FIGURES

Chapter 1:

Figure 1. Framework for operationalizing sexual health and its linkages to reproductive health.....	21
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LIST OF APPENDICES

- Appendix 1: Permission authorization for WHO copyrighted material
- Appendix 2: Ethics Approval Notice
- Appendix 3: Complete Descriptive Data Collected From the Online Survey
- Appendix 4: Results Dissemination Infographic

LIST OF ABBREVIATIONS

- **ACSHR:** Action Canada for Sexual Health & Rights
- **CCSA:** Canadian Centre on Substance Use and Addiction
- **CNDSS:** Canadian Notifiable Disease Surveillance System
- **CDC:** Centers for Disease Control and Prevention
- **CHAC:** CDC/HRSA Advisory Committee on HIV, Viral Hepatitis and STD Prevention and Treatment
- **COVID-19:** Coronavirus disease 2019
- **CTC:** Canadian Tourism Commission
- **GAC:** Global Affairs Canada
- **GOC:** Government of Canada
- **HIV:** human immunodeficiency virus
- **HPV:** human papillomavirus
- **HSV:** herpes simplex virus
- **INSPQ:** Institut national de santé publique du Québec
- **LGBTQ+:** lesbian, gay, bisexual, transgender, and queer
- **MEES:** Ministère de l'Éducation et de l'Enseignement supérieur
- **MERS:** Middle East Respiratory Syndrome
- **MSSS:** ministère de la Santé et des Services sociaux du Québec
- **OPH:** Ottawa public health
- **PHAC:** public health agency of Canada
- **RTIs:** reproductive tract infections
- **SARS:** severe acute respiratory syndrome
- **STBBIs:** sexually transmitted and blood-borne infections
- **STIs:** sexually transmitted infections
- **UNAIDS:** Joint United Nations Programme on HIV/AIDS
- **UNESCO:** United Nations Educational, Scientific and Cultural Organization
- **UNFPA:** United Nations Population Fund
- **UNWTO:** World Tourism Organization
- **USA:** United States of America
- **WHO:** World Health Organization

CHAPTER 1: INTRODUCTION

THESIS RESEARCH SUMMARY

This thesis provides an overview of the sexual health status of young Canadians travelling internationally and describes Ottawa-region pre-travel interventions available. The main goal of this thesis research is to better understand the sexual health of young Canadian travellers. This thesis aimed to address three research questions:

- **Research Question 1:** Do the sexual behaviours and practices of young adults differ while travelling internationally, compared to at home in Canada?
- **Research Question 2:** What factors are associated with having sexual relationships abroad among young Canadian travellers?
- **Research Question 3:** What are the practices, experiences, perceptions and challenges of key informants preparing young Canadian adults for travel?

LITERATURE REVIEW

Sexual Health

Defining Sexual Health

The concept of sexual health has evolved over the past 40 years and varies according to health or government organizations with a general focus on sexual well-being across physical, mental and emotional domains (Douglas & Fenton, 2013). The widely used World Health Organization (WHO) definition, first developed in 2002 and updated in 2010, describes sexual health as

“a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled” (WHO, 2010, p.3; WHO, 2017, p.3).

Another widely used definition of sexual health is described by the Centers for Disease Control and Prevention (CDC) and the CDC/Health Resources Services Administration (HRSA) Advisory Committee on HIV, Viral Hepatitis and STD Prevention and Treatment (CHAC) (CDC/HRSA, 2012). Comparable to the WHO definition, the CDC emphasizes multiple dimensions of sexuality on the individual level as well as on the social level (Douglas & Fenton, 2013):

“Sexual health is a state of well-being in relation to sexuality across the life span that involves physical, emotional, mental, social, and spiritual dimensions. Sexual health is an intrinsic element of human health and is based on a positive, equitable, and respectful approach to sexuality, relationships, and reproduction, that is free of coercion, fear, discrimination, stigma, shame, and violence. It includes: the ability to understand the benefits, risks, and responsibilities of sexual behaviour; the prevention and care of disease and other adverse outcomes; and the possibility of fulfilling sexual relationships. Sexual health is impacted by socioeconomic and cultural contexts—including policies, practices, and services—that support healthy outcomes for individuals, families, and their communities” (CDC/HRSA, 2012, p.41).

Both the CDC/HRSA and the WHO define sexual health as having multiple dimensions, encompassing values and includes a sex-positive lens. Both definitions assert specific values and principles (e.g. consent, respect, freedom, safety) and distance sexual health from discrimination, violence, coercion, diseases and dysfunctions. Key conceptual elements such as protection of human rights, health throughout the lifespan, diversity of sexualities and expression is more explicit in the WHO definition (WHO, 2010), whereas the CDC/HRSA places more emphasis on the individual and societal responsibility to prevent disease and other adverse outcomes (CDC/HRSA, 2012).

Sexual health underlies reproductive health (WHO, 2010), which *“implies that people are able to have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so”* (UNFPA, n.d.; WHO, 2010, p.5). Correspondingly, sexual health includes a positive, comprehensive and holistic view of sexuality, which *“encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy and reproduction”* (WHO, 2010, p.4).

In this thesis, I am using a combined version of these definitions of sexual health. The WHO and the CDC definitions, both widely used, include specific overlapping elements. Indeed, the WHO describes nine key elements of sexual health and recommends that public health organizations should focus and address these elements both simultaneously and comprehensively (WHO, 2010). These nine elements are primarily presented as adverse events related to sexual health and include sexually transmitted and blood-borne infections (STBBIs)¹ and reproductive tract infections (RTIs), unintended pregnancy and abortion, sexual

¹ Also commonly known as sexually transmitted infections (STIs), the term STBBIs is deliberately used in this thesis to acknowledge the fact that STI can also be transmitted without sexual contact (blood borne) and to reduce stigmatization associated with a STBI diagnosis. Many public health organization (e.g Public Health Agency of Canada) recommend using the term “STBBIs”.

dysfunction and infertility, violence related to gender and sexuality, impact of physical disabilities and chronic illnesses on sexual well-being and mental health issues related to sexual health (WHO, 2010). I present selected elements relevant to this thesis in the next sections.

Sexually Transmitted and Blood Borne Infections (STBBIs)

Sexually transmitted and blood-borne infections (STBBIs) occur when an infectious agent found in bodily fluids (semen, vaginal secretions, saliva, blood) is transmitted via sexual contact from person to person (Ballini *et al.*, 2012; OPH, 2011; Yarbrough & Burnham, 2016). More specifically, STBBIs can be transmitted via exchanges of fluids or via skin-to-skin contact, as seen with genital warts or herpes (GOC, 2016; OPH, 2011; Smith & Angarone, 2015; WHO, 2005). More than 30 different bacteria, parasites and viruses that are transmitted via sexual contact, which includes vaginal, anal and oral sex, can cause STBBIs (GOC, 2016; WHO, 2016a). STBBIs transmission can also occur via contact with blood and/or blood products or from mother to child during pregnancy and childbirth (e.g. HIV, chlamydia, gonorrhea), and rarely, via breastfeeding (Smith & Angarone, 2015; WHO, 2016a). Bacterial STBBIs (e.g. syphilis, gonorrhoea, chlamydia) and parasitic STBBIs (e.g. trichomoniasis) can be effectively cured by treatment with antibiotics (exceptions include antibiotic resistant strains) and anti-parasitics, respectively (Yarbrough & Burnham, 2016).

Antiviral medications or immune system modulators (e.g. interferon) can treat but not cure viral STBBIs (HSV, HIV, HPV). Similarly, vaccination (e.g. Gardasil for HPV, hepatitis B vaccine) can also prevent certain viral STBBIs (CDC, 2018; Gottlieb & Johnston, 2017; Smith & Angarone, 2015; WHO, 2016a; Yarbrough & Burnham, 2016). Examples of common STBBIs are presented in Table 1.

Table 1. Examples of common STBBIs

Agent	Name of Pathogen	Common Clinical Name
Bacteria	<i>Haemophilus ducreyi</i>	Chancroid
Bacteria	<i>Chlamydia trachomatis</i>	Chlamydia
Virus	Cytomegalovirus	CMV
Virus	Human papillomaviruses	HPV or genital warts
Bacteria	<i>Neisseria gonorrhoeae</i>	Gonorrhea
Virus	Hepatitis A virus (HAV)	Hepatitis A
	Hepatitis B virus (HBV)	Hepatitis B
	Hepatitis C virus (HCV)	Hepatitis C
	Hepatitis D virus (HDV)	Hepatitis D
	Hepatitis E virus (HEV)	Hepatitis E
	Hepatitis G virus (HGV)	GB virus C (former Hepatitis G)
Virus	Herpes simplex virus (HSV-1 and HSV-2)	Herpes

Virus	Human immunodeficiency virus (HIV-1 and HIV-2)	HIV/AIDS
Bacteria	<i>C. trachomatis</i> serotypes L1, L2 and L3	Lymphogranuloma venereum (LGV)
Virus	<i>Molluscum Contagiosum</i> virus	Molluscum Contagiosum
Bacteria	<i>Mycoplasma genitalium</i>	Mycoplasma genitalium
Different Pathogens	<i>Chlamydia trachomatis</i> <i>Ureaplasma urealyticum</i> <i>Trichomonas vaginalis</i> (rare) Herpes simplex virus (rare) Adenovirus <i>Haemophilus vaginalis</i> <i>Mycoplasma genitalium</i>	Nongonococcal Urethritis (NGU)
Bacteria	Consequences of bacteria like <i>chlamydia trachomatis</i> or <i>Neisseria gonorrhoeae</i>	Pelvic Inflammatory Disease (PID)
Parasite	Crab louse/pubic louse	Pubic Lice (crabs or Pediculosis pubis)
Parasite	<i>sarcoptes scabiei</i> mite	Scabies (seven-year itch)
Bacteria	<i>Treponema pallidum</i>	Syphilis
Parasite (protozoan)	<i>Trichomonas vaginalis</i>	Trichomoniasis (trich)
Bacteria	Changes in bacteria balance	Vaginitis-bacterial vaginosis
Fungus	<i>Candida albicans</i>	Vaginitis-vaginal candidiasis
Different pathogens	e.g. <i>Chlamydia trachomatis</i> or <i>neisseria gonorrhoeae</i>	Micropurulent cervicitis

References: CDC, 2015; MSSS, 2019; PHAC, 2020

Symptoms associated with STBBIs can vary and may include urethral or vaginal discharge, itching or burning sensation especially when urinating, sores and ulcers, rash, swollen glands in the groin area and abdominal pain. (GOC, 2016; Smith & Angarone, 2015; WHO, 2016a). However, most STBBIs present mild or no symptoms (Smith & Angarone, 2015; WHO, 2016a). Untreated STBBIs can lead to long-term complications including pelvic inflammatory disease, infertility, ectopic pregnancy, chronic abdominal pain, adverse pregnancy outcomes, neonatal and infant infections, urethral strictures in men, genital malignancies/cancer or sometimes even death (Ballini *et al.*, 2012; WHO, 2005; WHO, 2010; WHO, 2016a; Yarbrough & Burnham, 2016). In addition to these serious adverse events, STBBIs are associated with an increased risk of acquiring HIV (Ballini *et al.*, 2012; WHO, 2010; WHO, 2016a).

In addition to traditional STBBIs such as chlamydia and gonorrhoea, sexual transmission of other infectious diseases has recently been described (Croughs *et al.*, 2008; WHO, 2017). Lessons learned from the Zika virus (ZIKV) outbreak in South America in 2016 is that secondary sexual transmission of ZIKV occurs (Grischott *et al.*, 2016; Mansuy *et al.*, 2016; Musso *et al.*, 2015), with primary transmission through insect vectors (WHO, 2017). Similarly, sexual transmission of many other infectious diseases, like Ebola, can occur even though sexual contact might not be the primary route of transmission (WHO, 2017).

Although significant progress has been made worldwide for STBBIs treatment and management, there remain many challenges, especially given increasing trends of reported STBBIs such as chlamydia and antibiotic-resistant strains of gonorrhea (Smith & Angarone, 2015; WHO, 2016b). Antibiotic resistance of gonorrhea has increased in the past years and has reduced treatment options, which is why it has become an important issue across the globe (WHO, 2016a). In Canada, at least two cases of ceftriaxone-resistant gonorrhea were reported since January 2017 (Lefebvre *et al.*, 2018). Moreover, in the last decade, rates of different STBBIs have increased significantly in different areas of the world (PHAC, 2013; Yarbrough & Burnham, 2016) despite concerted efforts to control STBBIs transmission. According to the WHO (2016a), one million STBBIs are acquired each day. More than 500 million genital HSV infections, over 290 million women with HPV infections and about 357 million new infections of chlamydia, gonorrhea, syphilis or trichomoniasis each year (WHO 2016a). It is estimated that 417 million people have HSV-2 and that HPV causes 530,000 cases of cervical cancers each year (WHO, 2016a; WHO, 2016b).

Canada is no exception to this increasing trend of reported STBBIs. Rates of chlamydia, gonorrhoea and syphilis, all STBBIs reported to the Canadian Notifiable Disease Surveillance System (CNDSS), have continued to increase since the late 1990s, with rates further rising dramatically in the last decade (PHAC, 2012, 2013, 2019). The youngest age group (14–24, up to 29 years) exhibits the highest reported rates, consistent with other countries (WHO, 2010; WHO, 2016b; Yarbrough & Burnham, 2016). Table 2 illustrates the reported and increasing rates of the three most common bacterial STBBIs.

Table 2: Summary Table of the Reported Rates, Increases and Age Group Most Affected by the Three Most Common Bacterial STBBIs in Canada; adapted from PHAC (2017)

	Rates of reported STBBI in 2005 (<i>per 100,000 people</i>)	Rates of reported STBBI in 2014 (<i>per 100,000 people</i>)	Increase (%)	Highest relative rate increase	Rates in females vs. males	Age group most affected (years)
Chlamydia	206.0	307.4	49.3	Males (65%)	Females higher than males (382.5 vs 230.5/100 000)	20–24
Gonorrhea	28.4	45.8	61.2	Males (64.2%)	Males higher than females (58.8 vs. 32.9/100 000)	Female 15–24 and male 20–29
Syphilis	3.4	6.6	95.1	Males (115.5%)	Males higher than females (12.5 vs. 0.9/100 000)	Females 20–24 Males 25–29

Many public health interventions have been implemented to counter this increase in reported rates of STBBIs. These interventions are designed to 1) increase awareness and, 2) prevent, diagnose, and treat STBBIs (PHAC, 2017; Smith & Angarone, 2015; Yarbrough & Burnham, 2016). Yet, the reported rates of STBBIs are still increasing. According to the PHAC (2017), this might be explained by different factors: a real rise in incidence, improved diagnostic methods, more effective contact tracing and case detection. In addition, other factors that might, in part, influence the high number of reported STBBI rates include early sexual debut (Magnusson *et al.*, 2015), sexual activity ongoing at later ages because of erectile dysfunction drugs (Steben & Laberge, 2006), behavioural changes related to online dating (Steben & Laberge, 2006; Tsai *et al.*, 2019) or dating applications that enable users to have easier access to multiple sexual partners (Bhattacharya, 2015; Lehmler & Ioerger, 2014), modifications in behaviours regarding the HIV epidemic (Aral *et al.*, 2006; Steben & Laberge, 2006), safe sex fatigue (decrease condom use) (Rowniak, 2009) and the use of recreational drugs (phenomena of “chemsex” or “Party and Play”) (Hegazi *et al.*, 2017).

STBBIs are a significant public health concern and contribute to the global burden of diseases. Both short- and long-term health consequences result from STBBIs and affect sexual and reproductive health of individuals and the global well-being of populations (WHO, 2010; WHO, 2016a; Yarbrough & Burnham, 2016). Public health control of STBBIs requires recognizing the cofactors of transmission (such as having a primary STBBI and being at risk for subsequent infections) as well as the behavioural and societal factors that can increase individual risk (Steen *et al.*, 2009; WHO, 2010). The WHO (2016a) recommends both counselling and behavioural interventions to prevent STBBIs such as comprehensive sexual education - especially for youth - condom promotion, risk-reduction counselling and other strategies. Barriers to the implementation of STBBI interventions are identified as lack of public awareness and widespread stigma surrounding STBBIs (Dehne & Riedner, 2005; WHO, 2016b). The WHO considers STBBIs and related epidemics as a major public health problem and has put into place a 2016–2021 strategy to counter the rise of STBBIs and ultimately improve the sexual health and well-being of populations. This strategy highlights the importance of supporting local public health units and local programs involved in STBBIs prevention and control, as described in later sections.

Travel and Sexual Health

Popularity of International Travel

International travel has become increasingly popular (Vivancos *et al.*, 2010), especially among today’s youth (Sundbeck *et al.*, 2017; UNWTO, 2011). Young adults are an increasingly mobile population (UNWTO, 2011). In 2010, 20% of the 940 million international tourists were youth/young adults (aged 16–29 according to the World Tourism Organization [UNWTO], 2011). Youth/young adults make 190 million

international trips per year and it is expected that these age groups will take almost 300 million international trips by 2020 (UNWTO, 2011). Because of this increasing popularity, youth/young adult travel has become an industry in itself; a booming market (UNWTO, 2011).

Young travellers, defined as individuals between the ages of 15 and 24 (UNESCO, 2017), are characterized by travel behaviours as they seek to interact with local communities (UNWTO, 2011). For young travellers, travel serves multiple purposes: learning, leisure, meeting people, embedding into different cultures, as well as developing themselves, their sense of identity, and even their career (UNWTO, 2011). Young travellers consider travel as “an essential part of their everyday lives, rather than just a brief escape from reality” (UNWTO, 2011, p.6).

Increasing Popularity of Travel for Canadian Young Adults

The number of Canadians (all age groups) travelling abroad has increased consistently over the decades, breaking records in 2010 with 28.7 million international trips (a 9.4% increase from 2009) (Statistics Canada, 2016). Of those, Ontario residents took 12.8 million trips abroad in 2010, followed by Quebec residents who took 5.4 million trips (Statistics Canada, 2016). Canadians increased their overseas trips by 5.9% in 2010, reaching a high of 8.7 million trips (Statistics Canada, 2016). Indeed, Canadians are becoming an increasingly mobile population in part because of the more affordable airfares, the globalization process of trade and commerce, “voluntourism” and ecotourism trends, the greater representation of immigrants in the Canadian population (Boggild *et al.*, 2014) and the strength of the Canadian dollar (Statistics Canada, 2016). The face of Canadian travellers has shifted from stereotypical seasonal beach vacationers to adventurous backpackers, volunteers headed to developing countries, and immigrants returning to their country of origin to visit relatives (Boggild *et al.*, 2014). Even though the most visited country by Canadians is the United States of America (USA, especially New York, Florida and Washington), trips to Europe were extremely popular with 4.2 million visits in 2010 (Statistics Canada, 2016). These numbers continue to increase as Canadians made 32.3 million trips abroad in 2015 (20.7 million were to the USA) (Statistics Canada, 2016).

The 2015 Canada Millennial Domestic Travel Summary Report reports the attraction of international travel for young Canadians for leisure purposes. A poll conducted in 2010 and cited in this report depicts travel as a prime value for Canadian youth and “an essential component of their personal growth and learning process” (CTC, 2015, p.5). As a consequence, compared to other age categories, this specific sub-population tends to plan more trips in part because of their need for uniqueness, personal expression, pursuit of novelty and culture sampling (CTC, 2015). The travel patterns and behaviours of young Canadians

travellers also greatly differ from travel patterns of other age groups particularly when looking at trip intent and thus, destinations visited (CTC, 2015). Also, incidence and length of trips are higher for young Canadian travellers, but varies according to the province of origin of the travellers. Young adult residents of Ontario and Atlantic provinces take more international trips compared to Quebec young residents, who take the smallest amount of leisure trips among all the provinces (CTC, 2015).

Presumably, the increasing popularity of international travel will continue (Statistics Canada, 2016), and young Canadians will seek international travel opportunities, post-COVID-19 pandemic. This will further be discussed in Chapter 6- Discussion.

Impact on Sexual Health of Young Travellers

Riskier sexual behaviours and practices

Young travellers exhibit risky patterns of sexual behaviours when travelling abroad (Hughes *et al.*, 2009; Lewis & de Wildt, 2016; Sundbeck *et al.*, 2017; Vivancos *et al.*, 2010). Risky sexual behaviours among travellers include having one or more casual sexual partners and inconsistent condom use (Lewis & de Wildt, 2016; McNulty *et al.*, 2010; Sundbeck *et al.*, 2016). The authors of a 2010 meta-analysis concluded that the prevalence of travel-associated casual sex is 20.4%, although there is a high variability due to different factors (gender, reason and context of the trip, length of the trip, presence or absence of travelling partners, marital status of the traveller, etc.) (Croughs *et al.*, 2008; McNulty *et al.*, 2010; Sundbeck *et al.*, 2017; Vivancos *et al.*, 2010). This study also found that 50% of individuals engaging in casual sex abroad used condoms in an inconsistent manner (Vivancos *et al.*, 2010). The authors of the meta-analysis concluded that travel-associated, unprotected, casual sex is more frequent in younger individuals, a finding supported by several studies (Croughs *et al.*, 2008; Dahlman & Stafström, 2013; McNulty *et al.*, 2010; Sundbeck *et al.*, 2017). Indeed, Sundbeck and colleagues (2017) concluded that the probability of having casual sex while travelling abroad increases fivefold for young adults (18–24 years) compared to at home, increasing further to almost 20-fold for travellers leaving for short trips (around five days). The 2010 meta-analysis concluded that for individuals experiencing casual sex during travel, the risk of developing a STBBI is threefold higher (Croughs *et al.*, 2014; Vivancos *et al.*, 2010). Tanton and colleagues (2016) indicate that travel offers new opportunities for sexual partnerships. In other words, young adults have riskier sexual behaviours *because* they are abroad, leading them to be more at risk for sexual adverse events like STBBIs when abroad (Sundbeck *et al.*, 2017).

The travellers' risks of contracting certain types of diseases while abroad greatly depend on the destination. Tropical destinations increase risk of STBBI infection, in part because of the higher prevalence of certain

STBBIs (e.g. HIV and hepatitis B), leisure tourism and the high prevalence of unprotected sexual contacts among travellers (Crougths *et al.*, 2008). Both risk behaviours (e.g. walking alone at night; consuming alcohol and leaving drinks unattended, etc.) coupled with the destination country may further expose young travellers to sexual harassment and sexual assault (GAC, 2017; Kennedy & Flaherty, 2015).

Conceptual Framework

The framework I used in this thesis project is adapted from the WHO sexual health framework published in 2017 (Figure 1). The core of the framework is the “goal” of sexual health, that is “physical, emotional, mental and social well-being in relation to sexuality” (WHO, 2017, p.3). Three levels are defined in this framework, illustrating the different components of the WHO’s sexual health definition as presented in Chapter 1. The first level includes the six principles of sexual health interventions (gray in Figure 1), the second level describes the two groups of interventions (blue for sexual health and orange for reproductive health) and third level contains the cultural, socioeconomic, geopolitical and legal environments that influence sexual health.

Figure 1: Framework for operationalizing sexual health and its linkages to reproductive health. Retrieved from WHO’s *Sexual health and its linkages to reproductive health: an operational approach* (2017, p.5) Reproduced with permission from WHO (Appendix 1).



Level 1

The six principles described in Level 1 of the WHO framework aim to provide a strong foundation for the operationalization of sexual health in research. The holistic approach to sexual health emphasizes that sexual health is not merely the absence of disease, but the achievement of physical, emotional mental and social well-being. Thus, research on sexual health should address the prevention of disease but also promote

other positive aspects of sexual health (WHO, 2017) such as consensual and pleasurable sexual relationships. The depiction of sexual and reproductive health interventions as intertwined in the framework conceptualizes their interdependence and connection. Respect as well as the protection and fulfillment of human rights are necessary to attain sexual health, as described in this third principle. Thus, sexual health research must both ensure that sexual rights are respected and protected among participants, and also needs to assess the sexual autonomy and attainment of human rights among marginalized communities. The fourth principle describes the need for sexual health research to acknowledge, encompass and address the multiple levels (individual, social, organizational, legal, etc.) of sexual health; both separately and their interactions. The fifth principle requires research to be inclusive in terms of individual, cultural, socioeconomic, geopolitical, legal and environmental characteristics. Finally, the sixth principle requires sexual health research to be evidence-based, respectful and to adopt a sex-positive approach.

This thesis blends the six principles described above, encompassing the social, cultural, individual and collective levels of the sexual health of young Canadian travellers. Although outcome measures of sexual health and travel emphasize adverse experiences (e.g. STBBIs), the lens and framing of the analysis, where possible, used a sex-positive approach affirming sexual experiences, expressions, identities and healthy behaviours as essential components of sexual health.

Level 2

Level 2 is depicted on the inside of the framework, and represents areas of interventions in sexual health, which can take place in different settings: health, education, justice, economic and social care sectors. The representation of reproductive health aspects (orange) and sexual health aspects (blue) are intertwined, as the two are “inextricably interlinked” (WHO, 2017, p.4). Together, these four reproductive health aspects and four sexual health aspects are based on the six principles described in Level 1. As the main focus of our research is sexual health, I have emphasized the sexual health aspects (blue) for this thesis, although I also discuss reproductive health aspects (orange), given the close interdependency of sexual and reproductive health. This thesis will explore fundamental aspects related to contraception, counselling and provision (orange) as well as comprehensive education and information (blue), and prevention and control of STBBIs (blue), within the context of travel health.

Contraception Counselling and Provision

Defined as “the intentional prevention of pregnancy by artificial or natural means” (WHO, 2017, p.8), contraception is an essential component of both reproductive and sexual health, as contraception impacts reproduction as well as sexual pleasure and enjoyment (WHO, 2017). The WHO (2017) states that various

contraceptive methods and services should be available, accessible, affordable, and should be provided with skilled professionals without coercion. I will discuss this intervention area in the qualitative component of this thesis, as contraception and contraceptive needs were topics discussed during qualitative interviews with health and travel key informants.

Comprehensive Education and Information

This area of intervention involves providing information on physical, psychological and social aspects of reproduction and sexuality, which are valid, reliable, up to date and age-appropriate (WHO, 2017). Providing accurate information leads to fewer misconceptions and better knowledge and understanding of sexual and reproductive health, and to empowerment, healthy behaviours, positive attitudes and informed choices about sexuality and reproduction (WHO, 2017).

I will also discuss this intervention area in the qualitative component of this thesis, as key informants interviewed for this project emphasized this specific aspect of sexual health. The WHO states that information about sexual and reproductive health can be made available in clinical (e.g. preventive or curative care consultation) and non-clinical settings. This thesis addresses both contexts: the clinical context with key informants working in travel clinics and sexual health clinics, and the non-clinical settings with key informants from travel organizations.

Prevention and Control of STBBIs

I will address the areas of intervention mentioned above and related aspects of sexual and reproductive health through this thesis. However, the main emphasis of this thesis will be prevention and control of STBBIs in young Canadian adult travellers, one of the four areas of intervention in sexual health according to the WHO's framework presented above.

STBBI control is considered as a "public health outcome" and includes STBBI treatment, surveillance and monitoring (Steen *et al.*, 2009, p.858). A measure of STBBI control is the decrease in the incidence and prevalence of STBBIs, and can be achieved by using sexual health promotion and multiple community-based interventions simultaneously (Steen *et al.*, 2009). The WHO recommends that interventions focus on five main areas: (1) appropriate epidemiologic targeting; (2) primary prevention and access to means of prevention; (3) provision of effective clinical services; (4) an "enabling environment" for prevention, and finally (5) reliable data to guide decision-making (Steen *et al.*, 2009). The WHO emphasizes "prevention" as an essential component of STBBI control. STBBI prevention interventions include the promotion of behavioural changes, sexual health education as well as transmission of STBBI-related information and

access to condoms and other prophylaxis measures (Steen *et al.*, 2009). For example, comprehensive sexual health education and promotion should describe STBBIs, modes of transmission and emphasize means of prevention such as condoms, partner screening/notification, promotion of effective condom use and reduction of community barriers related to their prophylaxis and sexual health information access (Steen *et al.*, 2009). It is especially important to target comprehensive sexual health promotion to high-risk populations, including adolescents and young adults at high risk for STBBI transmission (Maticka-Tyndale, 2008; Steen *et al.*, 2009; WHO, 2010). Indeed, comprehensive and discrimination-free, gender bias-free and stigma-free sexual health education is the most effective way to improve sexual health in the long-term, especially for youths (WHO, 2010). Sexual health interventions targeting communities, especially if at high-risk like youths, is most effective (WHO, 2010). Thus, focus should be on influencing broader networks instead of only influencing individual behaviour changes (WHO, 2010).

Accordingly, in this thesis, I will focus on these five sub-areas of the prevention and control of STBBIs intervention area. Both quantitative and qualitative components will address topics related to STBBIs, from the youths' perspectives as well as the perspective of the key informants working with them. All five sub-areas will be addressed in this thesis: sub-areas 1 (epidemiologic targeting [risk and protective factors]), 2 (means of prevention [pre-travel interventions]) and 5 (data to guide decisions) via the quantitative component of this thesis and sub-areas 2 (means of prevention [pre-travel interventions]), 3 (clinical services) and 4 (environment for prevention) via the qualitative component. The data collected as part of this Masters' thesis project will be able to guide decision-making for stakeholders. More specifically, assessment of the perception and sexual behaviours of young Canadian travellers might provide health clinics, youth travel organizations and public health units with a clearer understanding of sexual health of young adults travelling abroad. This information could lead to more accurate targeting of at-risk populations through adaptations of sexual health information and health care both pre- and post-travel. Ultimately, development of travel-related sexual health best practices both for health professionals and for travel organizations may optimize sexual health for young adults travelling internationally.

Level 3

Many contextual factors influence the sexual health status and the four dimensions of the framework (cultural and social norms, gender and socioeconomic inequalities, human rights and laws, policies, regulations and strategies) encompass those factors. These dimensions should be considered when evaluating sexual health. This thesis will consider contextual factors influencing the sexual health of young Canadian adults travelling abroad like demographic information (ethno-racial identity, gender, sexual identity, religious affiliation, etc.), geographic location of travels, duration and types of travel, etc.

Rationale of the Approach Taken

The WHO framework described here includes a recognized definition put forward by the WHO in 2002 (updated in 2010), which has become a standard in the field. Further, the WHO framework is implicitly interdisciplinary, an essential theme of my research. Thus, it was logical to design my research using the WHO's sexual health framework given that it operationalizes the WHO's definition of sexual health.

Several studies have examined the sexual health and sexual behaviours of travellers (backpackers, sexual tourists, military men and women, business travellers, spring breakers, etc.), of different ages and nationalities. However, very few studies have specifically looked at the sexual health of young Canadian travelling abroad. As demonstrated by the literature review in Section 1.1 of this Chapter, young travellers may adopt riskier sexual behaviours while travelling and thus, become more at risk for sexual adverse events such as exposure to STBBIs.

