Bump' It or Dump It? A Qualitative Study exploring the Demand for, and Facilitators and Barriers towards an Anonymous Partner Notification App for STIs among Dutch Students

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Abstract

This study explored the potential need for, attitudes, and motives towards an anonymous partner notification app called Bump' It among Dutch students. Thematic analysis of semi-structured interviews revealed common themes related to attitudes and motives and how these factors could facilitate or hinder app use.

Students generally viewed the app as a positive idea but concerns regarding its necessity and adoption were identified as potential barriers. Attitudes towards partner notification varied, with some valuing anonymity and others emphasizing personal responsibility, which could either facilitate or hinder app adoption. Participants exhibited a casual attitude towards STIs, perceiving them as common and easily treatable, which could hinder app use. Knowledge gaps were identified, particularly regarding asymptomatic infections and accurate risk assessment. The app's social identity, peer adoption, and widespread use were identified as facilitators, while fear of stigma and limited use acted as barriers.

In conclusion, the need for an anonymous partner notification app among Dutch students remains uncertain. Addressing the abovementioned concerns and incorporating facilitating features are crucial for successful app implementation. Future research should further investigate identified facilitators and barriers, explore alternative app formats, and focus on educational interventions to improve partner notification practices among students.

Keywords: Partner Notification App, STI Prevention, Anonymous Partner Notification, Dutch Students

Introduction

There are over 150.000 new infections every year. Those are the numbers on sexually transmitted infections (STIs) in the Netherlands (van Wees et al., 2022). The most commonly diagnosed STIs in 2021 were Chlamydia (+/- 64.000), genital warts (+/- 47.000), genital herpes (+/- 29.000), and Gonorrhoea (+/- 22.000). Less common were diagnoses of Syphilis (1.378), Hepatitis B (785), Hepatitis C (501), and HIV (+/- 325). Despite efforts to decrease these numbers, STIs remain a problem that needs to be addressed. One barrier to reducing the STIs is that the majority of people with an STI is asymptomatic (World Health Organization: WHO, 2022). This not only makes it difficult to stop the spread of STIs, but also poses significant health risks. Namely, if STIs are left untreated, this has negative influences on sexual and reproductive health. For instance, it increases the risk of infertility, cervical and other cancers and pregnancy complications for both mother and child. There are also STIs that have even more serious consequences. For example, HIV/AIDS and Hepatitis B can be deadly if untreated. However, when STIs are diagnosed and consequently treated, they generally do not pose a great threat to people's health. This is why, it is vital that there are effective measures to diagnose STIs on time. One of these measures is partner notification, whereby partners are notified when they have been in sexual contact with someone who tested positive with an STI. One reason partner notification is effective is that it breaks the chain of transmission especially in cases of asymptomatic cases. Since partner notification is so important, new online methods of partner notification are currently being explored. In this study, we wanted to determine what factors would be important for such methods to be effective. Moreover, students are typically a high-risk group for STIs; therefore, we focused on a Dutch student sample as a relevant target group for partner notification. Accordingly, in this thesis, we aimed to answer the following research question: "What are the facilitators or barriers to using a partner notification app among Dutch students engaging in casual sex?"

Partner Notification and Risks in Casual Sex

Partner notification is a particularly important method to slow the spread of STIs. Two groups for which this is particularly relevant are men who have sex with men (MSM) and students. These groups are namely at elevated risk of catching STIs because they more often participate in casual and unprotected sex

(Chow et al., 2019; de Graaf et al., 2017). Since many people with STIs are asymptomatic and therefore unknowingly infectious, it is important that diagnosed people notify their partners to prevent the STI from spreading further. However, in the Netherlands, there is little known about the effectiveness of partner notification methods (van Aar et al., 2012). This study by van Aar and colleagues (2012) also shows that partner notification among MSM in the Netherlands is not optimal. They found that this is to a great extent caused by anonymous partners being unnotifiable. It is suspected that these partners are not notifiable due to not exchanging contact information. However, partner notification in students is less extensively studied. In the Dutch national lifestyle monitor for adolescents (de Graaf et al., 2017), the topic was investigated. The results of the survey showed that when adolescents tested positive for an STI, 75% of the girls and 68% of the boys notified their partner(s). Among students, it is not yet clear what causes them not to notify their partners. It is also unclear if not having contact information is an issue in this group. Accordingly, we aim to fill these gaps by investigating why students may not notify their partners and whether this is related to lack of contact information.

Another factor that may contribute to the high prevalence of STIs in adolescents becomes evident from the lifestyle monitor (de Graaf et al., 2017). This concerns casual sex. Within adolescents, especially highly educated students have been shown to have more sex, more sexual partners, and more positive views towards casual sex. They also more often have sex under the influence of alcohol and use dating apps for sex more regularly. All of these could potentially increase the risk of getting infected with an STI.

Also, of all one-night stands, around 4 out of 10 are unsafe, meaning no condoms are used. Despite this risky behaviour, adolescents generally do not feel at risk and therefore also do not test often for STIs. Together, these factors allow for STIs to continue to spread because infected individuals unknowingly infect their (multiple) partners. There may also be an issue with contact information exchange when it comes to casual sex in the student population. There are no studies showing how students contact casual sexual partners and whether they can reach them afterwards. If it turns out contact information is not shared by casual sexual partners, this would hinder partner notification and correspondingly increase the spread of

STIs in adolescents. One of the aims of this study is to figure out whether this is a barrier to partner notification.

