Rethinking harm reduction in the digital age for young consumers

Short title: Rethinking harm reduction in the digital age

Anne Guichard, Ph. D., associate professor, Faculté des sciences infirmières, Université Laval

Marianne St-Jacques, Ph. D., assistant professor, Faculté de médecine et des sciences de la santé, Université de Sherbrooke

Catherine Lefrançois, M. Sc., research professional, Faculté des sciences infirmières, Université Laval

Marie-Pierre Gagnon, Ph. D., full professor, Faculté des sciences infirmières, Université Laval

Élise Roy, M.D., M. Sc., research chair in addiction, Université de Sherbrooke

Correspondence address

Anne Guichard
Faculté des sciences infirmières
1050, avenue de la Médecine, local 3465
Université Laval
Québec (Québec) G1V 0A6
418-656-2131, ext. 4427
Fax: 418-656-7747
anne.guichard@fsi.ulaval.ca

Résumé

Introduction : La démultiplication des substances psychoactives, la transformation des pratiques de consommation, l'inadéquation des services pour les jeunes et le virage technologique pris par les consommateurs, tant pour acheter que s'informer sur les substances, incitent à repenser l'intervention en réduction des méfaits. **Objectifs** : L'étude vise à explorer l'intérêt et la faisabilité d'utiliser les technologies de l'information et des communications (TIC) pour prévenir des consommations plus intensives et réduire les dommages chez les jeunes adultes consommateurs en situation de grande vulnérabilité sociale. **Méthodes** : Elle utilise une approche de recherche communautaire basée sur des groupes de discussion menés auprès de jeunes consommateurs de 18 à 29 ans et d'intervenants œuvrant auprès des jeunes en difficultés dans la région de Québec. **Résultats :** Les TIC constituent un outil privilégié d'approvisionnement et d'échange d'informations sur les substances parmi les jeunes. Elles s'insèrent dans un contexte de lacunes dans les ressources existantes. En réponse, les participants suggèrent le développement d'une plateforme interactive spécialisée et actualisée d'échange d'informations sur les substances en circulation et la façon de gérer leurs consommations et les situations d'urgence. Pour les intervenants, les TIC sont peu exploitées pour des échanges en lien avec les substances illicites et jugées délicates à manipuler sur ces questions sensibles. Elles sont néanmoins perçues comme pouvant pallier un déficit de connaissances et de compétences pour aborder ces sujets complexes avec les jeunes. Des enjeux émergents liés aux inégalités d'accès au numérique, de littératie avec les TIC, éthiques et juridiques. **Conclusion** : Les TIC sont bien implantées dans le travail des intervenants et la vie des jeunes consommateurs. Elles sont des outils complémentaires, probablement incontournables à l'ère du numérique et de la complexification des marchés et des modes de consommation.

Mots-clés : jeunes de la rue, substances psychoactives (SPA), prévention, réduction des méfaits, technologies de l'information et des communications (TIC)

Abstract

Introduction: The proliferation of psychoactive substances, the transformation of substance use practices, the inadequacy of services for youth, and the technological shift among users, whether for purchasing or informing themselves on substances, are prompting a reassessment of harm-reduction interventions. **Objectives**: This study aims to explore the interest and feasibility of using information and communication technology (ICT) to prevent intensive drug use and reduce harm among socially vulnerable young adult users. **Methods**: The study uses a community-based research approach based on discussion groups conducted with young users aged 18 to 29 and with community workers serving at-risk youth in the Québec City area. **Results:** Young adults used ICT widely to purchase drugs and exchange related information. Participants perceived ICT as a means of addressing existing gaps in services. They suggested developing a specialized, up-to-date interactive platform for sharing information on current drugs, substance use management, and emergency situations. Community workers felt ICT was not generally used for exchanging drug-related information and considered it a problematic tool for managing sensitive harm reduction interventions. However, they did see its potential for remedying a lack of knowledge and skills to address these complex issues with young people. Emerging issues related to inequalities in digital access, ICT literacy, ethics, and law were identified. **Conclusion**: ICT is well established in the work of community workers and the lives of young drug users. It is a complementary tool, likely

unavoidable in the digital age and given the ever-increasing complexity of markets and substance use patterns.

INTRODUCTION

The use of psychoactive substances (PAS), particularly in certain concentrated forms, has long been considered a public health problem, especially for youth. Whether in the province of Quebec (Fleury & Grenier, 2012; Kairouz & Québec, 2008; Lesage, Bernèche, & Bordeleau, 2010) or elsewhere (ESPAD, 2016; Merikangas et al., 2010), young people aged 15–24 years are the population subgroup most at risk of encountering significant difficulties with PAS. In 2012, in Canada, 11.9% of youth aged 15 to 24 had a diagnosis of alcohol or PAS-related disorder, compared to 1.9% of those aged 45 and over (Pearson, Janz, & Ali, 2013). In this group, there was a 40% increase in the number of hospital days in Canada between 2006 and 2011 due to cannabinoid use (Young & Jesseman, 2014). In Quebec, a recent report shows an increase in the annual prevalence of drug use disorders in this age group, including drug-induced psychotic disorders and alcohol-induced poisoning (Huỳnh et al., 2019). Early use of PAS by youth increases the risk of developing addiction or mental health problems in adulthood (Brook, Saar, Zhang, & Brook, 2009; Pujazon-Zazik & Park, 2009). At this pivotal age of transition to adulthood, the harms of PAS use on the social and neurobiological development of youth are well documented (Arnett, 2000; Patton & Viner, 2007). Heavy PAS use can also have serious health consequences, including road accidents, unintentional injuries, family breakdowns, suicide, delinquency, school dropout, or infectious diseases such as HIV or hepatitis (Bailey & Marshall, 2004; Suris, Michaud, Akre, & Sawyer, 2008). Street youth, who are among the most vulnerable young people, are certainly particularly affected by these problems, which can even lead to significant risks of early mortality (Roy et al., 2004).

With the evolution of lifestyles and living conditions as well as the diversification of the drug market, user profiles and substance use practices have diversified, particularly among youth (Lascaux & Couteron, 2015; Obradovic, 2015). Use patterns are now characterized by more complex practices involving poly-use/poly-experimentation of a wider range of synthetic products, opiates, stimulants, non-medical use of prescription drugs, and alcohol (Gagnon et al., 2010; Guichard, Lert, Brodeur, & Richard, 2006; Guichard et al., 2003; Mateu-Gelabert, Guarino, Jessell, & Teper, 2015; Young & Jesseman, 2014). Injection, which once seemed to be the preferred method of administration for marginalized users, has emerged among youth in recreational settings (Girard & Boscher, 2009). The increase in the injection of opioid drugs among youth, particularly in Quebec (Leclerc et al., 2012), is all the more worrying because this type of use increases the risk of death by overdose.

Youth generally do not visit sites or facilities dedicated to addiction problems or harm reduction except under pressure from various actors such as parents, schools, or the judicial system. Both conventional and more specialized structures struggle to reach out to this population (Cadet-Taïrou et al., 2010; Merkinaite, Grund, & Frimpong, 2010; Nicholson, White, & Duncan, 1998), likely because they lack of tools and methods adapted to the specific profile and needs of youth. Often, due to anonymity or confidentiality concerns, youth prefer to use contemporary forms of digital communication to obtain supplies, learn about PAS and how they are used, share their drugs experience, seek advice from peers, and ultimately form "anonymous" virtual communities via media and social networks in the invisible space of the Internet (Barratt, 2011; Falck, Carlson, Wang, & Siegal, 2004; Murguia, 2007; Thoër & Robitaille, 2014). Given young users' familiarity with technology, information and communication technology (ICT) is a promising avenue for action in the area of prevention and harm reduction for young adults (Patnode et al., 2014). Indeed,

the Internet is increasingly being used for research and intervention with certain groups of the population who are reluctant to seek counselling and anxious to remain anonymous (Guichard & Dupéré, 2016; Guichard et al., 2013; Kivits, Lavielle, & Thoër, 2009; Perreault et al., 2009; Perreault et al., 2013; Thoër & Lévy, 2012; Velter et al., 2017).