THESIS RESEARCH QUESTIONS AND OBJECTIVES

International travel has impacts on the sexual health of travellers (McNulty *et al.*, 2010; Sundbeck *et al.*, 2017; Tanton *et al.*, 2016; Vivancos *et al.*, 2010, Wand *et al.*, 2011). However, very little is known about how international travel impacts the sexual behaviours of young Canadian adults specifically. This aspect requires further study, as travelling is becoming more and more popular among young Canadians. This thesis research will document pre- and post-travel interventions and help identify gaps. The overarching goal of this Master's thesis project is to better understand the sexual health of young Canadian adults, aged 18-25 years, travelling abroad. As described, the design of the thesis enables collection of the experiences, behaviours and sexual health outcomes of young Canadians who travel internationally.

This thesis was designed to address the following research questions and objectives:

- **Research Question 1:** Do the sexual behaviours and practices of young adults differ while travelling internationally, compared to at home in Canada?
- **Research Question 2:** What factors are associated with having sexual relationships abroad among young Canadian travellers?
- **Research Question 3:** What are the practices, experiences, perceptions and challenges of key informants preparing young Canadian adults for travel?

I will address Research Questions 1 and 2 by the following objectives, using a quantitative methodological approach:

- **Objective 1:** Survey Canadian young adults about their sexual health experiences, risk perceptions and behaviours both at home and while travelling internationally.
- **Objective 2:** Create a sexual health risk- profile for young adult travellers to share with key stakeholders.

I will address Research Question 3 by the following objective, using a qualitative approach:

- **Objective 3:** Document the sexual health-related practices including risk reduction education and information sharing in Ottawa-region health travel clinics and youth travel organizations

The general methodology can be found in Chapter 2 of this thesis and the detailed methodology of the quantitative and qualitative components of the project can be found in the Manuscripts 1 (Chapter 3), 2 (Chapter 4) and 3 (Chapter 5), respectively.

CHAPTER 2: METHODOLOGY

In this chapter, I provide a generalized overview of the methodological approaches used for the thesis project. I elaborated the methodologies specific to each component in the manuscripts, which appear in subsequent chapters. This thesis is comprised of:

Manuscript 1-quantitative: Impact of international travel on young Canadian adults' sexual behaviours

Manuscript 2-quantitative: Factors associated with young Canadian adults' sexual activity while travelling abroad

Manuscript 3-qualitative: Key informant perspectives on sexual health services for travelling young adults. A qualitative study.

DESIGN

The quantitative component (survey) enabled investigation of how travel impacts sexual health, sexual well-being and sexual behaviours of young adult Canadian travellers. The qualitative component (interviews) permitted in-depth investigation about different organizations (travel clinics, travel organizations and sexual health clinics) and travel and/or health key informants' perceptions of young adult Canadian travellers' sexual health.

This Masters thesis project explores aspects of the sexual health of young Canadian travellers within a specific time period. I used the WHO (2017) sexual health framework (Figure 1) to inform this Master's thesis project. The sexual health of young adult Canadian travellers remains the central theme, I view and analyze it using different lenses including the individual perspective (i.e. via the analysis of the survey answers of young adult Canadians) and the organizational perspective (i.e. via the key informants' perceptions and experiences), necessitating a multi-methods approach.

QUANTITATIVE COMPONENT: MANUSCRIPTS 1 AND 2

Rationale of the Study

As detailed in Chapter 1, I designed the quantitative component of this thesis to address the gaps in the literature about young adult Canadian travellers' sexual behaviours and practices. To better understand and improve effective and relevant sexual health promotion addressed to Canadian travellers, we examined the impact of international travel on young Canadian adults' sexual health and sexual behaviours.

General Methodology

Through social media, my research team and I promoted an online survey aimed to gather sexual health behaviours, travel experiences and sexual health before and after travel of young Canadian adults travelling internationally. Below is a summary of the methodology used for the quantitative component. The detailed methodology is found in Manuscripts 1 (Chapter 3) and 2 (Chapter 4) of this Master's thesis.

Survey

I created a survey through the Canadian online platform SimpleSurvey (OutSideSoft Solutions inc., Quebec, Canada). The survey was divided into five different sections: 1) Lifestyle Practices 2) Sexual and Reproductive Health 3) Travel 4) Perceptions and 5) Demographics. Question format included multiple-choice with a few open-ended questions so the respondents could provide more details if desired. The survey was available in English and in French. I adapted the survey questions from existing surveys and from the literature (Bellis *et al.*, 2004; Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Lewis & de Wildt, 2016). The survey included trigger warnings and a list of Canadian resources due to questions related to sexual harassment, sexual assault. I also provided information resources for respondents to learn more about sexual health and STBBIs. Respondents who had participated in the survey had a 1/50 chance to win a \$50 CAN Amazon gift card. To maintain confidentiality, I separated contact information of participants who registered for the draw from respondent answers.

Consent

I included a consent form explaining the details of the study, benefits and risks associated with participation and the possibility to enter the draw at the beginning of the survey. Survey participants were required to click a button indicating informed consent was provided to continue with the survey.

Recruitment

Data collection occurred April 5th, 2017 to October 5th, 2017. My research team and I promoted the survey through social media (Facebook and Twitter) , emphasizing Facebook groups of different universities and colleges across Canada.

We used a purposive sampling method, as we did not attempt to represent the whole young adult population as proportionality was not the main concern. The goal was not to have an accurate representation of the young-adult population of Canada, but only to get an insight on this population subgroup. We wanted to get much insight as possible into the sexual health of young Canadian adults travelling abroad and we wanted to be able to examine subgroups, representing different gender, race, sexual identities and geographic locations, in our sample. Thus, we recruited as many participants as possible, trying to get

enough participants for different categories to be able to compare them. For example, in order to get more male respondents to compare with the numerous female respondents, we posted recruitment information on post-secondary Facebook group pages that may typically attract a disproportionately male student population (engineering, IT sciences, etc.) Similarly, as we obtained many respondents from Quebec and Ontario, we redirected recruiting efforts towards British Columbia, Prairies and the Maritimes.

Inclusion Criterion and Justification

I recruited young adults between the age of 18 and 25 years for this study. The inclusion criteria were age at the time of survey completion, having travelled outside of Canada between January 1st, 2016 and December 31st, 2016 and being born and currently living in Canada.

I excluded individuals aged 17 or lower, as the age of consent to participate in research in most provinces is 18 years of age (GOC, 2014). I also excluded individuals aged 26 or older as the travel sexual health literature usually does not consider them as young adults (Lewis & de Wildt, 2016; Sundbeck *et al.*, 2017; UNESCO, 2017). To avoid recollection bias, only details about the respondents' most recent 2016 international trip were asked.

I excluded Canadians living outside of Canada and non-Canadians currently living in Canada from data analysis as it was necessary to evaluate young adults within a common context, including relatively consistent public school access to sexual health education, laws governing abortion and LGBTQ+ rights, and access to Canadian travel organizations and clinics. Young adults living outside of Canada may be exposed to different, potentially more restrictive social contexts as related to sexual health and different sexual health interventions. Similarly, non-Canadians currently living in Canada may not have grown up in Canada, thus having a very different social and educational context that might differ greatly from our comprehensive and open sexual health education and policies in Canada.

Participants

From 2256 survey entries, I deleted 252 entries as they were empty (no answers). From the 2004 survey entries remaining, I deleted 416 entries as they were only partly completed and were missing demographic data. From the 1585 entries remaining, I excluded 546 participants who did not travel internationally in 2016, as one of the inclusion criteria clearly stated at the beginning of the survey. From the 1039 survey entries remaining, I excluded 223 individuals from the analysis as they were not sexually active individuals. Sexually active individuals are defined as having had a sexual experience at least once in their lifetime with sexual experience defined individually by the participants. Lastly, from the 816 individuals remaining, I

excluded 168 participants from the analysis as they were not born in Canada. I excluded two other individuals identifying as non-binary from the analysis for statistical purposes. The final sample size was N=646 (n=271 who were sexually active on the trip).

- 2004 participants completed the survey partially
- 1586 participants completed the entire survey
 - 1011 participated decided to participate in the draw
- 1039 participants travelled outside of Canada in 2016
- 816 participants were sexually active
- 648 participants were born in Canada
- 646 participants identified as male (including trans males) or female (including trans females) and were included in the analysis.
 - 271 participants were sexually active on their trip.

Results

Response data for the survey appears in the Appendix 3 for the entire sample (N=648; including individuals identifying as non-binary). I indicated all the limitations relative to each specific question.

Manuscript 1: Data Analysis

Using descriptive statistics, I reported socio-demographic characteristics, sexual history information, STBBI precautionary measures, sexual behaviours and practices at-home and abroad as well as sexual activity abroad of females (including trans females) and males (including trans males) (N=646) in Manuscript 1-Chapter 3.

McNemar's Tests

Using a crossover design, I performed McNemar's tests (McNemar, 1947) to determine if there was a difference between sexual practices and contraception methods used between two related groups: participants at-home and participants abroad. In other words, I analyzed the differences between participants' at-home and participants' abroad sexual practices and contraception methods. The data met McNemar's test assumptions: one dichotomous dependent variable (sexual practices [masturbation yes/no; oral sex yes/no, etc.] and contraception methods [barrier method, yes/no; hormonal method, yes/no]) with two mutually exclusive groups, and one independent variable consisting of two matched pairs (participants at-home and participants abroad). I applied a continuity correction by Edwards (1948) to provide a better approximation to the chi-squared distribution and a more accurate *p*-value (Laerd, 2015a). In the case where the total number of participants was too low, I did not apply a correction. Instead, SPSS automatically used by a binomial distribution.

Wilcoxon signed-rank tests

Using a crossover design, I conducted Wilcoxon signed-rank tests to determine the effect travel (being abroad) on the consumption of alcohol, the frequency of sexual encounters while under the influence of alcohol and the use of external condoms. The data met all test assumptions : variables I examined were ordinal (3, 5 or 6 levels), the independent variable consisted of two matched pairs (participants at-home and abroad), and the distribution of the differences between the two related groups were all symmetrical in shape (assessed with histogram with superimposed normal curve) (Laerd, 2015b). I used the Wilcoxon signed-rank tests to determine whether there was a median difference between alcohol consumption, frequency of sexual encounters while under the influence of alcohol and the use of external condoms among participants at-home and abroad. I only included participants who were sexually active during the trip for the frequency of sexual encounters while under the influence of alcohol and the use of external condom Wilcoxon signed-rank tests. I conducted tests for females only (n=541, or n=222 for sexually active during trip females), males only (n=105, or n=49 for sexually active during trip males) and for the entire sample (N=646, or n=271 for sexually active during trip participants).

Manuscript 2: Data Analysis

I reported socio-demographic characteristics using descriptive statistics in Manuscript 2-Chapter 4. I conducted a binomial logistic regression (backward LR) using SPSS (version 27) (IBM Corp., Armonk, NY) to predict the probability that a participant had sexual relations with at least one sexual partner during their most recent 2016 international trip based on different lifestyles or sexual factors. The outcome (dependent) variable, sexual relations abroad, was based on the self-reported number of sexual partners during the trip which I dichotomized (0 partner vs. 1 partner or more).

I conducted a bivariate analysis to investigate associations between predictors (independent) variables and the outcome (dependent) dichotomous variable: chi-square (χ^2) analysis for dichotomous variables and rank biserial correlation for ordinal variables. I considered an α value of 0.05 was indicative of statistical significance and I considered variables yielding significant p-values for inclusion in the initial logistic regression model.

Assumptions

I tested variables to check that the data met the underlying assumptions of logistic regression (Laerd Statistics, 2017). As no variable in the model was continuous, I did not have to test the linearity assumption. I computed tolerance and variance inflation factors (VIF) to ensure that the data did not violated the multicollinearity assumption. Moreover, I conducted a correlation matrix using Phi (ϕ) for

dichotomous*dichotomous variables, Cramer's V (ϕ_c) for dichotomous*ordinal variables and Spearman's correlation for ordinal*ordinal variables. I considered Spearman correlation coefficients > 0.7 , and ϕ and $\phi_c > 0.5$ strong (Cohen, 1998; Laerd, 2016, 2018; Mukaka, 2012). I excluded variables yielding coefficients exceeding those thresholds from the model when appropriate. I did not add interaction term as it did not yield any conceptual relevance.

Based on existing literature (Angelin *et al.*, 2015; Bellis *et al.*, 2004; Cabada *et al.*, 2003; Crougns *et al.*, 2008; Downing *et al.*, 2011; Fenton *et al.*, 2001; Lehmler & Ioerger, 2014; Magnusson *et al.*, 2015; Lewis & de Wildt, 2016; Ortiz-Martínez *et al.*, 2018; Svensson *et al.*, 2018; Tanton *et al.*, 2016; Vivancos *et al.*, 2010), I considered gender, sexual orientation, sexual debut, number of sexual partners in lifetime, use of dating applications or websites, relationship status, travel experience, planning to have sex, bringing external condoms on the trip, alcohol consumption during the trip, risk perception about safe sex, having sex with strangers and about level of risk regarding sexual health and sexual well-being while abroad, organization of the trip and setting of the trip as factors in the investigation of correlates of STBBI diagnosis post-travel. I only considered variables yielding significant p-values in χ^2 and rank biserial correlation analysis for inclusion in the initial logistic regression model, but I also included variables about gender and sexual orientation.

The final model included nine independent variables (gender, sexual orientation, number of sexual partners in lifetime, relationship status, planning to have sex, bringing external condoms on the trip, alcohol consumption during the trip, and risk perception about having sex with strangers and organization of the trip). I based the identification of the predictors of having sexual relations with at least one partner while on the trip on the adjusted odds ratios (AORs) and I derived corresponding confidence intervals from this model.

Details about the methodology of the qualitative component are in Manuscripts 1 and 2 (Chapter 3 and 4).

QUALITATIVE COMPONENT—MANUSCRIPT 3

Rationale of the Study

The qualitative component of this Master's thesis aimed to investigate the perceptions, experiences, practices and challenges of Ottawa, Canada—region key informants working in travel clinics, travel organizations or sexual health organizations in the context of young Canadian adult sexual health.

General Methodology

I conducted interviews with key informants representing health and travel sectors aimed to gather information about the experiences of these professionals as related to young adult Canadian's preparation for travel and return from travel, within the context of sexual health. Below is a summary of the methodology used for the quantitative component. The detailed methodology can be found in Manuscript 3 (Chapter 5) of this Master's thesis.

I conducted 14 interviews were with key informants from 11 different organizations. The organizations targeted were either travel organizations (sending travellers abroad for internships, student exchanges, volunteerism, humanitarian travel, etc.) or health organizations (travel clinics, sexual health clinics or sexual health organizations). The goal was to learn more about the experiences and practices of Ottawa-region key informants that work with young Canadian adults travelling abroad and that know about their sexual health status.

Interview Guide

My supervisor Dr. Karen P. Phillips and I created the interview guide which contained six different sections: 1) Role of key informant, 2) Experiences and practices preparing young adults for travel, 3) Experiences and practices regarding young adults returning from travel, 4) Experiences and practices regarding emerging health issues, 5) Challenges and recommendations regarding sexual health of young adults and 6) Demographics, with a total of 25 general questions and many more sub-questions and probes. I adapted the interview guide to each participant, whether they were from a travel background (travel organizations) or a health background (health organizations).

Interviews

I conducted interviews were in person (offices of key informants) or via Skype, in English (n=7) or in French (n=7). Interviews lasted approximately 60 minutes in duration and I followed an interview guide that I specifically adapted to the key informant. I audio-recorded the interviews, memoed to reflect on the interviewer-participant interaction and subsequently transcribed them. Interviews focused on mechanisms by which key informants address sexual health with young adults pre- and post-travel, perceptions of young adult Canadian travellers' sexual health, and challenges faced by participants within the scope of this study. I excluded one interview from analysis as the organization for which the key informant worked was based in Montreal and offered services to Quebecers only.

Participants did know about the research project's goal and were aware that the interviews (qualitative component) were part of a bigger Master's thesis project including quantitative data from surveys. No prior

relationships were established between the interviewee and myself prior to the interview, except email exchanges to set up a date, time and location for the interview.

The fact that as interviewer, I have an extensive background in sexual health and sexual education, is a sex-positive person and believe everyone should take the opportunity to promote sexual health is a potential bias. My unintentional encouragement and verbal cues when an interviewee started talking about comprehensive or positive sexual education and promotion in young travellers might have encouraged interviewees to talk more extensively about that topic to please the interviewer. However, my younger age relative to most interviewees and lack of professional status was not anticipated to contribute to undue power dynamics. No other apparent biases from the interviewer were identified.

Sampling and Recruitment

Key informants included individuals responsible for the provision of health care, recommendations or opportunities for young adults travelling abroad. I recruited participants from travel-specialized health clinics, sexual health clinics, young-adult-focused travel organizations and health-promotion organizations all within the region of Ottawa, Canada. I recruited participants by email, by phone or in-person. I found potential key informants via Internet search or via other key informants' recommendation. The recruitment period was from April to September 2017 and I scheduled interviews between April and November 2017.

I used a purposive sampling method, as I did not attempt to represent the entire population of travel clinics, sexual health clinics and travel organizations offering services in Ottawa. The goal was not to represent all key informants working with young travellers from the Ottawa region, but only to get an insight on two occupational sectors working with travelling young adults. I also decided to include both travel key informants (from travel organizations) and health key informants (from health clinics) to have the perception of both types of key informants in order to compare perceptions, experiences and practices of both categories. Thus, the sample for each category was small and in no way representative of the different travel organizations or (travel of sexual health) clinics of Ottawa/offering services in the Ottawa region.

Consent

All participants signed an informed consent form prior to each interview. The informed consent summarized the purpose of the study, risks and benefits to participants and mechanisms of participation. I sent the consent form to the interviewees at least seven days before the interview.

Inclusion Criterion and Justification

I divided key informants into two categories: health organization key informants and travel organizations key informants. Participants generally provided treatment, counsel or information to young adults regarding travel and/or sexual health. I included individuals from organizations located in Ottawa, Canada or its surroundings, but excluded organizations that did not offer services in Ottawa. I limited my search to organizations providing services in Ottawa to be able to tailor our conclusion to the Ottawa region, as organizations from different cities or different provinces might face different challenges or are governed by different provincial regulations.

I contacted 50 key informants from various organizations, but only 14 accepted to participate in the project. Many key informants did not return emails or phone calls and many others refused to participate. The two main reasons for refusal to participate included 1) they were not comfortable answering questions about sexual health as they did not address this topic with young travellers pre- or post-travel and 2) they did not have time to answer questions/were too busy.

Data Analysis

I audio-recorded, memoed, transcribed and analyzed the interviews using software NVivo (version 11.4.3 (2084)). I transcribed French interviews and a member of my research team transcribed the English interviews. I coded the data, following discussion with Dr. Phillips. I analyzed the data iteratively, and themes emerged inductively from the data. I discussed themes with my research team .

More details about the methodology of the qualitative component can be found in Manuscript 3 (Chapter 5).

ETHICS

The Research Ethics Board at the University of Ottawa (File # H02-17-14) approved both components of the project. The ethics certificate can be found in the Appendix 2 of this Master's thesis.

CHAPTER 3: MANUSCRIPT 1

TITLE PAGE

Potential Journal: Sexual Health

Title: Impact of International Travel on Young Canadian Adults' Sexual Behaviours

Running title: Sexual health and travel

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Declarations

Ethics approval and consent to participate

The Research Ethics Board at the University of Ottawa reviewed and approved this study (File # H02-17-14). The survey included the purpose of the study, risks and benefits to participants and mechanisms of participation. All respondents included in this study indicated their consent to participate.

Competing interests

No competing interests to declare.

Funding

EG was supported by a scholarship from the Faculty of Health Sciences, University of Ottawa.

Authors' contributions

EG and KP conceived the research project and recruited participants. EG analyzed the data, with oversight from KP. The manuscript was written by both EG and KP. This work was comprised EG's MSc thesis project, supervised by KP.

Acknowledgements

The authors would like to thank all respondents who participated in this study.

Abstract

Background: International travel has become increasingly accessible and popular, especially among young adults. Previous studies report that young adults exhibit risky behaviours abroad, and are at high risk to contract sexually transmitted and blood-borne infections (STBBIs), thereby contributing to the global propagation of STBBIs. Yet, very few studies have specifically looked at the influence of travel on young Canadians' sexual health, although data show that Canadians are avid travellers. The aim of this study is to examine the impact of international travel on young Canadian adults' sexual and risk behaviours.

Methods: A cross-sectional study was conducted using a self-administered online questionnaire targeting Canadians aged 18-25 years, who travelled abroad in 2016. In total, 646 sexually active-respondents' answers were included in the analysis. McNemar's tests, Wilcoxon signed-rank tests and descriptive statistics were used to report sexual health information and to compare young Canadian adults' risk and sexual behaviours at-home and abroad.

Results: Most of the participants remained abstinent during their trip (58.0%). Overall, participants were significantly less sexually active abroad, but had significantly riskier behaviours. Alcohol consumption significantly increased abroad while external condom use significantly decreased. Although participants cited condoms as the most common contraception method both at-home and abroad, less than one third of trip-sexually active participants used them consistently. Concerning STBBI screening, 37.2% of participants reported that they never get screened.

Conclusion: Although many young Canadian respondents in our sample practiced abstinence in their 2016 travel, trip-active sexually active participants exhibited riskier behaviours compared to at-home, jeopardizing their sexual health and their future partners' sexual health. Young travelling adults should remain a priority in terms of pre-travel sexual health promotion interventions.

KEY WORDS: travel, sexual health, youth, youth adults, risky behaviours, sexual practices, sexuality, sexually and blood-borne transmitted infection

INTRODUCTION

The past few decades have seen a major increase and democratization in international travel (Ward & Plourde 2006). Both affordable airfare and the increased perceptions of the importance of travel to shape youths' experiences have influenced the popularity of travel (Dobruszkes, 2006; UNWTO, 2008, 2011, 2016). The World Tourism Organization (UNWTO, 2016) estimates that 23% of all international travellers were aged 15-29 years in 2015. Young Canadians in particular are keen travellers, and presumably the popularity of international travel will continue (Statistics Canada, 2016; CTC, 2015) once the COVID-19 pandemic has subsided.

Young adult travellers' sexual health is particularly at-risk in part due to the risk behaviours associated with sexually transmitted infections (STIs - also termed sexually transmitted blood borne infections - STBBIs) (Abdullah *et al.*, 2004; Sundbeck *et al.*, 2017). Indeed, because of the high level of sexual activity of adolescents and young adults (usually defined as 15-24 years; UNESCO, 2017), the popularity of travel, and the risk behaviours exhibited by this population (PHAC, 2015; Sundbeck *et al.*, 2017), young travellers' sexual health is considered at-risk. Sexually active young travellers may play a vector role in transmitting STBBIs in their home country (Abdullah *et al.*, 2004; Kaehler *et al.*, 2013; Ansart *et al.*, 2009; McNulty *et al.*, 2010). Travel is identified as a major contributing factor in the spread of STBBIs around the world which, despite prevention efforts, remain a major public health concern (Keystone *et al.*, 2013; Memish & Osoba, 2003, 2006; Monsel & Caumes, 2010; Svensson *et al.*, 2018).

Post-COVID-19, international tourism is likely to rebound, fuelled by young adults' sense of adventure and curiosity about the world. The eventual reboot of international leisure and educational travel provides an excellent opportunity to develop risk communication and health promotion interventions informed by updated evidence about the sexual health and well-being of young travellers. As we currently have no recent data on the sexual practices and general sexual health of young Canadian travellers, the aim of this study is to examine the impact of international travel on young Canadian adults' sexual and other risk behaviours.

METHODOLOGY

Data Collection

The World Health Organization (WHO) sexual health framework (2017), which highlights and links the multiple interconnected facets of sexual health, guided the survey design and data analysis of this study. We surveyed Canadian young adults, aged 18-25 years, who had travelled abroad in 2016 (SimpleSurvey, OutSideSoft Solutions inc., Quebec, Canada) about their sexual health and sexual behaviours. We recruited participants from April to October 2017 through social media, in a purposive sampling manner to ensure regional participation. The online survey, which was available in English and French, consisted of five

sections: 1) Lifestyle Practices, 2) Sexual and Reproductive Health, 3) Travel, 4) Perceptions, and 5) Demographics. Questions were mainly multiple choice with some open-ended questions, and we adapted them from the available literature (Bellis *et al.*, 2004; Downing *et al.*, 2011; Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Lewis & de Wildt, 2016).

Participants

We received a total of 1585 complete responses, but only we only analyzed data from participants with Canadian citizenship status who travelled internationally in 2016, identified as female (including trans female) or male (including trans male) and who had at least one sexual partner in their lifetime (N=646).

Data Analysis

Following data extraction to Excel, EG removed incomplete and missing data and then coded for further analysis in SPSS (v. 27) (IBM Corp., Armonk, NY). We reported main socio-demographic characteristics were using descriptive statistics. We used McNemar's test (McNemar, 1947) (crossover design) with continuity correction (Edwards, 1948) to determine if there was a significant difference in the proportion of participants practicing various sexual behaviours at home and abroad, as well as if there was a significant difference in the proportion of participants using various methods of contraception at home and abroad. We compared all participants' (sexually active during the trip and abstinent during the trip) sexual behaviours and contraception methods. We used Wilcoxon signed-rank tests to determine whether there was a median difference between alcohol consumption, frequency of sexual encounters while under the influence of alcohol and the use of external condoms among participants at-home and abroad. For Wilcoxon signed-rank tests, we only included participants who were sexually active during the trip for the frequency of sexual encounters while under the influence of alcohol and the use of external condoms.

Ethics

EG obtained informed consent from all participants prior to data collection. Participants received details about the study, the benefits and risks associated with participation and could enter a draw for a \$50 CAN Amazon gift card (1/50 chance of winning) to be compensated for their time. The Research Ethics Board at the University of Ottawa approved this study (File # H02-17-14).

RESULTS

Demographics

We recognize the importance of representing non-binary individuals' reality in research, however, we only included binary (male, female) participants in the analysis to meet statistical conditions. The sample for analysis therefore consisted of 646 individuals, 83.7% (n=541) identifying as female (including trans

females, n=2) and 16.3% (n=105) identifying as male (including trans males, n=3). A majority of participants (n=518, 80.2%) identified as heterosexual and Caucasian (n=564, 87.3%). Most participants either lived in Ontario or Quebec, Canada (n=548, 84.8%) and were post-secondary students at the time of the survey (n=546, 84.5%). All relevant demographic information appears in Table 1. Lifetime history of sexual assault as of December 31, 2015 was reported by 24.9% (n=161) participants.

Sexual History

As shown in Table 2, most respondents (n=514, 79.6%) were 15-19 years at sexual debut. The majority (n=417, 64.6%) had five sexual partners or less and had at least one one-night stand (n=354, 54.8%) in their lifetime. In the past 12 months, 57.0% (n=368) had only one sexual partner, and 17.3% (n=112) had multiple sexual partners at the same time. Fifty participants (7.7%) reported at least one lifetime STBBI diagnosis. Among females, 4.7% (n=30) had at least one pregnancy and 3.3% (n=18) had at least one abortion.

STBBI Precautionary Measures

Table 3 presents all relevant information about participants' STBBI precautionary measures. Most common precautionary measures taken against STBBI were using a condom and/or a dental dam for sex (n=491, 76.0%) and asking for partner(s)'s history of STBBI (n=388, 60.1%). Only 2.6% (n=17) of participants reported using a condom or a dental dam every time during oral sex. STBBI screening was reported by 40.1% (n=259) respondents at least once per year or when beginning a new relationship/ new partner (n=161, 24.9%).

Sexual Activity Abroad

Table 4 presents relevant information about the sexual activity of participants abroad. During their trip, most participants were in a romantic or sexual partnership (n=382, 59.1%), did not plan to have sex (n=425, 65.8%) or did not bring external condoms with them (n=484, 74.9%). Most participants remained abstinent during the trip (n=375, 58.0%). Among the sexually active participants abroad (n=271, 42.0%), 79.3% (n=215) reported only one partner. The majority of participants who had sex abroad identified their usual sexual or romantic partner (n=176, 64.9%). Only 3.3% of the participants who were sexually active abroad were diagnosed with a STBBI post-travel.

Sexual Practices and Sexual Behaviours at Home vs. Abroad Comparison

Table 5 presents data about sexual practices and sexual behaviours at home and abroad for participants who were abstinent on their most recent international trip, as well as for participants who were sexually active on their trip (at least one sexual partner abroad).

Sexual Practices: Most common sexual practices at home reported by respondents included masturbation (n=507, 78.5%), mutual masturbation (n=506, 78.3%), oral sex (n=599, 92.7%) and vaginal sex (n=600, 92.9%). All sexual behaviours decreased significantly ($p < 0.001$; McNemar test) abroad compared to at home, among both females and males. The proportion of participants reporting no sexual behaviours at all increased from 1.2% (n=8) at home to 42.3% (n=273) abroad, a statistically significant difference $\chi^2(1) = 261.03$, $p < 0.001$. Table 7 presents χ^2 values and p-values for each sexual behaviours.

Contraception: Most common contraceptive methods at home included barrier methods (n=76.6%, 495) and hormonal methods (contraceptive pill but not hormonal intrauterine device (IUD); n=415, 64.2%). Among both females and males, the use of barrier methods, hormonal methods and IUD all significantly decreased ($p < 0.005$; McNemar test) abroad compared to at home. Looking at the entire sample, the use of other contraception methods also significantly decreased abroad compared to at home ($p < 0.001$; McNemar test). The proportion of participants using abstinence as a contraception method statistically increased abroad ($\chi^2(1) = 141.485$, $p < 0.001$) among both females and males. Table 8 presents χ^2 values and p-values for each contraception method.

Alcohol Consumption: Alcohol consumption (4 times per week or more) increased abroad. Although lower levels of alcohol consumption (less than once per week to 3 times per week) decreased abroad, alcohol abstinence did increase abroad. Among all participants, being abroad elicited a statistically significant median increase in alcohol consumption compared to at home (Wilcoxon, $z = -11.341$, $p < 0.001$; Table 9).

Sexual Encounters While Under the Influence of Alcohol: Although alcohol consumption increased abroad, the frequency of sexual encounters while under the influence of alcohol did not increase among trip-sexually active participants. Indeed, being abroad elicited a statistically significant decrease in sexual encounters under the influence of alcohol compared to at home (Wilcoxon, $z = -6.612$, $p < 0.001$) for all participants who were sexually active on their trip (Table 10).

External Condom Use: Although external condoms were the most popular contraception methods, less than a third of trip-sexually active participant used condoms every time they had sex, both at-home and abroad. Being abroad elicited a statistically significant median decrease in external condom use compared to at home (Wilcoxon, $z = -4.790$, $p < 0.001$), in both males and females who were sexually active on their trip. Indeed, among all participants who were sexually active during the trip, median external condom use

frequency rating was “sometimes ” at-home, but “rarely ” abroad. Note that we merged the “Never” and “N/A” option together for the Wilcoxon signed-rank test (Table 11).