Partner Notification Practices in the Netherlands

Currently, partner notification in the Netherlands is either done by the infected person themselves or by their care provider (GGD). People can inform partners in person or (anonymously) by phone or email. If the care provider handles the partner notification, the GGD would also need contact information of the sexual partners in order to inform them (Soa Aids Nederland et al., 2018). Due to the previously mentioned potential problem that casual partners may not always exchange contact information; it may also not be possible to reach all casual sex partners through the existing partner notification methods. We know that currently 38.5% of all diagnosed STI cases are detected through partner notification (van Wees et al., 2022). This implies that the rest of the diagnosed people were never notified. As discussed before, two factors that may be contributing to this problem are not feeling at risk and not having symptoms. Together, these factors may cause people not to get tested regularly and consequently take longer to get diagnosed. In the meantime, they continue to have (casual) sex, spreading STIs further. So, when people do get diagnosed, it is important that they inform their partners in order to break the chain of transmission. Because if they do not notify them and their partners also do not get tested because they do not feel at risk and have no symptoms, their partners will spread it to even more partners. This resulting in a vicious cycle that facilitates the spread of STIs. It was already established that in adolescents, only 75% of the girls and 68% of the boys notified their partners (de Graaf et al., 2017).

Taken together, only about a third of all STIs are discovered through partner notification, this shows that partner notification (among students) is currently lacking and that insufficient partner notification among students probably contributes to the high prevalence of STIs in adolescents.

Partner notification is recognized by the WHO as a valuable tool to decrease the spread of STIs and is included in it is Global Sexually Transmitted Infections Programme (WHO; Global Sexually Transmitted Infections Programme, n.d.). Also, the European Centre for Disease Prevention and Control (ECDC) considers

partner notification as an essential tool to STI prevention and important part of sexual health care (Lambert et al., 2021). However, within the EU, there are no guidelines on how to apply partner notification. As a result, many states in the EU do not have national guidelines related to partner notification. The ones that do have national guidelines, differ from each other in terms of contact selection, screening procedures and the prescription of preventative treatment. In these countries, they do use the same methods of partner notification as in the Netherlands. Recently, the topic has gained more attention from the ECDC. This is because the ECDC feels that partner notification has been neglected and could help reaching high-risk populations and consequently reduce the spread of STIs. This shows that partner notification is deemed a relevant topic and that innovation is needed, not only in the Netherlands but in the EU as well.

"Bump It": Partner Notification Through an Anonymous App

In this study, we explore the possibility that the lack of contact information causes traditional partner notification methods to be insufficient and investigate an online partner notification method that can work around it. Since it is not possible to reach people if one does not have their contact information, traditional partner notification methods such as through calling or text messages are incapable of reaching those people. A potential new way to reach partners is online partner notification.

From the Corona crisis, we learned that there is technology available for contact tracing without sharing personal information because that is how the CoronaMelder app worked (Boncz, 2021). Online partner notification allows for anonymous internet-based communication and could increase the number of partners notified because no exchange of contact information is necessary, and people can remain anonymous whilst still being provided with a way to contact sexual partners.

We came up with the idea for an app called "Bump it" that would allow for anonymous online partner communication. It would be based on similar technology as the CoronaMelder app, allowing people to bump their phones together to make an anonymous connection. Both parties have to agree to make a connection. The app anonymously stores all the connections someone makes. If someone then tests positive for an STI, they can enter this in the app, which can then let all the connected partners know anonymously

they have been in contact with someone who tested positive for an STI. This new method of partner notification could potentially reach partners that could not be reached before. This would help break the chain of STI transmission.

It turns out that there already is an app with a remarkably similar purpose. This app is called WeFlash (Lessard et al., 2019). This app was tailored to an MSM sample. The idea behind it was that sexual partners could bump their phones and that this would allow them to anonymously connect in the app. Users would get reminders to get tested for STIs. The result of the test was entered in the app and if the test was positive, the app automatically sends anonymous notifications to connected sexual partners. However, this app was not successful, and it did not make it to the public domain. Any explanations as to why are unknown.

Since WeFlash failed, we want to first explore if there is a need for a partner notification app and what would be facilitators or barriers to using the app. This is necessary because it is a recently discovered technology and we do not know yet what factors encourage or discourage students to use such an app. Examples of factors that could be facilitating or discouraging app use are perceived risk of STIs or privacy concerns.

Namely, if people feel like they themselves and others are at risk of catching STIs, they may be more motivated to notify partners of potential infections. Additionally, if people feel like the app does not store their data safely, this would violate their sense of privacy and cause them not to download such an app. The goal is to make sure that a potential future app is designed in such a way that it will be successful. Additionally, we want to bridge the gap in knowledge regarding adolescents and partner notification. We aim get some insight into the regular methods of partner notification in this group and to find out whether a lack of contact information is an issue for them.

The Current Study

To find out the facilitators or barriers to using a partner notification app among Dutch students engaging in casual sex, we conducted a qualitative study. The participants were heterosexual students with

active sex lives and engaging in casual sex. They were asked about their attitudes towards STIs, partner notification and the app in a semi-structured interview. We also inquired what app features would be desired, what factors could cause concern and what would drive intentions to use the app. Thematic analysis was used to identify common themes.