The potential of new technologies for intervention on youth substance use has already led to the deployment of several interventions based on very heterogeneous theoretical models and technological platforms, the effects of which have not been well documented. A quick review of the literature showed that ICT interventions with young people were generally carried out in schools, and therefore aimed more at socially integrated adolescent audiences. They focused mainly on the primary prevention of alcohol and cannabis consumption, thus excluding a significant proportion of the young adult population concerned, who are socially disaffiliated, dropouts from school or poly-users (Guichard, Roy, Saint-Jacques, Payne-Gagnon, & Gagnon, 2017). Nevertheless, the results of an exclusively web-based intervention, using Facebook to recruit young people aged 15 to 16 from sexual minorities, showed a decrease in the drug use, as well as better ability to refuse PAS, results that were maintained three months after the end of the intervention (Schwinn, Thom, Schinke, & Hopkins, 2015). While these results suggest that ICT has potential for effective intervention on certain user behaviours, there is not yet any evidence available for disaffiliated young users in regard to harm reduction.

Finally, the degree of involvement of community partners and front-line intervention communities in these projects is very variable and the perspective of the main users of these interventions is not emphasized, particularly at the needs-definition stage. Although the Internet is a useful channel for reaching hidden populations of young consumers (Miller & Sønderlund, 2010; Thoër & Lévy, 2012), disaffiliated youth often lack access to connected devices due to the digital divide (Guichard & Dupéré, 2016). Social differences in access, use, and appropriation of digital health resources are likely to exacerbate precariousness among the most vulnerable groups (Lupton, 2017; Thoër & Lévy, 2012). To plan responsible and effective action using ICT for these populations, it is first necessary to understand them better and to clarify their background, reality, interests, or fears in relation to ICT. It was to shed light on these questions that a study was conducted based on a research partnership with a community organization on the front lines of intervention with young users. The study's objective was to explore the perspectives of youth and community workers regarding the interest, relevance, and feasibility of using ICT to prevent transition to more intensive substance use and to reduce drug-related harm among street youth.

METHODOLOGY

This was an exploratory study using a participatory approach based on a research partnership with a community organization (Holkup, Tripp-Reimer, Salois, & Weinert, 2004), Maison Dauphine. Located in Vieux-Québec, the organization has been welcoming street youth aged 12 to 29 for 25 years. Concerned by the drop in youth attendance in community organizations and the frequency of substance use problems among the youth it served, Maison Dauphine seized the opportunity to explore new possibilities for using technological tools to facilitate or complement its more socio-educational interventions. From the very first stages of project development, Maison Dauphine was involved in decision-making and it remained involved throughout the project, especially in the recruitment of youths and the organization of discussion groups.

Sampling procedure and participant recruitment

The study was conducted with young adults (18 years of age and over) who defined themselves as users or former users of PAS (n = 16) and with community workers who had experience working with this population in the territory of Québec City (n = 7), where our study was conducted.

The youths were recruited through the community partner organization. We opted for a convenience sample while focusing on contrasting individual characteristics, such as gender and age, and social characteristics (e.g., participation in a progressive reintegration program, having a child) in order to obtain the best representation of youth perspectives and situations (Pires, 1997). The eligibility criteria adopted were as follows: being between 18 and 29 years of age and having already used legal or illegal PAS on a consistent basis in terms of frequency, quantity, and variety of substances. Following the recommendations of Gibbs and colleagues (2008) regarding the recruitment of vulnerable participants attending an organization, a psychosocial worker from Maison Dauphine initially approached youths who might meet these criteria and briefly explained the project to them. Interested youths were then referred to the research professional for further explanation of the project and to validate their interest in participating and the criteria for participation. During the recruitment phase, all youth were informed of the confidential nature of the discussion groups, particularly with respect to the referring community organization, and care was taken to obtain free and informed consent. Compensation in the form of a $25 gift certificate was provided following the discussion group.

The community workers were recruited by mapping community organizations and institutions in Québec City that served a clientele of young adults (18–29 years old) who were substance users. This mapping was done in collaboration with Maison Dauphine, which supplied the names of contact persons at each of the organizations identified and approached. The project was presented to these contacts so that they could direct us to community workers with expertise/cross-interest in youth intervention and substance abuse (the main inclusion criterion) who would be willing to participate. The community workers identified in this way were then invited to participate in a discussion group. Free and informed consent was obtained from each individual.

Data collection procedure

The participants were divided into three discussion groups (Krueger, 1994) (two groups of youths and one of community workers) to obtain their views on the value and usefulness of ICT (Internet, smartphones, games, social networks) in preventing the transition to more intensive substance use and reducing the harm to youth. Considering the exploratory nature of our study, the fact that the topic was not a mainstream one, and the likelihood that participants had not reflected much on these topics beforehand, a group discussion format appeared to be conducive to stimulating the emergence and exchange of ideas. The approach also has the advantage of helping to identify consensual and controversial elements within groups, an important aspect to guide the development of tools based on the concerns of the target groups (Baribeau & Germain, 2010). Data collection took place early 2017.

This study was approved by the Research Ethics Committee of Université Laval (REF2016-123). All participants were informed of the content and objectives of the study, participated on a voluntary basis, and signed a consent form.

An interview guide was developed based on ten exploratory interviews conducted previously on a related topic as part of a master's thesis in community health (Pinchinat, 2015) supervised by

Author 1. This guide was then submitted to five practitioners from the partner community organization to ensure relevance and acceptability of the content and clarity of the language used, especially for youth. The guide for youth interviews covered how they and their peers used ICT with regard to PAS use, their needs in relation to drug use, as well as their perspective on the relevance, feasibility, and limits of using ICT for harm prevention or reduction purposes. The guide used for the community worker group repeated these core issues, but with wording adapted to their occupation. Additional questions were more specifically aimed at understanding their interest and how ICT could support their work/mission with youth.

Data analysis

The discussions were audio recorded in their entirety. To facilitate analysis, a partial transcription of the data was performed by a member of the research team to eliminate from the text the many redundancies, digressions, and portions with no obvious connection to the research (especially in the youth groups) and thus target the most relevant and representative participant comments (Geoffrion, 1998). The text was then organized into a narrative suitable for thematic analysis. First, the verbatim transcripts were reorganized, classifying the material according to the themes of the interview guide. Summaries of the discussions were produced and validated by three team members (Authors 1, 2 and 5) using the audio material. A second level of thematic and content analysis, using a mixed analytical grid to analyze so-called predetermined and emerging categories (Miles, Huberman and Saldana, 2014), identified relevant emerging themes related to the research objectives, informed the significance of certain themes, and identified recurrences and divergences within and between the discussion groups (Paillé and Mucchielli, 2016). All the authors of this article were involved in all phases of the thematic analysis.