Health and Sexual Health Advice given by Organizations/Groups/Associations

As shown in Table 6, few participants (16.7%, n=108) reported that their most recent 2016 international trip was arranged by an organization/group/association. Of these respondents, only 44.4% (n=48) received information/recommendations about health and safety from the organization/association prior to travel, and only 13.0% (n=14) of participants received information/recommendations about sexual health.

DISCUSSION

The vast majority of studies about sexual health in travellers often focus on the acquisition of new sexual partners, but not on sexual practices or established sexual partnerships (Vivancos *et al.*, 2010). We report here that our sample of young Canadian travellers were significantly less sexually active abroad in terms of both partnered and solo activities, compared to at-home. Our findings can be explained by our predominantly female sample, as the literature suggests that men typically report more sexual activity during travel (Crawford *et al.*, 2016; Kaehler *et al.*, 2013; PHAC, 2015; Svensson *et al.*, 2018; Vivancos *et al.*, 2010). Moreover, as single, unpartnered travellers are more likely to have sex during a trip (Kaehler *et al.*, 2013; PHAC, 2015; Svensson *et al.*, 2018; Vivancos *et al.*, 2010), the fact that our sample was mainly composed of participants in a relationship might have influenced the results.

Sexual activity among young travellers varies according to trip factors (e.g. setting, duration, purpose and type of travel, travel partner(s), travel experience) and personal factors (e.g. gender, sexual orientation, sexual experience, relationship status, expectation to have sex abroad, risk behaviours, etc.) (Crawford *et al.*, 2016; Downing *et al.*, 2011; Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Sundbeck *et al.*, 2017; Svensson *et al.*, 2018; Vivancos *et al.*, 2010). The prevalence of travel-associated casual sex is generally estimated as 20.4% (Vivancos *et al.*, 2010), with the literature reporting wide variation from 5-68.9% among young travellers (Bellis *et al.*, 2004; Downing *et al.*, 2011; Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Lewis & de Wildt, 2016; McNulty *et al.*, 2010; Svensson *et al.*, 2018). Our study’s findings are consistent with the literature, as 42.0% of participants had sex abroad (not limited to penetrative sex), and 40.6% of trip sexually active travellers reported a new sexual partner. Overall, we can conclude that our Canadian sample did have sex at a similar rate than other surveyed populations, but still remains less sexually active than at-home.

Risky Behaviours Leading to Riskier Sexual Health

It is well established in the literature that travel increases risk behaviours exhibited by young adults (Berdychevsky & Gibson, 2015; Kaehler *et al.*, 2013; Lejelind *et al.*, 2017; Qvarnström & Oscarsson, 2014) as travel elicits a sense of escape from social control, of freedom and of adventure (Dahlman & Stafström, 2013). Young travellers often express fun-seeking, hedonism which leads to risk behaviours such as heavy alcohol and/or drug use, casual sex, multiple partners, condom misuse, and “supremacy of enjoyment” over the respect of social norms (Berdychevsky, 2016, 2017; Dahlman & Stafström, 2013; Downing *et al.*, 2011). This can put the health and sexual health of travellers at-risk (Frew *et al.*, 2017; Hughes *et al.*, 2009; Sundbeck *et al.*, 2017; Svensson *et al.*, 2018).

In our sample both alcohol abstinence increased, as well as alcohol consumption (four times per week or more). This might be explained by the setting of the trip (e.g. humanitarian travels might not be favourable for alcohol consumption vs. travel in an all-inclusive hotel). Still, overall, alcohol consumption significantly increased, confirming previous findings among other populations. A meta-analysis (Svensson *et al.*, 2018) established that travellers engaging in heavy alcohol use (i.e. binge drinking) had three times higher odds of having casual sex encounters, which can lead to unprotected sex (Downing *et al.*, 2011; Lejelind *et al.*, 2017; Sundbeck *et al.*, 2017). However, in our sample, the frequency of sexual encounters under the influence of alcohol significantly decreased abroad compared to at-home, indicating that although travellers exhibited higher-risk behaviours (alcohol consumption), it did not necessarily put their sexual health more at-risk abroad.

Alcohol consumption is not only associated with casual sex (Downing *et al.*, 2011) but also condoms use. Marcantonio and colleagues (2019) found that travellers who exhibited “hazardous drinking” were more likely to use condoms, but in contrast, Lejelind and colleagues (2017) established that alcohol impairs the ability to use condoms. In general, travellers use condoms inconsistently (Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Korzeniewski & Juszczak, 2015; Lejelind *et al.*, 2017; Lewis & de Wildt, 2016; Marcantonio *et al.*, 2019). Among our participants, about one third (30.8%) planned to have sex, but only one fifth (21.4%) brought external condoms on their trip. Among participants who were sexually active during the trip, the proportion who packed condoms increased to 42.8%. Even though participants did not have more sexual encounters under the influence of alcohol, they did use external condoms less frequently than at home. Poor condom use might be explained by the fact that many travellers do not use this barrier method with their usual partner. This is consistent with Bellis and colleagues (2004) and Kaehler and colleagues’ (2013) findings which concluded that travellers having sex with their usual partners are about three times more likely to not use a condom.

The risk of contracting a STBBI is threefold among travellers having casual sex abroad (Vivancos *et al.*, 2010), and young adults are considered the most at-risk population in terms of STBBI acquisition (Dahlman & Stafström, 2013; Korzeniewski & Juszczak, 2015; Matteelli *et al.*, 2013; McNulty *et al.*, 2010; PHAC, 2015). Among trip sexually active participants, condom use significantly decreased abroad, which may indicate that their sexual health was actually more at-risk abroad. This raises a major public health issue as international travellers may transmit a broad spectrum of travel acquired STBBI to sexual partners when returning home (Ansart *et al.*, 2009; Korzeniewski & Juszczak, 2015; Kaehler *et al.*, 2013). In our sample, only 3.3% of trip sexually active travellers reported being diagnosed with a STBBI, which is a conservative percentage as many asymptomatic STBBI might have remained undetected and 37.2% of our sample never get screened for STBBI.

Having multiple partners during the same time window is considered risky for sexual health (Korzeniewski & Juszczak, 2015; Wand *et al.*, 2011). In our sample, 20.7% of travellers who were sexually active during the trip had more than one sexual partner during their trip. This is lower than previous findings (39.7% to 45.7%; Hughes *et al.*, 2009). Being young, male, single, with a history of multiple partners in the last year, with a history of STBBI, with travel experience, consuming alcohol and/or drugs, travelling for long periods of time were factors that have been found to influence having multiple sexual partners abroad (Downing *et al.*, 2011; Korzeniewski & Juszczak, 2015; Svensson *et al.*, 2018).

Sexual Health Promotion

Some organizations and associations surrounding travel (travel clinics, travel organizations, student exchange programs, etc.) occasionally provide pre-travel consultations to travellers and might include sexual health promotion. Sexual health-targeted pre-travel interventions can significantly improve travellers' sexual health knowledge (Frew *et al.*, 2017), and in turn improve sexual health (Croughs *et al.*, 2008; Lewis & de Wildt, 2016; Matteelli *et al.*, 2013), although effectiveness of pre-travel consultation is disputed (Angelin *et al.*, 2014; Kaehler *et al.*, 2013). In our study, from travellers whose trip was arranged by a travel association/organization, only 13.0% received information about sexual health (compared to 44.4% who received information about health and safety). This appears to be a missed opportunity by travel/youth organizations to promote sexual health of young travellers and prevent sexual health adverse events.

LIMITATIONS

Our purposive, non-random sample is not representative of the Canadian 18-25 year population, which prevents generalizability. Heterosexual Caucasian females are overrepresented in our sample which might be attributed to a selection bias related to the use of online questionnaires and recruitment methods (Bethlehem, 2010). The cross-sectional design of our study limits establishment of causality between variables. As all measures are self-reported, this can induce a risk of social desirability and retrospective biases, especially for questions asking about behaviours in the last two years (Boislard & Poulin, 2015; Huang *et al.*, 1998). The social desirability bias may have caused participants to under-report certain sexual or lifestyle behaviours or STBBI health history. Finally, almost two thirds of our sample are highly educated (at least a college diploma completed), such that the behaviours and experiences may not be relevant to a less educated, less privileged population cohort.

CONCLUSION

To our knowledge, this is the first study assessing the sexual health of young Canadian travellers and the first one to compare sexual practices at-home and abroad. Our sample of young travellers was as sexually active abroad compared to other similar populations, but were less sexually active abroad than at-home. Our sample exhibited significantly higher alcohol consumption and significantly less condom use abroad compared to at-home, which makes their sexual health more at-risk, especially as they did not report frequent and regular STBBI screening. It is evident that continued sexual health promotion of STBBI screening and promotion of condoms should be featured in both domestic and travel-associated sexual health promotion programs.

TABLES

Table 1. Demographics

	Females (n=541)	Males (n=105)	Total (N=646)
Mean Age (years)	21.18 (SD ¹ : 2.135)	21.28 (SD: 2.059)	21.2 (SD: 2.122)
Sexual Orientation			
Heterosexual	438 (81.0%)	80 (76.2%)	518 (80.2%)
Other (bisexual, homosexual, pansexual, asexual or other)	103 (19.0%)	25 (23.8%)	128 (19.8%)
Ethno-Cultural Identity <i>Respondents could choose more than one answer</i>			
Caucasian/white	477 (88.2%)	87 (82.9%)	564 (87.3%)
Chinese	24 (4.4%)	5 (4.8%)	29 (4.5%)
Indigenous/Aboriginal/Native	19 (3.5%)	2 (1.9%)	21 (3.3%)
South Asian	11 (2.0%)	7 (6.7%)	18 (2.8%)
Arab	13 (2.4%)	4 (3.8%)	17 (2.6%)
Southeast Asian	15 (2.8%)	1 (1.0%)	16 (2.5%)
Black	8 (1.5%)	6 (5.7%)	14 (2.2%)
Latin American	10 (1.8%)	3 (2.9%)	13 (2.0%)
Filipino	7 (1.3%)	2 (1.9%)	9 (1.4%)
West Asian	3 (0.6%)	1 (1.0%)	4 (0.6%)
Japanese	4 (0.7%)	0 (0.0%)	4 (0.6%)
Other	9 (1.7%)	1 (1.0%)	10 (1.5%)
Province of Residence			
Ontario	238 (44.0%)	42 (40.0%)	280 (43.3%)
Quebec	221 (40.9%)	47 (44.8%)	268 (41.5%)
British Columbia	44 (8.1%)	10 (9.5%)	54 (8.4%)
Other (Alberta, Manitoba, New Brunswick, Nova Scotia, Saskatchewan)	38 (7.0%)	6 (5.7%)	44 (6.8%)
Highest Level of Education Completed			
Secondary School Diploma	205 (37.9%)	36 (34.3%)	241 (37.3%)
College Diploma (including DEC ²)	110 (20.3%)	30 (28.6%)	140 (21.7%)
University Degree (Undergraduate, Masters, PhD or medical degree)	218 (40.3%)	39 (37.1%)	257 (39.8%)
Other	8 (1.5%)	0 (0%)	8 (1.2%)
Occupation			
Student	459 (84.8)	87 (82.9%)	546 (84.5%)
Full or part-time work	75 (13.9%)	17 (16.2%)	92 (14.2%)
Other/Unemployed	7 (1.3%)	1 (1.0%)	8 (1.2%)

¹SD: standard deviation; ² “Diplôme d’études collégiales”; pre-university diploma equivalent to Grade 12 high school + Year 1 University (Quebec, Canada).

Table 2. Sexual History

	Females (n=541)	Males (n=105)	Total (N=646)
Sexual Debut			
14 years old or less	56 (10.4%)	8 (7.6%)	64 (9.9%)
15-16 years old	171 (31.6%)	33 (31.4%)	204 (31.6%)
17-19 years old	264 (48.8%)	46 (43.8%)	310 (48.0%)
20 years old or older	50 (9.2%)	18 (17.1%)	68 (10.5%)
Number of Sexual Partners in Lifetime			
1	141 (26.1%)	21 (20.0%)	162 (25.1%)
2-5	210 (38.8%)	45 (42.9%)	255 (39.5%)
6-10	106 (19.6%)	17 (16.2%)	123 (19.0%)
11-14	39 (7.2%)	7 (6.7%)	46 (7.1%)
15 or more	45 (8.3%)	15 (14.3%)	60 (9.3%)
Number of Sexual Partners in Past 12 Months			
0	19 (3.5%)	4 (3.8%)	23 (3.6%)
1	312 (57.7%)	56 (53.3%)	368 (57.0%)
2-5	172 (31.8%)	33 (31.4%)	205 (31.7%)
6-10	26 (4.8%)	7 (6.7%)	33 (5.1%)
11 or more	12 (2.2%)	5 (4.8%)	17 (2.6%)
Number One-Night Stands in Lifetime			
0	253 (46.8%)	39 (37.1%)	292 (45.2%)
1-2	168 (31.1%)	31 (29.5%)	199 (30.8%)
3-5	64 (11.8%)	14 (13.3%)	78 (12.1%)
6-8	33 (6.1%)	4 (3.8%)	37 (5.7%)
9 or more	23 (4.3%)	17 (16.2%)	40 (6.2%)
Multiple Partners at the Same Time in Last 12 Months			
No	453 (83.7%)	81 (77.1%)	534 (82.7%)
Yes	88 (16.3%)	24 (22.9%)	112 (17.3%)
Lifetime STBBI Diagnosis¹			
No	497 (91.9%)	99 (94.3%)	596 (92.3%)
Yes	44 (8.1%)	6 (5.7%)	50 (7.7%)
Use of Dating Websites or Apps			
No	300 (55.5%)	43 (41.0%)	343 (53.1%)
Yes	241 (44.5%)	62 (59.0%)	303 (46.9%)
Number of Pregnancies (including abortions and miscarriages)			
0	511 (94.5%)		
1	26 (4.8%)		
2 or more	4 (0.7%)		
Number of Abortions			
0	522 (96.5%)		
1	15 (2.8%)		
2 or more	3 (0.6%)		
Prefer Not to Answer	1 (0.2%)		

¹STBBI diagnosed in total population (N=646) were: chlamydia (n=33), genital warts/HPV (n=8), gonorrhoea (n=5), genital herpes (n=4), scabies (n=3), pubic lice (n=2), chancroid (n=1), HIV (n=1) and syphilis (n=1)

Table 3. STBBI Precautionary Measures

	Females (n=541)	Males (n=105)	Total (N=646)
Precautionary Measures Taken Against STBBI at Home <i>(could choose more than one option)</i>			
Using Condom and/or Dental Dam for Penetrative or Oral Sex	411 (76.0%)	80 (76.2%)	491 (76.0%)
Asking for Partner(s)'s History of STBBIs	327 (60.5%)	61 (58.1%)	388 (60.1%)
Asking for Partner(s) to Be Screened	153 (28.3%)	19 (18.1%)	172 (26.6%)
None	42 (7.8%)	14 (13.3%)	56 (8.7%)
Screening Frequency <i>(could choose more than one option)</i>			
At Least One Per Year	224 (41.4%)	35 (33.3%)	259 (40.1%)
Never	185 (34.2%)	55 (52.4%)	240 (37.2%)
When Beginning New Relationship/New Partner	149 (27.5%)	12 (11.4%)	161 (24.9%)
After Unprotected Sex	62 (11.5%)	4 (3.8%)	66 (10.2%)
Other	18 (3.3%)	3 (2.9%)	21 (3.3%)
Frequency of Condom Use (or Dental Dam) During Oral Sex			
Never or N/A	436 (80.6%)	82 (78.1%)	518 (80.2%)
Rarely, Sometimes or most of the time	94 (17.4%)	17 (16.2%)	111 (17.2%)
Every Time	11 (2.0%)	6 (5.7%)	17 (2.6%)

Table 4. Sexual Activity Abroad

	Females			Males			All		
	Trip Abstinent (n=319)	Trip Sexually Active (n=222)	All (n=541)	Trip Abstinent (n=56)	Trip Sexually Active (n=49)	All (n=105)	Trip Abstinent (n=375)	Trip Sexually Active (n=271)	Total (N=646)
Relationship Status During Trip									
Single	137 (42.9%)	65 (29.3%)	202 (37.3%)	32 (57.1%)	26 (53.1%)	58 (55.2%)	169 (54.1%)	91 (33.6%)	260 (40.2%)
In a Romantic Relationship	162 (50.8%)	142 (64.0%)	304 (56.2%)	22 (39.3%)	15 (30.6%)	37 (35.2%)	184 (49.1%)	157 (57.9%)	341 (52.8%)
In a Sexual Partnership	16 (5.0%)	9 (4.1%)	25 (4.6%)	1 (1.8%)	5 (10.2%)	6 (5.7%)	17 (4.5%)	14 (5.2%)	31 (4.8%)
Married	2 (0.6%)	4 (1.8%)	6 (1.1%)	1 (1.8%)	3 (6.1%)	4 (3.8%)	3 (0.8%)	7 (2.6%)	10 (1.5%)
Other	2 (0.6%)	2 (0.9%)	4 (0.7%)	0 (0%)	0 (0%)	0 (0%)	2 (0.5%)	2 (0.7%)	4 (0.6%)
Plan to Have Sex During Trip									
Yes	8 (2.5%)	153 (68.9%)	161 (29.8%)	5 (8.9%)	33 (67.3%)	38 (36.2%)	13 (3.5%)	186 (68.6%)	199 (30.8%)
No	304 (95.3%)	58 (26.1%)	362 (66.9%)	49 (87.5%)	14 (28.6%)	63 (60.0%)	353 (94.1%)	72 (26.6%)	425 (65.8%)
Don't remember	7 (2.2%)	11 (5.0%)	18 (3.3%)	2 (3.6%)	2 (4.1%)	4 (3.8%)	9 (2.4%)	13 (4.8%)	22 (3.4%)
Did Bring External Condom(s) During Trip									
Yes	27 (8.5%)	87 (39.2%)	114 (21.1%)	13 (23.2%)	29 (59.2%)	42 (40.0%)	40 (10.7%)	116 (42.8%)	156 (21.4%)
No	292 (91.5%)	131 (59.0%)	432 (78.2%)	43 (76.8%)	18 (36.7%)	61 (58.1%)	335 (89.3%)	149 (55.0%)	484 (74.9%)
Don't remember	0 (0%)	4 (1.8%)	4 (0.7%)	0 (0%)	2 (4.1%)	2 (1.9%)	0 (0%)	6 (2.2%)	6 (0.9%)
Number of Sexual Partners During Most Recent 2016 International Trip									
0	319 (100%)	–	319 (59.0%)	56 (100%)	–	56 (53.3%)	375 (100%)	–	375 (58.0%)
1	–	183 (82.4%)	183 (33.8%)	–	32 (65.3%)	32 (30.5%)	–	215 (79.3%)	215 (33.3%)
2-5		35 (15.8%)	35 (6.5%)		13 (26.5%)	13 (12.4%)		48 (17.7%)	48 (7.4%)
6 or more		4 (1.8%)	4 (0.6%)		4 (8.2%)	4 (3.8%)		8 (3.0%)	8 (1.2%)
Post-Travel STBBI Diagnosis ^{1,2}									
Yes	–	5 (3.5%)	–	–	4 (8.2%)	–	–	9 (3.3%)	–
No		217 (97.7%)			45 (91.8%)			262 (96.7%)	
Identity of Sexual Partner(s) During Trip (could choose more than one option)									
Usual Sexual and/or Romantic Partner	–	154 (69.4%)	–	–	22 (44.9%)	–	–	176 (64.9%)	–
New Partner ³		79 (35.6%)			31 (63.3%)			110 (40.6%)	

¹ STBBI Diagnosis in Females: chlamydia (n=4) and genital herpes (n=1)

² STBBI Diagnosis in Males: chancroid (n=1), chlamydia (n=1), genital herpes (n=1), genital warts/HPV (n=1), HIV (n=1), scabies (n=1), syphilis (n=1)

³New Partner: friend(s), other traveller(s), local citizen(s), sex worker(s), other(s).

Table 5. Comparison of Sexual Practices and Sexual Behaviours at Home and Abroad in Trip Abstinent Participants

	Females						Males						All					
	Trip Abstinent (n=319)		Trip Sexually Active (n=222)		All (n=541)		Trip Abstinent (n=56)		Trip Sexually Active (n=49)		All (n=105)		Trip Abstinent (n=375)		Trip Sexually Active (n=271)		Total (N=646)	
	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad	Home	Abroad
Method of Contraception <i>(could choose more than one option)</i>																		
Condom/ Barrier Methods	243 (76.2%)	4 (1.3%)	163 (73.4%)	111 (50.0%)	406 (75.0%)	115 (21.3%)	52 (92.9%)	2 (3.6%)	37 (75.5%)	26 (53.1%)	89 (84.8%)	28 (26.7%)	295 (78.7%)	6 (1.6%)	200 (73.8%)	137 (50.6%)	495 (76.6%)	143 (22.1%)
Hormonal Methods (eg. OCP ¹)	217 (68.0%)	96 (30.1%)	151 (68.0%)	115 (51.8%)	368 (68.0%)	211 (39.0%)	25 (44.6%)	2 (3.6%)	22 (44.9%)	14 (28.6%)	47 (44.8%)	16 (15.2%)	242 (64.5%)	98 (26.1%)	173 (63.8%)	129 (47.6%)	415 (64.2%)	227 (35.1%)
IUD ²	34 (10.7%)	13 (4.1%)	30 (13.5%)	23 (10.4%)	64 (11.8%)	36 (6.7%)	7 (12.5%)	2 (3.6%)	7 (14.3%)	2 (4.1%)	14 (13.3%)	4 (3.8%)	41 (10.9%)	15 (4.0%)	37 (13.7%)	25 (9.2%)	78 (12.1%)	40 (6.2%)
None	54 (16.9%)	39 (12.2%)	29 (13.1%)	36 (16.2%)	83 (15.3%)	75 (13.9%)	10 (17.9%)	14 (25.0%)	10 (20.4%)	14 (28.6%)	20 (19.0%)	28 (26.7%)	64 (17.1%)	53 (14.1%)	39 (14.4%)	50 (18.5%)	103 (15.9%)	103 (15.9%)
Abstinence	46 (14.4%)	203 (63.6%)	14 (6.3%)	7 (3.2%)	60 (11.1%)	210 (38.8%)	6 (10.7%)	39 (69.6%)	5 (10.2%)	3 (6.1%)	11 (10.5%)	42 (40.0%)	52 (13.9%)	242 (64.5%)	19 (7.0%)	10 (3.7%)	71 (11.0%)	252 (39.0%)
Other ³	7 (2.2%)	0 (0%)	8 (3.6%)	3 (1.4%)	15 (2.8%)	3 (0.6%)	1 (1.8%)	0 (0%)	1 (2%)	0 (0%)	2 (1.9%)	0 (0%)	8 (2.1%)	0 (0%)	9 (3.2%)	3 (1.1%)	17 (2.6%)	3 (0.5%)
Sexual Practices <i>(could choose more than one option)</i>																		
Masturbation	236 (74.0%)	81 (25.4%)	172 (77.5%)	69 (31.1%)	408 (75.4%)	150 (27.7%)	53 (94.6%)	28 (50.0%)	46 (93.9%)	27 (55.1%)	99 (94.3%)	55 (52.4%)	289 (77.1%)	109 (29.1%)	218 (80.4%)	96 (35.4%)	507 (78.5%)	205 (31.7%)
Mutual Masturbation	239 (74.9%)	0 (0%)	188 (84.7%)	130 (58.6%)	427 (78.9%)	130 (24.0%)	41 (73.2%)	0 (0%)	38 (77.6%)	25 (51.0%)	79 (75.2%)	25 (23.8%)	280 (74.7%)	0 (0%)	226 (83.4%)	155 (57.2%)	506 (78.3%)	155 (24.0%)
Oral Sex	294 (92.2%)	1(0.3%)	209 (94.1%)	163 (73.4%)	503 (93.0%)	164 (30.3%)	52 (92.9%)	1 (1.8%)	44 (89.8%)	38 (77.6%)	96 (91.4%)	39 (37.1%)	346 (92.3%)	2 (0.5%)	253 (93.4%)	201 (74.2%)	599 (92.7%)	203 (31.4%)
Vaginal Sex	302 (94.7%)	1 (0.3%)	211 (95.0%)	196 (88.3%)	513 (94.8%)	197 (36.4%)	48 (85.7%)	0 (0%)	39 (79.6%)	32 (65.3%)	87 (82.9%)	32 (30.5%)	350 (93.3%)	1 (0.3%)	250 (92.3%)	228 (84.1%)	600 (92.9%)	229 (35.4%)
Anal Sex	49 (15.4%)	0 (0%)	42 (18.9%)	15 (6.8%)	91 (16.8%)	15 (2.8%)	12 (21.4%)	0 (0%)	22 (44.9%)	10 (20.4%)	34 (32.4%)	10 (9.5%)	61 (16.3%)	0 (0%)	64 (23.6%)	25 (9.2%)	125 (19.3%)	25 (3.9%)
Use of Sex Toys	100 (31.3%)	2 (0.6%)	90 (40.5%)	13 (5.9%)	190 (35.1%)	15 (2.8%)	10 (17.9%)	0 (0%)	11 (22.4%)	3 (6.1%)	21 (20.0%)	3 (2.9%)	110 (29.3%)	2 (0.5%)	101 (37.3%)	16 (5.9%)	211 (32.7%)	18 (2.8%)
BDSM ⁴	31 (9.7%)	0 (0%)	14 (6.3%)	5 (2.3%)	45 (8.3%)	5 (0.9%)	6 (10.7%)	0 (0%)	4 (8.2%)	1 (2.0%)	10 (9.5%)	1 (1.0%)	37 (9.9%)	0 (0%)	18 (6.6%)	6 (2.2%)	55 (8.5%)	6 (0.9%)
Other	1 (0.3%)	0 (0%)	2 (0.9%)	0 (0%)	3 (0.6%)	0 (0%)	0 (0%)	27 (48.2%)	0 (0%)	1 (2.0%)	0 (0%)	28 (26.7%)	1 (0.3%)	0 (0%)	2 (0.7%)	0 (0%)	3 (0.5%)	0 (0%)
N/A	6 (1.9%)	236 (74.0%)	2 (0.9%)	9 (4.1%)	8 (1.5%)	245 (45.3%)	53 (94.6%)	28 (50.0%)	46 (93.9%)	27 (55.1%)	99 (94.3%)	55 (52.4%)	6 (1.6%)	263 (70.1%)	2 (0.7%)	10 (3.7%)	8 (1.2%)	273 (42.3%)
Frequency of External Condom Use During Intercourse																		
Never	30 (9.4%)	33 (10.3%)	33 (14.9%)	90 (40.5%)	63 (11.6%)	123 (22.7%)	3 (5.4%)	11 (19.6%)	8 (16.3%)	16 (32.7%)	11 (10.5%)	27 (25.7%)	33 (8.8%)	44 (11.7%)	41 (15.1%)	106 (39.1%)	74 (11.5%)	150 (23.2%)
Rarely	59 (18.5%)	0 (0%)	38 (17.1%)	17 (7.7%)	97 (17.9%)	17 (3.1%)	9 (16.1%)	0 (0%)	11 (22.4%)	2 (4.1%)	20 (19.0%)	2 (1.9%)	68 (18.1%)	0 (0%)	49 (18.1%)	19 (7.0%)	117 (18.1%)	19 (2.9%)
Sometimes	55 (17.2%)	0 (0%)	44 (19.8%)	11 (5.0%)	99 (18.3%)	11 (2.0%)	9 (16.1%)	1 (1.8%)	6 (12.2%)	3 (6.1%)	15 (14.3%)	4 (3.8%)	64 (17.1%)	1 (0.3%)	50 (18.5%)	14 (5.2%)	114 (17.6%)	15 (2.3%)
Most of the Time	88 (27.6%)	1 (0.3%)	67 (30.2%)	31 (14.0%)	155 (28.7%)	32 (5.9%)	16 (28.6%)	0 (0%)	11 (22.4%)	5 (10.2%)	27 (25.7%)	5 (4.8%)	104 (27.7%)	1 (0.3%)	78 (28.8%)	36 (13.3%)	182 (28.2%)	37 (5.7%)

Every Time	72 (22.6%)	0 (0%)	34 (15.3%)	61 (27.5%)	106 (19.6%)	61 (11.3%)	17 (30.4%)	0 (0%)	13 (26.5%)	14 (28.6%)	30 (28.6%)	14 (13.3%)	89 (23.7%)	0 (0%)	47 (17.3%)	75 (27.7%)	136 (21.1%)	75 (11.6%)
N/A	15 (4.7%)	285 (89.3%)	6 (2.7%)	12 (5.4%)	21 (3.9%)	297 (54.9%)	2 (3.6%)	44 (78.6%)	0 (0%)	9 (18.4%)	2 (1.9%)	53 (50.5%)	17 (4.5%)	329 (87.7%)	6 (2.2%)	21 (7.7%)	23 (3.6%)	350 (54.2%)
Alcohol Consumption																		
Everyday	1 (0.3%)	50 (15.7%)	6 (2.7%)	53 (23.9%)	7 (1.3%)	103 (19.0%)	0 (0%)	11 (19.6%)	0 (0%)	13 (26.5%)	0 (0%)	24 (22.9%)	1 (0.3%)	61 (16.3%)	6 (2.2%)	66 (24.4%)	7 (1.1%)	127 (19.7%)
4-5 Times a Week	5 (1.6%)	48 (15.0%)	10 (4.5%)	48 (21.6%)	15 (2.8%)	96 (17.7%)	3 (4.5%)	10 (17.9%)	8 (16.3%)	10 (20.4%)	11 (10.5%)	20 (19.0%)	8 (2.1%)	58 (15.5%)	18 (6.6%)	58 (21.4%)	26 (4.0%)	116 (18.0%)
2-3 Times a Week	59 (18.5%)	62 (19.4%)	55 (24.8%)	24.3%)	114 (21.1%)	116 (21.4%)	14 (25.0%)	9 (16.1%)	16 (32.7%)	15 (30.6%)	30 (28.6%)	24 (22.9%)	73 (19.5%)	71 (18.9%)	71 (26.2%)	69 (25.5%)	144 (22.3%)	140 (21.7%)
Once a Week	110 (34.5%)	41 (12.9%)	76 (34.2%)	29 (13.1%)	186 (34.4%)	70 (12.9%)	16 (28.6%)	5 (8.9%)	15 (30.6%)	2 (4.1%)	31 (29.5%)	7 (6.7%)	126 (33.6%)	46 (12.3%)	91 (33.6%)	31 (11.4%)	217 (33.6%)	77 (11.9%)
Less than Once a Week	131 (41.1%)	37 (11.6%)	73 (32.9%)	21 (9.5%)	204 (37.7%)	58 (10.7%)	19 (33.9%)	3 (5.4%)	9 (18.4%)	5 (10.2%)	28 (26.7%)	8 (7.6%)	150 (40.0%)	40 (10.7%)	82 (30.3%)	26 (9.6%)	232 (35.9%)	66 (10.2%)
Never	13 (4.1%)	81 (25.4%)	2 (0.9%)	17 (7.7%)	15 (2.8%)	98 (18.1%)	4 (7.1%)	18 (32.1%)	1 (2.0%)	4 (8.2%)	5 (4.8%)	22 (21.0%)	17 (4.5%)	99 (26.4%)	3 (1.1%)	21 (7.7%)	20 (3.1%)	120 (18.6%)
Frequency of Sexual Encounters While Under the Influence of Alcohol																		
Never/Don't remember	67 (21.0%)	318 (99.7%)	19 (8.6%)	79 (35.6%)	86 (15.9%)	397 (73.4%)	14 (25.0%)	55 (98.2%)	4 (8.2%)	16 (32.7%)	18 (17.1%)	71 (67.6%)	81 (21.6%)	373 (99.5%)	23 (8.5%)	95 (35.1%)	104 (16.1%)	468 (72.4%)
Rarely or Sometimes	232 (72.7%)	1 (0.3%)	179 (80.6%)	119 (53.6%)	411 (76.0%)	120 (22.2%)	41 (73.2%)	1 (1.8%)	39 (79.6%)	25 (51.0%)	80 (76.2%)	26 (24.8%)	273 (72.8%)	2 (0.5%)	218 (80.4%)	144 (53.1%)	491 (76.0%)	136 (22.6%)
Most of the Time or Every Time	20 (6.3%)	0 (0%)	24 (10.8%)	24 (10.8%)	44 (8.1%)	24 (4.4%)	1 (1.8%)	0 (0%)	6 (12.2%)	8 (16.3%)	7 (6.7%)	8 (7.6%)	21 (5.6%)	0 (0%)	30 (11.1%)	32 (11.8%)	51 (7.9%)	32 (5.0%)

¹OCP- oral contraceptive pill; ²IUD- intrauterine device; ³ Other: Write-in responses (Plan B, pull-out method or not specified); ⁴Bondage and discipline, dominance and submission, and sadism and masochism

Table 6. Travel Organizations

		Females (n=541)	Males (n=105)	Total (N=646)
Trip Arrangements				
	Arranged by an association/organization ¹	89 (16.5%)	19 (18.1%)	108 (16.7%)
	Not arranged by an association/organization	452 (83.5%)	86 (81.9%)	538 (83.3%)
Among Participants Whose Trip Was Organized by an Association/Organization				
Information Received About Health and Safety From the Association/Organization				
	Yes	43 (48.3%)	5 (26.3%)	48 (44.4%)
	No	46 (51.7%)	14 (73.7%)	60 (55.6%)
Information Received About Sexual Health From the Association/Organization				
	Yes	12 (13.5%)	2 (10.5%)	14 (13.0%)
	No	77 (86.5%)	17 (89.5%)	94 (87.0%)

¹ Organizations were mainly education-related (n=50, 56.2% for females; n=9, 47.4% for males), humanitarian/charity/volunteer related (n=22, 24.7% for females; n=6, 31.6%), or tourism-related (n=7, 7.9% of females; n=4, 21.1% of males). Participants could choose more than one option.