Method

Participants

Our sample consisted of eight participants (six females and two males, age ranging from 19 to 25 years old). The inclusion criteria were that they should be heterosexual, between 17 and 25 years old, enrolled in an educational program (in Groningen), and currently or previously engaging in casual sex. In table 1, you can find all participants' age, gender, nationality, and education level.

The recruitment was aimed to take place at the Rijksuniversiteit of Groningen. Flyers were distributed in several faculty buildings, and we planned to use a snowballing method (see Appendix A). We chose this approach because our target population is students in Groningen and because we wanted to try and get a diverse sample. Unfortunately, only one participant responded to the flyers and this participant did not refer any other participants. In reaction to this, the researchers reached out to their personal network and asked friends and acquaintances to participate themselves and/or to ask others to participate in the study. As a result of this, we ended up with a sample established through convenience and snowballing. This also meant that the interviewer knew all participants either directly or indirectly, except for one international student, who reacted to the flyer and therefore was unknown to the interviewer.

Table 1. *Basic demographics of participants.*

Pseudonym	Age	Gender	Nationality	Education level
Christina	21	Female	Polish	Bachelor student
Loes	19	Female	Dutch	Bachelor student
Maartje	20	Female	Dutch	Bachelor student
Pauline	21	Female	Dutch	Bachelor student
Eva	21	Female	Dutch	Bachelor student
Dana	21	Female	Dutch	HBO student
Rutger	23	Male	Dutch	HBO student
Mees	25	Male	Dutch	Master student

Interview Methodology and Procedure

To find out if there is a need for a partner notification app among students in Groningen, we performed a qualitative interview study. We interviewed eight students by following a semi-structured script, consisting of open-ended questions. When determining the sample size, we aimed to get 8-10 participants since this is considered to be sufficient when performing a small thematic analysis project (Braun & Clarke, 2013). The interviews were conducted between 15 March and 11 May 2023. Our aim was to have the interviews one-to-one in person at the University faculty building. Two interviews actually took place at the university. Six interviews were performed in a secluded setting at the researchers' home due to participant preferences and room-availability at the university. The interviews were conducted in English and in Dutch. There was only one interview done in English, this was with the international participant.

Before the interviews would start, the participants were informed about the research topic. This is because sexuality is a sensitive topic and we wanted to make sure that they were aware that a considerable proportion of questions would be personal since it regards their sex life and associated attitudes. We did this to minimize the chance that they would get emotionally distressed from participating in the interview. Participants were also asked to sign an informed consent form to participate in the study and to consent to recording the interview. The information provided and the consent form can be found in Appendix B. We ensured anonymity by using pseudonyms and by changing or excluding any information that could identify the participants.

During the interview, the participants were asked about: a) their sexual habits and experiences, b) safer sex practises, c) their attitude towards STIs, d) their attitudes towards partner notification in general, e) their attitudes towards and intentions to use an anonymous partner notification app and f) what features they would (dis)like in the app (see Appendix C). We also collected some demographics, including age, gender, sexual orientation, nationality, education level and employment status. After the interview, the participants were debriefed.

The interviews varied in length, ranging between 19 and 47 minutes. The participants were offered coffee/tea and a snack during the interview as compensation.

Analysis

We transcribed the interviews and analysed the data using thematic analysis (Braun & Clarke, 2006). We decided thematic analysis would be suitable for our exploratory research purpose because it gives us insight into the underlying attitudes of students regarding partner notification and using an anonymous partner notification app, as well as give us a sense of what factors would facilitate and hinder the use of such an app.

First, we familiarized ourselves with the data by reading the transcriptions multiple times. Next, both authors coded the first interview. We discussed the codes and agreed on the codes we established. Then, we coded the first three interviews and created initial themes by clustering the codes, based on the data. This means that we identified the themes inductively. When identifying the themes, we used a more semantic approach, meaning that the themes were based on the explicit content of the data. The five remaining interviews were also coded and reviewed to see if any new themes had emerged. After this review, no new themes emerged. Next, we determined whether all the themes represented separate factors or if they could be merged into greater, overarching themes. This resulted in five defined themes that describe students' attitudes towards partner notification and explain what factors facilitate and hinder the use of an anonymous partner notification app among students.

Results

From the interviews, five themes emerged related to facilitators and barriers to partner notification through the app. These were: 1) *Personal attitude, Affect and Knowledge about STIs   2) Perceived risk and Personal relevance 3) Relationship strength and Social norms 4) Effort, Accessibility and Feasibility 5) Confidentiality Concerns and Authenticity.* Each theme is discussed with regards to how it relates to partner notification and app use. Also, relevant features of the app flow naturally out of the facilitating and hindering factors that come up in the themes.

Partner Notification Behaviour

One aim of this study was to fill the research gap about how partner notification takes place among students. Before delving into the themes, we present how students are currently notifying their partners to set the baseline for the need for the app, and associated facilitators and barriers.

Notifying partners

There were only two participants that ever tested positive and consequently had to notify a partner. One of them did it in person and the other one sent a message over WhatsApp. Someone else informed a partner of a negative test, and he did this over WhatsApp. This means that there were no participants that tested positive and decided not to inform their partners. Overall, seven out of the eight participants voiced that they would inform their partners if they tested positive.