RESULTS

Description of the discussion groups and participants

The two youth discussion groups, lasting 90 and 60 minutes respectively, were conducted at Maison Dauphine and were facilitated by the co-researchers responsible for the project (Authors 1, 2 and 5) with assistance from a research professional (Author 3). Participants were randomly assigned to each group, while attempting to ensure an even distribution of men and women (G1: 3 women and 4 men; G2: 5 women and 4 men). The community worker discussion group, which lasted 107 minutes, was conducted on the premises of Université Laval and was facilitated by Authors 1 and 3.

Table 1 presents the main characteristics reported by respondents during the discussion groups. The profiles and substance use patterns presented reflect the perspective of youth and community workers regarding substance use practices among young people in situations of great social hardship in Québec City. Indeed, for ethical reasons, as the youths were encouraged to share their opinions and ideas on the basis of their user experience, they were therefore never directly questioned about their personal experience as users.

Table 1. Main characteristics of discussion group participants by profile (youths and community workers)

* This information does not claim to reflect the individual substance use patterns of the youth participants. They are based on the voluntary statements of participants in the discussion groups and their opinion regarding the main patterns of use of PAS among youth in their community.

Youths (n=16)	Recruitment program at Maison Dauphine	Mean age	Declared substance use profile*	Main psychoactive substances (SPA) used, in order of importance*
GD1 (n=7)	*Le Local*** (n=8)	23 years old	Active poly-users of PAS (n=15)	Amphetamines, cannabis, and alcohol
			Youths (26 to 29 years old) self-declaring as "ex-users" (n=3)	Speed, MDMA, synthetic drugs, opioids
GD2 (n=9)	*JAD / École de la rue*** (n=8)	(18-29 years old)	Principals means of PAS administration: ingested, sniffed, or smoked.	Opiates, cocaine and derivatives
			Having used injection (n=5).	

Community workers (n=7)	Institutional affiliation	Post occupied/field of activity	Years of experience in current post/field of youth intervention
GD1 (n=7)	5 community organizations working with socially vulnerable youth in Québec City	Street outreach (n=3)	
		Trainers with experience in street outreach (n=2)	≥ 2 years in current post (n = 7)
		Community workers specializing in social intervention and healthy lifestyles (n=2)	> 10 years of experience in this field (n=4)

** "Le Local" is an unconditional welcome program for street youth that provides basic services (e.g., helping relation, health, hygiene, housing assistance, legal support, and food). The "Service Spécialisé Jeunes Dauphine" (JAD) and the "École de la rue" are two of Maison Dauphine's specialized programs aimed at the progressive social reintegration of youths.

Amphetamines emerged as the most commonly used PAS, along with cannabis and alcohol, although the youths did not spontaneously mention the latter two substances because they are such a regular part of their lifestyle. *"Alcohol and cannabis are so commonplace that we forgot to mention them" (Emma, 27)*. Injection was apparently uncommon among youth in the region. It seemed to be a practice notionally associated with certain geographical areas of the city (downtown) and highly stigmatized. These multiple and intensive forms of use were discussed a length by the community workers, who considered them to be a relatively new and worrying phenomenon among the youths who frequented their organizations.

> […] it's not just what they consume, but it's the mixes they make that, for me, are becoming worrying. The kid takes a hydromorphone hit, two minutes later he takes speed, then he does 3-4 lines, after that beer, then 5ml of juice…

> Pierre, community worker

ICT use

Smartphones as young adults' principal means of accessing ICT?

Cell phones are an important means of ICT access for young people. The vast majority say they either own one or have easy access through someone close to them. Free WI-FI hotspots in public spaces give youths easy and plentiful access to mobile online communication (telephone, social networks, emails, messaging, etc.). Social networks, Facebook in particular, are a favourite communication platform for these young adults.

The community workers perceived cell phones as being at the heart of the social life of young people under 25 years of age, even when they are homeless, and as something they would only give up as a last resort. *"They would have to be in a really badly spot to pawn their cell phone" (Simone, community worker)*. However, this 'unconditional' attachment to their cell phone was qualified by several youths who expressed a lack of interest, even reluctance, regarding cell phone ownership, being content instead with using those of their friends when necessary.

ICT use in relation to PAS

The youth stated they used ICT mainly to procure drugs and to find information on substances they used. Messaging platforms (SMS, Facebook, iMessage, etc.) were the preferred means of communicating with their suppliers. Some said they posted messages, coded or not, on their Facebook wall to find the substances they wanted. Some youths mentioned specialized websites for ordering cannabis and opioid drugs, but this practice seemed to be a minority one, involving the older members of the group:

> A younger person won't go that far, because it's complicated. You need to know a little bit about it. Young people don't necessarily have the experience to go to these sites or the cards to pay, but there are some among the rest of us who've done it before.   Emma, 27 years old

On the other hand, it was common for the youths to use ICT to obtain information on substances they used or intended to use, and most had conducted research on the composition, effects, methods of administration, or risks of certain substances. They appreciated the variety of information and experience-sharing available on the web, which allowed them to learn about products discreetly without fear of judgment from their peers or community workers. Some youths, particularly those who use the Internet to procure substances, say they visit specialized sites to identify or find out more on the specific composition of purchased PAS. Several sites known for having reliable and up-to-date information were mentioned: PillsReport,[1] Leafly,[2] and the Royal Canadian Mounted Police website.

> I also go online to look for information about drugs, what they are made of, what the effects (buzz) or risks are... I want real, up-to-date information, but sometimes it's hard to trust people [...] These networks aren't exactly gatherings of Nobel Prize winners!

> Frédéric, 29 years old

For their part, the community workers described a certain carelessness on the part of youths regarding social network comments regarding drug use. Several had already intervened to encourage young people to be cautious.

> They're not aware of the trail they leave on the Internet and social networks. They feel like they're safe behind a screen.

> Simone, community worker

In this area, our analyses point to a gap between the youths and community workers. While community workers were aware that youths used messaging to contact their supplier or set up plans to purchase, they reported that they did not know much about online purchase sites (other than through the media) and did not think that youths used them. According to the workers, using ICT for information on PAS was a marginal practice among young people, reserved for emergency situations. They believed that this type of information was still mainly sought from other users or from community workers.

> They see public health alerts being posted, from the police on Facebook – Fentanyl for example – because they're active on Facebook, but from there to looking up information on drug quality, I don't think so, that happens more through us.

> Louis, coordinator

When community workers were asked about ICT used in their professional practices, they spontaneously described ICT, especially social networks, as being incorporated into psychosocial intervention. Outreach workers highlighted the usefulness and importance of ICT options in connecting and following up with youths. These options were complementary, even essential to

---

[1] Pillreports is a global database on ecstasy based on both user testimonials and scientific analysis.
[2] Leafly is the world's largest cannabis website, with more than 15 million monthly visitors and 40 million page views on its website and mobile applications.

local intervention, whether to maintain contact, access a young person's natural network, manage appointments, promote the organization's activities, or disseminate information. On the other hand, practitioners considered it that using ICT to discuss PAS use on an individual basis to be tricky and preferred to have such conversations in person.

> Above all, it allows us to create or maintain links with young people, to communicate, but also to promote and organize activities and share photos or videos or preventive content. For drugs, it's more delicate....

> Louis, coordinator

Meeting the needs of young people: service offering, accessibility, and quality

Limited and inadequate resources, social service workers in disarray

Communicating, having access to a space for listening, empathy, and non-judgmental dialogue with people who are available and familiar with user issues was a major need expressed by the youths. This need becomes essential during critical moments of substance use that often occur in the evening, at night, or on weekends, when most community resources are closed. This service gap between 4 p.m. and 8 a.m. results in difficult experiences for young people who feel left on their own when a substance use problem arises and they are unable to get to make it to an emergency room.