Table 7. Comparing Sexual Behaviours at Home and Abroad: McNemar's Tests Results

		Masturbation	Mutual Masturbation	Oral Sex	Vaginal Sex	Anal Sex	Use of Sex Toys	BDSM	N/A
Total (N=646)	Chi-Square^a	292.261	250.696	380.549	361.214	87.509	191.005	45.176	261.034
	p-value	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**
All Females (n=541)	Chi-Square^a	250.186	240.303	329.233	308.152	65.407	173.006	36.214	233.038
	p-value	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**
All Males (n=105)	Chi-Square^a	40.196	12.595	49.778	51.158	20.346			26.056
	p-value	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**	<0.001** ^b	0.004 ^b	<0.001**

* p-value < 0.005 ** p-value < 0.001

a. Continuity corrected

b. Binomial distribution used

Table 8. Comparing Contraception Methods at Home and Abroad: McNemar's Tests Results^a

		Barrier Methods (including external condom)	Hormonal Method (including contraceptive pill, excluding IUD)	IUD	None	Abstinence	Other
Total (N=646)	Chi-Square^b	340.334	174.845	34.225	0.000	141.485	
	p-value	<0.001**	<0.001**	<0.001**	1.000 ^c	<0.001**	<0.001** ^d
All Females (n=541)	Chi-Square^b	281.271	147.491	24.300	0.510	120.658	
	p-value	<0.001**	<0.001**	<0.001**	0.475	<0.001**	<0.001** ^d
All Males (n=105)	Chi-Square^b	57.143	25.714		1.633	20.000	
	p-value	<0.001**	<0.001**	0.002* ^d	0.201	<0.001**	0.500 ^d

* p-value < 0.005 ** p-value < 0.001

a. Individuals from all sexual orientations were included as even if you identify with a certain orientation, you might still have sexual relations with individuals with various sexual identities.

- b. Continuity corrected
- c. No discordant pairs (n=103 at home and n=103 abroad)
- d. Binomial distribution used

Table 9. Comparing Alcohol Consumption at Home and Abroad: Wilcoxon Signed-Rank Test

	Wilcoxon Signed-Rank Test		Median		Ranks		
	<i>z</i>	<i>p</i> -value	Alcohol Consumption at Home	Alcohol Consumption at Abroad	Abroad<Home	Abroad>Home	Abroad=Home
Total Participants (<i>N</i> =646)	-11.341 ^a	<0.001*	Once a week (2)	2-3 times a week (3)	140	356	142
Females (<i>n</i> =541)	-10.711 ^a	<0.001*	Once a week (2)	2-3 times a week (3)	116	309	116
Males (<i>n</i> =105)	-3.830 ^a	<0.001*	Once a week (2)	2-3 times a week (3)	24	55	26

**p*-value < 0.001

^a Based on Abroad<Home rank

Table 10. Comparing Sexual Encounter Under the Influence of Alcohol at Home and Abroad: Wilcoxon Signed-Rank Test Among Participants Who Were Sexually Active on Their Trip

	Wilcoxon Signed-Rank Test		Median		Ranks		
	<i>z</i>	<i>p</i> -value	Condom Use at Home	Condom Use at Abroad	Abroad<Home	Abroad>Home	Abroad=Home
Total Participants sexually active on Trip (<i>N</i> =271)	-6.612 ^a	<0.001	Rarely or sometimes (1)	Rarely or sometimes (1)	88	18	165
Females sexually active on Trip (<i>n</i> =222)	-6.396 ^a	<0.001	Rarely or sometimes (1)	Rarely or sometimes (1)	73	12	137
Males sexually active on Trip (<i>n</i> =49)	-2.041	0.041	Rarely or sometimes (1)	Rarely or sometimes (1)	15	6	28

^a based on Abroad>Home rank

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CHAPTER 4: MANUSCRIPT 2

TITLE PAGE

Potential Journal: Sexual Health

Title: Factors Associated with Young Canadian Adults' Sexual Activity While Travelling Abroad

Running title: Predictors of travel-related sexual behaviours

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Declarations

Ethics approval and consent to participate

The Research Ethics Board at the University of Ottawa reviewed and approved this study (File # H02-17-14). The survey included the purpose of the study, risks and benefits to participants and mechanisms of participation. All respondents included in this study indicated their consent to participate.

Competing interests

The authors have no competing interests to declare.

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EG was supported by a scholarship from the Faculty of Health Sciences, University of Ottawa.

Authors' contributions

EG and KP conceived the research project and recruited participants. EG analyzed the data, with oversight from KP. The manuscript was written by both EG and KP. This work was comprised EG's MSc thesis project, supervised by KP.

Acknowledgements

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Abstract

Background: Travel is of particular importance to young adults in search of new experiences and it has become increasingly common. Previous studies report that travellers are much more likely to have casual sex abroad compared to at-home. However, the majority of studies only address casual sex, without necessarily including travellers who have sex with a regular partner. The aim of this study is therefore to see what factors are associated with having sex abroad, whether it is casual or not

Methods: Authors recruited Canadians aged 18-25 years who travelled abroad in the past year via social media to self-administer an online questionnaire. A binomial logistic regression was used to examine the demographic, sexual health and risk factors associated with having sex abroad.

Results: The sexually active sample was predominantly composed of females (83.7%), Caucasians (87.3%) and individuals identifying as heterosexual (80.2%). The logistic regression model was statistically significant, explained 60.5% of the variance in sexual activity abroad and correctly classified 88.4% of the cases. Having had at least six sexual partners in their lifetime and consuming alcohol at least twice per week abroad significantly predicted having sexual activity with a partner abroad according to the regression model. The odds of having sex abroad were about fifty-fold for travellers who planned to have sex on their trip, and was almost threefold for travellers who brought external condoms with them abroad. Unlike previous studies, gender, sexual orientation and relationship status did not predict having sex abroad according to the regression model.

Conclusion: In light of our results, we recommend that pre-travel intervention providers tailor their sexual health interventions based on modifiable factors in order to target travellers who are more likely to have sex abroad and to provide them more specific information and recommendations regarding their sexual health. We also recommend that pre-travel interventions, as well a general sexual health promotion initiatives, should be done in a sex-positive and harm-reduction approach for all travellers.

KEY WORDS: travel, sexual health, youth, youth adults

INTRODUCTION

The popularity of international travel has increased in the past two decades as it has become more affordable and accessible (Tanton *et al.*, 2016; Thomas, 2005). This is especially true among young adults, described as the “future of travel”, and depicted as a mobile and adventurous cohort of travellers (UNWTO, 2011). Young travellers are looking for new and unique travel experiences like “off the beaten track”, fun and immersive experiences (Berdychevsky, 2016; UNWTO, 2016). Travel can provide a sense of anonymity, freedom and “situational disinhibition”, which, combined with the fun and adventure-seeking mentality of young adults, are associated with risk behaviours like alcohol and drug consumption, casual sex and inconsistent use of condoms (Berdychevsky, 2016, 2017; Briggs & Tutenges, 2014; Dahlman & Stafström, 2013; Frew *et al.*, 2017; Hughes *et al.*, 2009; Qvarnstrom & Oscarsson, 2014). Indeed, studies have shown that travel increases at-risk sexual behaviours (Qvarnstrom & Oscarsson, 2014; Sundbeck *et al.*, 2017; Svensson *et al.*, 2018; Vivancos *et al.*, 2010), which are defined as sex without condoms, sex with a partner without knowing her/his sexually and blood-borne infection (STBBI) history/status and sex under the influence of alcohol and/or drugs (CDC, 2017; Marcantonio *et al.*, 2019). Identifying as male, single, having same-sex relations, consuming alcohol and/or drugs and long trip durations are factors associated with sexual risk taking abroad among youths (Bellis *et al.*, 2004; Downing *et al.*, 2011; Hughes *et al.*, 2009; McNulty *et al.*, 2010; Mercer *et al.*, 2007; Sundbeck *et al.*, 2017).

Many studies focus on the risk behaviours associated with casual sex abroad (Downing *et al.*, 2011; Lewis & de Wildt, 2016; Sundbeck *et al.*, 2017; Tanton *et al.*, 2016; Vivancos *et al.*, 2010), but little is known about the factors associated with sex abroad, either with usual or new partners. To understand and improve effective and relevant sexual health promotion, we examined factors associated with young Canadian adults’ sexual activity while travelling abroad.

METHODOLOGY

Data Collection

The WHO’s sexual health framework (2017), which recognizes multilevel influences on sexual health, informed the study design and analysis. We designed an online survey (SimpleSurvey, OutSideSoft Solutions inc., Quebec, Canada) to explore sexual health and behaviours among young Canadian travellers, aged 18-25 years, within the context of their 2016 international travel. We conducted the recruitment (April to October 2017) through social media, using a purposive sampling method to ensure regional participation.

The online survey was divided into five different sections: 1) Lifestyle Practices, 2) Sexual and Reproductive Health, 3) Travel, 4) Perceptions, and 5) Demographics. We adapted the survey questions from the literature (Bellis *et al.*, 2004; Downing *et al.*, 2011; Hughes *et al.*, 2009; Kaehler *et al.*, 2013;

Lewis & de Wildt, 2016). The survey was available in English and French, and consisted of closed questions with some open-ended questions. More details about data collection can be found in Gareau & Phillips (unpublished).

Participants

We received a total of 1585 complete survey responses. The sample was restricted on the basis of Canadian citizenship/residency status and history of international travel in 2016 (N=809). For the purposes of this analysis, the sample was further limited to participants who had at least one sexual partner in their lifetime and identified as female (including trans female) or male (including trans male) (N=646).

Data Analysis

Outcome Variable and Predictors of the Binomial Logistic Regression

The outcome variable, having sexual relations during the trip, was dichotomised (yes/no), based on the number of sexual partners abroad (0/more than 0). We identified potential predictors of having sex during the trip as follows: gender, sexual orientation, sexual debut, number of sexual partners in lifetime, relationship status, use of dating apps/websites, plans to have sex on the trip, bringing external condoms on the trip, alcohol consumption on the trip, travel experience, setting and organization of the trip, risk perception about safe sex, sex with strangers and sexual health and well-being on the trip (Crawford *et al.*, 2016; Crougths, 2008; Downing *et al.*, 2011; Lewis & de Wildt, 2016; Svevensson *et al.*, 2018; Vivancos *et al.*, 2010). We considered these variables in the investigation of correlates of having sex abroad in this sample. We dichotomized all variables except for the number of sexual partners in lifetime (ordinal-4 levels), setting of the trip (nominal-3 levels), alcohol consumption on the trip (ordinal-4 levels) and risk perception variables (ordinal-3 levels).

We extracted the survey data to Excel (Microsoft 365, version 16.42), removed incomplete or missing data and coded the remaining data for further analysis in SPSS (v. 27) (IBM Corp., Armonk, NY). We reported socio-demographic characteristics of the sample using descriptive statistics. We conducted bivariate analyses (X^2 for dichotomous variables and rank biserial correlation for ordinal variables) to investigate associations between predictor variables and the dichotomous outcome variable. We only retained statistically significant ($\alpha < 0.05$) variables in the initial regression model (backward LR) along with gender and sexual orientation.

We tested the variables to check that the data met the underlying assumptions of logistic regression. We computed tolerance and variance inflation factors (VIF) to ensure that the data did not violate multicollinearity assumption. We conducted a correlation matrix using Phi (ϕ) for

dichotomous*dichotomous variables, Cramer's V (ϕ_c) for dichotomous*ordinal variables and Spearman's correlation for ordinal*ordinal variables was also. We considered Spearman correlation coefficients > 0.7 and $\phi_c > 0.5$ strong (Cohen, 1998; Laerd, 2016, 2018; Mukaka, 2012) and we excluded variables yielding coefficients exceeding those thresholds from the model when appropriate. We did not add any interaction term as it did not yield any conceptual relevance.

Based on the adjusted odds ratios (AORs) and corresponding confidence intervals derived from the model, we interpreted the odds of having sex abroad to identify predictors in this sample.

Ethics

The Research Ethics Board at the University of Ottawa approved this study (File # H02-17-14). We provided the details of the study, benefits and risks associated with participation to all participants who could choose to consent to continue with the survey. To reimburse participants for their time, participants could voluntarily enter a draw for a \$50 CAN Amazon gift card (1/50 chance of winning).

RESULTS

Demographics

The sample was 83.7% (n=541) female (including trans females, n=2) and 16.3% (n=105) male (including trans males, n=3). We recognize the importance of representing the realities of non-binary individuals in research, however, we only included binary (male, female) were in the analysis as the number of non-binary individuals was too small (n=2). The sample was predominantly heterosexual (80.2%, n=518), Caucasian (87.3%, n=564) and were post-secondary school students at the time of the survey (84.5%, n=546). Participants lived mainly in Ontario or Quebec, Canada. Table 1 presents all demographic information. More demographic information about the sample can be found in Gareau & Phillips (unpublished).

Age 14 years old and older was the period of sexual debut identified by 90.1% (n=582) of participants. as. The majority of participants (65.6%, n=417) reported 1-5 sexual partners in their lifetime and did not use dating websites or applications (53.1%, n=343). Table 2 presents information about sexual history of participants.

The majority of participants consider safe sex as important (agree or strongly agree; 81.1%, n=524), and 27.7% (n=179) were open to having sex with people they just met. Only 29.7% (n=192) considered that their sexual health and sexual well-being were more at-risk during their most recent international trip. Table 3 presents risk perception information.

Table 4 presents sexual activity of participants during travel. Although only 30.8% (n=199) of participants planned to have sex during their trip and 24.1% (n=156) packed external condoms, 42% (n=271, 42.0%) report travel-related sexual relations.

Table 5 presents relevant travel information. The majority of participants (n=441; 68.3%) can be considered experienced travellers (on average, 2 or more international trips per year). In their most recent 2016 international trip, 53.6% (n=346) travelled mostly to an urban region. Only 16.7% (n=108) had their trip arranged by an organization/association. Alcohol consumption, at least twice per week, was reported by 59.3% (n=383) of participants.

Regression

Bivariate Analysis of Associations of Socio-Demographic Characteristics with Having Sex Abroad and Multi-Collinearity Testing

Tables 1-5 presents the results of bivariate analysis assessing the association between each predictor variable and the outcome. We only included variables yielding significant p-values ($p < 0.05$) in χ^2 and rank biserial correlation analysis in the initial logistic regression model, but we also included variables about gender and sexual orientation. The multicollinearity assumption was not violated as no predictors were not highly correlated with one another (ϕ_c , ϕ , and Spearman's correlation coefficient < 0.295).

Predictors of Having Sex Abroad

We performed a backward LR binomial logistic regression to ascertain the effects of factors (gender, sexual orientation, number of sexual partners in lifetime, relationship status, plans to have sex abroad, bringing external condoms on the trip, alcohol consumption on the trip, the risk perception about having sex with new acquaintances and the organization of the trip) as potential predictors of travel-associated sex among the sample.

We examined cases with standardized residuals (ZResid) with values of 2.5 standard deviations or higher (n=23) and kept them in the analysis. The logistic regression model was statistically significant, $\chi^2(9) = 386.34$, $p < 0.001$. The model explained 60.5 % (Nagelkerke R^2) of the variance in having sex abroad and correctly classified 88.4% of cases. In comparison, the null model, containing only the constant, correctly classified 58.0% of the cases. Sensitivity was 68.6%, specificity was 96.5%. Of the nine predictor variables only four were statistically significant: (1) number of sexual partners in lifetime (6-10 partners, and 11 or more partners), (2) plans to have sex on the trip, (3) bringing condoms on the trip and (4) alcohol consumption abroad (consumption 2-3 times per week, and 4 or more times per week).

As shown in Table 6, the odds of having sex abroad were about fifty-fold for travellers who planned to have sex on their trip, and was almost threefold for travellers who brought external condoms with them abroad. Consuming alcohol at least twice per week and having had at least six sexual partners in their lifetime significantly predict having sex abroad.

DISCUSSION

We identified four main predictors of travel-associated sex among our young Canadian adult sample: (1) number of sexual partners in lifetime, (2) plans to have sex on the trip, (3) bringing condoms on the trip and (4) alcohol consumption abroad. Young Canadian adults' expectations of travel-associated sex is highly predicted by the expectation of sex, which is consistent with the results of a meta-analysis which concluded that one of the strongest predictors for casual sex abroad was expectations of travel-associated sex (Svensson *et al.*, 2018).

Similarly, the regression results confirmed that the odds of having sex abroad increased about threefold if travellers brought external condoms with them on their trip. This is consistent with previous studies which reported correlations between bringing condoms and sexual activity (Svensson *et al.*, 2018; Lewis & de Wildt, 2016). We have previously reported that condom use decreased during travel, compared to at home among trip-sexually active participants (Gareau & Phillips unpublished). Thus, although bringing external condoms is a predictor to having sex abroad, it is not a guarantee that they will be used. A number of studies about young travellers report inconsistent condom use, even with new, casual sexual partners (Downing *et al.*, 2011; Gareau & Phillips, unpublished; Hughes *et al.*, 2009; Kaehler *et al.*, 2013; Lejelind *et al.*, 2017; Lewis & de Wildt, 2016; Wand *et al.*, 2011).

Reasons used to justify the non-usage or inconsistent use of condoms include difficult access to quality condoms, embarrassment to buy condoms, difficulty to express preference for condom use to partner, fear that using a condom will ruin the mood, fear of giving the impression of being promiscuous by having/using condoms, condoms reducing or modifying sensations/pleasure (mainly reported by males) or inducing pain/discomfort in the genital area (mainly reported by females) (Lejelind *et al.*, 2017; Qvarnstrom & Oscarsson, 2014). Many variables were found to influence condom use abroad: travel buddy (Downing *et al.*, 2011), gender, identity of sex partner(s) (Kaehler *et al.*, 2013), alcohol consumption (Marcantonio *et al.*, 2019), mental health (Sundbeck *et al.*, 2017) and condom use at home (Egan, 2001). Hence, Bauer (2009) points out that bringing condoms does not ensure condom use; being able to negotiate consistent and proper condom use is essential.

Our findings regarding alcohol consumption are also consistent with available literature. Young adults engaging in heavy or hazardous alcohol drinking abroad are more likely to have sex (Crawford *et al.*, 2016; Downing *et al.*, 2011; Hughes *et al.*, 2009; Marcantonio *et al.*, 2019; Sundbeck *et al.*, 2017). Our results confirm that alcohol consumption (i.e. 2-3 times per week or more) was associated with having sex abroad. Alcohol consumption influences other risk factors, such as condom use or frequency of casual sex encounters (Downing *et al.*, 2011; Lejelind *et al.*, 2017). We recommend that alcohol consumption, a modifiable risk factor, should be the focus of pre-travel interventions.

In contrast to previous studies (Downing *et al.*, 2011; Kaehler *et al.*, 2013; Lewis & de Wildt, 2016; Sundbeck *et al.*, 2017; PHAC, 2015; Svensson *et al.*, 2018; Vivancos *et al.*, 2010), gender, sexual orientation and relationship status did not significantly predict sex abroad. This might be explained by the fact that our sample was mainly composed of heterosexual females in a relationship. However, the number of lifetime sexual partners was associated with having sex abroad. This is supported by available literature which establishes that the number of previous partners (usually in the last year) or a history of multiple partners predict the chances of having casual relationships abroad (Downing *et al.*, 2011; Korzeniewski & Juszczak, 2015; PHAC, 2015). Sexual history should be incorporated in pre-travel consultations, particularly in healthcare settings as this provides an opportunity to reinforce STBBI screening and safer sexual practices.

Among travellers that relied upon a travel organization for trip planning, sexual health was reported as a major gap in pre-travel information, consistent with previous studies (Dahlman & Stafström, 2013). Korzeniewski & Juszczak (2015) state that prevention among travellers is the best way to decrease mortality and morbidity associated with STBBI. Because youth exhibit high levels of sexual activity abroad and are more likely to form new sexual partnerships compared to older travellers, appropriate health promotion information should be easily accessible to them (Sundbeck *et al.*, 2017; Tanton *et al.*, 2016). Although there is some debate about the effectiveness and usefulness of existing pre-travel interventions (Frew *et al.*, 2017; Kaehler *et al.*, 2013; Svensson *et al.*, 2018), innovative strategies using social media, new technologies (e.g. targeted ads on social media) and social marketing strategies might improve uptake of sexual health promotion messaging (Wand *et al.*, 2011). As sexual behaviours of travellers are heterogeneous (Dahlman & Stafström, 2013; Vivancos *et al.*, 2010), pre-travel intervention should thus address sexual health and tailor the approach to the traveller's personal characteristics, travel destinations, and overall needs (Berdychevsky, 2017; Downing *et al.*, 2011; Martin *et al.*, 2012; Lejelind *et al.*, 2017).

Our findings clearly call for pre-travel interventions, but also for comprehensive and sex-positive sexual education and sexual health promotion. Many of the gaps in safer sexual health practices (e.g. inconsistent condom use, STBBI testing; Gareau and Phillips, unpublished) reported by our young Canadian travellers require comprehensive sexual education throughout childhood, adolescence and the entire lifespan.

LIMITATIONS

This study provides insights on factors influencing sexual relationships while travelling internationally among young Canadian adults. Still, several limitations need to be considered. First, because of the purposive, non-random sampling method used, the sample is not representative of the Canadian 18-25 year population, which prevents generalizability. Second, the cross-sectional design of the study prevented determination of causality between variables. Third, all measures are self-reported, which can induce a risk of social desirability and retrospective biases, especially for questions asking about behaviours in the last two years (Boislard & Poulin, 2015; Huang *et al.*, 1998). Fourth, we did not include some personal and travel-related factors known to influence the sexual activity of travellers (e.g. duration, purpose, setting of travel; travel buddy; travel experience, etc.) in the regression because we either did not have access to this information, or answers were too inconsistent to be used.

CONCLUSION

Our findings suggest that plans to have sex abroad, bringing external condoms abroad, a high number of lifetime sexual partners, and alcohol consumption abroad, are factors which predict sexual activity abroad in our sample. Our findings provide insights about factors influencing the sexual activity of young Canadian travellers abroad which may be useful to tailor sexual health counselling during pre-travel interventions, or general sexual health promotion initiatives targeting young travellers. We recommended comprehensive, sex-positive health promotion interventions to mitigate risk behaviours at all stages of the lifespan. We also recommend that pre-travel interventions focus on modifiable practices like alcohol consumption and plans to have sex abroad, and that a sex-positive, harm-reduction approach should be taken rather than emphasis on trip abstinence.

TABLES

Table 1. Demographics

	Total (N=646)
Gender¹	
Female	541 (83.7%)
Male	105 (16.3%)
Mean Age (years)	21.2 (SD ² 2.122)
Sexual Orientation¹	
Heterosexual	518 (80.2%)
Other (bisexual, homosexual, pansexual, asexual or other)	128 (19.8%)
Ethno-Cultural Identity <i>Respondents could choose more than one answer</i>	
Caucasian/white	564 (87.3%)
Chinese	29 (4.5%)
Indigenous/Aboriginal/Native	21 (3.3%)
South Asian	18 (2.8%)
Arab	17 (2.6%)
Southeast Asian	16 (2.5%)
Black	14 (2.2%)
Latin American	13 (2.0%)
Filipino	9 (1.4%)
Japanese	4 (0.6%)
West Asian	4 (0.6%)
Other	10 (1.5%)
Province of Residence	
Ontario	280 (43.3%)
Quebec	268 (41.5%)
British Columbia	54 (8.4%)
Other (Alberta, Manitoba, New Brunswick, Nova Scotia, Saskatchewan)	44 (6.8%)
Highest Level of Education Completed	
Secondary School Diploma	241 (37.3%)
College Diploma (DEC ³)	140 (21.7%)
University Degree (Undergraduate, Masters, PhD or medical degree)	257 (39.8%)
Other	8 (1.2%)
Occupation	
Student	546 (84.5%)
Full or part-time work	92 (14.2%)
Other/Unemployed	8 (1.2%)

¹Associations between the outcome variable (sex abroad) and variables “gender” and “sexual orientation” were determined by χ^2 (or Fisher’s test). Both were not significantly associated, but were still included in the regression model. ²SD :standard deviation, ³ “Diplôme d’études collégiales”; pre-university diploma equivalent to Grade 12 high school + Year 1 University (Quebec, Canada).

Table 2. Sexual History

	Total (N=646)
Sexual Debut	
14 years old or less (early)	64 (9.9%)
15 or more	582 (90.1%)
Number of Sexual Partners in Lifetime**	
1	162 (25.1%)
2-5	255 (39.5%)
6-10	123 (19.0%)
11 or more	106 (16.4%)
Use of Dating Websites or Apps	
No	343 (53.1%)
Yes	303 (46.9%)

* $p < 0.05$ **; $p < 0.01$; *** $p < 0.001$

p-values determined by χ^2 (or Fisher's test) for dichotomous*dichotomous and rank biserial correlation for dichotomous*ordinal

Table 3. Risk Perceptions

	Total (N=646)
Having Safe Sex (Use of Condoms) is Important for Me	
Disagree or strongly disagree	26 (4.0%)
Neutral	96 (14.9%)
Agree or strongly agree	524 (81.1%)
I Don't Mind Having Sex With People I Just Met*	
Disagree or strongly disagree	331 (51.2%)
Neutral	136 (21.1%)
Agree or strongly agree	179 (27.7%)
I feel that my sexual health and sexual well-being were more at risk during my most recent international trip compared to back at home	
Disagree or strongly disagree	454 (70.3%)
Neutral	103 (15.9%)
Agree or strongly agree	89 (13.8%)

* $p < 0.05$ **; $p < 0.01$; *** $p < 0.001$

p-values determined by χ^2 (or Fisher's test) for dichotomous*dichotomous and rank biserial correlation for dichotomous*ordinal

Table 4. Sexual Activity and Lifestyle Behaviours Abroad

	Total (N=646)
Sexually Active (with partner) Abroad	
Yes	271 (42.0%)
No	375 (58.0%)
Relationship Status During Trip*	
Single	260 (40.2%)
Not single	386 (59.8%)
Plan to Have Sex During Trip***	
Yes	199 (30.8%)
No/Don't remember	422 (65.3%)
Did Bring External Condom(s) During Trip***	
Yes	156 (24.1%)
No/ Don't remember	499 (77.4%)
Alcohol Consumption Abroad***	
Never	120 (18.6%)
Once a week or less	143 (22.1%)
2-3 times a week	140 (21.7%)
4 times a week or more	243 (37.6%)

* $p < 0.05$ **; $p < 0.01$; *** $p < 0.001$

^a p -values determined by χ^2 (or Fisher's test) for dichotomous*dichotomous and rank biserial correlation for dichotomous*ordinal

Table 5. Travel Information

	Total (N=646)
Travel experience (average of trips taken outside of the country per year)	
No (0-1 country visited per year)	205 (31.7%)
Yes (2 or more countries visited per year)	441 (68.3%)
Setting of Most Recent 2016 International Trip	
Mostly Urban	346 (53.6%)
Mostly Rural	108 (16.7%)
Equally Urban and Rural	192 (29.7%)
Organization of the Trip*	
Organized by an association/organization	538 (83.3%)
Not organized by an association/organization	108 (16.7%)

* $p < 0.05$ **; $p < 0.01$; *** $p < 0.001$

^a p -values determined by χ^2 (or Fisher's test) for dichotomous*dichotomous and rank biserial correlation for dichotomous*ordinal

Table 6. Logistic Regression Model for the Prediction of Having Sex on a Trip Among Young Canadian Travellers

	<i>B</i> ¹	Standard Error	Wald Chi-Square	<i>df</i>	<i>p</i>	Adjusted Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Gender								
(Female) ^a								
Male	-0.144	0.332	0.187	1	0.666	0.866	0.452	1.662
Sexual Orientation								
(Heterosexual) ^a								
Other	-0.079	0.291	0.074	1	0.785	0.924	0.522	1.634
Relationship Status								
(Not Single) ^a								
Single	-0.015	0.255	0.004	1	0.952	0.985	0.598	1.622
Number of Sexual Partner(s) in Lifetime								
(1) ^a								
2-5	0.620	0.332	3.490	1	0.062	1.859	0.970	3.564
6-10	0.902	0.372	5.888	1	0.015*	2.464	1.189	5.106
11 or more	0.805	0.392	4.229	1	0.040*	2.238	1.039	4.821
Plan to Have Sex Abroad								
(No/Don't remember) ^a								
Yes	3.934	0.324	147.044	1	<0.001***	51.134	27.072	96.580.
Brought External Condoms								
(No/Don't remember) ^a								
Yes	1.041	0.279	13.923	1	<0.001***	2.833	1.639	4.896
Risk Perception About Sex With Strangers^b								
(Disagree/Strongly Disagree) ^a								
Neutral	-0.291	0.321	0.826	1	0.363	0.747	0.399	1.401
Agree/Strongly Agree	0.107	0.303	0.125	1	0.724	1.113	0.615	2.015
Organization of the trip								
(Not done by an association/organization) ^a								
Organized by an association/organization	-0.104	0.322	0.105	1	0.746	0.901	0.480	1.693
Alcohol Consumption								
(Never) ^a								
Once a week or less	0.753	.408	3.405	1	0.065	2.124	0.954	4.728
2-3 times a week	0.991	0.405	6.001	1	0.014*	2.694	1.219	5.954
4 times a week	0.857	0.380	5.091	1	0.024*	2.355	1.119	4.956

a. Reference category

b. "I don't mind having sex with people I just met"

*p-value <0.05; ** p-value<0.01 *** p value<0.001

¹ Values for the logistic regression equation for predicting the dependent variable from the independent variable. They are in log-odds units.