> Yes [I would notify my partners] (...) I think that's decent towards people, kind of a
> responsibility. (Mees)

There was one participant who was conflicted about whether or not she would inform her partners. She said:

> No, I don't think that me personally, I would reach out: "Hey, I got tested."
> (Christina)

But also, she said:

> If I was meeting someone for longer time, (…) I would get STD's, I
> would tell them. But if it's a person that I just met once on Tinder and never met
> again, then personally reaching out, I don't think I would ever do that. (Christina)

She shared that her most important reasons not to notify personally were stigma, rumours and getting judged, whereas the other participants were not as worried about this. These other participants mostly stressed that they felt it was their responsibility to inform their partners.

All participants stated that they had contact information of their partners and would be able to reach their partners if they wanted to. It differed what kind of contact information they had. It was always a phone number, Instagram and/or Snapchat. When we asked the seven people how they would inform their partners, most participants (five) said that they would send a message.

> I would send a message saying: this is what's going on, I find it really annoying as well. But it is the situation, so maybe you should get tested by your GP. (Eva)

Of the two participants that preferred another method of partner notification, one would prefer to notify her partners in-person and the other would decide between doing it in-person or sending a message depending on how often they see their partner.

An important finding that also came up was that the participants were only willing to inform recent partners of a positive STI test. They said that they would solely inform partners from the last three to six months. They seem to feel that it is weird to inform partners less recent than that.

> I'm not going to message someone I had sex with a year and a half ago, if I just now found out I have an STI. So, the last six months I consider still recent enough to send an app or a message. (Maartje)

Overall, the majority of participants expressed a willingness to notify their partners if they tested positive for an STI, with most preferring to send a message. However, one participant expressed hesitation in personally notifying partners, citing concerns about stigma and judgment. All participants shared that they had contact information of their partners. It was found that participants were only willing to inform recent partners from the past three to six months.

Behaviours increasing the risk of STIs

Previous research shows that there are some behaviours contributing to the spread of STIs among students. These are: not feeling at risk, not getting tested for STIs regularly, being under influence of alcohol or drugs when having sex, not using condoms, and using dating apps for sex (de Graaf et al., 2017). During

the interviews, all of these were confirmed except for using dating apps for sex. Interestingly, using dating

apps for sex was not common in the current sample. Also, when the participants were asked if they

perceived themselves to be at risk, many of them answered that if they had (unsafe) sex, they know that

there is always a risk that they get an STI. However, when we consequently asked them if they thought they

themselves were at risk, they told us with great confidence that they were not really at risk although they

had not recently been tested and had been engaging in unsafe sex.

> I do realise that things can always just go wrong, so there is always a risk. And it's not
> like I've been so well-behaved recently, so there is a possibility [I have an STI], but I
> don't think so. In fact, I'm sure I don't [have an STI]. (Eva)

Something that seems to play a significant role in this is that the participants assumed that getting an STI

means that they would get symptoms. So, only if they get symptoms, they would think they may have an STI.

Also, there are some stereotype views about which type of people would have STIs. With that comes a

smaller perceived risk of getting STIs from partners who are not conforming to that stereotype.

> Like, they are not some junkies, and we don't do drugs. We didn't meet in the club
> or in some shady area and they are my peers, and they just look like they care for
> themselves, so it never occurred to me. So, back then I would definitely say: No, I
> am not at risk. (Christina)

Loes had a similar view, and she also mentioned that when choosing sexual partners, she actually examines

her partners' lifestyle to assess how much risk that partner has for STIs.

> Of course, there is always a risk, but I do think my risk [of catching an STI] is lower
> because I always choose people I know and have some knowledge of their lives. That
> I think: I don't think the chance that you have an STI is very high. (Loes)

In summary, the interviews endorsed that certain behaviours increase the risk of STI transmission

among students, including not perceiving oneself at risk, insufficient STI testing, engaging in sex under the

influence of substances, and not using condoms. Interestingly, using dating apps for sex was not common

among the participants. When asked about their perceived risk, many participants expressed with

confidence that they were not at risk despite engaging in unsafe sex and not recent testing. This may be attributed to the assumption the participants made that STIs only occur with noticeable symptoms and stereotypical views about who is at risk.

In the next section, we will discuss how the themes were applied to and explained attitudes towards partner notification and the anonymous partner notification app.

Personal Attitude, Affect, and Knowledge about STIs

This theme highlights the participants' attitudes, emotions, and knowledge towards STIs, partner notification, and the anonymous partner notification app.

Attitude towards STIs

The participants' attitudes towards sexually transmitted infections (STIs) were characterized by a casual and nonchalant outlook. Most participants expressed that they would not be too upset if they were diagnosed with an STI. They viewed it as a common occurrence within their social circles and believed that it could be easily resolved through treatment. The participants considered STIs as a natural consequence of engaging in (casual) sexual activities.

> I wouldn't really mind if I'm honest. (…) Because it is very common in my
> surroundings and you just take some antibiotics and then it is gone. So yes, the only
> thing is that you want to know if you have it so you can take antibiotics and then
> you're two weeks further and then it's fixed. (Pauline)

It is noteworthy that only one participant expressed finding STIs as dirty. Surprisingly, three participants mentioned that they perceived having scabies as worse than other common STIs among students. Additionally, two participants implied that the act of notifying their partners would upset them more than the potential health implications associated with the infection. For example, when asked if they would be upset if they got an STI, Dana answered:

Yes, quite a bit, I think. But on the other hand, it's more just kind of embarrassing. Also, just because you then have to go and tell people: I have an STI. I know it's easy to get rid of, but it's just not really a pleasant idea. (Dana)

This suggests that they did not perceive getting an STI as such a big problem but rather that notifying their partners was upsetting to them. Furthermore, Mees even mentioned that they would find contracting an STI a funny story to share.