> Resources are not always geared to us users! Often, I feel that I'm being judged or that professionals aren't familiar enough with user issues. Also, it's when you'd need to talk to someone the most that there's almost no service available...

> Simon, 24 years old

The youths were critical with regard to the supply, accessibility, and quality of resources dedicated to young users. In addition to a significant lack of services to respond to emergencies, the youths considered that the staff providing these services had poor knowledge of PAS and how to deal with users. They felt unwelcome and strongly stigmatized when a substance use problem was identified. The "Info-Santé" telephone line and hospital emergency rooms were the subject of mockery, interspersed with anecdotes illustrating perceived inadequate or disproportionate responses to real-life situations:

> We called Info-Santé because we didn't know, but the person didn't know. She just said to go to the hospital in less than two hours, that he might be dying. And then I went into an organization the next day, they told me it was just a cotton fever, to drink a lot of water and rest and it passed. Info-santé knows absolutely nothing.

> Naomi, 22 years old

> And often they judge you. "Oh, you're calling because 'Sir' doesn't feel good on morphine." Seriously, I went to the hospital and we almost got kicked out on our asses because "Sir" was on morphine.

Naomi, 22 years old

Their testimonies did not spare community organizations either, a minority of which were likely welcome young users unconditionally. Although they recognized that some community workers were competent, the youths said that when it came to PAS, they preferred to talk with experienced people who could provide good advice on the substances they used. It is in this context that the youths identified the specific benefits of using ICTs to obtain information on PAS and to fill the gaps in supply, quality and adequacy of services to address their needs.

> I find that the message gets through a lot easier from a former user than from someone who has never used in their life and who tells you about things they've seen in their textbooks. If the person in front of me is someone who works in this, I know that they're not shitting me, it just takes a lot of experience, not necessarily experience of getting stoned. Someone who'll be open to what I'm going to say, who listens to me, and who doesn't just try to force me to go through steps.

Karl, 26 years old

> What do I like about going on websites? The freedom! You're doing a search, you won't be judged by your computer. Just the fact of not getting sideways looks or being sent to the emergency room by a nurse who doesn't know what she's talking about

Frédéric, 29 years old

Echoing the comments of the young people, the community workers stated that they were poorly equipped to respond to the PAS-related questions and problems encountered by young people. Although they worked with a large proportion of users, they did not feel empowered enough to intervene on these issues effectively. They highlighted the complexity and rapid evolution of the market, as well as the proliferation of available products, methods of supply, and use patterns as obstacles to keeping current. They reported feeling overwhelmed, often helpless, when faced with youths' questions about substance composition, effects, and potential risks. Due to lack of knowledge, their interventions were limited to providing general advice and advocating caution when using certain products, while trying to provide a space for listening, dialogue, and non-judgment when young people showed a willingness to open up.

> The substances, the drugs, that get around in the street are more and more complex... often I don't feel properly equipped to support youths. Already, youths are using community resources less and less… it's becoming difficult to reach young users. I myself, toward the end of my practice, I didn't even go to see the information on official sites because I felt it wasn't useful to me anymore. The kids can't even tell me what they're taking. The product, by the time it comes out and they analyze it, the street has moved on to something else. So, I do my harm reduction anyway, but more comprehensively than before, not focused on a product, because we don't know the product, we'll never know it.

Louis, coordinator

ICT: An option for new interventions in harm prevention and reduction

When asked how ICT could address the needs expressed above, both youths and community workers had trouble formulating concrete ideas or suggestions. There was interest, mixed with curiosity and skepticism, especially among community workers, as well as mistrust on the part of the youths. While proposals emerged and took shape as the discussions progressed, they were the result of a collective construction within all the discussion groups and reflected the difficulties reported in relation to PAS and health services. The youths were quick to reject the option of using ICT in the form of an online intervention to reduce, stop, or better control their substance use (e.g. a tailor-made computer-based intervention or online coaching). They conveyed that this involved a personal decision in which technological tools had no place. However, some ideas emerged about the potential utility of technologies for prevention, awareness, and reduction of harm.

> I wouldn't use an app to quit using. If I wanted to stop, I wouldn't turn
> to technology... but it's still important to spread information, messages
> on prevention or awareness...

> Martin, 22 years old

The need for specialized and up-to-date information on PAS

Both the community workers and youths raised the need for better access to accurate and up-to-date information on current products in their region (composition, expected and undesirable effects, risks). They perceived existing information sites as too general, obsolete, or not relevant to substances available locally. Nor did these sites generally address the effects and risks arising from the concurrent use of more than one substance, whereas poly-drug use was common in the experience of our youth participants. Although both youths and community workers has some doubt regarding the deterrent effect of this online information and the actual use that would be made of it, they considered it was important to make it available.

> When you're using, you don't care [...] even if in the end I'd known
> what was in it, I would've used anyway.

> Charlotte, 18 years old

> Someone who's using, who's going through withdrawal, I don't think
> their first thought is going to be to go and see if there's an app to help,
> but it's important anyway.
> Jonathan, 21 years old

Varied, realistic messages, adapted to the situations and backgrounds of youths

Both the youths and community workers deemed that messages aimed at discouraging young people from using have a role to play and are of key importance in the digital landscape. Injection and prevention of the transition to injection (briefly covered in the discussions) were treated in the same way (informative/deterrent). ICT can serve to disseminate messages that are varied and adapted (tone, format, content) to the realities and needs of youths. These messages should enable youths to project themselves more easily, to make them think, be neutral/factual, realistic and non-moralistic. They should be short, playful, and convey the idea of evolving, focusing on their

concerns (body, mind, relationships) as young users. But beyond these aspects, all agreed that the messages should engage the values of young people, values to which they hold strongly:

> I think that's where you have to speak to. To people's values, not substance use or the fact of injecting. If you want to get stoned and you see a video against drug use, you'll get stoned anyway. But a video that tells you that you're a human being and that you have values and that you need to respect yourself, well…
>
> Emma, 27 years old

> However, we have to move away from sensationalist, moralizing prevention campaigns or campaigns that are out of touch with the realities of young users... Youth have to be able to identify and feel that it speaks to their values.
>
> Isabelle, community worker

The youths and community workers pointed to "video shorts", featuring snapshots of life stories, as an appropriate and popular format for conveying awareness and prevention messages. To illustrate their point, the workers referred to an existing public video explaining sexual consent by analogy with offering a cup of tea. Given youths' engagement with social networks, the community workers suggested rethinking how these messages were delivered and building on the "viral" potential of video clips in the digital space to reach affected youth more effectively.

A multifunctional platform for harm reduction and crisis management

Information, guidance, and emergency situations

In response to the needs and challenges mentioned above, the youths developed in some depth the idea of a multi-functional ("all-in-one") digital platform for harm reduction, either on the Internet or as an application.

On this platform, the youths envisioned having access to factual, pragmatic, and up-to-date information on current products along with a directory of community organizations that might even include interactive or geotagged features. The underlying idea was to have quick access to available resources as needed and to be able to communicate (e.g., through chat rooms) at any time with a counsellor specialized in substance use. This platform would have an emergency call functionality that would allow rapid contact to be made with a person equipped to manage emergency situations outside of organizations' regular hours. The community workers to whom this proposal was presented believed it could be a useful channel to which youths could be directed by community organizations after hours.

ICT as a medium for human relations, not a panacea

While digital communication was appreciated in other contexts, neither the youths nor the community workers considered such virtual distance desirable in managing substance use problems. They shared a cautious and nuanced view on this subject. The greatest reason they

reported for being reluctant about this kind of project was the loss of human relationship in interventions, which the youths qualified as an essential need.