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CHAPTER 5: MANUSCRIPT 3

TITLE PAGE

Potential Journal: BMC Health Services

Title: Key informant perspectives on sexual health services for travelling young adults. A qualitative study.

Running title: Travel provider experiences related to sexual health services

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Declarations

Ethics approval and consent to participate

The Research Ethics Board at the University of Ottawa reviewed and approved this study (File # H02-17-14). All participants signed a consent form prior to each interview which summarized the purpose of the study, risks and benefits to participants and mechanisms of participation.

Consent for publication

Not applicable

Availability of data and materials

Not applicable

Competing interests

Not applicable

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Authors' contributions

EG and KP conceived the research project. EG conducted and analyzed interviews, with oversight from KP. The manuscript was written by both EG and KP. This work was comprised EG's MSc thesis project, supervised by KP.

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Abstract

Background: International travel has become increasingly popular among young adults. These young adults often engage in casual sexual relationships abroad, exhibit substantial sexual risk behaviours and may thus be at risk of contracting sexually transmitted and blood-borne infections. Still, studies show that appropriate pre-travel interventions and consultations might mitigate this risk. At present, we know little about pre-travel practices of Canadian providers. The aim of this study was therefore to document the sexual health-related practices including risk reduction education and information sharing in Ottawa-region health travel clinics and youth travel organizations.

Methods: This study used a qualitative approach and consisted of 13 in person or Skype semi-structured interviews with key informants working in travel clinics, travel organizations or sexual health clinics of the Ottawa region and working with a young adult population. Data was analyzed for content and themes using inductive techniques.

Results: Both travel clinics and youth travel organizations did not consider sexual health as a common topic in pre-travel interventions as most of those interventions were mainly risk assessment driven and travel purpose driven. When sexuality was discussed, it was mainly done in a risk perspective. We identified dissemination and uptake of information as barriers to sexual health promotion.

Conclusion: Although there is a great deal of variation in terms of practices in the different organizations dealing with young travelling adults, the findings of this study suggest that more time and resources should be allocated to the topic of sexual health during pre-travel interventions with young adults and more sexual health promotion targeted to young travelling adults should be done to improve the precarious sexual health status of travellers. Comprehensive sexual education throughout the lifetime was also considered as an effective way to improve sexual health of young Canadian adults in general, and thereby young travelling adults.

KEY WORDS: travel organization, travel clinic, travel medicine, travel physician, youth, young adults, sexual health

INTRODUCTION

Young adults, individuals between the ages of 15 and 24 (UNESCO, 2017), represent the greatest risk group by age for adverse sexual health outcomes (Centers for Disease Control and Prevention [CDC], 2017; Liu *et al.*, 2015). Transmission of sexually transmitted blood borne infections (STBBIs) and unintended pregnancy (CDC, 2017; Liu *et al.*, 2015; Sedgh *et al.*, 2015) in young adults may be caused by inconsistent condom use (Dehne & Riedner, 2005; USAID, 2015), high-risk behaviours, including drug and alcohol use, social media sexual encounters and multiple partners (Gilliam *et al.*, 2014; Lehmler & Ioerger, 2014; OPH, 2011; PHAC, 2017).

Today's young adults are one of the most mobile generations in terms of international experiences (UNWTO, 2011). In 2015, 23% of all international travellers were young adults (aged 15–29 according to the World Tourism Organization (UNWTO, 2016). Young adult travellers are more likely to spend longer periods abroad, with purposeful travel - work, study or language opportunities- steadily replacing leisure travel (UNWTO, 2016). Motivations for international travel include interactions with local citizens and a desire for an immersive local cultural experience (UNWTO, 2016).

The rise in international leisure travel has created a healthcare sector focused on the provision of travel-related health information (Keystone & Tessier, 2003; Sofarelli *et al.*, 2011). Pre-travel health consultations typically include individual risk assessment, medical history, health risk education and related mitigation specific to the travel region, as well as relevant immunizations and medications for prophylaxis and self-treatment (CDC, 2019; Chen *et al.*, 2018). High-risk lifestyle behaviours are often a feature of travel, thereby further increasing the risk of adverse sexual health outcomes in young adults (Crawford *et al.*, 2016; Croughs *et al.*, 2008; 2017; Sundbeck *et al.*, 2017; Vivancos *et al.*, 2010). Although discussion of sexual risk behaviours in pre-travel consultations by health practitioners is a best practice (Aw *et al.*, 2014; CATMAT, 2006; CDC, 2019, ISTM, 2017), the quality and frequency of sexual health promotion is less well known.

Ottawa, Ontario is the bilingual (English, French) capital city of Canada, home to 934,243 residents including 125,840 young adults, aged 15-24 years (Statistics Canada, 2017). The number of Canadians travelling abroad has increased consistently over the decades, with 28.7 million international trips in 2010; 44.6% representing travel by Ontarian residents (Statistics Canada, 2016). Although the United States remains the most popular destination, Canadian travellers include backpackers, volunteers headed to underdeveloped countries, and immigrants returning in their country of origin to visit relatives (Boggild *et*

al., 2014). Given the increased risk of adverse sexual health outcomes, including STBBIs, among young adults, travel health interventions can be considered an essential component of public health. This study aims to investigate the experiences, practices and challenges of Ottawa-region professionals, employed in fields of travel medicine, sexual health or travel organizations, within the context of young adult travellers' sexual health.

METHODS

Data Collection

EG recruited key informants to participate in a semi-structured interview through purposive sampling by email, phone or in person. Key informants were professionals employed in Ottawa-region travel-specialized health clinics, sexual health clinics, young-adult-focused travel organizations and health-promotion organizations. Thirteen key informants from 11 different organizations provided written consent to participate in the study; consistent with certification from the Research Ethics Board at the University of Ottawa (File # H02-17-14). EG conducted English and French interviews in person or via Skype, between April-November 2017, with seven English- and six French-speaking participants. The World Health Organization sexual health conceptual framework (WHO, 2017) which promotes sexual health as the holistic achievement of physical, emotional, mental and social well-being, and framed by human rights, evidence-based and a sex-positive approach informed the interview guide. Interview topics included sexual health counselling and interventions with young adults pre- and post-travel, perceptions of young adult Canadian travellers' sexual health, experiences, challenges and recommendations faced by participants within the scope of this study. EG also collected demographic information.

Analysis

EG audio-recorded, transcribed and analyzed interview data in the original source language. Translations of sample quotations from French-speaking participants appear in this article. We reached thematic saturation (Elo & Kyngas, 2008; Green & Thorogood, 2004). We managed transcript data coding with NVivo (Version 11.4.3 (2084)). Authors developed the data coding scheme using both inductive (Elo & Kyngas, 2008; Green & Thorogood, 2004) and deductive approaches; supported by the WHO sexual health framework (WHO, 2017) and the interview questions. EG analyzed the data iteratively and the research team reviewed and discussed the interpretation and qualitative content analysis (Elo & Kyngas, 2008) to fully develop our understanding of the data.

RESULTS

Participant characteristics

Key informants included seven professionals working in a health-related organization (4 travel clinics, 3 sexual health clinics) and six employed by travel organizations (Table 1). The majority of the key informants identified as female (n=11) and had less than 10 years of experience in their current field of work (n=8). Travel/sexual health clinic respondents were trained as nurses (n=5), physician (n=1) and one non-healthcare professional. Recognizing that mandates of healthcare (i.e. travel clinics, sexual health clinics) are distinct from travel services (i.e. organizations specializing in international cooperation, volunteering or student exchanges), our analysis is presented as a comparison of the perspectives of the two groups of respondents.

Pre-Travel Interventions

Respondents from both healthcare and travel services generally did not consider sexual health a common component of pre-travel interventions. Pre-travel interventions described by respondents were distinct and tailored to the role of the employer or host organization, although some approaches were common across sectors. Two clear types of pre-travel interventions emerged: (1) risk-assessment driven interventions and (2) practical or purpose-driven interventions. Healthcare participants offered pre-travel interventions following a risk assessment/management approach related to diseases or potential health hazards (e.g. food, water, mosquitoes, etc.) associated with the destination region. Typical pre-travel healthcare interventions included vaccinations, medications and general travel advice. When asked how young travellers' sexual health could be improved, a travel nurse (EG01) said, "[...] we have to focus on vaccines and medications like malaria- we have to focus on the risks of illness," following the guidelines and directives of the host organization. A travel services respondent recognized the risk-assessment approach used by healthcare workers, and recalled that the nurses responsible for the pre-travel health module training emphasized risks related to diseases:

"It's really only an overview. Because whether you want it or not, in the pre-departure training, we have to talk about so many other diseases, parasites, this and that. So it [STBBIs] are rarely discussed. You know, we won't go into details." [translation]; -male, program officer, travel services, EG11

Travel services respondents reported that most humanitarian or volunteer opportunities are organized as group activities. Although practices varied widely across different host organizations, respondents described pre-travel practical or purpose-driven interventions tailored to the collective needs of the group. Travel services key informants noted little emphasis on sexual health in the pre-travel health discussions.

“We have only one slide on [sexual] health. What is said is things like ‘don’t forget your condoms’ or ‘if you are a woman and are on the pill, talk with your family physician and ask them for a prescription and make sure you have enough’. We tell them ‘condoms are not always available in all sizes in all different countries, so bring what you need’. They’ll find that funny, but at least, we tell them.” [translation]- program director, travel services, EG02.

Respondents from travel services perceived that healthcare professionals were better able to address sexual health topics. Travel services key informants described outsourcing pre-travel health interventions to a travel nurse, or recommended travellers visit a health clinic or travel clinic prior to travel, in some cases requiring a certificate from a physician stating that the traveler is fit for travel.

“It’s not our responsibility to do their sexual education necessarily, but we remind them that [sex] isn’t the same abroad, not everything we have here is available abroad, that if they need prescriptions, they need to think about that, to put it on their to-do list. I think it’s part of our responsibility, but I’m not sure that I have the right competence to go in depth [...] We don’t focus on health”. [translation], Program director, travel services, EG02.

Key informants also framed sexuality abroad as safety issues, both in terms of acceptability of sexual expression and risks related to sexual assault.

“...we know how difficult it is for people to talk about.. um.. sex in general, sexual assault and harassment in particular, is even more taboo and difficult, so if we talk to them before they [sic] leave, and we tell them that there is a policy and there are procedures and we take this extremely seriously, then when it does occur um- and the percentage of it occurring are quite high ..., they’ll be more likely, one, to report it if um they’re the victims of harassment or assault, and two, to be more aware of it happening in their environment”. Female, Program director, travel services, EG07

“Our patients- it’s really to talk about safe sex, uh, we will discuss if they’re travelling to a country where there’s a high incidence of HIV. ... I talk about, for young girls, especially travelling to certain places where it might be dangerous for them, that there has been cases of rape, even, kidnapping in things like group rape” - EG03, female nurse

« In fact, we talk about sexual harassment, a lot from a work perspective, we also talk about homosexual relations, which for us too is a major issue because in many countries where we

operate ... Homosexuality, it is either prohibited or criminal, or otherwise it is taboo. Some countries even, it's illegal [translation] » male, program officer, travel services EG11

Key informants from volunteer-travel services mentioned that no-sex contracts or no-sex policies for travellers were quite common, although such abstinence-policies were rarely enforced in the field.

“Somebody told me that like years ago, there used to be a message, like ‘no sex is best’, and they said that was so silly because people are gonna do what they wanna do, so you should be telling them more, you know, how to protect themselves in the decisions they make.”- Female, Program director, travel services, EG07

“In our first aid kit, we have condoms and Plan B [morning after pill]. Still, it [having sexual relationships]’s forbidden. They have signed a contract that says they can’t have sex, whether it’s sex with locals or with people from the groups. You know, we are pretty clear on that. But we could give condoms and Plan Bs. You know, at some point, they are adults and we know it can happen. So we tell ourselves that if it happens, we can deal with it” [translation] – male, program officer, travel services EG11

Barriers to Sexual Health Promotion

Key informants identified pre-travel sexual health promotion barriers as either issues with dissemination or uptake of sexual health content of pre-travel interventions. Dissemination barriers included; (1) limited time for discussion, (2) lack of suitable resources (i.e. sexual health training), and (3) perceptions that as travellers are adults, their sexual behaviours are private.

“In terms of travel, because you’re seeing sometimes someone for the first time, and there’s a lot of things you need to cover. Because they’re more concerned about what vaccines they need, right? There’s a lot to cover so...I mean, I would say the sexual health part kind of gets squeezed a bit...just for time. But, I mean, I always make the attempt to talk about it”- male, travel physician, EG08

“[...] it’s time limited, and there are many clinics, or speakers, who I know who will say that, you know, we need to incorporate this [sexual health] into our consultations. But it’s easier said than done. I think having written information for clients to take home, that’s really concise, and full of information would be much more beneficial.”- female, travel nurse, EG01

“Sexual health is important for sure. But we consider that they [travellers] are adults, they are university students and they know a little bit about that stuff.” [translation] -female, program director, travel services, EG02.

Most respondents identified the uptake of sexual health content by travellers as a second major barrier by. Three themes related to sexual health uptake barriers emerged as: (1) young adults’ embarrassment, (2) travel/healthcare professionals’ discomfort, and (3) travellers’ financial constraints.

Both travel services and healthcare respondents described young travellers’ discomfort with sexual health discussions, perceived shyness, apparent disregard, or requests to change topic when sexual health was introduced.

“I think they’re also very shy. People are just generally shy. And not comfortable speaking about sexual health.” -female, travel nurse, EG01

“Some it seems like they’re just coming in for that vaccine... it’s to get their attention to talk about everything else, but you’ll see their eyes glaze over and you know they’re already thinking, or they’re on their phone texting somebody, and they think that the visit’s over.” -female, travel nurse, EG03

“We have to just judge from their response, whether they’re open to it or not, right? You know, some say, ‘I know, I know, you don’t have to tell me’, like that- then obviously, I’m not gonna go into it too much.” -male, travel physician, EG08

Key informants considered that although some young adults overestimate their personal knowledge about sexual health, others are uncomfortable talking sex, especially if they don’t plan on having sexual relationships while abroad. A travel services participant perceived that young adults feel condescended to when the topic of sexual health is discussed.

“Often they are paternalized. Often, it’s a bit like you impose a decision on them”, “Sometimes, youths think they know a lot. We have the feeling that they have an ‘I do not care’ attitude. They [youth] are like ‘Who are you to tell me that kind of things?’” [translation]-male, program officer, EG11.

Respondents also acknowledged that travel/healthcare professionals often feel uncomfortable discussing sexual health, thereby contributing to the uptake barrier.

« I don't think there are a lot of family doctors or travel clinics who are comfortable talking about this [sexual health; translation]. » - female, sexual health nurse, EG04

A travel nurse mentioned that her employer refused to talk about sexual health topics and referred his patients to her for sexual health-related questions:

“That's why the physician didn't speak to you [EG]; he doesn't feel as comfortable. Now he's an older gentleman, it's a different generation. He doesn't like to bring up the sexual aspect of the visit. So I think it's a matter of even healthcare professionals feeling comfortable enough to discuss it without feeling embarrassed or shy, or feeling like you're imposing your opinion. But you have to put yourself outside of it somehow and be comfortable to just give factual information, in a way that they're gonna take it in.” -female, travel nurse, EG03.

A humanitarian travel organization key informant seemed ill at ease when discussing sexual health topics during the interview,

“I don't think it's [sexual health] a common topic. I don't know if it's because the organization might think that talking about it might encourage people...encourage [sexual] actions...For us, it's difficult...We are all together during fifteen days in the same environment...I don't think it's appropriate.” [translation] -female, travel services mission lead, EG13

Respondents also considered travellers' financial limitations as barriers to uptake of sexual health information.

“Many times, young adults- because of cost issues and finances- may- sometimes come in, ... there are times where they don't want to listen to a consult, they don't want all the information; but mostly, it's because of the budget. They have a small budget, and they want the bare necessities. [...]” -female, travel nurse, EG01

“You never have enough time to get young people- certain young people comfortable enough to start talking and to get really engaged with them. And when you just start to get really close to them, really talking outward and honest with you, and displaying their needs and their issues, and getting questions, their time is up, and you don't get enough time with them. And our services cost, so it's not like they can just keep coming back and back and back, and taking all that time. They can't afford that!” -female, travel nurse, EG09.

As the interviews progressed, key informants recognized that sexual health was an overlooked subject in their respective practices. A healthcare professional considered that many young adults may return from

travel and reflect on their travel-related sexual behaviours with regret, health or safety concerns resulting in “post-travel anxiety”.

“People will travel, come back and only then will the reality strikes. They’ll be very, very anxious and they’ll have regrets about behaviours they had or things that happened. There will be a lot of anxiety like “what have I done”, anxiety towards STIs, towards [STIs] testing, things like that.”
“We often see anxious people, coming back from a trip, who have regrets and fears [concerning their sexual health; translation],” -female, sexual health nurse, EG04

Perceived impact of travel on young adults’ sexual health risk perceptions

Both health and travel key informants recognized that impending travel may cause young adults to perceive sexual behaviours as less risky while travelling, in spite of lifestyle behaviours (e.g. alcohol consumption) commonly associated with adverse sexual health outcomes. When asked about the travellers who are more at risk in terms of sexual adverse events, a nurse replied:

“[...] it’s usually the backpackers. It’s the young people travelling, backpackers going to South-East Asia, South America, staying in hostels. I would say- and the ones who are at resorts as well- , where there’s a lot of drinking involved, they’ll absolutely be at a higher risk of sexually transmitted diseases and probably more frequent unplanned sex.” - female, travel nurse, EG01

Key informants acknowledged that pre-travel sexual health promotion was necessary to challenge the “what happens in Vegas stays in Vegas” culture frequently embraced by young adults.

“[...] people will behave differently on vacation. And maybe throw caution to the wind more” - female, travel nurse, EG03

“You know, students, when they travel abroad, they party. Often, they party a lot and they meet people and they are more vulnerable” [translation]- female, program director-travel services, EG02.

Key informants perceived that the anonymity of travel in a foreign country encouraged young adults to engage in risky behaviours. A volunteering program officer explains:

“ You’ll keep your anonymity and you will do more things...and this is the danger that we often witness. You have less pressure, or at least, the pressure you feel is different. While travelling, you’ll do things that you wouldn’t necessarily do. There’s the exotic side of things. People always have risky behaviours, but while abroad, I’ll say that 10-15%, even 10-20% of travellers have

problematic risky behaviours. You allow yourself to do more things because you're just passing through the country. You're more nonchalant." [translation]- male, program officer, travel services, EG11

"Travellers take more risks. There is a lot of infidelity. People travel to have sexual encounters and be unfaithful, because it's less likely that you'll have to deal with the repercussions. If they are at home in Ottawa and want to have a one-night stand, casual sex, there are more risks involved that people may see you or that you see your one night partner again. I think that people find it easier to go on a trip and be anonymous. We see a lot of that" [translation]- female, sexual health nurse, EG04

Feelings of homesickness and cultural shock may be the impetus to drive travellers to engage in new and potentially risky sexual encounters.

"I'd say that the sexual health of young adults travelling is more at risk as people are in a new context, one of adventures, new experiences and discoveries and because of this thrill they feel, will be less cautious, especially when they just arrived." [translation] -female, volunteering organization recruitment agent, EG12

Recommendations

Key informants acknowledged that sexual health promotion and education during adolescence were determinants of sexual health and sexual well-being of young adults. Many key informants described young adults as having a general lack of sexual health knowledge, and almost all key informants recommended a more comprehensive sexual education targeted to youth and young adults.

"We can obviously do more because we have such a high rate of sexually transmitted diseases, so obviously we're not doing our job. For sure, there could be more done and more taught. Starting from maybe making it easier taught in schools, but they do talk about it. I do believe that there is a lot of ignorance and a lot of young people, they still think that they are invincible. It only happens once, or it's not going to happen to me." -female, travel nurse, EG01

"I think there's this idea still that maybe a lot of us [young adults] are invincible, and that it happens to other people. And I think there's a lot of myths and misinformation when it comes to health. Definitely." - female, sexual health counsellor/coordinator, EG06

DISCUSSION

Sexual health is generally omitted, neglected or considered an awkward, uncomfortable topic by Ottawa-region travel key informants. Health key informants prioritized risk-assessment driven interventions, emphasizing nonsexual infectious diseases, prophylactic vaccinations and general health and safety; whereas travel key informants relied on practical or purpose-driven interventions, tailored to the immediate needs and activities of the travellers. A 2016 systematic review identified that less than half of travellers from high income countries received pre-travel sexual health interventions (Crawford *et al.*, 2016). Consistent with our results, sexual health risks are rarely discussed in pre-travel consultation in travel clinics (Cabada *et al.*, 2005; Crougths *et al.*, 2014), with uptake barriers proposed to include format and perceived relevance of the sexual health travel-related promotion (Crougths *et al.*, 2008, 2017).

Reported Barriers to Sexual Health Promotion

Travel and health professionals articulated discomfort, lack of training and confidence associated with sexuality discussions as barriers. This is consistent with implementation barriers for sexual education by teachers (Eisenberg *et al.*, 2013; Martinez & Phillips, 2009), and clinical sexual histories/counselling by medical students (Komlenac *et al.*, 2019; Shindel *et al.*, 2010) and nurses (Fennell *et al.*, 2019; Martel *et al.*, 2017). Training and continuing education are strategies to enable sexual educators, including health professionals, become more assertive and confident with sexuality discussions (Martinez & Phillips, 2009; Fennell *et al.*, 2019). Attitudes related to perceived discomfort and embarrassment of clients, students, patients, and in our study, young travellers, often reflects gaps in understanding of the importance of sexual promotion to the target audience, insufficient training or other barriers including lack of time or privacy (Fennell *et al.*, 2019; Martinez & Phillips, 2009). Training by itself, however, cannot abrogate policies, protocols or organization cultures which do not support open sexual health promotion (Eisenberg *et al.*, 2013). Best practices for sexual health promotion should ensure a judgment-free dialogue that is sex-positive (Martinez & Phillips, 2009; Larkin *et al.*, 2017; WHO, 2017), tailored and relevant to the audience, and is evidence-based (UNESCO 2017, 2018; WHO, 2017). Inflexible personal beliefs about sexuality may bias sexual health promotion, contribute to missed opportunities for needed referrals, information and counsel, and lead to incorrect individual sexual health risk assessments (Komlenac *et al.*, 2019).

A heterocentric lens of sexuality does not meaningfully reflect diverse sexual identities in Canada (Martinez & Phillips, 2009), such that needs of minority groups may go unaddressed with respect to sexual health and travel. Travel key informants discussed sexual harassment, risk of sexual assault and cultural/legal acceptability of homosexuality and non-binary sexual identity expression abroad, however these topics received less emphasis compared with standard pre-travel consultation topics (e.g. food and water safety,

medication, cultural shock, etc.). Key informants framed gender-based violence along with legality of sexual expression abroad as human-resource or safety topics, rather than part of the broader dialogue about sexual health. Risk of sexual violence, particularly for young women and gay and bisexual men, is dependent on many variables including travel destination, excessive intoxication, accommodation, nightlife activities, and solo travel (Calafat *et al.*, 2013; Kennedy & Flaherty, 2015). Tourism-sector workers face considerable sexual harassment, such that young adult travellers may also represent potential perpetrators (Ram, 2019). It was unclear whether established abstinence policies and no-sex contracts for travellers were a form of risk mitigation against sexual assault and possible legal repercussions of casual sex, or whether these policies were intended to safeguard the reputation of participating travel organizations, and minimize problematic sexual behaviours of travellers abroad which may impact trip success. Key informants acknowledged that these abstinence contracts were difficult to monitor and enforce.

STBBI

Health key informants identified the topic of vaccines, especially hepatitis B vaccine, was used as a mechanism to introduce sexual health, mainly HIV and STBBI, briefly in pre-travel interventions. Emphasis on travel STBBI risk reduction is essential, as globalization and travel have facilitated STBBI dispersion and impacted surveillance and treatment (Boggild *et al.*, 2014; Crawford *et al.*, 2016; Svensson *et al.*, 2018; Vivancos *et al.*, 2010). Indeed, travellers who engage in sexual relationships abroad are exposed to new and different sexual networks (CDC, 2019) especially when travelling to STBBI hot-spots (Ortiz-Martinez *et al.*, 2018). Travel-related sexual networks can facilitate the introduction of new drug-resistant STBBI in the home country, including drug-resistant strains of *N. gonorrhoea* (CDC, 2019; Svensson *et al.*, 2018; Vivancos *et al.*, 2010), as well as other blood-borne pathogens (Boggild *et al.*, 2014) like the Zika virus (Grischott *et al.*, 2016; Mansuy *et al.*, 2016). As young travellers, particularly men, are at higher risk to engage in casual sexual relationship abroad (CDC, 2019; Sundbeck *et al.*, 2017; Vivancos *et al.*, 2010), it is important that pre-travel consultations address the issue of STBBI and safe sex abroad (CDC, 2019). Pre-travel health interventions can reduce STBBI transmission among travellers (Matteelli *et al.*, 2013).

Recommendations

Our findings indicate that Ottawa-region travel and health key informants provide only limited sexual health pre-travel interventions. Most international health organizations identify sexual health as an essential pre-travel intervention (e.g. CDC, WHO, Committee to Advise on Tropical Medicine and Travel [CATMAT]). Further, travellers should be encouraged to follow up with post-travel interventions, including sexual health assessments. It is evident that Ottawa-region travel services prioritize pre-travel preparations, rather than

post-travel follow-up or referrals. Health key informants were more likely to manage post-travel incidents, however there did not appear to be a systematic scheduling of post-travel follow-up appointments.

More research is needed to determine what are the best practices in terms of pre-travel health intervention and sexual health information uptake by young travellers (Angelin *et al.*, 2014). Young adults experience health hazards, such as unprotected sex, as less risky, compared with older adults (Krewski *et al.*, 2006). Kim and White (2018) completed a systematic literature review to explore mechanisms to improve health communication with adolescents and young adults. As described by our key informants, introduction of sensitive topics such as sexual health, may create discomfort for both provider and patient (Kim & White, 2018). For providers, sexual health training, youth/young adult-targeted sexual health guidelines, and sexual risk assessment decision aids, such as the touch-screen-administered measure Sexual Risk Behavior Inventory (SRBI) for primary care patients (Fredericksen *et al.*, 2018), may help instill confidence and ability. Adolescents and young adults do participate in discussions of sensitive topics, such as sexual health, however facilitators of their engagement include establishment of trust, emotional comfort initiated by informal conversation (Kim & White, 2018). Our health key informants seemed to realize this, however, they described very little time to establish patient rapport, with consultation time restricted to priority travel vaccinations.

LIMITATIONS

This qualitative study is not meant to be generalizable or representative of the experiences and practices of all key informants working in travel clinics, sexual health clinics and travel organizations. Several organizations declined our invitation to participate in the study; citing lack of coverage of sexual health topics or discomfort with the topic. This suggests a sampling bias, as the key informants who agreed to participate did address sexual health to some extent or were comfortable discussing this topic.

CONCLUSION AND RECOMMENDATIONS

The findings from our study highlight that Ottawa-region health or travel key informants omit or neglect sexual health in pre-travel interventions. We recommend that youth-focused travel organizations allocate sufficient time within pre-travel consultations for comprehensive sexual health discussions that recognize the intersectionality of sexual identities, race/ethnicity, gender, age and citizenship. Both travel and health key informants should consider sexual risk assessment decision aids, such as the SRBI (Fredericksen *et al.*, 2018), to facilitate sensitive discussions.

TABLES

Table 1. Key Informants' Age, Gender, Organization and Years of Experience

Characteristic	Travel Clinic	Sexual Health Clinic	Travel Organization
Total	4	3	6
Gender			
Female	3	3	5
Male	1		1
Age			
25-34		2	3
35-50	1	1	2
+50	3		1
Years of Experience			
≤5	1	2	3
6-10		1	1
11-20	3		
21+			2

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CHAPTER 6: DISCUSSION

This Master's thesis explored the sexual health of young Canadian travellers from the perspective of travel organizations and health clinics, as well as from young Canadian travellers themselves. I used the WHO's sexual health framework (2017), which puts forward the many interconnected aspects of sexual health, to frame this thesis, which together with a sex-positive lens, informed the analysis and interpretation of the results. The findings of this thesis will guide recommendations regarding pre-travel interventions targeted to young Canadian adults travelling abroad, including sexual health promotion.

SUMMARY OF FINDINGS

Manuscript 1 addressed the first research question of this Master's thesis: *Do the sexual behaviours and practices of young adults differ while travelling internationally, compared to at home in Canada?* We report that young Canadian travellers were less sexually active abroad compared to at-home. However, their alcohol consumption significantly increased, and their condom use significantly decreased abroad, even though participants identified condoms as the main contraception method they used. These findings suggest that young Canadian travellers' sexual health was more at-risk abroad; with inconsistent STBBI screening further increasing sexual health risks. Thus, even though young Canadian travellers are less sexually active abroad, their sexual health is at greater risk compared to at-home. The results reiterate the importance of pre-travel intervention tailored to young Canadian adults travelling abroad.