Attitudes towards partner notification

Moreover, participants exhibited diverse attitudes towards partner notification, which could either facilitate or hinder the use of an anonymous partner notification app. Some participants perceived anonymous partner notification as unnecessary, emphasizing that sharing this responsibility directly with partners is an integral part of sexual relationships. They believed that partner notification should be done personally and considered it a shared burden and social plight.

Yeah, I think that [anonymous partner notification] is kinda nonsense because it's a responsibility to just share that with each other. And that it's just part of it. (Rutger)

Well, [partner notification] is socially obligatory, I think. And that person can also pass it on again and then it happens all over again. It's just decent to do that. I actually, think it's the right thing to do. I would find it really ridiculous if you didn't. Even though I know some people who don't. But I think that's a very peculiar thing. (Loes)

The participants feeling this way were less likely to think that the app is a promising idea, were less convinced of a need for the app and were more sceptical towards app adoption among students. In contrast, other participants expressed that the option of anonymous partner notification should be available for those who are uncomfortable sharing their diagnosis or prefer not to notify partners themselves. For example, Pauline said: "It is good though, that for those who want it, that opportunity is there." These participants recognized the usefulness of an anonymous partner notification tool for individuals who value privacy or find

personal notification uncomfortable. These people were more likely to think that the app is a promising idea, were more convinced of a need for the app and were less sceptical towards app adoption among students.

Overall, there was a mixed support for the app depending on the attitude towards the need for anonymous partner notification methods.

Attitudes towards, and need for anonymous partner notification app

Participants generally considered the anonymous partner notification app to be a promising idea; however, they expressed doubts regarding its necessity and level of adoption among users. Some participants acknowledged the potential need for the app, particularly for those who do not have regular sexual partners.

> Not for myself, but I can imagine [the need] being there. Especially for people who don't have regular partners. I do think it's a helpful tool, especially for the people who are more private or do find it uncomfortable to mention it. (Loes)

Others were uncertain about whether people would find it easy to send notifications. For example, Maartje said: "I honestly don't know what other people think about that, whether people find it easy to send a message or not." It was also mentioned by some participants that individuals do not seem to worry too much about STIs, implying a potential lack of concern regarding the use of the app. Mees also felt this way: "I think people are kind of like: yeah, whatever. (…) I think a lot of people don't really worry about STIs." Additionally, some participants simply regarded partner notification as an integral part of having sex and therefore thought the app should not be necessary.

Affect

Moreover, partner notification elicited a range of emotions among the participants. Some expressed negative feelings, such as shame, awkwardness, a sense of being unsafe, feelings of stigma, and the fear of being judged when notifying their partners.

> [I would feel] ashamed and really bad. (…) I definitely would be concerned [about my safety]. (…) I guess people can be nasty. (Christina)

However, most participants shared that they would feel a little uncomfortable or awkward when having to inform partners but that they would be able to get over that quickly and that it simply had to be done. One person was actually indifferent about having to notify their partners. They felt it was no big deal. When asked how they would feel if they had to inform a partner of a positive test, they said they would have been okay. Additionally, some participants indicated that they would not feel bad if they had to inform their partner of a positive test, as the responsibility for the infection could not be solely attributed to one person, considering that it is not always clear who infected whom.

> I think maybe slightly uncomfortable. Because you want to share something positive and when you have to deliver negative news, that's never fun. But you caused it together by doing it unsafe. Then you are not solely responsible I think because it could also have been the other way around. (Eva)

Moreover, the participants differed in their reaction if they were to receive a partner notification message, with some expressing gratitude for being informed, while others expressed anger, betrayal, and shock. After brief consideration, the participants expressing that they would be angry and shocked, and they realised that they would also highly appreciate getting notified regardless of their initial reaction. Christina for example mentioned that her initial reaction would be shock and anger but later she added that she would thank her partner for letting her know.

Knowledge

The participants demonstrated a general lack of knowledge about STIs, testing procedures, prevention methods, and appropriate actions to take when diagnosed with an STI. They expressed the need for the app to provide such information in a comprehensive way. Examples of topics they would like to have information about in the app are: STIs, anticonception, testing, treatment options, and relevant support resources. They believed that incorporating such information within the app would be valuable and informative for users.

Yeah, I think that's really nice to have information about STIs. Like: what is the best thing to do now? And that there might also possibly be phone numbers with it: that's where you can call. Or you can be referred to a site. Things like that, I think would be informative and nice to have included. (Loes)

Perhaps it would be good that in such an app you also offer information right away. Like: hey, you have an STI, this is what you do now. (Mees)

Overall, participants had a casual attitude towards STIs, viewing them as common and easily treatable. This could be a barrier towards app use since students may not feel like it is a problem that needs to be addressed. Attitudes towards partner notification varied, with some valuing the option of anonymous notification and others emphasizing personal responsibility. Therefore, attitude towards partner notification could either facilitate or hinder app use. While the anonymous partner notification app was generally seen as a promising idea, doubts were raised about its necessity and adoption thereby raising a potential barrier towards app use. (Personal) partner notification elicited emotions ranging from shame to indifference and could therefore function as either a facilitator or barrier. Finally, participants lacked knowledge about STIs and related topics and desired comprehensive information within the app. Providing this information in the app would therefore be a facilitating factor.