> What happens with technology is that it's cold. It's not human. Human contact is essential. No one wants robots! We would want an application that allows us to talk to someone who knows about substance use issues and who can go out in-person if necessary.

> Alex, 23 years old

The community workers agreed and drew on their experiences to describe the limits of written communication using ICT (expression, intention, interpretation) for the purposes of psychosocial intervention. Given the instability of lifestyles associated with substance use, having access to an individual's context, emotions, and non-verbal expressions is essential. Moreover, according to the practitioners, a harm reduction approach is inherently based on this close relationship. This is why both groups perceived ICT as being primarily useful for connecting youths, youth workers and resources, while serving to raise awareness and provide information.

A toolbox for practitioners

Given the lack of information on PAS and the limited tools available to community workers to intervene in the area of harm reduction, the workers extended the youths' idea to the intervention level and suggested developing a site that would pull together various resources for harm reduction, from which they could draw according to their needs and those of youth. This could include informational and intervention materials (e. g. a video showing a safe injection).

> The platform could also contain a protected specialized section for harm reduction workers. It would be helpful to have access to information, tools, resources, or intervention strategies based on our needs and those of youths.

> Sylvain, community worker

Challenges in using ICT in relation to PAS

Among the youths, concrete challenges emerged when it came to making use of such interventions in their social context. A platform such as the one mentioned above presents the dual challenge of access to technological devices, and access to free WI-FI connection. A mobile application is problematic if there is a need to download it when away from a WI-FI hotspot. Indeed, it was difficult for youths to see why they would download such an application before experiencing a crisis, and yet having to download it at just such a time would likely prove to be an obstacle.

The youths also raised technological literacy issues. Although most stated they were comfortable with ICT, not everyone was "easily" able to access the information they were looking for (by searching and browsing the Internet). In addition to difficulties in locating information scattered in the digital sphere, there were difficulties in understanding PAS-related information, which often used pharmacological or medical terminology. These were all elements that for some constituted significant obstacles to using ICT for this purpose.

For many of the youths, legal considerations were another important limitation to using ICT in a harm-reduction approach. This was manifested as distrust of police cyber-surveillance practices and other privacy violations (e.g., tracking their IP address) during Web browsing or personal communications.

> It shouldn't be possible for the information you give when you ask for help to be used against you later on. There is certainly a fear that the police will get involved if we search for certain information online...

> Jonathan, 21 years old

The youths and community workers spontaneously raised concerns regarding large-scale distribution on the Internet of potentially sensitive content that could be considered as bordering on incitement to substance use. All agreed there were ethical issues involved in disseminating PAS-related content to the general public, with or without a harm reduction perspective, and they recommended using a secure site accessible to a targeted audience or geared toward professional use.

> It shouldn't make you want to use drugs. A young person sees that a drug exists, that it looks cool, and they will find some...

> Simone, community worker

Finally, for community workers, although the use of ICT as part of an online harm reduction approach raised many questions, they perceived a rapid and unavoidable evolution, with respect to both the phenomenon of "online drugs" and "digital health", trends that are here to stay and whose significance and role in health and intervention today cannot be denied.

DISCUSSION

This study is the first to have documented the views of street youths and community workers on the use of ICT for drug and health intervention. Cellular phones are the main tool for accessing communication platforms for youths, with the network being easily available during the opening hours of public locations providing free WI-FI. Smartphones are also a valuable means of communication regarding substance use, whether for supply, information, or experience-sharing, via messaging, social networks, or certain specialized sites. The suggestions made by the youths in our study regarding the use of ICT directly reflected perceived gaps in existing resources and services for young consumers, which were considered inadequate in relation to their needs, realities, substance use practices, and lifestyles. These youths expressed interest in developing a specialized and up-to-date platform for exchanging information on substances and on how to manage their use, especially in emergency situations. There is clearly room for an interactive function involving professional practitioners in these areas. Community workers, for their part, reported that ICT was rarely used for individualized interventions related to PAS and that they considered it difficult to employ in such a context. Given the increasing complexity of substances and of use patterns, however, the community workers saw a potential for ICT-based tools to help compensate for current deficiencies in practitioners' knowledge and skills when it comes to discussing these topics with youth. The workers also pointed to the value of social networks for disseminating harm prevention or reduction messages in a reactive and targeted manner. Nevertheless, both the youths and community workers were of the opinion that using digital

16

technology to address these issues required respect for values and consideration of the specific needs of youth in a context of marginality, as well as clarification of ethical and even legal issues associated with how information on sensitive subjects is disseminated online.

The confirmation that ICT, including the Internet and social media, is already integrated into the patterns of supply, substance use, and substance use management of these young users is consistent with the literature and with findings on the major role of peer exchange spaces (e.g., social networks, Internet forums) in locating and sharing information on substances and their use, as well as sharing experiences and advice, particularly with a view to reducing the risks associated with substance use (Barratt, Lenton, & Allen, 2013; Murguia, 2007; Thoër & Lévy, 2012; Thoër & Robitaille, 2014; Tighe, Dunn, McKay, & Piatkowski, 2017). These new online venues should be considered in relation to the development of anonymous encrypted online markets (cryptomarket/darknet) and the explosion in online drug sales, now considered to have transformed the drug market (Aldridge & Décary-Hétu, 2014). As in the case of our sample, these spaces for exchange are emerging in a context of gaps in the provision of services to certain vulnerable groups and distrust of the information provided by health professionals (Tighe, Dunn, McKay, & Piatkowski, 2017). They also respond to the challenges perceived by some front-line workers in keeping informed and competent about new substances in circulation and use practices (Barratt, Lenton, & Allen, 2013; Pirona et al., 2017). In a context where it is difficult to obtain official information on substances newly available on the market (Boyer, Shannon, & Hibberd, 2001; Murguia, 2007), users tend to seek information from other users in their community, particularly through Internet discussion forums, or even on the very sites where substances are bought and sold, which develop their own exchange spaces (Van Hout & Hearne, 2015). This emerging phenomenon is the result of doubts about the reliability of the information, advice, indications, and recommendations provided to participants (Boyer, Shannon, & Hibberd, 2001; Falck,Carlson, Wang, & Siegal, 2004; Mitchell, Sweitzer, Tunno, Kollins, & McClernon, 2016; Murguia, 2007; Thoër & Lévy, 2012).