Manuscript 2 addressed the second research question of this Master's thesis: *What factors are associated with having sexual relationships abroad among young Canadian travellers?* From the binomial logistic regression performed, it was possible to conclude that plans to have sex abroad, bringing external condoms during the trip, consuming alcohol, and a high number of lifetime sexual partners predicted having sex abroad. From the literature, we know that other factors are often associated with casual sex abroad (i.e. gender, sexual orientation, relationship status, travel experience, travel setting, etc.) (Crawford *et al.*, 2016; Crougns *et al.*, 2008; Kaehler *et al.*, 2013; Svensson *et al.*, 2018; Vivancos *et al.*, 2010), however, in our study these factors were not associated with sex abroad. The results support the Canadian recommendations that pre-travel interventions should be tailored to each traveller (Aw *et al.*, 2014), and that providers should take risk and protective factors into consideration when addressing sexual health issues with young adults (CDC, 2020).

The third manuscript describes our findings related to the final research question of this Master's thesis: *What are the practices, experiences, perceptions and challenges of key informants preparing young*

Canadian adults for travel? Although practices and experiences varied among the key informants interviewed, especially between the health and the travel sectors, it was clear that they all faced similar challenges. Key informants did not consider sexual health as a common component of pre-travel interventions, which often focused on general health risk assessment or on the purpose of the trip itself. Key informants all discussed the importance of addressing sexual health within pre-travel interventions and agreed that more emphasis should be placed on this topic, especially for youth-focused pre-travel interventions. Yet, key informants identified several barriers to dissemination and uptake of sexual health content including limited time for discussion, lack of resources to talk about sexual health, and discomfort discussing personal and private topics. Overall, key informants agreed that pre-travel interventions were necessary and should be improved to focus on sexual health.

The following section summarizes quantitative results and presents for the first time data concerning at-home behaviours. Appendix 3 contains the complete results.

SEXUAL HEALTH OF YOUNG CANADIAN TRAVELLERS

As shown by the data collected in the online survey (see Appendix 3), which was supported by the perceptions held by interviewed key informants, young Canadians exhibit risk behaviours (alcohol, drugs and/or tobacco consumption; sexual relations under the influence of alcohol and/or drugs, inconsistent condom use; multiple sexual partners during one time-window, etc.) that can influence their sexual health, both at-home and abroad. At home, 96.9% (n=628) of participants consumed alcohol in the year prior to the survey (compared to the 82.3% of Canadian aged 18-24 y [CCSA, 2019]), 47.5% (n=308) consumed recreational drugs in the last year (compared to the 20% of Canadian aged 15-19 years and 35% of Canadians aged 20-24 years [Statistics Canada, 2019]) and 13.9% (n=90) consumed tobacco products (e.g. cigarettes, e-cigarettes, etc.) occasionally or every day (compared to the 8% of Canadian aged 15-19 years and 16% of Canadians aged 20-24 years [Statistics Canada, 2019]). Abroad, 81.2% (n=526) consumed alcohol and 14.2% (n=92) consumed recreational drugs.

It is evident from our data collected about the sexual behaviours and sexual risk reduction practices that the sexual health of young Canadian adults is not optimal and could be improved; an observation also made by many Ottawa-region key informants. Indeed, key informants all mentioned that the sexual health of young Canadian travellers was an overlooked topic, both in the context of travel, but also at-home in Canada. Our results show that 17.3% (n=112) of the participants did have multiple sexual partners at a time (e.g. during the same time window) in the past year. The most popular contraception method identified at-home was the condom (76.4%, n=495) and the most popular precautionary measures taken to protect against STBBIs

at-home were using condoms when having penetrative intercourse (75.5%, n=489). Yet, only 21.1% (n=137) of participants used condoms every time they had sexual intercourse at-home, and 2.6% (n=17) used a condom or a dental dam every time when having oral sex at-home. Regarding risk perception, 18.8% (n=122) did not agree (or strongly agree) that safe sex (use of condoms) was important for them and 48.6% (n=315) did not mind having sex with newly met people. Furthermore, 30.4% (n=197) never get screened for STBBIs with 7.7% (n=50) reporting a STBBI diagnosis (mostly chlamydia, genital warts, gonorrhea and scabies). Because we observed an inconsistent use of condoms and inconsistent STBBI screening, STBBI diagnosis might be underreported as STBBI are often asymptomatic and cannot be detected without appropriate screening (MSSS, 2019). Participants may also have underreported their STBBI diagnosis because of a desirability bias. Overall, those results show that the sexual health of young Canadian adults could be improved, regardless of travel.

The original emphasis of this study was STBBI risk reduction, however, it is important to consider sexual violence prevention and mitigation both domestically and in the context of travel with both pre-travel/post-travel interventions. Among our participants, 24.8% (n=161) reported a history of sexual assault. This proportion might be even higher as the survey only asked about sexual assault that happened before January 1st, 2016 (we collected survey answers between April and October 2017). Among our participants, 3.2% (n=21) reported being sexually assaulted abroad, predominantly by local citizen(s) (28.6% n=6), by stranger(s) (28.6%, n=6) or by a travel buddy (23.8% n=5). Only one respondent sought health services related to the assault and only nine reported the assault to a friend/companion/family member/member of travel organization. Although few of the participants reported being sexually assaulted abroad, sexual violence is still an important topic to address both in the context of home and travel. This topic will be discussed later in this Chapter.

We included questions regarding the experience with pregnancy and abortion in our survey to add to our sexual health portrait of our respondents. Among females, 3.5% (n=19) reported having had at least one abortion (no abortion reported among non-binary individuals and trans males). This is not a complete picture of abortion experiences, nor did we explore use of emergency contraceptives. Moreover, 5.5% (n=30) females reported at least one pregnancy (no pregnancy reported among non-binary individuals and trans males).

Regarding the sexual health of young adults abroad, 30.7% (n=199) planned to have sex abroad and 24.1% (n=156) brought external condoms with them on their trip. This may be explained by plans to have non-penetrative sexual relations or expectations that typical contraceptive measures (not condoms) would be

sufficient. The proportion of respondents who reported having sex abroad was actually higher (41.8% (n=271), suggesting that at least 72 individuals (11.1%) had unplanned sexual activity. Of trip-sexually active participants, 79.3% (n=215) had only one sexual partner, whereas 20.7% (n=58) had two sexual partners or more. This may be explained by a greater trip duration for individuals with more than one partner, polyamorous individuals or more instances of casual sex. Further, 65.7% (n=178) had sex under the influence of alcohol; an established risk factor for inconsistent condom use (Allen *et al.*, 2015; CDC, 2019a; Mola *et al.*, 2016). Among participants who were sexually active on their trip, they listed condoms as the most common method of contraception (50.6%, n=137), but only 27.7% (n=75) used them every time they had sex. Post-travel, 3.3% (n=9) of trip-sexually active participants were diagnosed with an STBBI (mainly chlamydia, genital warts and scabies). This is likely an underestimation of the true incidence of STBBI diagnoses given that our sample participants do not get screened often, and that most STBBIs are asymptomatic (MSSS, 2019). Although only 13.7% (n=89) perceived that their sexual health was more at-risk abroad compared to at-home, the decreased use of condoms suggests that gaps in sexual health knowledge and mitigation by young travellers.

Overall, this Master's thesis has shed light on certain gaps in protective sexual behaviours of young Canadian travellers, both at-home and abroad. In the next sections, I suggest methods to improve sexual health during travel, covering the different sexual health interventions areas and the guiding principles suggested by the WHO sexual health framework (2017). Appendix 4 provides an infographic to disseminate the results to pre-travel providers, travel organizations and associations, travel health professionals and travelling young adults.

IMPROVING SEXUAL HEALTH OF YOUNG TRAVELLERS

There is a pretty clear agreement between researchers, public health organizations and the results of this Master's thesis regarding the importance of improving the sexual health of young travellers. Nevertheless, there is debate about mitigation strategies. The next sections explore interventions to improve the sexual health of young Canadian travellers.

Pre-Travel Interventions - Emphasis on Sexual Health Promotion

As described in Manuscript 3 of this Master's thesis, pre-travel interventions vary in terms of content, providers and target audience. Although there are research gaps about pre-travel interventions set up in non-medical contexts (e.g. pre-travel interventions organized by travel associations/organizations, humanitarian/voluntourism organizations, student exchange programs, etc.), a large body of literature exists regarding travel medicine interventions (Angelin *et al.*, 2014; Aw *et al.*, 2014; Bühler *et al.*, 2014;

Cornelisse *et al.*, 2019; Crawford *et al.*, 2016; Croughs *et al.*, 2014, Heywood & Zwar, 2018; Sofarelli *et al.*, 2011). Travel medicine aims to promote and preserve travellers' health (Angelin *et al.*, 2014) and is usually characterized by a medical provider's care (e.g. vaccination/immunization, prophylaxis medication) and counselling (e.g. advice, provision of resources in case of disease) (Aw *et al.*, 2014). Travel medicine is considered as a dynamic and evolving field and requires continuing specialized training about travel-related illnesses, including STBBI, as well as a vast expertise of the global epidemiology of health risks, health regulations and health recommendations (Aw *et al.*, 2014). For instance, travel health professionals are required to keep up to date with antimicrobial resistance, which is considered a public health threat especially for travellers (GOC, 2019; Ham *et al.*, 2020). Indeed, travel can facilitate the introduction of new drug-resistant pathogens in the home-country, including STBBIs, such as emerging strains of gonorrhea (GOC, 2019; Korzeniewski & Juszczak, 2015; Memish & Osoba, 2003). Fortunately, many guidelines exist for travel medicine providers (e.g. Committee to Advise on Tropical Medicine and Travel [CATMAT], CDC's Yellow Book about health information for international travel, International Society of Travel Medicine). Those guidelines all clearly state the importance of discussing sexual health and sexual safety with travellers, but when those topics are discussed, it is usually with a risk-driven approach promoting risk reduction (Aw *et al.*, 2014; Boubaker *et al.*, 2016; Heywood *et al.*, 2012).

Although sexual health is an important part of pre-travel interventions (Croughs *et al.*, 2014, 2017; CDC, 2020; Kennedy & Flaherty, 2015; Tanton *et al.*, 2016), it is often overlooked for many reasons such as the sensitive nature and taboos surrounding sex and sexuality (Baer *et al.*, 2014; Cornelisse *et al.*, 2019; Croughs *et al.*, 2017), limited time and/or resources (Gundacker & Rodriguez, 2016; Heywood *et al.*, 2012) and the context in which the pre-travel intervention takes place (e.g. group interventions vs. individual interventions) (Cornelisse *et al.*, 2019). Key informants interviewed as part of this thesis also mentioned the lack of training regarding sexual health issues, the lack of interest and attention of travellers when they discussed sexual health with them, and the travellers' financial constraints. Indeed, travellers might not expect to discuss their sexual health during pre-travel consultations, making it harder for pre-travel consultation providers, who often prioritize other topics, to discuss sexual health-related matters (Cornelisse *et al.*, 2019). Still, sexual health remains a priority matter, as the risk of acquiring a STBBI abroad can often be higher than other travel-related illnesses and infections (Cornelisse *et al.*, 2019). Among our participants who had their trip arranged by an organization/association (16.7%, n=108), 44.4% (n=48) received general travel health-related information, mainly related to vaccination/immunization, safety and security, and food/water safety. Only 13% (n=14) of participants whose trip was organized by an organization/association received sexual health-related information, which emphasized abstinence recommendation or risk-related recommendations (ie. STBBI, unintended pregnancies). Our results are thus

consistent with the available literature indicating that sexual health is clearly overlooked in pre-travel interventions.

Relatively few travellers seek pre-travel advice, seemingly because of a lack of awareness regarding the importance of it and regarding the potential health issues that could arise during travel (Aw *et al.*, 2014; Baer *et al.*, 2014; Boggild *et al.*, 2014; Heywood *et al.*, 2012). Among our young Canadian respondents, 40% (n=259) participants visited a health travel clinic or other medical providers before an international trip in the two years prior to our survey, usually for travel-related vaccination purposes (76.8%, n=199) or regular/routine medical appointment (33.6%, n=87). Crawford and colleagues (2016) estimate that the proportion of travellers seeking pre-travel advice ranges from 4% to 90%, which is consistent with other studies, although this proportion can vary according to different factors (e.g. destination, travel experience, home country of travellers; purpose of the trip, etc.) (Frew *et al.*, 2017; Heywood *et al.*, 2012; Kaehler *et al.*, 2013; Sofarelli *et al.*, 2011). Literature specific to young adults is scarce, but it is expected that as very few young travellers seek pre-travel advice (Qvarnström & Oscarsson, 2014). Pre-travel STBBI prevention efforts rarely reach them, although most pre-travel interventions do not include sexual health information (Crawford *et al.*, 2016). The most popular sources of pre-travel advice are usually the Internet (including governmental travel references), friends or relatives and general medical providers (Frew *et al.*, 2017; Heywood *et al.*, 2012).

Many travel health researchers recommend pre-travel interventions targeted to young travellers (Cornelisse *et al.*, 2019; Khan *et al.*, 2016; Lewis & de Wildt, 2016; Vivancos *et al.*, 2010). However, the effectiveness of current pre-travel interventions is unclear. Crougths and colleagues (2014) as well as Crawford and colleagues (2016) mention that STBBIs focused interventions could decrease disease transmission by reducing sexual risk behaviours. In contrast, other studies state that even if pre-travel interventions are associated with better knowledge, and more accurate risk perceptions, these interventions were not necessarily associated with a reduction in risk behaviours and exposures (Frew *et al.*, 2017; Heywood *et al.*, 2012; Lestelle *et al.*, 2015; Svensson *et al.*, 2018). In addition, Angelin and colleagues (2014) concluded that young travellers do not necessarily comply with pre-travel advice provided, find travel health advice less helpful, and do not put into practice advice they received; consequently experiencing greater travel-related illness compared to other travellers by age group. In spite of these contradictory conclusions, it's important to consider the limitations of evaluating the effectiveness of pre-travel interventions given the numerous variables including, the heterogeneity of both providers and travellers, along with trip destinations (Boggild *et al.*, 2014). It is evident that current pre-travel intervention targeting young travellers are not optimized for this specific population and with scope for improvement in the field of

sexual-health travel promotion (Boggild *et al.*, 2014; Kaehler *et al.*, 2013; Crawford *et al.*, 2016; Svensson *et al.*, 2018).

Sex-Positive Pre-Travel Interventions

We recommend that pre-travel interventions, whether provided by medical professionals or travel professionals, should incorporate a sex-positive lens when discussing sexual health topics. Best practices include emphasis on sexual risk behaviours, STBBIs and condom use (Angelin *et al.*, 2014; Ansart *et al.*, 2009; Boubaker *et al.*, 2016; CDC, 2020; Crougns *et al.*, 2014, 2017; Korzeniewski & Juszczak, 2015; Marcantonio *et al.*, 2019), however, focus on broader aspects of sexuality is consistent with WHO sexual health framework and young travellers are more likely perceive those aspects as relevant (Sundbeck *et al.*, 2017; Tanton *et al.*, 2016). Examples of a sex-positive, holistic approach could include condom negotiation skills (Bauer, 2007, 2009) rather than simply asserting the importance of condom use during sex. Instead of stating that penetrative sex puts travellers at-risk for contracting a STBBI, pre-travel intervention providers could talk about other safer and alternative sexual practices (e.g. mutual masturbation).

Legal considerations surrounding sexuality (e.g. age of consent, acceptability of LGBTQ+ realities in different countries, etc.) should also be discussed using a sex-positive lens (Cornelisse *et al.*, 2019). One key informant interviewed for this project mentioned that talking about the cultural acceptability of casual, premarital sex and the potential impacts of having sex with locals is essential to inform Canadian travellers about regional cultural norms and responsible tourism. As mentioned by this key informant, casual, premarital sex in certain regions might have serious implications for locals, their families, and, in some cases, might even influence diplomatic relations between partner countries (in the case of humanitarian help, for example; Bauer, 2009; Jennings, 2010). In contrast to the approach taken by some travel organizations who recommend abstinence (Crougns *et al.*, 2014), or make travellers sign no-sex contracts, a practice mentioned by some of our key informants, we believe that sexual health should be discussed in a positive manner, emphasizing safer sex practices. This means framing the travel information positively in terms of safer sex practices, informed consent, and conscious decision-making. This positive framing does not totally eclipse information sharing related to sexual health risks. For example, sexual violence should definitely still be part of the sexual health discussion (Kennedy & Flaherty, 2015), but should be framed in a manner which avoids victim-blaming or slut-shaming. Although these topics might be hard and potentially uncomfortable to discuss, they are nonetheless essential topics which will safeguard the sexual health of young travellers as they are part of sexual health, according to the WHO sexual health framework (2017).

This sex-positive approach positions itself in opposition to the archaic risk-driven approach usually adopted to discuss sexual health in the context of travel, but also in the context of sexual education. As discussed earlier, risk-driven approaches promoting abstinence or enforcing shyness around topics related to sexuality are effective in the context of travel. Adopting a sex-positive lens consistent with the WHO framework (2017) might destigmatize sexual behaviours, allow for in-depth discussion about sexuality and thus improve the sexual health of travellers.

Innovative Strategies for Pre-Travel Interventions

As stated above, current pre-travel interventions are not clearly proven to be effective to improve the sexual health of travellers, especially among young adults (Angelin *et al.*, 2014; Cornelisse *et al.*, 2019) nor are these interventions widely available, leaving significant room for design and implementation of innovative strategies. First, pre-travel interventions should be individually focused to account for the heterogeneity of travellers and their prior level of sexual health-related knowledge, without making any assumption about the travellers' sexuality and sexual history (Cornelisse *et al.*, 2019; Dahlman & Stafström, 2013; Lestelle *et al.*, 2015). Indeed, pre-travel consultation providers should conduct a comprehensive risk assessment of each traveller while taking into consideration various factors (e.g. age, gender, sexual orientation, medical history, health status, personal characteristics like sensation-seeking traits, risk perceptions, initial knowledge about health and sexual health; travel destinations, trip purpose, itinerary) in order to tailor the intervention to the travellers' specific needs (Aw *et al.*, 2014; Berdychevsky, 2017; Lestelle *et al.*, 2015). Many Ottawa-region key informants reported using a pre-prepared, fixed and general presentation for pre-travel interventions, often with little emphasis on sexual health. Yet, a "one size fits all" sexual health intervention might not reach all young travellers as it does not represent diversities of gender, sexual orientation, ethno-cultural identity, level of sexual experience, motivations regarding sex abroad, sensation seeking and risk-taking behaviours and traits, etc. (Berdychevsky, 2017; Boggild *et al.*, 2014; Matteelli *et al.*, 2013). This, in turn, might lead to ineffective interventions, depleting already limited resources (Berdychevsky, 2017; Scott-Sheldon *et al.*, 2010). Thus, an individual-focused, targeted, detailed and diversity-sensitive approach is likely to increase the efficacy of the intervention (Berdychevsky, 2017; Bühler *et al.*, 2014; Heywood & Zwar, 2018; Lejelind *et al.*, 2017). Travellers more likely to follow advice if they correctly perceive and understand the risks, and recognize the relevance of health messaging (Angelin *et al.*, 2014; Baer *et al.*, 2014; Croughs *et al.*, 2014; Noble *et al.*, 2012).

Second, considering that pre-travel interventions conducted by medical providers emphasize prophylaxis/mitigation strategies (e.g. vaccination/immunization, altitude medication, anti-diarrheal or antimalarial medication), it would be ideal to use a similar approach to sexual health. Indeed, medications

and immunizations related to STBBIs, such as HIV pre- and post-exposure prophylaxis, HPV/Hepatitis B vaccinations, antibiotics for self-treatment of STBBIs and urinary tract infections, along with contraceptive options, could be incorporated in the pre-travel visit with complementary oral and written guidance (Aw *et al.*, 2014; Cornelisse *et al.*, 2019). As one goal of pre-travel interventions remains sexual health promotion and prevention of adverse sexual health outcomes, it is still fundamental that evidence-based guidance includes limitations of prophylactic medications to avoid giving a false sense of security to travellers and to promote safe behaviours.

Third, new strategies for health promotion should complement traditional methods (e.g. oral advice, pamphlets with written information). Indeed, available literature reports that even when travellers receive written information prior to their departure, only about half actually read this content (Croughs *et al.*, 2008, 2014, 2017). Furthermore, Croughs and colleagues (2017) found that when websites are provided to travellers as additional information source, there is little traveller uptake, preferring pamphlets and face-to-face consultation. Health-brochure-independent website access remains the most popular source of information, particularly websites which provide valid and reliable information about travel, and enable travellers to assess their individual sexual health risks and (Frew *et al.*, 2017; Wand *et al.*, 2011). We suggest exploration of new mechanisms to deliver sexual health information and recommendations. Baer (2014) recommends referring travellers directly to digital resources at the time of online airline ticket purchase, which could improve the number of travellers using those resources. Visual supports (e.g. videos) and apps are increasingly popular, such as *GGD Op reis*, *MyTravelHealth* or CDC's app *TravWell* (CDC, 2019b; Chiodini, 2014a, 2014b; GGD Flevoland, 2014; My Travel & Wellness LLC, 2018). In the same way, SMS/text messages with sexual health promotion information and/or resources could be sent out to travellers before, during or even after their trip (Lim *et al.*, 2010). Online social media sexual health promotion campaigns in the context of travel or via peer-mediated interventions are both proven effective to promote sexual health issues such as STBBI screening promotion and STBBI knowledge (Bauermeister *et al.*, 2015; Cao *et al.*, 2017; Shangani *et al.*, 2017). Although we recommend modernization and diversification of pre-travel sexual health promotion platforms, it seems that face-to-face consultation with a pre-travel provider is the most trustworthy method for health promotion messaging, which can include immediate provision of evidence-based advice, prophylaxis/mitigation immunizations and medications (Leder *et al.*, 2013).

Post-Travel Interventions

From a sexual health prevention perspective, it is important that emphasis be placed on pre-travel, nevertheless, in-situ interventions and post-travel interventions should also be available. Although, more

research is needed regarding during-travel interventions to validate their effectiveness, sexual health prevention initiatives done during travel, for example in places where risky behaviours can take place (e.g. bars, nightclubs, hostels, etc.), should be supported (Alcedo *et al.*, 2014; Baer *et al.*, 2014; Downing *et al.*, 2011; Hughes *et al.*, 2009; Wand *et al.*, 2011). Yet, as it is difficult to ensure quality, equity and sexual rights-based in situ interventions, post-travel interventions should thus be readily available. Dahlman & Stafström (2013) recommend that pre-travel interventions include information about post-travel services and resources in case of sexual health adverse events (e.g. unprotected sex, unintended pregnancies, sexual assault, etc.) This would not only ensure young travellers' sexual health, but also their partners' sexual health upon returning from travel. Kaehler and colleagues (2013) reported that among young travellers who had unprotected casual sex, only 57.5% consulted a medical doctor post-travel. In our sample, only 18.4% (n=119) visited a health travel clinic or other medical providers after returning from international travel in two years prior to our survey (purposes were mainly for regular/routine medical appointment, 63.0% n=75, or for prescription refill, 39.5% n=47). This indicates that post-travel consultations are even rarer than pre-travel consultations. Thus, considering the potential public health risk that returning young travellers pose, promotion efforts towards post-travel STBBI screening should be emphasized (Svensson *et al.*, 2018).

Resources should also be made available for counselling about sexual violence experienced during international travel. According to Kennedy & Flaherty (2015), the prevalence of sexual violence abroad is significant, although rarely disclosed to healthcare providers, a conclusion corroborated by our results like mentioned earlier. Kennedy & Flaherty (2015) recommend that post-travel intervention providers take the time to consider the possibility of sexual violence, especially during a STBBI screening, in order to direct the traveller to appropriate resources.

SEXUAL HEALTH PROMOTION AND EDUCATION

As outlined by the WHO sexual health framework (2017), sexual education is a keystone in sexual health. Apart from specific pre-travel intervention aiming to promote young travellers' sexual health, general sexual health promotion interventions and comprehensive sexual education should be a focus of public health initiatives. Indeed, as pointed out by almost all key informants interviewed for this Master's thesis research project, young Canadian travellers would definitely benefit from pre-travel interventions focused on sexual health, but would benefit even more from general sexual education throughout their lifespan. Further, some key informants stated that better general sexual education would reduce the need for focused sexual health pre- and post-travel interventions. Bauer (2009) recommends that travel health advice interventions need to focus on condom use negotiation skills so young travellers can assert their decisions, desires, needs and demands. Dahlman & Stafström (2013), Lejelind and colleagues (2017) and Marcantonio

and colleagues (2019) highlighted that peer pressure among young travellers is common (for alcohol consumption or condom use for example). Comprehensive sexual education throughout the lifespan will familiarize young Canadians with issues related to sexuality, thereby reducing the taboo around sexuality itself (Descheneaux *et al.*, 2018). This will in turn overcome the taboo obstacles mentioned by many key informants who found youths uncomfortable when discussing sexual health.

The content and delivery of sexual education curricula vary across Canada, and primarily falls under provincial and territorial ministries of education. In Ontario and Quebec, for example, the home provinces of 84.7% (n=549) of our participant sample, sexual health is part of the public school curriculum (MEES, 2020; Ministry of Education, 2019). Some curricula taught in Canada are not considered as comprehensive sexual education as they do not rely on quality, accurate and updated information, and many focus on a risk-reduction approach rather than sexual health promotion and sex-positive lens (ACSHR, 2020). According to Action Health Canada for Sexual Health and Rights (2020, p.11), “[t]he sex-ed that is currently offered in Canadian classrooms does not live up to human rights standards, the most modern international evidence on best practices, or the 2019 Canadian guidelines for sexuality education.” The consequences of substandard sexual education in Canada are numerous: major gaps in sexual health knowledge (Kumar *et al.*, 2013; Flicker *et al.*, 2009), STBBIs rates among youth continue to be on the rise (INSPQ, 2017; PHAC, 2014), alarming rates of sexual violence especially among women (UNESCO, 2018; Wolfe & Chiodo, 2008), and youths entering adult life left with questions about their sexual health without knowing how to access resources to answer their questions (ACSHR, 2020). As sexual education has not been a priority for numerous years, the majority of young Canadians receive very little to no sexual education at all (ACSHR, 2020), leaving entire generations of young adults misinformed about their own sexual health.

Sexual education is a human right and is recognized by the WHO, UNESCO, UNAIDS and UNFPA (ACSHR, 2020). The impacts of quality sexual education are numerous: decreased sexual risk-taking, increased condom and contraception use, increased knowledge about sexual health, improved attitudes about sexual health, decreased sexual violence, etc. (ACSHR, 2020; UNESCO, 2018) Hence, we recommend that comprehensive sexual education be a priority across Canada. This would improve the sexual health of young adults, and therefore of young Canadian travellers.

TRAVEL IN A POST-COVID-19 WORLD

The recent coronavirus pandemic (COVID-19) has had unprecedented consequences of the travel and tourism industry (Gössling *et al.*, 2020; Li *et al.*, 2020). Starting in March 2020, international travel

decreased and numerous countries imposed many measures to contain the COVID-19 outbreaks including travel bans, closed international borders, quarantine periods, shut down of the hospitality trade sector, and social distancing requirements in the airline industry. (Gössling *et al.*, 2020; Sharma & Nicolau, 2020; Sigala, 2020) This directly resulted in a decrease in tourism, both domestic and global (Gössling *et al.*, 2020). For example, comparing March 2020 with March 2019 accommodation sector industry, the number of guests declined by more than 50% (Gössling *et al.*, 2020). There is much speculation on the tourism sector post-COVID-19 world. While some propose that tourism will bounce back and return to levels prior to the pandemic, others are anticipating a profound and lasting impact on the tourism sector (Gössling *et al.*, 2020; Gretzel *et al.*, 2020; Hall *et al.*, 2020; Li *et al.*, 2020; Sigala, 2020).

The tourism industry is a resilient sector: it has survived major events like 9/11, severe acute respiratory syndrome (SARS) outbreak in 2003, the 2008-2009 economic crisis, the Middle East Respiratory Syndrome (MERS) in 2015, although these crises have had a lasting impact on the industry (Alonso *et al.*, 2020; Gössling *et al.*, 2020; Sigala, 2020; Ugur & Akbiyik, 2020). Researchers and experts expect that COVID-19 will not be different even if it is considered, at present, as an unprecedented crisis because of the global economic implications (Gössling *et al.*, 2020; Nicola *et al.*, 2020; Sharma & Nicolau, 2020). Further, the globalization and democratization of travel, as well as increasingly mobile populations, suggest a recovery for the tourism sector. Whether the travel industry returns to “business-as-usual” once the COVID-19 crisis is resolved or whether it will have sparked a reflection on the reconsideration and transformation of the global touristic industry, experts predict that travel will continue to be an important part of our realities (Alonso *et al.*, 2020; Hall *et al.*, 2020; Li *et al.*, 2020; Sigala, 2020).

We expect that future guidelines for travellers will focus on COVID-19. Although this is necessary, it is important that public health initiatives targeting travellers do not omit sexual health in a comprehensive manner. Despite COVID-19, travellers are likely to continue exhibiting risky behaviours and to have sex abroad, thereby potentially returning to Canada as a vector for both COVID-19 and STBBI. Likewise, it is important to consider that despite the measures of social isolation and distancing, young Canadian adults still face sexual health issues. As the majority of health resources are currently reallocated to COVID-19 efforts, it is important that public health instances keep in mind that sexual health resources and services should still be accessible for the Canadian population.

REFLEXIVITY

My previous professional sexual and reproductive health experiences have had an undeniable influence of the conceptualization and completion of this Master’s thesis. In the past 10 years, I had the opportunity to

work as a clerk in an abortion clinic, as a sexual health educator in high schools, as an administrator in a charity organization fighting for sexual rights and as a project coordinator for provincial STBBI screening campaign. I also volunteered in many sexual health organizations, participated in various projects promoting sexual health and sexual rights and published several lay articles on sexual health issues. I identify as a feminist, pro-choice and a sexual rights advocate, and as an ally to the LGBTQ+ community. My positionality definitely had the effect of aligning this research project on a sex-positive, feminist and intersectional lens. Specific to the qualitative section of this Master's thesis, I consider any potential bias related to my sexual health expertise was balanced by my age, compared to the professionals interviewed and their level of expertise in their respective professional positions.

LIMITATIONS

Although I mention broader limitations here, I described specific limitations of the components of this thesis in Manuscripts 1, 2 and 3.

First, because we mainly recruited survey participants by posting the study information in Canadian university and college Facebook groups, our sample was primarily comprised of young adults who identified their main occupation as 'student'. Missing from our sample are young adults in the workforce, unemployed, homeless or institutionalized. Hence, the conclusions of the study cannot apply to all young Canadians. Second, the construction and formulation of certain survey questions could lead to a loss of sensitivity in answers. For example, questions asking about the number of sexual partners were not continuous as brackets of numbers were suggested to participants. We queried participants about their frequency of alcohol consumption instead of the amount of alcohol consumed. Third, we observed some inconsistencies in the data (e.g. having had vaginal sex, but no sexual partner; having one or more sexual partner(s) of the opposite sex, but having "abstinence" as contraception method; having no sexual partners abroad but using external condoms as a contraception method; having no sexual partner during the trip but using external condom most of the time) which we left as is, which may have biased results. Fourth, in this project, we did not consider some factors known to influence sexual health of travellers (e.g. duration, purpose, setting of travel; travel buddy; travel experience, etc.). In retrospect, I wish the construction of the survey included more sex-positive questions to enable exploration of this lens. Sixth, concerning the qualitative part of this Master's thesis, combining conclusions of travel key informants with medical key informants may have limited the interpretation. Rather, we could have done two independent data collections to have more complete, precise and thorough representation of the realities of both kinds of key informants.