Perceived Risk and Personal Relevance

Perceived risk and personal relevance were influential factors in shaping the participants' attitudes towards partner notification and their potential acceptance of an anonymous partner notification app. As a result, the participants suggested several app features that could either help with or hinder app use.

Assess partners' risk

The participants expressed a strong desire to have knowledge about which partners were at risk, enabling them to make informed decisions about personal notification.

That the app knows who you need to notify (…) and that you then automatically know: I could send them a message or use the app to notify them. (Eva)

They were averse to the idea of the app notifying partners who were not actually at risk. This concern was a key reason most participants preferred personal partner notification, as it allowed them to have a better understanding of when they contracted the STI and, subsequently, which of their partners were at risk and needed to be informed.

> It's just nice to know who it's from, because then you also know when it's from. (...) then I can go back and reason: who did I see after that, I could have given it to them too. And otherwise, you don't have that clarity. (Pauline)

To persuade these individuals to use the app, participants suggested the inclusion of a feature that would allow them to select who gave them the STI and to register negative STI tests. For example, Loes mentioned: "That if you have had a negative test in the meantime, you can enter that as well. So that you can cut it off." This would help with determining which partners they may have infected and would be particularly beneficial if the partners at risk have gotten tested after the sexual encounter where the infection might have occurred. By registering these negative test results, participants reasoned that they would not need to notify those partners because they either already knew of the infection or apparently did not get infected.

Assess personal risk

Additionally, participants expressed a desire to assess their own risk and suggested that the app should provide information about when the positive test was, approximately how long ago the sexual encounter was, if condoms were used and the sexual orientation of their partners. This information would help them gauge their risk of acquiring STIs. The partners' sexuality was viewed important for this because some STIs are more prevalent among specific populations, such as HIV among men who have sex with men. Therefore, if a bisexual partner notified them, they know they also would have to check for HIV.

> The date when you had sex with certain people and how much time was in between, and when he got that STI. That you yourself can also think: do I have symptoms myself? (Loes)

Personal investment

The participants also raised concerns about the potential impact of the app on the likelihood of receiving personal notifications. Some participants feared that if their partners had access to the app while they themselves did not, personal notifications might be disregarded, assuming the app would handle the task automatically. Pauline was worried about this and said: "I'm just afraid that if this is there, they'll think: it's automatic anyway, and then I won't get a personal message anymore." Conversely, other participants believed that the app could increase the chances of being notified, as it provided an alternative for individuals who were uncomfortable with personal notification. They recognized that receiving an anonymous message through the app, even if not ideal, was preferable to receiving no notification at all.

> If other people apparently find it easier anonymously, it's still nice to get a message, whether anonymous or personal. (Maartje)

Overall, the participants' emphasized the importance of accurately identifying personal risk and partners at risk and preferred having control over the notification process. Having these functions in the app would therefore facilitate app use. Participants also considered the potential impact of the app on personal notifications, with some feeling that it would increase the likelihood of receiving partner notification (a facilitator), while others expressed concerns about reduced personal notifications (a barrier).

Relationship Strength, Social Norms, and Stigma

The participants' perception of their relationships with casual sex partners, in addition to perceived social norms and fear for stigma, played a significant role in shaping their attitudes towards partner notification, and app use.

Relationship strength

The type of relationship emerged as a crucial factor influencing participants' preferences for partner notification methods. Participants who had long-term sexual partners, even if not in a committed relationship, expressed a strong inclination towards personal partner notification. They viewed it as a

responsible and respectful act, indicative of trust and openness in their relationships. For these individuals, notifying long-term partners anonymously through the app was seen as impersonal and strange.

> I think if there was someone, I would want to let them know that it was me personally, that I could reach them outside of the app. And if I actually wanted to let them know it was me, doing it in the app would be a little bit weird and not personal. (Christina)

They emphasized the importance of being able to have open conversations about STIs and saw personal notification as an opportunity to address the topic without it being taboo. For example, Rutger shared: "I just think you should be able to talk about it. So, that you can just talk about it, and that it doesn't have to be a taboo."

Conversely, when it came to one-night stands, some participants expressed a preference for anonymous partner notification through the app. They perceived these encounters as less significant and felt less invested in the personal aspect of the notification process. Anonymity provided a convenient and less involved means of informing these partners. They considered it unnecessary to have extensive conversations about the encounter and believed that a simple anonymous notification sufficed.

> If it was a one-night-stand, I would prefer to do it anonymously because I don't care that much anyway. But if it's someone I've seen more often, I might want to explain it a bit more or something. (Dana)

Social norms

Social perception and peer influence were also significant considerations for the participants. They acknowledged that their decision to use the app would be influenced by the widespread adoption of the app among their peers. If everyone else was using the app, participants were more likely to adopt it as well.