For the street youths, ICT, far from being an innovative approach to prevention and harm reduction, first and foremost represented a tool to address the shortcomings of the health and social services system. For them, it is above all a question of accessing quality information in an understandable language, as well as specialized and respectful services, in order to better manage their substance use and the associated risks. Thus, this study provides a reminder, on the one hand, of the lack of services adapted to the specific needs of young users and, on the other hand, of the importance of planning approaches used for harm reduction interventions (by respecting the values, culture, living conditions, and needs of the target population). In this context, the youths expected technology to provide a means of contacting qualified professionals who would not judge them, particularly in emergency situations. In this sense, therapeutic programmes or other short online therapies (e.g. S*creening, Brief Intervention, and Referral to Treatment* -SBIRT) created for individualized remote support of users who wish to reduce or stop their substance use, did not correspond to their immediate expectations. Other programs, developed for preventive purposes, intended for schools, or focusing mainly on alcohol and cannabis consumption, also did not connect with this out-of-school population, which was more concerned about poly-use than about alcohol and cannabis consumption (Guichard, Roy, Saint-Jacques, Payne-Gagnon, & Gagnon, 2017). Moreover, the youths we met were not looking for a relationship with a "digital algorithm" or a remote counsellor, but were expressly in search of social interaction and a human, emotional relationship, which they considered essential – a vision that was widely shared by the community

workers. For the latter, although ICT was considered essential and complementary in their practices, it could not replace community-based intervention. Rather, it had a role to play in strengthening the knowledge and skills of youth workers not specialized in substance abuse, to enable them to cope with the changing market landscape and the increasing complexity of patterns of use. For these reasons, the participants perceived ICT primarily as a means to promote connections between youths, practitioners, and resources. Some saw this as an opportunity for greater involvement of health professionals in peer-to-peer user exchanges, as it could allow delivery of reliable, easily shareable ('viral') information, that users are seeking and that peers are not always able to provide (Tighe, Dunn, Mckay, & Piatkowski, 2017). Becoming involved in these spaces could in turn afford health and social service professionals a good vantage point on local markets, patterns, practices, and user concerns (Dunn, Mckay, & Piatkowski 2017). In short, one could discern the outline of a kind of virtual practice community for harm reduction, that would integrate users, social and health workers, and that would move closer to online psychosocial support models for specific clienteles (Ali, Farrer, Gulliver, & Griffiths, 2015; Bastiaensens et al., 2015).

While ICT is a promising area for action on harm reduction among young adults (Patnode et al., 2014), its use raises a number of unresolved issues. The challenges and risks of ethical and legal abuse were highlighted and deemed significant, whether for potential service users, for the practitioners who would be employing it, or for the general population which could potentially be exposed to sensitive messages in a virtual that is not well-controlled and poorly regulated. While the literature highlights the benefits of ICT in reaching people in crisis situations, victims of discrimination, people concerned about anonymity, people in self-regulating risky behaviour, and in contributing to the democratization of health information, our results show that insufficiently thoughtful use of digital technology among marginalized minorities could exacerbate injustice and vulnerabilities such as isolation, judicialization, discrimination, or social exclusion (Bedrouni, 2018; Lévy, Dumas, Thoër, Ryan, & Léobon, 2009; Lupton, 2017, 2018; Thoër & Lévy, 2012). Among the participating street youths, the fear of online police surveillance and concerns regarding the traceability of their digital IDs were identified at the outset as a barrier to using ICT in a harm reduction context. Our data do not allow us to affirm this, but it is likely that this issue is more acute among marginalized and homeless clienteles whose life courses expose them more than others to problems of legalization. Other limiting aspects, including those related to the very real digital divide affecting street youth, should be considered, taking into account not only the accessibility and distribution of technological resources, but also the equitable distribution of conditions for access, participation and use (information and networks, knowledge and skills) of these resources, conditions which operate at several levels: material, cognitive, generational, and social (Alexander, Adams Becker, & Cummins, 2016).

Study strengths and limitations

The aim of this study was to perform a first level of exploration regarding the interest and feasibility of harm prevention and reduction initiatives adapted to new digital realities, with young people in situations of high social vulnerability who have first-hand experience of these realities and with youth intervention workers who deal directly with these issues in their daily practice. The variety and richness of these intersecting points of view, which situate the use of ICT relative to the health system's stance with respect to substance use, and highlight its potential and limitations from a harm reduction perspective, are probably the most original and significant contribution of

this study, as these issues have not yet been explored in the literature pertaining to this target population.

The main limitations are the small number of discussion groups conducted with youth (recruited from a single community organization) and community workers (recruited exclusively from the community-based psychosocial intervention sector), as well as the geographical area that was limited to Québec City. Representativeness bias and bias due to data saturation not having been achieved should therefore be considered, and caution should be exercised in interpreting the results. In the youth discussion groups, there were contrasting levels of participation and involvement, with younger people tending to be more withdrawn from discussions and generate fewer ideas, while older participants or those who defined themselves as former users were more reflective and outspoken. It is possible that holding discussion groups dealing with the use of criminalized substances or with which a taboo is associated may have influenced the content of the youth discussions. It is difficult to estimate the impact of this or the level of self-censorship in the statements. However, it was observed that mentioning certain PAS (opiates, cocaine and its derivatives) or injection could make the youths uncomfortable. A greater diversity in practitioners' profiles and sectors of activity, particularly in the field of addiction and harm reduction, would probably have produced richer results in terms of perceptions of needs and assessment of the relevance, potential, or limitations of ICT for practice. Nevertheless, our results are very similar to those obtained previously on a related theme from ten exploratory interviews with professionals working in youth intervention, young adult training, and harm reduction, as well as with police (Pinchinat, 2015). Another limitation of the study could be the recruitment process, as participants were selected on a voluntary basis only. In this sense, it is possible that some participants, particularly among the community workers who were solicited but who did not respond to our invitation, may have had particular characteristics or points of view on the subject, concerning which we have no substantial information.

CONCLUSION

Given the technological shift affecting both drug markets and the user population, it appears useful and relevant to adapt prevention and harm reduction initiatives to new digital realities, making them complementary to existing tools and resources. In the evolving and uncertain context of the legalization of cannabis and the opioid crisis in Canada, there can be no adequate response that does not take into account these new aspects of the circulation of PAS and of substance use patterns in a digital environment. However, ICT use is far from being a panacea or an exclusive response for marginalized populations. It could even be dangerous to rush into such interventions without prior ethical and legal reflection based on the living conditions, values, and needs of the populations for whom they are intended. Otherwise, there is a significant risk that digital interventions will renew or even amplify the mechanisms that produce inequalities and vulnerability in the supply, access, and use of services for the most vulnerable. While this study can already contribute to the development of better informed and more effective interventions for the target population, the issues that it raises should encourage further exploration of the interface between ICT, the health system, and substance use in order to reduce harm for the target groups.

References

Aldridge, J. & Décary-Hétu, D. (2014). Not an 'Ebay for drugs': the cryptomarket 'Silk Road' as a paradigm shifting criminal innovation. *Social Science Research Network*. Retrieved from https://ssrn.com/abstract=2436643 or http://dx.doi.org/10.2139/ssrn.2436643

Alexander, B., Adams Becker, S. & Cummins, M. (2016). *Digital Literacy: An NMC Horizon Project Strategic Brief*. Retrieved from https://www.nmc.org/publication/digital-literacy-an-nmc-horizon-project-strategic-brief/

Ali, K., Farrer, L., Gulliver, A. & Griffiths, K. M. (2015). Online peer-to-peer support for young people with mental health problems: a systematic review. *JMIR Mental Health, 2*(2), e19. doi:10.2196/mental.4418

Arnett, J. J. (2000). Emerging adulthood. A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480.

Bailey, S. & Marshall, R. (2004). Perspectives on substance misuse in young offenders. In I. Crome, H. Ghodse, E. Gilvarry, & P. McArdle (Eds.), *Young People and Substances Misuse* (p. 163-179). London, United Kingdom: Gaskell.

Baribeau, C. & Germain, M. (2010). L'entretien de groupe: considérations théoriques et méthodologiques. *Recherches Qualitatives, 29*(1), 28-49.

Barratt, M. J. (2011, June). *Discussing illicit drugs in public Internet forums: visibility, stigma, and pseudonymity*. Paper presented at the Proceedings of the 5th International Conference on Communities and Technologies, Brisbane, Australia.