AREAS FOR FURTHER RESEARCH

As this Master's thesis only examined data from sexually active Canadians born in Canada, we will at a later date analyze the excluded members of our sample - Canadian born outside of Canada- to better represent the diversity of the Canadian population. With an expanded data set, it would be important to consider the impact of various factors known to influence sexual health (e.g. type and purpose of the trip, duration of the trip, countries visited, travel partner(s)). Further, we excluded sexually inexperienced participants from this thesis data set, however, analysis of their responses may provide further information about risk behaviours and use of pre-travel health interventions. The vast majority of studies looking at the sexual health and sexual behaviours of young adults focus on risks to their sexual health (Crawford *et al.*, 2016), but very few examine factors safeguarding or promoting their sexual health and well-being. Thus, we recommend that future research adopt a sex-positive lens by focusing on factors that could improve the sexual health of young travellers. We would also recommend that future research focus on sexual diversity. Most studies focus on cis-gender heterosexual individuals and a few focus on men having sex with other men, but the literature representing the diversity of identities, orientations and practices in the context of travel is too scarce. Travellers identifying as "sexual minorities", like men having sex with men, are usually considered as more at-risk in terms of sexual health (Lewis & de Wildt, 2016; PHAC, 2015, Sundbeck *et al.*, 2017; Svensson *et al.*, 2018; Vivancos *et al.*, 2010). In order to implement diverse, inclusive and effective sexual health promotion interventions, more research focusing on members of LGBTQ+ community is needed. Finally, as the COVID-19 pandemic is likely to influence the tourism and travel industry (Gössling *et al.*, 2020; Gretzel *et al.*, 2020; Hall *et al.*, 2020; Li *et al.*, 2020; Sigala, 2020), research looking at the sexual health of young Canadian travellers specific to a COVID-19 or post-COVID-19 context will be necessary in order to adapt current and future travel interventions promoting sexual health. Lastly, future studies looking at the sexual health of young Canadian travellers using valid standardized measures would allow to confirm the results of this research.

CONCLUSION

The first manuscript provided a portrait of the sexual health, sexual behaviours and risky behaviours of young Canadians travelling abroad and highlighted several gaps in terms of sexual health. The second manuscript enabled to identify factors predicted having sex abroad, providing information on how to better target young travellers who are more likely to have sexual encounters abroad. Finally, the third manuscript provided a complementary perspective from key informants on the sexual health of young Canadian travellers and on the pre-travel interventions needed to safeguard their sexual health. In conclusion, this thesis research brought to light the importance of sexual health promotion for young Canadian adults, more specifically those travelling abroad. Based on the results of this research, we strongly recommend

comprehensive, individually focused and tailored pre- and post-travel interventions addressing sexual health. In addition, in order to promote sexual well-being and the sexual health of young Canadians, we strongly advocate for thorough, comprehensive and sex-positive sexual education interventions and programs throughout the lifespan. This work thereby contributes to a better understanding of young Canadian travellers' sexual health and provides recommendations on how to improve and maximize it through sexual health promotion initiatives.

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Ethics Approval Notice **Health Sciences and Science REB**

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Karen	Phillips	Health Sciences / Others	Supervisor
Emmanuelle	Gareau	Health Sciences / Others	Student Researcher
Nura	Soucy	Health Sciences / Others	Research Assistant
Rowan	Terrell	Health Sciences / Others	Research Assistant

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Type of Project: Master's Thesis

Title: Impact of International Travel Experiences on Sexual Health Risk Perceptions and Behaviours of Young Canadian Adults

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
02/27/2017	02/26/2018	Approval

Special Conditions / Comments:
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Ethics Coordinator
For Catherine Paquet, Director of the Office of Research Ethics and Integrity

APPENDIX 3 - COMPLETE DESCRIPTIVE DATA COLLECTED FROM THE ONLINE SURVEY

2256 individuals participated in the survey. From those, we excluded 252 individuals because they did not answer any questions in the survey (only the consent form was filled out), we excluded 419 individuals because they partially responded (often only section A-Lifestyle Practices was filled out), we excluded 546 individuals because they did not travelled outside of Canada in 2016, we excluded 168 individuals because they were born outside of Canada and finally we excluded 223 individuals because did not have a first sexual experience yet. Thus, we included 648 individuals in the sample (541 females, 105 males, and 2 individuals identifying as non-binary).

We translated the survey in French, but only the English version of the questions appears here. Only relevant and renumbered English questions appear below. All percentages are rounded up to the first decimal.

Lifestyle Practices

1) How often did you drink alcoholic beverages during the past 12 months?

	Non-binary	Female	Male	Total
Never	0	15	5	20 (3.1%)
Less than once a month	1	63	12	76 (11.7%)
Once a month	1	141	16	158 (24.4%)
Once a week	0	186	31	217 (33.5%)
2-3 times a week	0	114	30	144 (22.2%)
4-5 times a week	0	15	11	26 (4.0%)
Everyday	0	7	0	7 (1.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: We only asked the frequency of alcohol consumption, not the amount of alcohol consumed which may have been more appropriate to infer alcohol consumption.

2) Please indicate all situations in which you typically drink alcoholic beverages, if applicable (top 3 responses).

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	While with friends (n=2)	While with friends (n=491)	While with friends (n=91)
#2	While travelling inside Canada (n=1)	At a bar/restaurant/Club (n=455)	At a bar/restaurant/Club (n=79)
#3	/	During Special Occasion (n=447)	While travelling outside Canada (n=78)

* Respondents could choose more than one option.

**We excluded the “not applicable” option from the top 3 responses (not applicable option: non-binary n=0, female n=14, male=7)

3) How often did you use recreational drugs during the past 12 months?

	Non-binary	Female	Male	Total
Never	1	293	46	340 (52.5%)
Less than once a month	0	154	29	183 (28.2%)
Once a month	0	48	9	57 (8.8%)
Once a week	1	28	10	39 (6.0%)
2-3 times a week	0	6	5	11 (1.7%)
4-5 times a week	0	7	3	10 (1.5%)
Everyday	0	5	3	8 (1.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

4) If applicable, what kinds of recreational drugs have you consumed in the past 6 months? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Marijuana/Cannabis/hashish (n=1)	Marijuana/Cannabis/hashish (n=241)	Marijuana/Cannabis/hashish (n=56)
#2	/	MDMA/Ecstasy (n=39)	Hallucinogens (n=11)
#3	/	Cocaine (n=24) Hallucinogens (n=24)	MDMA/Ecstasy (n=10)

* Respondents could choose more than one option.

**We excluded the “not applicable” option from the top 3 responses (not applicable option: non-binary n=1, female n=299, male=47)

5) Please indicate all situations in which you typically use recreational drugs, if applicable. (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	n=1 for all of those: while consuming	While with friends (n=215)	While with friends (n=51)
#2	alcohol, while on a date, while with friends, while alone, while traveling	While consuming alcohol (n=106)	While consuming alcohol (n=25)
#3	outside of Canada, while traveling inside Canada.	On special occasions (n=65)	While travelling outside of Canada (n=19)

* Respondents could choose more than one option.

**We excluded the “not applicable” option from the top 3 responses (not applicable option: non-binary n=1, female n=284, male=47)

6) Do you currently use tobacco (cigarettes, e-cigarettes, chewing tobacco, other) every day, occasionally or not at all?

	Non-binary	Female	Male	Total
Not at all	1	474	83	558 (86.1%)
Occasionally	1	54	15	70 (10.8%)
Every day	0	13	7	20 (2.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Sexual and Reproductive Health

2) How old were you at your first sexual experience?

	Non-binary	Female	Male	Total
Less than 13 years	0	4	3	7 (1.1%)
13-14 years	0	52	5	57 (8.8%)
15-16 years	0	171	33	204 (31.5%)
17-19 years	2	264	46	312 (48.1%)
20 years or older	0	50	18	68 (10.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: We used ranges instead of the actual age, which is less precise.

3) How many sexual partners have you had in your lifetime?

	Non-binary	Female	Male	Total
1	2	141	21	164 (25.3%)
2-5	0	210	45	255 (39.4%)
6-10	0	106	17	123 (19.0%)
11-14	0	39	7	46 (7.1%)
15 or more	0	45	15	60 (9.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: We used ranges instead of the actual age, which is less precise..

4) How many sexual partners have you had in the past 12 months?

	Non-binary	Female	Male	Total
0	0	19	4	23 (3.5%)
1	2	312	56	370 (57.1%)
2-5	0	172	33	205 (31.6%)
6-10	0	26	7	33 (5.1%)
11-14	0	6	3	9 (1.4%)
15 or more	0	6	2	8 (1.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: We used ranges instead of the actual age, which is less precise.

5) How many 'one night stands' have you had in your lifetime?

	Non-binary	Female	Male	Total
None	2	253	39	294 (45.4%)
1-2	0	168	31	199 (30.7%)
3-5	0	64	14	78 (12.0%)
6-8	0	33	4	37 (5.7%)
9-11	0	9	4	13 (2.0%)
12-15	0	4	3	7 (1.1%)
More than 15	0	10	10	20 (3.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: We used ranges instead of the actual age, which is less precise.

6) During the past year, did you have multiple sexual partners at a time (e.g. during the same time window, having sexual intercourse with more than one person)?

	Non-binary	Female	Male	Total
No	2	453	81	536 (82.7%)
Yes	0	88	24	112 (17.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

7) What kind of sexual practices do you participate in? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Masturbation (n=2) and Oral sex (n=2)	Vaginal sex (n=513)	Masturbation (n=99)
#2	Vaginal sex (n=1)	Oral sex (n=503)	Oral sex (n=96)
#3	/	Mutual Masturbation (n=427)	Vaginal sex (n=87)
#4		Masturbation (n=408)	Mutual masturbation (n=79)
#5		Use of sex toys (n=190)	Anal sex (n=34)
#6		Anal sex (n=91)	Use of sex toys (n=21)
#7		BDSM** (n=45)	BDSM** (n=10)
#8		Not applicable (n=8)	/
#9		Other (n=3)	

* Respondents could choose more than one option.

**BDSM : Bondage, discipline, dominance, submission, sadism and masochism.

8) In the past 2 years, how frequently have you had sexual encounters while under the influence of alcohol?

	Non-binary	Female	Male	Total
Never	1	86	18	105 (16.2%)
Rarely	1	196	46	243 (37.5%)
Sometimes	0	215	34	249 (38.4%)
Most of the time	0	42	6	48 (7.4%)
Every time	0	2	1	3 (0.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

9) In the past 2 years, how frequently have you had sexual encounters while under the influence of recreational drugs?

	Non-binary	Female	Male	Total
Never	1	398	73	472 (72.8%)
Rarely	1	93	21	115 (17.7%)
Sometimes	0	47	7	54 (8.3%)
Most of the time	0	3	4	7 (1.1%)
Every time	0	0	0	0 (0%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

10) Indicate all methods of contraception used in the past year (2016). (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	n=1 for condom, Contraceptive pill and Plan B	Condom (n=405)	Condom (n=89)
#2	/	Contraceptive pill (n=350)	Contraceptive pill (n=44)
#3	/	No method (n=83)	No method (n=20)

* Respondents could choose more than one option.

Limitations: This question might not apply to homosexual individuals, abstinent individuals and individuals trying to get pregnant.

11) How frequently did you/your partner(s) use male condoms/external condom when having sexual intercourse in the past 2 years?

	Non-binary	Female	Male	Total
Never	0	63	11	74 (11.4%)
Rarely	0	97	20	117 (18.1%)
Sometimes	0	99	15	114 (17.6%)
Most of the time	0	155	27	182 (28.1%)
Every time	1	106	30	137 (21.1%)
N/A	1	21	2	24 (3.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: This question might not always apply to homosexual females, abstinent individuals, individuals in monogamous relationships and individuals trying to get pregnant.

12) Which precautionary measure do you take when having sexual relations in order to protect against sexually transmitted infections (STI/STD)? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Ask partner(s)' history of STIs (n=2)	Use condom when having penetrative intercourse (n=409)	Use condom when having penetrative intercourse (n=80)
#2	n=1 for use condom when having penetrative intercourse n=1 for ask partner(s) to be screened for STI before having sexual relationship	Ask partner(s)' history of STIs (n=327)	Ask partner(s)' history of STIs (n=61)
#2	/	Ask partner(s) to be screened for STI before having sexual relationship (n=153)	Ask partner(s) to be screened for STI before having sexual relationship (n=19)

* Respondents could choose more than one option.

Limitation: This question does not allow to differentiate individuals who are in long-term or monogamous relationships, which might influence the answers to this question.

13) How frequently did you/your partner use a condom or a dental dam when having oral sex in the past 2 years?

	Non-binary	Female	Male	Total
Never	2	410	77	489 (75.5%)
Rarely	0	40	10	50 (7.7%)
Sometimes	0	28	5	33 (5.1%)
Most of the time	0	26	2	28 (4.3%)
Every time	0	11	6	17 (2.6%)
N/A	0	26	5	31 (4.8%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

14) Have you ever been diagnosed with a sexually transmitted infection (STI/STD)?

	Non-binary	Female	Male	Total
No	2	497	99	598 (92.3%)
Yes	0	44	6	50 (7.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

15) Please indicate all STIs/STDs you have ever been diagnosed with. (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	/	Chlamydia (n=30)	Chlamydia (n=3) Scabies (n=3)
#2	/	Genital warts (n=6)	Genital warts (n=2) Pubic lice (n=2)
#3	/	Gonorrhea (n=4)	Chancroid (n=1) Genital herpes (n=1) Gonorrhea (n=1) HIV (n=1) Syphilis (n=1)

* Respondents could choose more than one option.

16) How often do you get screened for STI/STD? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Never (n=2)	At least once per year (n=227)	Never (n=41)
#2	/	Never (n=154)	At least once per year (n=36)
#3	/	When beginning a new relationship (n=149)	Not applicable (n=15)

* Respondents could choose more than one option.

Limitation: This question doesn't allow us to differentiate individuals who never get screen for STBBI because they are abstinent (all the time) or because they are in long-term or monogamous relationship from individuals who are sexually active and have multiple sexual partners, but don't get screened for STBBIs.

17) Have you used online dating websites or dating applications in the past 2 years?

	Non-binary	Female	Male	Total
No	1	300	43	344 (53.1%)
Dating websites	0	15	6	21 (3.2%)
Dating applications	1	202	48	251 (38.7%)
Both	0	24	8	32 (4.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

18) How many pregnancies have you had (including abortions, miscarriages)?

	Female
0	511 (94.5%)
1	26 (4.8%)
2-3	3 (0.6%)
4-6	1 (0.2%)
Total	541 (100%)

* We only included females are here (n=541, 83.5% of the entire sample n=648).

** We combined the N/A option with "0" option.

*** We excluded individuals who identified as "male" .

****We excluded individuals who identified as non-binary for the gender identity . They answered "0" to this question.

***** As seen in question 8 of the demographics section of the survey (E), two female participants each have one child, and one participant has three children. This means that the remaining number of pregnancies ended up in abortions, miscarriages, or adoption.

19) Have you ever had an abortion?

	Female
No	522 (96.5%)
Yes, once	15 (2.8%)
Yes, twice or more	3 (0.6%)
Prefer not to answer	1 (0.2%)
Total	541 (100%)

* We only included females here (n=541, 83.5% of the entire sample n=648).

** We combined the N/A option with "0" option.

*** We excluded individuals who identified as "male" .

****We excluded individuals who identified as non-binary for the gender identity . They answered "0" to this question.

20) Prior to January 1, 2016, had you ever been sexually assaulted including rape, incest or other forms of sexual violence (groping, vaginal/anal penetration, unwanted touching, unwanted oral contact)?

	Non-binary	Female	Male	Total
Prefer not to answer	0	3	1	4 (0.6%)
No	2	383	98	483 (74.5%)
Yes	0	155	6	161 (24.8%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Limitation: Survey was ongoing from April 2017 to October 2017, but we asked about sexual assault prior to January 1st, 2016 meaning that the actual number might be even higher, as the sexual assault might have happened after January 1st, 2016.

21) Please indicate all circumstances in which you were sexually assaulted. (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	/	At university (n=54)	At home (n=3)
#2	/	At high school (n=38)	Prefer not to answer (n=2) At high school (n=2) At university (n=2) While travelling within Canada (n=2)
#3	/	At home (n=27)	While travelling outside Canada (n=1) Other (n=1)

* Respondents could choose more than one option.

Travel

1) Have you visited a Canadian health travel clinic or other medical providers before international travel in the past 2 years?

	Non-binary	Female	Male	Total
No	2	284	63	349 (53.9%)
Yes	0	220	39	259 (40.0%)
Not sure	0	37	3	40 (6.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

2) Please indicate the purpose of your travel-related medical visit(s). (top 3 responses)

	Non-binary (n=0)	Female (n=220)	Male (n=39)
#1	/	Travel-related vaccination (n=167)	Travel-related vaccination (n=32)
#2	/	Regular/routine medical appointment (n=75)	Health-related counselling/advice specific to travel (n=15)
#3	/	Anti-diarrheal medication (n=73)	Regular/routine medical appointment (n=12)

* Respondents could choose more than one option.

Note: Only individuals who visited a Canadian health travel clinic or other medical providers before international travel in the past 2 years answered this question (answered “Yes” to question 1 of the travel section of the survey (C)).

3) In the last five years, how many times have you traveled outside of Canada per year on average?

	Non-binary	Female	Male	Total
0	0	1	2	3 (0.5%)
1	0	167	35	202 (31.2%)
2	1	148	26	175 (27.0%)
3	1	75	12	88 (13.6%)
4	0	40	10	50 (7.7%)
5	0	31	7	38 (5.9%)
More than 5	0	79	13	92 (14.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

4) Have you visited a Canadian health travel clinic or other medical providers after returning from international travel in the past 2 years?

	Non-binary	Female	Male	Total
Not sure	0	36	2	38 (5.9%)
No	2	405	84	491 (75.8%)
Yes	0	100	19	119 (18.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

5) Please indicate the purpose of your travel-related medical visit upon your return (top 3 responses)

	Non-binary (n=0)	Female (n=100)	Male (n=19)
#1	/	Regular/routine medical appointment (n=62)	Regular/routine medical appointment (n=13)
#2	/	Prescription refill (n=41)	Prescription refill (n=6)
#3	/	Follow-up appointment to discuss travel-related illness (n=29)	Follow-up appointment to discuss travel-related illness (n=3) Follow-up appointment to discuss travel-related injury (n=3) STI test (n=3)

* Respondents could choose more than one option.

**Only individual who answered that they had visited a Canadian health travel clinic or other medical providers after returning from international travel in the past 2 years answered this question (question 4 of travel section of the survey (C)).

6) Please identify all countries you have visited at least once in your lifetime.

Number of Countries Visited at Least Once			
Non-binary (n=2)	Female (n=541)	Male (n=104)*	Total (n=648)
Minimum=2	Minimum=1	Minimum=1	Minimum=0
Maximum=3	Maximum=42	Maximum=57	Maximum=57
Mean=2.5	Mean=8.55	Mean=9.08	Mean=8.60
Std. deviation=0.707	Std. deviation=6.480	Std. deviation=9.364	Std. deviation= 7.019
Variance=0.5	Variance=41.989	Variance=87.683	Variance=49.272

* We excluded one individual from the sample as he had inconsistent answers.

ADDED TABLE: Top 10 of most popular countries visited

	Non-binary (n=2)	Female (n=541)	Male (n=104*)	Total (n=648)
#1	USA (n=2)	USA (n=479)	USA (n=85)	USA (n=566)
#2	Bahamas (n=1) Denmark (n=1) UK (n=1)	France (n=304)	France (n=51)	France (n=355)
#3	/	Mexico (n=230)	UK (n=45)	Mexico (n=265)
#4		Italy (n=207)	Cuba (n=37) Italy (n=37)	Italy (n=244)
#5		Cuba (n=197)	Mexico (n=35)	UK (n=236)
#6		UK (n=190)	Germany (n=34)	Cuba (n=234)
#7		Germany (n=165) Spain (n=165)	Spain (n=27)	Germany (n=199)
#8		Dominican Republic (n=143)	Belgium (n=21) Dominican Republic (n=21) Switzerland (n=21)	Spain (n=192)
#9		Netherlands (n=121)	Netherlands (n=19)	Dominican Republic (n=164)
#10		Belgium (n=108)	Greece (n=36)	Netherlands (n=140)

* We excluded one individual was from the sample as he had inconsistent answers.

** Respondents could choose more than one option.

*** We excluded Canada from the top 10 (n=0 non-binary, n=435 female, n=79 male)

7) Duration of most recent 2016 international travel

Non-binary (n=2)	Female (n=523)*	Male (n=99)**	TOTAL (n=624)
Minimum: 16 days Maximum: 23 days Mean= 19.50 days Median= 19.50 days Mode= N/A Std. deviation= 4.950 Variance= 24.500	Minimum: 0 days Maximum: 526 days Mean= 46.6 days Median: 13.0 days Mode: 7 days Std. deviation= 89.619 Variance= 8031.493	Minimum: 0 days Maximum: 431 days Mean= 50.46 days Median: 13.0 days Mode: 7 days Std. deviation= 85.736 Variance: 7350.659	Minimum: 0 days Maximum: 526 days Mean= 47.08 days Median= 13.0 days Mode= 7 days Std. deviation= 88.827 Variance= 7890.258

* We excluded 18 female individuals as they provided inconsistent data (return trip date prior to departure date)

** We excluded 6 male individuals as they provided inconsistent data (return trip date prior to departure date or trip length over 1019 days).

8) During this most recent international trip, which country(ies) did you visit? (top 5 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	USA (n=2)	USA (n=184)	USA (n=37)
#2	Bahamas (n=1) Denmark (n=1) UK (n=1)	France (n=70)	Cuba (n=12)
#3	/	UK (n=58)	Germany (n=10)
#4		Italy (n=42)	UK (n=8)
#5		Mexico (n=41)	Italy (n=7)

* We excluded Canada from the choices as the question is about international trip

** Respondents could choose more than one option.

9) Identify all country(ies) that you travelled to for the first time in 2016. (top 5 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Bahamas (n=1) Denmark (n=1) UK (n=1)	France (n=43)	UK (n=8)
#2	/	UK (n=37)	Cuba (n=7) USA (n=7)
#3		Germany (n=35) Italy (n=35)	Australia (n=6) France (n=6) Iceland (n=6)
#4		Spain (n=34)	Germany (n=5) Greece (n=5)
#5		Netherlands (n=32)	Italy (n=4) Peru (n=4) Portugal (n=4) Spain (n=4) Switzerland (n=4)

* Respondents could choose more than one option.

** We excluded N/A option from the top 5 (non-binary n=0, female n=207, male n=41)

***We excluded Canada option from the top 5 (non-binary n=0, female n=2, male n=1)

10) Specify all country(ies) that you have travelled to more than five times before your most recent 2016 international trip.

Number of individuals who travelled more than 5 times to a country (excluding most recent 2016 international trip)				
# of country	Non-binary	Female	Male	Total
0	0	165	37	202 (31.2%)
1	2	295	50	347 (53.5%)
2	0	61	6	67 (10.3%)
3	0	13	5	18 (2.8%)
4	0	5	3	8 (1.2%)
5	0	2	2	4 (0.6%)
7	0	0	1	1 (0.2%)
12	0	0	1	1 (0.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Top 5 countries in which individuals have travelled more than five times before their most recent 2016 trip

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	USA (n=2)	USA (n=323)	USA (n=55)
#2	/	Mexico (n=21)	UK (n=9)
#3		Cuba (n=18) UK (n=18)	France (n=5)
#4		France (n=15)	Germany (n=3) Mexico (n=3)
#5		China (n=6) Dominican Republic (n=6)	Australia (n=2) India (n=2) Ireland (n=2) Switzerland (n=2) Uganda (n=2) UAE (n=2)

* Respondents could choose more than one option.

**We excluded N/A option from the top 5 (non-binary n=0, female n=159, male n=35)

***We excluded Canada option from the top 5 (non-binary n=0, female n=72, male n=16)

11) What was the purpose of this most recent international trip within 2016? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Tourism/Leisure (n=2) Visiting family (n=2)	Tourism/Leisure (n=426)	Tourism/Leisure (n=82)
#2	Visiting friends (n=1)	Visiting family (n=94)	Visiting friends (n=18) Visiting family (n=18)
#3	/	Visiting friends (n=65) Study abroad/education (n=65)	Study abroad/education (n=14)

* Respondents could choose more than one option.

12) Was this trip a cruise?

	Non-binary	Female	Male	Total
No	1	523	101	625 (96.5%)
Yes	1	18	4	23 (3.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Inconsistency: One non-binary individual was on a cruise, but did not identify “cruise” as a type of accommodation at question 14 of the travel section of the survey(C).

13) What was the travel setting of this most recent trip?

	Non-binary	Female	Male	Total
Mostly urban	1	292	54	347 (53.5%)
Mostly rural	1	88	20	109 (16.8%)
Equally urban and rural	0	161	31	192 (29.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

14) What was your type of accommodation during this trip? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Hotel (n=1) Airbnb or home/apartment/villa rental (n=1) At a friend's house (n=1) Family/home stay (n=1)	Hotel (n=249)	Hotel (n=55)
#2	/	Hostel (n=131)	Hostel (n=26)
#3	/	Airbnb or home/apartment/villa rental (n=117)	Airbnb or home/apartment/villa rental (n=21) Family/home stay (n=21)

* Respondents could choose more than one option.

15) Who arranged/scheduled this trip? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Family (n=2)	Family (n=201)	Myself (n=49)
#2	Myself (n=1)	Myself (n=186)	Family (n=35)
#3	/	Myself and friends/partner (n=175)	Myself and friends/partner (n=25)

* Respondents could choose more than one option.

** Number of individuals who chose "organization/association": female n=89; male n=19 et non-binary n=0. Thus, 108 individuals total had their trip arranged by an organization.

16) How much time did you spent preparing this trip (planning, immunization, pre-travel information session, etc.)?

	Non-binary	Female	Male	Total
Less than a week prior to departure	0	100	27	127 (19.6%)
2-3 weeks prior to departure	0	116	20	136 (21.0%)
4-6 weeks prior to departure	1	98	29	128 (19.8%)
7-10 weeks prior to departure	1	80	9	90 (13.9%)
11-15 weeks prior to departure	0	40	4	44 (6.8%)
16 weeks or more prior to departure	0	107	16	123 (19.0%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

17) If this travel was arranged by an organization/group or association, please identify the type of organization. (top 3 responses)

	Non-binary (n=0)	Female (n=89)	Male (n=19)
#1	/	Education-related (n=50)	Education-related (n=9)
#2		Humanitarian group/charity or volunteer (n=22)	Humanitarian group/charity or volunteer (n=6)
#3		Medicine/health (n=7) Other-Travel/tourism organization (n=7) Other (n=7)	Other-Travel/tourism organization (n=4)

* Respondents could choose more than one option.

**We only included individual who answered “organization/association” to question #15 of the travel section of the survey (C) (n=108).

*** 3 females and 1 male (4 individuals total) chose the “N/A” option to this question.

****Other-please specify answers” (n=7 female, n=0 male): sports organization (5), grad trip (1), “société de recherche sur le cancer” (1).

18) Did you receive any information/recommendations about health and safety from this organization prior to travel?

	Female	Male	Total
N/A	5	4	9 (8.3%)
No	41	10	51 (47.2%)
Yes	43	5	48 (44.4%)
Total	89 (82.4%)	19 (17.6%)	108 (100%)

*We only included individual who answered “organization/association” to question #15 of the travel section of the survey (C) here (n=108, 16.7% of the entire sample).

**We did not show non-binary individuals data here as n=0.

***Answers in the “please specify” box can be classified in 10 categories

- Vaccination and medication;
- Potential diseases (e.g. Zika, Hepatitis, HIV, Malaria);
- Information regarding safety and/or security (e.g. laws in different countries, etc.);

- Health and travel insurance;
- Health recommendations (e.g. health tips, location of hospitals, first aid training, etc.);
- Food and water security recommendations (e.g. drinkable water, restaurants, food poisoning, etc.);
- Emergency contacts (e.g. Embassy, phone numbers in case of emergency, etc.);
- Format of recommendations (e.g. pamphlets, trainings, forms, internet);
- Who provided the information (schools/university, travel clinics/nurse/doctor, government, company, etc.);
- General information.

19) Did you receive any information/recommendations about sexual health from this organization prior to travel?

	Female	Male	Total
N/A	5	3	8 (7.4%)
No	72	14	86 (79.6%)
Yes	12	2	14 (13.0%)
Total	89 (82.4%)	19 (17.6%)	108 (100%)

*We only included individual who answered “organization/association” to question #15 of the travel section of the survey (C) here (n=108, non-binary n=0).

**Answers in the “please specify” box can be classified in 6 categories:

- Who provided the information (e.g. travel clinic, university, organization, team)
- Abstinence recommendation (in general, with locals only or only for certain types of sexual encounters like one-night stands)
- Protection information (e.g. condoms, contraception)
- Information about sexually transmitted and blood borne diseases (STBBIs) (e.g. HIV/AIDS)
- Information about consent
- Information about how women’s bodies are perceived in other countries

20) With whom did you travel in this most recent international trip in 2016? (top 3 responses)

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	Family-relative(s) (aunts, uncles, grandparents) (n=2)	Friends (n=182)	Friends (n=35)
#2	-Alone (n=1) -Friend(s) (n=1) -Family-parents (n=1) -Family-relative(s)(same age group- siblings, cousins) (n=1)	Family-parents (n=171)	Family-parents (n=30) Alone (n=30)
#3	/	Family-relative(s)(same age group- siblings, cousins) (n=162)	Family-relative(s)(same age group- siblings, cousins) (n=29)

* Respondents could choose more than one option.

21) At the time of this trip, what was your relationship status?

	Non-binary	Female	Male	Total
In a romantic relationship	1	304	37	342 (52.8%)
Single	1	202	58	261 (40.3%)
In a sexual partnership	0	25	6	31 (4.8%)
Married	0	6	4	10 (1.5%)
Other	0	4	0	4 (0.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

22) Did you plan to have sexual relations during your trip?

	Non-binary	Female	Male	Total
No	2	362	63	427 (65.9%)
Yes	0	161	38	199 (30.7%)
Don't remember	0	18	4	22 (3.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

23) During your trip, did you have sexual relations while under the influence of alcohol?