> If it really becomes a whole thing and everyone has it, then you're going to take it yourself as well, of course. So, it kind depends on how important people think it is. (Rutger)

Conversely, if the app was not commonly used, participants felt less inclined to use it themselves. The perceived importance and acceptance of the app within their social circles played a crucial role in their decision-making process.

> I think once quite a lot of people have it; the threshold becomes a bit lower. But if you are one of the first and say to someone you sleep with: "Hey, would you mind downloading my code?" That it would be somewhat special. Then I myself would be like: I don't know what you're talking about. So, I think it only works if everyone does it, because otherwise everyone probably thinks it's stupid. Or it doesn't work. (Maartje)

Stigma

Finally, participants noted that the level of app use could signal certain assumptions or stigmas. If app use was not common, it might be interpreted as an indication that users either had or were likely to have STIs. For example, Rutger said: "If someone has such an app, then they already assume apparently that they will get or have an STI." This potential stigma associated with app use could deter individuals from using it, as they might not want to be associated with such assumptions. This also is a reason that some people felt they would find it hard to bring up the app to partners. If the other partner has the app, all is well but if their partner does not know it, this could cause some anxiety and would hinder app use.

> Yes, I feel like if someone had the app: okay, we are on the same page, we can hook up but I don't know if I would mention it first like: "Oh, do you have this app? I have it, do you want to link?" I don't think that is how it would go. (Christina)

In summary, relationship strength, social norms, and stigma emerged as influential factors that could act as both facilitators and barriers to the use of the partner notification app. The type of relationship strongly influenced participants' preferences for personal or anonymous notification methods, indicating that relationship dynamics could either facilitate or hinder app use. The perception of social acceptance and peer influence played a significant role in shaping attitudes towards app adoption, highlighting the potential for widespread app use as a facilitator. However, participants expressed concerns about potential misuse of

the app and the impact of stigma associated with its use, suggesting that these factors could act as barriers to app uptake and effectiveness.

Effort, Accessibility, and Feasibility

The theme of "Effort, Accessibility, and Feasibility" revolves around the participants' considerations regarding the ease of use, practicality, and integration of the partner notification app with existing systems, and these factors' influence on the app's effectiveness and usability.

Effort

The participants emphasized the importance of an easy-to-use app that required minimal effort. While some perceived using the app as an additional effort, others considered it to be less effort compared to personal notification. The ease of use was a crucial factor in their decision to use the app for partner notification.

> I think really only laxity is what would hold me back. (…) If you already can't be bothered to put a condom on, why would you bother holding that app against someone? (Mees)

> [Staying anonymous] is not a requirement, but it's just a little bit nicer, it's just a little bit less effort and less hassle I guess then. (Eva)

Participants expressed that the app should offer convenience by integrating various functionalities into one platform. They found it practical if the app allowed them to make testing appointments, order test kits, access test results, and perform anonymous partner notification all in one place. They appreciated the idea of working together with STI clinics or healthcare providers by utilizing the app for testing and receiving results. Simplifying these processes by condensing them into a single app streamlined the user experience and reduced the number of actions required.

> [I would like it if] you can make an appointment for testing through that app. Or
>
> being able to order a self kit, that would be helpful. That you no longer have to go to
>
> a GGD or an STI clinic or a GP. Or that you actually collaborate with parties like that.
>
> you can do the test through the app and also get the results there, in that app.
>
> (Pauline)

Accessibility and feasibility

Affordability and practicality were significant concerns raised by participants. They mentioned that if the app had a cost associated with it or proved to be impractical, it would discourage them from using it. The participants therefore wanted the app to be freely accessible, ensuring that financial barriers did not hinder its adoption. They also mentioned that a practical challenge to implementing the app would be for the users to actually remember to bump their phones.

> You also have to think about it too. You've had sex, you're in bed together in the
>
> morning, you have to work at eight o'clock. And at half past six you're still drunk and
>
> say: bye, I'm going. Then at that moment you also have to ... Then it's: oh wait,
>
> before I go, first our phones should bump each other. (Pauline)

Additionally, participants highlighted the need for seamless integration of the app with dating sites. They expressed enthusiasm for the idea of integrating the app into dating platforms, as it would eliminate the need for physically bumping phones and establish automatic connections between matched partners. This integration was seen as particularly useful because they perceive that students find one-night-stand partners mostly through dating apps. They believed that having the app integrated into dating platforms would be a way to reach those people who have the greatest need for an anonymous partner notification app. Participants therefore viewed this integration as a practical solution that would also be more likely to succeed.

Now you have to put those phones against each other. Maybe in that dating app: you

have a match and then maybe you can indicate or click something like: we met and

we had sex. And then maybe you both have to do that, but if you then both indicate

that and it turns out there is an STI in the end, that it works that way. That actually

seems even easier to me. (Pauline)

In summary, participants emphasized the importance of an app that was free, easy to use and required minimal effort, and suggested many features to ensure the correct implementation of these facilitating factors. Furthermore, the positive reception towards integrating the app with dating sites indicates that having this feature would simplify the partner notification process and reach those individuals perceived to be in greater need of the app, thus serving as a facilitator.

Confidentiality Concerns and Authenticity

This theme explores the participants' concerns and considerations regarding the level of anonymity, data protection, and the reliability of messages within the partner notification app.