Barratt, M. J., Lenton, S. & Allen, M. (2013). Internet content regulation, public drug websites and the growth in hidden Internet services. *Drugs: Education, Prevention and Policy, 20*(3), 195-202. doi:10.3109/09687637.2012.745828

Bastiaensens, S., Pabian, S., Vandebosch, H., Poels, K., Cleemput, K., DeSmet, A., & De Bourdeaudhuij, I. (2015). *Joining in cyberbullying as a bystander: a normative social influence model*. Retrieved from https://www.researchgate.net/publication/271834930_Joining_in_cyberbullying_as_a_bystander_a_normative_social_influence_model

Bedrouni, W. (2018). On the use of digital technologies to reduce the public health impacts of cannabis legalization in Canada. *Canadian Journal of Public Health. Revue Canadienne de Santé Publique, 109*(5-6)*,* 748-75 . doi:10.17269/s41997-018-0117-7

Boyer , E. W., Shannon , M., & Hibberd , P. L. (2001). Web sites with misinformation about illicit drugs. *New England Journal of Medicine, 345*(6), 469-471. doi:10.1056/nejm200108093450619

Brook, J. S., Saar, N. S., Zhang, C., & Brook, D. W. (2009). Psychosocial antecedents and adverse health consequences related to substance use. *American Journal of Public Health, 99*(3), 563-568. doi:10.2105/ajph.2007.127225

Cadet-Taïrou, A., Gandilhon, M., Lahaie, E., Chalumeau, M., Coquelin, A., & Toufik, A. (2010). Drogues et usages de drogues en France. État des lieux et tendances récentes 2007–2009. Saint-Denis, France: OFDT, 2010, 280.

ESPAD, G. (2016). *ESPAD report 2015: Results from the European School Survey Project on Alcohol and Other Drugs*. Retrieved from http://www.espad.org/sites/espad.org/files/ESPAD_report_2015.pdf

Falck, R. S., Carlson, R. G., Wang, J., & Siegal, H. A. (2004). Sources of information about MDMA (3,4-methylenedioxymethamphetamine): perceived accuracy, importance, and implications for prevention among young adult users. *Drug and Alcohol Dependence, 74*(1), 45-54. doi:http://dx.doi.org/10.1016/j.drugalcdep.2003.11.009

Fleury, M. & Grenier, G. (2012). *État de situation sur la santé mentale au québec et réponse du système de santé et de services sociaux*. Québec, Québec: Commissaire à la santé et au bien-être. Retrieved from https://www.csbe.gouv.qc.ca/fileadmin/www/2012/SanteMentale/CSBE_EtatSituation_SanteMentale_2012.pdf

Gagnon, H., Rochefort, L., April, N., Brunelle, N., Haley, N., & Kairouz, S. (2010). *L'usage de substances psychoactives chez les jeunes Québécois: conséquences et facteurs associés*. Montréal, Québec: Direction du développement des individus et des communautés, Institut national de santé publique du Québec.

Geoffrion, P. (1998). Le groupe de discussion. In B. Gauthier (Ed.), *Recherche sociale: De la problématique à la collecte des données* (pp. 303-328). Québec: Presses de l'Université du Québec.

Gibbs, S. M., Brown, M. J., & Muir, W. J. (2008). The experiences of adults with intellectual disabilities and their carers in general hospitals: a focus group study. *Journal of Intellectual Disability Research, 52*(12), 1061-1077. doi:10.1111/j.1365-2788.2008.01057.x

Girard, G. & Boscher, G. (2009). *Les pratiques d'injection en milieu festif. Etat des lieux en 2008. Données issues du dispositif TREND de l'OFDT*. Paris, France: OFDT.

Guichard, A. & Dupéré, S. (2016). Recherche en ligne : de nouvelles possibilités pour la recherche en santé communautaire. In N. V. Valérie Desgroseilliers, Anne Guichard, & Bernard Roy (Eds.), *La santé communautaire en 4 actes : Repères, acteurs, démarches et défis* (p. 336-343). Québec, Québec: Presses de l'Université Laval, Collection Infirmières, communautés et sociétés.

Guichard, A., Guignard, R., Michels, D., Beck, F., Arwidson, P., Lert, F., & Roy, E. (2013). Changing patterns of first injection across key periods of the French Harm Reduction Policy: PrimInject, a cross sectional analysis. *Drug and Alcohol Dependence, 133*(1), 254-261. doi:10.1016/j.drugalcdep.2013.04.026

Guichard, A., Lert, F., Brodeur, J.-M., & Richard, L. (2006). Rapports des usagers au Subutex®: de la reconquête de l'autonomie à la spirale de l'échec. *Sciences sociales et santé, 24*(4), 5-43.

Guichard, A., Lert, F., Calderon, C., Gaigi, H., Maguet, O., Soletti, J., … & Zunzunegui, M. V. (2003). Illicit drug use and injection practices among drug users on methadone and buprenorphine maintenance treatment in France. *Addiction, 98*(11), 1585-1597.

Guichard, A., Roy, É., Saint-Jacques, M., Payne-Gagnon, J., & Gagnon, M. (2017). *Innovative harm reduction strategies among young adults : A rapid review of ICT -based interventions*. Paper presented at the 25th Harm Reduction International Conference (HR17), Montréal, Québec.

Holkup, P. A., Tripp-Reimer, T., Salois, E. M., & Weinert, C. (2004). Community-based participatory research: an approach to intervention research with a Native American community. *ANS. Advances in nursing science, 27*(3), 162-175.

Huỳnh, C., Rochette, L., Pelletier, E., Jutras-Aswad, D., Larocque, A., Fleury, M. J., …& Lesage, A. (2019). *Les troubles liés aux substances psychoactives – Prévalence des cas identifiés à partir des banques de données administratives, 2001-2016.* Montréal, Québec: Institut national de santé publique du Québec. Retrieved from https://www.inspq.qc.ca/sites/default/files/publications/2512_troubles_substances_psychoactives _prevalence_cas_identifies.pdf

Kairouz, S. & Québec, I. d. l. s. d. (2008). *Troubles mentaux, toxicomanie et autres problèmes liés à la santé mentale chez les adultes québécois: enquête sur la santé dans les collectivités canadiennes (cycle 1.2).* Montréal, Québec: Institut de la statistique du Québec.

Kivits, J., Lavielle, C., & Thoër, C. (2009). Internet et santé publique : comprendre les pratiques, partager les expériences, discuter les enjeux. [The Internet and Public Health: Understanding Practices, Sharing Experiences, and Discussing the Issues]. *Santé Publique, 21*(hs2), 5-12. doi:10.3917/spub.098.0005

Krueger, R. A. (1994). *Focus groups: a practical guide for applied research*. New Park, CA: Sage Publications.

Lascaux, M. & Couteron, J.-P. (2015). Nouvelles pratiques au sein d'une société addictogène. [New Practices within an Addictogenic Society]. *Adolescence, T.33 1*(1), 165-176. doi:10.3917/ado.091.0165

Leclerc, P., Roy, E., Morissette, C., Alary, M., Parent, R., & Blouin, K. (2012). *Surveillance des maladies infectieuses chez les utilisateurs de drogue par injection*. Retrieved from https://www.inspq.qc.ca/sites/default/files/publications/2400_surveillance_maladies_infectieuses_utilisate urs_drogue_injection.pdf.

Lesage, A., Bernèche, F., & Bordeleau, M. (2010). *Étude sur la santé mentale et le bien-être des adultes québécois : une synthèse pour soutenir l'action. Enquête sur la santé dans les collectivités canadiennes (cycle 1.2).* Retrieved from http://www.stat.gouv.qc.ca/statistiques/sante/etat-sante/mentale/sante-mentale-action.pdf.