	Non-binary	Female	Male	Total
No	2	390	71	463 (71.5%)
Yes, sometimes	0	120	26	146 (22.5%)
Yes, most of the time	0	24	8	32 (4.9%)
Don't remember	0	7	0	7 (1.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

24) During your trip, did you have sexual relations while under the influence of recreational drugs?

	Non-binary	Female	Male	Total
No	2	522	97	621 (95.8%)
Yes, sometimes	0	17	7	24 (3.7%)
Yes, most of the time	0	1	0	1 (0.2%)
Don't remember	0	1	1	2 (0.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

25) Did you bring male condoms/external condom with you on this most recent international trip?

	Non-binary	Female	Male	Total
No	2	423	61	486 (75.0%)
Yes	0	114	42	156 (24.1%)
Don't remember	0	4	2	6 (0.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

26) How many sexual partners did you have during your trip?

	Non-binary	Female	Male	Total
0	2	319	56	377 (58.2%)
1	0	183	32	215 (33.2%)
2-5	0	35	13	48 (7.4%)
6-10	0	2	2	4 (0.6%)
11-14	0	1	2	3 (0.5%)
15 or more	0	1	0	1 (0.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

27) If applicable, what was the gender of your sexual partner(s) during this international trip? (top 3 responses)

	Non-binary (n=0)	Female (n=222)	Male (n=49)
#1	/	Male (n=211)	Female (n=40)
#2		Female (n=13)	Male (n=9)
#3		Trans male (n=1)	Trans female (n=1)

*We only included individuals who were sexually active during their trip (n=271) here.

** Respondents could choose more than one option.

***One female responded N/A.

28) Who was(were) your sexual partner(s) during this most recent international trip? (top 3 responses)

	Non-binary (n=0)	Female (n=222)	Male (n=49)
#1	/	Usual partner (romantic or sexual) (n=173)	Usual partner (romantic or sexual) (n=24)
#2		Other traveller(s) (n=48)	Local citizen(s) (n=15)
#3		Local citizen(s) (n=33)	Other traveller(s) (n=14)

*We only included individuals who were sexually active during their trip (n=271) here (individuals who answered “0” at question #26 of the travel section of the survey (C) of the survey were excluded).

** Respondents could choose more than one option.

29) If applicable, did you participate in any the following during the trip? (top 3 responses)

	Non-binary (n=2)	Non-binary who had sex during their trip (n=0)	Female (n=541)	Female who had sex during their trip (n=222)	Male (n=105)	Male who had sex during their trip (n=49)
#1	Masturbation (n=1) N/A (n=1)	/	N/A (n=245)	Vaginal sex (n=196)	Masturbation (n=55)	Oral sex (n=38)
#2	/	/	Vaginal sex (n=197)	Oral sex (n=163)	Oral sex (n=39)	Vaginal sex (n=32)
#3	/	/	Oral sex (n=164)	Mutual masturbation (n=130)	Vaginal sex (n=32)	Masturbation (n=27)
#4	/	/	Masturbation (n=150)	Masturbation (n=69)	N/A (n=28)	Mutual Masturbation (n=25)
#5	/	/	Mutual masturbation (N=130)	Anal sex (n=15)	Mutual masturbation (n=25)	Anal sex (n=10)
#6	/	/	Anal sex (n=15) Use of sex toys (n=15)	Use of sex toys (n=13)	Anal sex (n=10)	Use of sex toys (n=3)
#7	/	/	BDSM** (=5)	N/A (n=9)	Use of sex toys (n=3)	BDSM** (n=1)
#8	/	/	/	BDSM** (n=5)	BDSM** (n=1)	N/A (n=1)

*Respondents could choose more than one option.

**BDSM : Bondage, discipline, dominance, submission, sadism and masochism.

30) During the trip, what was your method of contraception? (top 3 responses)

	Non-binary (n=2)	Non-binary who had sex during their trip (n=0)	Female (n=541)	Female who had sex during their trip (n=222)	Male (n=105)	Male who had sex during their trip (n=49)
#1	Abstinence (n=1) No method (n=1) Contraceptive pill (n=1)	/	Abstinence (n=210)	Condom (n=111)	Abstinence (n=42)	Condom (n=26)
#2	/		Contraceptive pill (n=197)	Contraceptive pill (n=105)	No method (n=28) External condom (n=28)	No method (n=14)
#3	/		External condom (n=115)	No method (n=36)	Contraceptive pill (n=11)	Contraceptive pill (n=10)

*Respondents could choose more than one option.

**This question might not apply to homosexual individuals and individuals trying to get pregnant.

***Limitation: we cannot differentiate individuals who did not use a contraception because they don't need one (homosexual individuals or individuals trying to get pregnant) and individual who just don't use one.

***Males who had sex with female(s) during their trip might have trouble answering this question if their partner was a new one (might not know what contraception method their new partner uses).

31) During the trip at what frequency did you/your partner(s) use male condoms/external condom when having sexual contact?

	Female	Male	Total
Never	90	16	106 (39.1%)
Rarely	17	2	19 (7.0%)
Sometimes	11	3	14 (5.2%)
Most of the time	31	5	36 (13.3%)
Every time	61	14	75 (27.7%)
N/A	12	9	21 (7.7%)
Total	222 (81.8%)	49 (18.1%)	271 (100%)

*We only included individuals who were sexually active during their trip (n=271) here (individuals who answered "0" at question #26 were excluded).

**Note 1: This question doesn't allow us to differentiate between individuals not using condom because they are in a long-term monogamous relationship and other individuals.

***Note 2: We added the N/A option for individuals who did not have sex during their trip. However, individuals who did have sex during their trip still chose that option. They might have done so because they never use condom (homosexual females, long-term monogamous relationship, etc.)

32) Upon returning from your most recent trip were you diagnosed with a sexually transmitted infection (STI/STD) ?

All individuals				
	Non-binary	Female	Male	Total
No	2	535	100	637 (98.3%)
Yes	0	6	5	11 (1.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Only sexually active individuals			
	Female	Male	Total
No	217	45	262 (96.7%)
Yes	5	4	9 (3.3%)
Total	222 (81.9%)	49 (18.1%)	271 (100%)

33) Top 3 of STI Diagnosed Post-2016 International Travel

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	/	Chlamydia (n=4)	-Genital warts (n=2) -Scabies (n=2)
#2	/	Genital herpes (n=1)	-Chancroid (n=1) -Chlamydia (n=1) -Genital herpes (n=1) -HIV (n=1) -Syphilis (n=1)
#3	/	/	

*Respondents could choose more than one option.

**Some males were diagnosed with more than one STI post-travel.

***One female did not indicate which STI she was diagnosed with.

34) Approximately, how frequently did you consume alcohol on this most recent trip outside of Canada?

	Non-binary	Female	Male	Total
Never	2	98	22	122 (18.8%)
Less than once a week	0	58	8	66 (10.2%)
Once a week	0	70	7	77 (11.9%)
2-3 times a week	0	116	24	140 (21.6%)
4-5 times a week	0	96	20	116 (17.9%)
Everyday	0	103	24	127 (19.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

35) Approximately, how frequently did you use recreational drugs on this most recent trip outside of Canada?

	Non-binary	Female	Male	Total
Never	2	472	82	556 (85.8%)
Less than once a week	0	36	9	45 (6.9%)
Once a week	0	13	5	18 (2.8%)
2-3 times a week	0	9	6	15 (2.3%)
4-5 times a week	0	7	3	10 (1.5%)
Everyday	0	4	0	4 (0.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

36) Top 3 of Recreational Drugs Consumed During the Most Recent 2016 International Trip

	Non-binary (n=2)	Female (n=541)	Male (n=105)
#1	/	Marijuana (n=58)	Marijuana (n=18)
#2		Hallucinogens (n=12)	Hallucinogens (n=7)
#3		Cocaine (n=7)	Amphetamine (n=2) Cocaine (n=2) Other (n=2)

*Respondents could choose more than one option.

** We did not include N/A option in the top 3 (female n=476; male n=83; non-binary n=2)

37) Were you sexually assaulted including rape, incest or other forms of sexual violence (groping, vaginal/anal penetration, unwanted touching, unwanted oral contact) during this most recent international trip?

	Non-binary	Female	Male	Total
Prefer not to answer	0	1	2	3 (0.5%)
No	2	523	99	624 (96.3%)
Yes	0	17	4	21 (3.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

All answers provided in the “provide additional details” section:

- Flashed publicly
- I'm not sure if this counts, but my partner ejaculated inside me without a condom when he came to visit even though we had agreed not to.
- Only unwanted touching
- Someone grabbing my butt lol
- Passed out in bed with a girl due to mixing allergy medication and alcohol. Woke up to her masturbating me.

38) If you answered yes, please indicate the person who assaulted you

	Non-binary (n=0)	Female (n=17)	Male (n=4)
#1	/	Local citizen(s) (n=6)	A friend(s) with whom you travelled (n=2)
#2		Stranger (n=5)	Prefer not to answer (n=1) Usual romantic partner (n=1) Usual sexual partner(s) (n=1) Other traveller(s) (n=1) Sex worker (n=1) Stranger (n=1)
#3		A friend(s) with whom you travelled (n=3) Unknown (n=3)	/

*Respondents could choose more than one option.

**We only included respondents who were sexually assaulted during their trip (answered “Yes” to question #37) here (n=21).

39) Did you seek health services related to the assault during international travel?

	Female	Male	Total
N/A	3	2	5 (23.8%)
Yes	0	1	1 (4.8%)
No	14	1	15 (71.4%)
Total	17 (81.0%)	4 (19.0%)	21 (100%)

*We only included respondents who were sexually assaulted during their trip (answered “Yes” to question #37) here (n=21)

40) Did you report the assault to your travel companions/travel organization/family?

	Female	Male	Total
N/A	1	1	2 (9.5%)
Yes	9	0	9 (42.9%)
No	7	3	10 (47.6%)
Total	17 (81.0%)	4 (19.0%)	21 (100%)

*We only included respondents who were sexually assaulted during their trip (answered “Yes” to question #37) here (n=21)

41) If you would like to provide additional details or comments related to the sexual assault, please do so here.
No individual provided details.

Perceptions

1) Having safe sex (use of condom) is important for me

	Non-binary	Female	Male	Total
Strongly disagree	0	3	1	4 (0.6%)
Disagree	0	17	5	22 (3.4%)
Neutral	0	76	20	96 (14.8%)
Agree	1	182	36	219 (33.8%)
Strongly agree	1	263	43	307 (47.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

2) I don't mind having sex with people I just met

	Non-binary	Female	Male	Total
Strongly disagree	2	140	9	151 (23.3%)
Disagree	0	164	18	182 (28.1%)
Neutral	0	118	18	136 (21.0%)
Agree	0	93	41	134 (20.7%)
Strongly agree	0	26	19	45 (6.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

3) I feel that my sexual health and sexual well-being were more at risk during my most recent international trip compared to back home

	Non-binary	Female	Male	Total
Strongly disagree	1	211	36	248 (38.3%)
Disagree	1	183	24	208 (32.1%)
Neutral	0	81	22	103 (15.9%)
Agree	0	52	18	70 (10.8%)
Strongly agree	0	14	5	19 (2.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

4) Identify the level of risk to YOUR health if you were to become infected with chlamydia

	Non-binary	Female	Male	Total
Do not know/no opinion	1	93	20	114 (17.6%)
Almost no health risk	1	44	4	49 (7.6%)
Slight health risk	0	96	23	119 (18.4%)
Moderate health risk	0	199	42	241 (37.2%)
High health risk	0	109	16	125 (19.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

5) Identify the level of risk to YOUR health if you were to become infected with chancroid

	Non-binary	Female	Male	Total
Do not know/no opinion	2	258	55	315 (48.6%)
Almost no health risk	0	21	0	21 (3.2%)
Slight health risk	0	32	11	43 (6.6%)
Moderate health risk	0	117	28	145 (22.4%)
High health risk	0	113	11	124 (19.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

6) Identify the level of risk to YOUR health if you were to become infected with genital herpes

	Non-binary	Female	Male	Total
Do not know/no opinion	1	85	14	100 (15.4%)
Almost no health risk	0	28	5	33 (5.1%)
Slight health risk	0	81	35	116 (17.9%)
Moderate health risk	1	169	30	200 (30.9%)
High health risk	0	178	21	199 (30.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

7) Identify the level of risk to YOUR health if you were to become infected with genital warts

	Non-binary	Female	Male	Total
Do not know/no opinion	0	98	17	115 (17.7%)
Almost no health risk	1	37	6	44 (6.8%)
Slight health risk	1	87	33	121 (18.7%)
Moderate health risk	0	165	30	195 (30.1%)
High health risk	0	154	19	173 (26.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

8) Identify the level of risk to YOUR health if you were to become infected with gonorrhea

	Non-binary	Female	Male	Total
Do not know/no opinion	2	94	19	115 (17.7%)
Almost no health risk	0	32	4	36 (5.6%)
Slight health risk	0	51	20	71 (11.0%)
Moderate health risk	0	197	38	235 (36.3%)
High health risk	0	167	24	191 (29.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

9) Identify the level of risk to YOUR health if you were to become infected with hepatitis B

	Non-binary	Female	Male	Total
Do not know/no opinion	2	83	16	101 (15.6%)
Almost no health risk	0	16	2	18 (2.8%)
Slight health risk	0	11	7	18 (2.8%)
Moderate health risk	0	77	28	105 (16.2%)
High health risk	0	354	52	406 (62.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

10) Identify the level of risk to YOUR health if you were to become infected with HIV

	Non-binary	Female	Male	Total
Do not know/no opinion	0	60	9	69 (10.6%)
Almost no health risk	0	15	4	19 (2.9%)
Slight health risk	0	4	2	6 (0.9%)
Moderate health risk	1	28	7	36 (5.6%)
High health risk	1	434	83	518 (79.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

11) Identify the level of risk to YOUR health if you were to become infected with lymphogranuloma venereum (LGV)

	Non-binary	Female	Male	Total
Do not know/no opinion	2	271	58	331 (51.1%)
Almost no health risk	0	15	1	16 (2.5%)
Slight health risk	0	7	7	14 (2.2%)
Moderate health risk	0	63	14	77 (11.9%)
High health risk	0	185	25	210 (32.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

12) Identify the level of risk to YOUR health if you were to become infected with pubic lice

	Non-binary	Female	Male	Total
Do not know/no opinion	1	89	22	112 (17.3%)
Almost no health risk	1	74	23	98 (15.1%)
Slight health risk	0	168	30	198 (30.6%)
Moderate health risk	0	128	23	151 (23.3%)
High health risk	0	82	7	89 (13.7%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

13) Identify the level of risk to YOUR health if you were to become infected with scabies

	Non-binary	Female	Male	Total
Do not know/no opinion	1	162	43	206 (31.8%)
Almost no health risk	0	23	4	27 (4.2%)
Slight health risk	0	63	17	80 (12.3%)
Moderate health risk	1	135	23	159 (24.5%)
High health risk	0	158	18	176 (27.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

14) Identify the level of risk to YOUR health if you were to become infected with syphilis

	Non-binary	Female	Male	Total
Do not know/no opinion	1	95	19	115 (17.7%)
Almost no health risk	0	19	1	20 (3.1%)
Slight health risk	0	25	7	32 (4.9%)
Moderate health risk	1	125	38	164 (25.3%)
High health risk	0	277	40	317 (48.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

15) Identify the level of risk to YOUR health if you were to become infected with trichomonosis

	Non-binary	Female	Male	Total
Do not know/no opinion	2	246	55	303 (46.8%)
Almost no health risk	0	15	3	18 (2.8%)
Slight health risk	0	29	9	38 (5.9%)
Moderate health risk	0	95	19	114 (17.6%)
High health risk	0	156	19	175 (27.0%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

16) Identify the level of risk to YOUR health if you were to become/are obese

	Non-binary	Female	Male	Total
Do not know/no opinion	0	36	7	43 (6.6%)
Almost no health risk	0	15	3	18 (2.8%)
Slight health risk	1	41	7	49 (7.6%)
Moderate health risk	1	152	27	180 (27.8%)
High health risk	0	297	61	358 (55.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

17) Identify the level of risk to YOUR health if you were to have unprotected sex

	Non-binary	Female	Male	Total
Do not know/no opinion	0	25	3	28 (4.3%)
Almost no health risk	1	52	14	67 (10.3%)
Slight health risk	0	142	31	173 (26.7%)
Moderate health risk	0	220	43	263 (40.6%)
High health risk	1	102	14	117 (18.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

18) Identify the level of risk to YOUR health if you get infected with influenza

	Non-binary	Female	Male	Total
Do not know/no opinion	0	57	7	64 (9.9%)
Almost no health risk	1	79	18	98 (15.1%)
Slight health risk	1	190	33	224 (34.6%)
Moderate health risk	0	130	34	164 (25.3%)
High health risk	0	85	13	98 (15.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

19) Identify the level of risk to YOUR health if you drink alcohol

	Non-binary	Female	Male	Total
Do not know/no opinion	0	15	3	18 (2.8%)
Almost no health risk	1	212	36	249 (38.4%)
Slight health risk	0	222	43	265 (40.9%)
Moderate health risk	1	81	19	101 (15.6%)
High health risk	0	11	4	15 (2.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

20) Identify the level of risk to YOUR health if you were to/do smoke cigarettes

	Non-binary	Female	Male	Total
Do not know/no opinion	0	23	5	28 (4.3%)
Almost no health risk	1	32	4	37 (5.7%)
Slight health risk	0	59	19	78 (12.0%)
Moderate health risk	1	174	31	206 (31.8%)
High health risk	0	253	46	299 (46.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

21) Identify the level of risk to YOUR health if you were to be diagnosed with AIDS

	Non-binary	Female	Male	Total
Do not know/no opinion	0	34	7	41 (6.3%)
Almost no health risk	0	10	1	11 (1.7%)
Slight health risk	0	3	3	6 (0.9%)
Moderate health risk	0	16	10	26 (4.0%)
High health risk	2	478	84	564 (87.0%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

22) Identify the level of risk to YOUR health if were to travel internationally

	Non-binary	Female	Male	Total
Do not know/no opinion	0	21	4	25 (3.9%)
Almost no health risk	2	217	48	267 (41.2%)
Slight health risk	0	241	43	284 (43.8%)
Moderate health risk	0	55	7	62 (9.6%)
High health risk	0	7	3	10 (1.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

23) Identify the level of risk to YOUR health if were to be infected with Zika virus

	Non-binary	Female	Male	Total
Do not know/no opinion	0	75	15	90 (13.9%)
Almost no health risk	1	18	3	22 (3.4%)
Slight health risk	0	65	14	79 (12.2%)
Moderate health risk	1	144	33	178 (27.5%)
High health risk	0	239	40	279 (43.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

24) Identify the level of risk to YOUR health if you were to be infected with Ebola virus

	Non-binary	Female	Male	Total
Do not know/no opinion	0	42	9	51 (7.9%)
Almost no health risk	0	13	0	13 (2.0%)
Slight health risk	0	13	4	17 (2.6%)
Moderate health risk	1	78	14	93 (14.4%)
High health risk	1	395	78	474 (73.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

25) Identify the level of risk to YOUR health if you were to travel by boat/cruise ship

	Non-binary	Female	Male	Total
Do not know/no opinion	0	36	8	44 (6.8%)
Almost no health risk	2	236	51	289 (44.6%)
Slight health risk	0	203	33	236 (36.4%)
Moderate health risk	0	57	12	69 (10.6%)
High health risk	0	9	1	10 (1.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

26) Identify the level of risk to YOUR health if you were to travel by plane

	Non-binary	Female	Male	Total
Do not know/no opinion	0	17	5	22 (3.4%)
Almost no health risk	2	303	66	371 (57.3%)
Slight health risk	0	173	26	199 (30.7%)
Moderate health risk	0	41	6	47 (7.3%)
High health risk	0	7	2	9 (1.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

27) Identify the level of risk to YOUR health if you travel by car

	Non-binary	Female	Male	Total
Do not know/no opinion	0	19	4	23 (3.5%)
Almost no health risk	2	315	61	378 (58.3%)
Slight health risk	0	160	30	190 (29.3%)
Moderate health risk	0	42	6	48 (7.4%)
High health risk	0	5	4	9 (1.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

28) Identify the level of risk to YOUR health if you were to travel alone outside of Canada

	Non-binary	Female	Male	Total
Do not know/no opinion	0	19	3	22 (3.4%)
Almost no health risk	1	142	44	187 (28.9%)
Slight health risk	1	213	38	252 (38.9%)
Moderate health risk	0	144	18	162 (25.0%)
High health risk	0	23	2	25 (3.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

29) Identify the level of risk to YOUR health if you were to travel within Canada

	Non-binary	Female	Male	Total
Do not know/no opinion	0	15	2	17 (2.6%)
Almost no health risk	2	347	76	425 (65.6%)
Slight health risk	0	159	19	178 (27.5%)
Moderate health risk	0	17	7	24 (3.7%)
High health risk	0	3	1	4 (0.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

30) Identify the level of risk to YOUR health if you were to travel to the United States

	Non-binary	Female	Male	Total
Do not know/no opinion	0	16	2	18 (2.8%)
Almost no health risk	0	285	66	351 (54.2%)
Slight health risk	1	191	24	216 (33.3%)
Moderate health risk	1	43	13	57 (8.8%)
High health risk	0	6	0	6 (0.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

31) Identify the level of risk to YOUR health if you were to travel to Mexico

	Non-binary	Female	Male	Total
Do not know/no opinion	0	22	5	27 (4.2%)
Almost no health risk	1	109	19	129 (19.9%)
Slight health risk	0	242	49	291 (44.9%)
Moderate health risk	1	147	27	175 (27.0%)
High health risk	0	21	5	26 (4.0%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

32) Identify the level of risk to YOUR health if you were to travel to a country in Western Europe (e.g. UK, France, Spain, Italy, Portugal, Germany, etc.)

	Non-binary	Female	Male	Total
Do not know/no opinion	0	16	3	19 (2.9%)
Almost no health risk	2	247	64	313 (48.3%)
Slight health risk	0	223	29	252 (38.9%)
Moderate health risk	0	48	7	55 (8.5%)
High health risk	0	7	2	9 (1.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

33) Identify the level of risk to YOUR health if you were to travel to a country in South America

	Non-binary	Female	Male	Total
Do not know/no opinion	0	24	6	30 (4.6%)
Almost no health risk	1	72	18	91 (14.0%)
Slight health risk	0	208	36	244 (37.7%)
Moderate health risk	1	201	38	240 (37.0%)
High health risk	0	36	7	43 (6.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

34) Identify the level of risk to YOUR health if you were to travel to a country in Africa

	Non-binary	Female	Male	Total
Do not know/no opinion	0	25	5	30 (4.6%)
Almost no health risk	1	40	7	48 (7.4%)
Slight health risk	0	151	31	182 (28.1%)
Moderate health risk	1	233	37	271 (41.8%)
High health risk	0	92	25	117 (18.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

35) Identify the level of risk to YOUR health if you were to travel to a country in the Middle East

	Non-binary	Female	Male	Total
Do not know/no opinion	0	30	4	34 (5.2%)
Almost no health risk	1	55	15	71 (11.0%)
Slight health risk	1	164	33	198 (30.6%)
Moderate health risk	0	203	39	242 (37.3%)
High health risk	0	89	14	103 (15.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

36) Identify the level of risk to YOUR health if you were to travel to a country in Asia (e.g. India, China, Vietnam, Indonesia, etc.)

	Non-binary	Female	Male	Total
Do not know/no opinion	0	28	5	33 (5.1%)
Almost no health risk	1	58	16	75 (11.6%)
Slight health risk	1	197	38	236 (36.4%)
Moderate health risk	0	204	39	243 (37.5%)
High health risk	0	54	7	61 (9.4%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

37) Identify the level of risk to YOUR health if you were to travel to a country in Eastern Europe (e.g. Russia, Czech Republic, Poland, Hungary, Albania, etc.)

	Non-binary	Female	Male	Total
Do not know/no opinion	0	28	5	33 (5.1%)
Almost no health risk	1	174	34	209 (32.3%)
Slight health risk	0	238	43	281 (43.4%)
Moderate health risk	0	91	19	110 (17.0%)
High health risk	1	10	4	15 (2.3%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

38) Identify the level of risk to YOUR health if you were to travel to a country where you don't speak the local language

	Non-binary	Female	Male	Total
Do not know/no opinion	0	28	5	33 (5.1%)
Almost no health risk	0	96	26	122 (18.8%)
Slight health risk	2	216	45	263 (40.6%)
Moderate health risk	0	164	24	188 (29.0%)
High health risk	0	37	5	42 (6.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

Demographics

1) What is your gender?

Non-binary	2 (0.3%)
Female	541 (83.5%)
Male	105 (16.2%)
Total	648 (100%)

2) Age

Non-binary (n=2)	Female (n=541)	Male (n=105)
Minimum=18 Maximum=18 Mean=18 Std. deviation=0 Variance=0	Minimum=18 Maximum=25 Mean=21.18 Std. deviation=2.135 Variance=4.560	Minimum=18 Maximum=25 Mean=21.28 Std. deviation=2.059 Variance=4.240

3) What is your sexual orientation?

	Non-binary	Female	Male	Total
Other	0	3	1	4 (0.6%)
Heterosexual	0	438	80	518 (79.9%)
Homosexual	0	17	15	32 (4.9%)
Bisexual	0	59	9	68 (10.5%)
Pansexual	0	19	0	19 (2.9%)
Asexual	2	5	0	7 (1.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

4) With what ethno-racial identity do you identify with?

	Non-binary (n=2)	Female (n=541)	Male (n=105)	Total (n=648)
White	2	477	87	566
Chinese	0	24	5	29
Aboriginal	0	19	2	21
South Asia	0	11	7	18
Arab	0	13	4	17
Southeast Asian	0	15	1	16
Black	0	8	6	14
Latin American	0	10	3	13
Filipino	1	7	2	10
Other	0	9	1	10
West Asian	0	3	1	4
Japanese	0	4	0	4

*Respondents could choose more than one option.

5) What is your mother tongue?

	Non-binary	Female	Male	Total
English	2	311	64	377 (58.2%)
French	0	188	30	218 (33.6%)
Other	0	42	11	53 (8.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

6) What language do you use the most?

	Non-binary	Female	Male	Total
English	2	358	73	433 (66.8%)
French	0	178	31	209 (32.3%)
Other	0	51	1	6 (0.9%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

7) What is your religious affiliation?

	Non-binary	Female	Male	Total
Nonreligious	1	325	59	385 (59.4%)
Catholic	0	112	24	136 (21.0%)
Protestant	0	30	3	33 (5.1%)
Christian Orthodox	1	24	6	31 (4.8%)
Jewish	0	16	4	20 (3.1%)
Buddhist	0	9	2	11 (1.7%)
Muslim	0	6	2	8 (1.2%)
Hindu	0	1	2	3 (0.5%)
Other Eastern religion	0	2	0	2 (0.3%)
Sikh	0	0	1	1 (0.2%)
Other	0	16	2	18 (2.8%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

8) How many children do you have?

	Non-binary	Female	Male	Total
0	2	538	102	642 (99.1%)
1	0	2	1	3 (0.5%)
2	0	0	2	2 (0.3%)
3	0	1	0	1 (0.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

9) What is the highest level of education you have completed?

	Non-binary	Female	Male	Total
Secondary School Diploma	2	205	36	243 (37.5%)
College Diploma	0	110	30	140 (21.6%)
University Bachelor's Degree	0	185	33	218 (33.6%)
University Master's Degree	0	27	6	33 (5.1%)
University Doctorate Degree	0	2	0	2 (0.3%)
Medical Degree	0	4	0	4 (0.6%)
Other	0	8	0	8 (1.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

10) What is your occupation?

	Non-binary	Female	Male	Total
Other	0	0	1	1 (0.2%)
Student	2	459	87	548 (84.6%)
Full-time work	0	53	13	66 (10.2%)
Part-time work	0	22	4	26 (4.0%)
Unemployed	0	7	0	7 (1.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

11) What is your program of study?

Program	Non-binary	Female	Male	Total
Social Science	2	114	18	134
Health Sciences	0	86	8	94
Science	0	58	13	71
Arts	0	55	9	64
Engineering	0	27	14	41
Law	0	33	5	38
Medicine	0	32	6	38
Education	0	29	5	34
Management	0	20	9	29
Business/Commerce	0	9	6	15
Agricultural&Environmental Sciences	0	9	0	9
Nursing	0	5	1	6
Music	0	3	1	4
Other	0	23	1	24
Total	2	503	96	601

* Respondents could choose more than one option.

**This question only appeared for individuals who identified as “student” at the previous question (see question 10, Demographics section of the survey (E)) n=548

12) Who do you live with during the majority of the year?

	Non-binary	Female	Male	Total
Living with roommates/flatmates	1	208	34	243 (37.5%)
Living with parents	1	184	40	225 (34.7%)
Living with romantic partner	0	72	16	88 (13.6%)
Living alone	0	57	12	69 (10.6%)
Living with a relative	0	17	3	20 (3.1%)
Other	0	3	0	3 (0.5%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

13) What is your total household income?

	Non- binary	Female	Male	Total
Less than \$10,000	0	135	14	149 (23.0%)
\$10,000 to \$19,000	1	78	9	88 (13.6%)
\$20,000 to \$29,000	0	39	13	52 (8.0%)
\$30,000 to \$39,000	0	35	8	43 (6.6%)
\$40,000 to \$49,000	0	22	6	28 (4.3%)
\$50,000 to \$59,000	0	30	6	36 (5.6%)
\$60,000 to \$69,000	0	25	3	28 (4.3%)
\$70,000 to \$79,000	1	22	2	25 (3.9%)
\$80,000 to \$89,000	0	14	6	20 (3.1%)
\$90,000 to \$99,000	0	20	6	26 (4.0%)
\$100,000 to \$149,999	0	50	15	65 (10.0%)
\$150,000 or more	0	71	17	88 (13.6%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

15) In which province/territory were you born?

	Non- binary	Female	Male	Total
Alberta	1	16	2	19 (2.9%)
B.C.	0	51	16	67 (10.3%)
Manitoba	0	10	1	11 (1.7%)
N.B.	0	4	1	5 (0.8%)
N.S.	0	8	2	10 (1.5%)
Ontario	1	240	39	280 (43.2%)
QC	0	207	42	249 (38.4%)
Saskatchewan	0	5	2	7 (1.1%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

16) What is your current province/territory of residence most of the year?

	Non- binary	Female	Male	Total
Alberta	0	8	1	9 (1.4%)
B.C.	1	44	10	55 (8.5%)
Manitoba	0	7	0	7 (1.1%)
N.B.	0	2	0	2 (0.3%)
N.S.	0	16	2	18 (2.8%)
Ontario	1	238	42	281 (43.4%)
QC	0	221	47	268 (41.4%)
Saskatchewan	0	5	3	8 (1.2%)
Total	2 (0.3%)	541 (83.5%)	105 (16.2%)	648 (100%)

APPENDIX 4 - RESULTS DISSEMINATION INFOGRAPHIC