Lévy, J., Dumas, J., Thoër, C., Ryan, B., & Léobon, A. (2009). Internet et santé des minorités sexuelles au Canada : une étude exploratoire. [Internet and the Health of Sexual Minorities in Canada: An Exploratory Study]. *Santé Publique, 21*(hs2), 53-63. doi:10.3917/spub.098.0053

Lupton, D. (2017). Digital health now and in the future: Findings from a participatory design stakeholder workshop. *DIGITAL HEALTH, 3*. doi:10.1177/2055207617740018

Lupton, D. (2018). *Digital Health*. London, United Kingdom: Routledge.

Mateu-Gelabert, P., Guarino, H., Jessell, L., & Teper, A. (2015). Injection and sexual HIV/HCV risk behaviors associated with nonmedical use of prescription opioids among young adults in New York City. *Journal of Substance Abuse Treatment, 48*(1), 13. doi:10.1016/j.jsat.2014.07.002

Merikangas, K., He, J.-P., Burstein, M., A Swanson, S., Avenevoli, S., Cui, L., … & Swendsen, J. (2010). *Lifetime Prevalence of Mental Disorders in U.S. Adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A)* (Vol. 49).

Merkinaite, S., Grund, J. P., & Frimpong, A. (2010). Young people and drugs: next generation of harm reduction. *International Journal of Drug Policy, 21*(2), 112-114.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis*.New Park, CA: SAGE Publications.

Miller, P. G. & Sønderlund, A. L. (2010). Using the Internet to research hidden populations of illicit drug users: a review. *Addiction, 105*(9), 1557-1567. doi:10.1111/j.1360-0443.2010.02992.x

Mitchell, J., Sweitzer, M., Tunno, A., Kollins, S., & McClernon, F. (2016). "I use weed for my ADHD": a qualitative analysis of online forum discussions on cannabis use and ADHD. *PlosOne, 11*(5). doi:https://doi.org/10.1371/journal.pone.0156614

Murguia, E. (2007). *Real Drugs in a Virtual World: Drug Discourse and Community Online*. Landham, MD: Lexington Books.

Nicholson, T., White, J., & Duncan, D. (1998). Dragnet: A pilot study of adult recreational drug use via the WWW. *Substance Abuse, 19*(3), 109-121. doi:10.1080/08897079809511380

Obradovic, I. (2015). Usages de drogues et société addictogène. [Drug use and addictogenic society]. *Adolescence, T.33 1*(1), 177-192. doi:10.3917/ado.091.0177

Paillé, P., & Mucchielli, A. (2016). *L'analyse qualitative en sciences humaines et sociales (4th ed.)*. Paris, France: Armand Colin.

Patnode, C. D., O'Connor, E., Rowland, M., Burda, B. U., Perdue, L. A., & Whitlock, E. P. (2014). Primary care behavioral interventions to prevent or reduce illicit drug use and nonmedical pharmaceutical use in children and adolescents: a systematic evidence review for the U.S. Preventive Services Task Force. *Annals of Internal Medicine, 160*(9), 612-620. doi:10.7326/m13-2064

Patton, G. C. & Viner, R. (2007). Pubertal transitions in health. *Lancet, 369*(9567), 1130-1139. doi:10.1016/s0140-6736(07)60366-3

Pearson, C., Janz, T., & Ali, J. (2013). *Troubles mentaux et troubles liés à l'utilisation de substances au Canada* (82-624-X). Retrieved from https://www.statcan.gc.ca/pub/82-624-x/2013001/article/11855-fra.htm

Perreault, M., Chartier-Otis, M., Djawn White, N., Bélanger, C., Marchand, A., Zacchia, C., & Bouchard, S. (2009). Évaluation d'une consultation en ligne portant sur le traitement des troubles anxieux. *Journal International de Victimologie, 20*, 1-5.

Perreault, M., Lafortune, D., Laverdure, A., Chartier-Otis, M., Bélanger, C., Marchand, A., … & Milton, D. (2013). Obstacles de l'accès au traitement rapportés par des personnes aux prises avec un trouble anxieux. *The Canadian Journal of Psychiatry, 58*(5), 300-305. doi:10.1177/070674371305800508

Pinchinat Jean-Charles, K. (2015). *Jeunes consommateurs de drogues et approches par internet dans une perspective de réduction des méfaits: une étude exploratoire* (Master's thesis). Médecine sociale et préventive. Université Laval. Québec.

Pires, A. (1997). Échantillonnage et recherche qualitative: essai théorique et méthodologique. In D. Poupart, Groulx, Laperrière, Mayer, Pires (Eds.), *La recherche qualitative. Enjeux épistémologiques et méthodologiques* (p. 113-169). Montréal, Québec: Gaëtan Morin.

Pirona, A., Bo, A., Hedrich, D., Ferri, M., van Gelder, N., Giraudon, I., … & Mounteney, J. (2017). New psychoactive substances: current health-related practices and challenges in responding to use and harms in Europe. *International Journal of Drug Policy, 40*, 84-92. doi:10.1016/j.drugpo.2016.10.004

Pujazon-Zazik, M., & Park, M. J. (2009). Marijuana: use among young males and health outcomes. *American Journal of Men's Health, 3*(3), 265-274. doi:10.1177/1557988309340577

Roy, E., Haley, N., Leclerc, P., Sochanski, B., Boudreau, J., & Boivin, J. (2004). Mortality in a cohort of street youth in Montreal. *JAMA, 292*(5), 569-574.

Schwinn, T. M., Thom, B., Schinke, S. P., & Hopkins, J. (2015). Preventing drug use among sexual-minority youths: findings from a tailored, web-based intervention. *Journal of Adolescent Health, 56*(5), 571-573. doi:10.1016/j.jadohealth.2014.12.015

Suris, J. C., Michaud, P. A., Akre, C., & Sawyer, S. M. (2008). Health risk behaviors in adolescents with chronic conditions. *Pediatrics, 122*(5), e1113-1118. doi:10.1542/peds.2008-1479

Thoër, C. & Lévy, J. (2012). *Internet et santé Acteurs, usages et appropriations*. Québec City, Québec: Presses de l'Université du Québec.

Thoër, C. & Robitaille, M. (2014). Le rôle d'Internet dans la construction des risques relatifs à la consommation détournée de médicaments par des jeunes adultes québécois. *Le Temps des médias,* (2), 144-147.

Tighe, B., Dunn, M., McKay, F. H., & Piatkowski, T. (2017). Information sought, information shared: exploring performance and image enhancing drug user-facilitated harm reduction

information in online forums. *Harm Reduction Journal, 14*(1), 48. doi:10.1186/s12954-017-0176-8

Van Hout, M. C. & Hearne, E. (2015). "Vintage meds": a netnographic study of user decision-making, home preparation, and consumptive patterns of laudanum. *Substance Use and Misuse, 50*(5), 598-608. doi:10.3109/10826084.2014.991408

Velter, A., Sauvage, C., Saboni, L., Sommen, C., Alexandre, A., Lydié, N., & Peytavin, G. (2017). Estimation de la prévalence du VIH chez les hommes ayant des relations sexuelles avec des hommes fréquentant les lieux de convivialité gay de cinq villes françaises – PREVAGAY 2015. *Bulletin Épidémiologique Hebdomadaire, 18*, 347-354.

Young, M. M. & Jesseman, R. A. (2014). *Répercussions des troubles liés aux substances sur l'utilisation des services hospitaliers*. Retrieved from
http://www.ccsa.ca/Resource%20Library/CCSA-Substance-Use-Hospital-Impact-Report-2014-fr.pdf.