Confidentiality

Participants expressed concerns regarding the level of anonymity provided by the app. For example, Christina said: "It's not a hundred percent anonymous because you can maybe still track who it will be." These participants believed that the app might not guarantee complete anonymity, particularly if there were limited connections between users. Some participants were not bothered by this as they preferred personal notification, while others felt that the lack of complete anonymity would discourage them from using the app. For, example Loes said: "If it suddenly came out, or if they did find out I have an STI; As I said, I would say it in person anyway, then I wouldn't have too many problems with it."

Data protection was another issue with confidentiality that participants raised. They were concerned that the data stored within the app could be leaked, potentially compromising anonymity. Christina explained: "And also, like data storage, even if it's anonymous for the users, some people know how to hack that stuff." However, some participants were reassured by the data protection legislation in the Netherlands

and believed that the existing laws were sufficient to address their concerns. Mees explained: "I assume with the Dutch AVG legislation, that all will be well. No, I wouldn't worry about that."

Participants also emphasized the importance of maintaining confidentiality within the app. They expressed discomfort with others being able to open the app on their phone and suggested implementing a password feature to enhance security. For example, Maartje mentioned: "I would personally want something of a code on it. (...) Just a simple one, that others can't look and nose around." They also highlighted the need for discreet messaging, as they did not want explicit notifications to be visible to others. Eva illustrated: "If your grandparents are watching and you suddenly get a notification on that app, that would be a bit awkward." Suggestions here included sending a notification (either through the app, email, or SMS) indicating the presence of a new message, which would then require opening the app. Participants who preferred disabling notifications appreciated the idea of having a visual indicator on the app icon to signal the presence of new notifications.

Authenticity

Most participants indicated that they would trust the authenticity of messages received through the app. They believed that individuals who downloaded the app were likely to do so with honest intentions. Maartje explained this: "Someone who downloads such an app probably goes about it honestly because otherwise, you wouldn't download such an app." However, one participant expressed concern that the app could be misused to enter false results and prank people. Despite this, participants viewed messages from the app as reliable and would take them seriously.

> I would see some revenge stuff, that someone is like: that guy did something to me, so one false STD sends everyone a notification, I think that also could happen just to – I don't know, make a nerve-wracking moment for some people or spread a rumour. (…) I would take it seriously when I get a notification, but I wouldn't trust it hundred percent. (Christina)

In summary, concerns regarding app anonymity and traceability can be seen as potential barriers, as participants expressed worries about their privacy and the risk of being identified. However, participants

also emphasized the importance of data protection and confidentiality, suggesting that addressing these concerns through features such as password protection and discreet messaging could serve as facilitators to app adoption. The overall trust in the authenticity of messages received through the app is a facilitator, but the scepticism raised by one participant regarding the potential for false results could be seen as a barrier, indicating the need for ensuring the accuracy and reliability of the app's information and notifications.

Discussion

The aim of this study was to get insight into the partner notification behaviour and its corresponding attitudes and motives among (Dutch) students, and if there is a need for an anonymous partner notification app (like Bump' It) in this group. We also wanted to know what would drive or hinder app use to prevent that the app would fail like WeFlash did (Lessard et al., 2019).

First, we gathered crucial information about the current partner notification practises among students. It was encouraging to find that the majority expressed a willingness to (personally) inform their partners if they tested positive for an STI. The participants reported having access to various means of contacting their partners. This indicates that lacking contact information is not an issue here, as is the case among MSM (van Aar et al., 2012). Also, risk factors previously found to be applicable to Dutch adolescents (de Graaf et al., 2017) were mostly confirmed in the interviews. Namely, the interviewed students did not feel at risk, did not get tested for STIs regularly, regularly were under influence of alcohol or drugs when having sex, and often did not use condoms, which is concerning for the spread of STIs. However, students did not use dating apps for sex as much as would have been expected. This is related to the fact that virtually all participants had long-term casual sex partners, and that one-night-stands were not common among this sample. Since dating app were considered to be used to find one-night-stand partners, it tracks that the students in this sample did not use dating apps for sex much.

Next, we discuss some important attitudes and motives towards STIs and partner notification. While most emphasized partner notification as being a personal responsibility, viewing it as a moral obligation,

others were more concerned with the (negative) personal consequences of personal partner notification and therefore valued having the option of anonymous notification. Interestingly, the participants felt like they had a greater responsibility to inform long-term casual partners than one-night-stands. Due to this, they also thought that anonymous partner notification was more appropriate for one-night-stands. Another notable finding was that the vast majority of participants exhibited a casual attitude towards getting STIS, considering them as common and easily treatable. Additionally, participants experienced cognitive dissonance when assessing personal risk. All participants realize that having unsafe sex puts them at risk of getting STIs, but they perceive themselves – whilst having unsafe sex – not to be at risk. Moreover, participants mentioned that they would solely notify partners they feel could be at risk. However, participants lack the knowledge to accurately decide which partners are at risk. For example, participants linked the presence of symptoms to having an STI, indicating a lack of awareness about asymptomatic infections. Especially taken together with the participants expressing a preference for informing only recent partners, this poses a problem to adequate partner notification.

We also asked the participants about the perceived need for an anonymous partner notification app. When we introduced the Bump' It app, it was generally seen as a positive idea. This suggests that there is potential for an anonymous partner notification app to be well-received by students. However, concerns were raised about the necessity and adoption of such an app. Most participants would choose to personally notify their partners and therefore have no personal need for the app. This suggests that there might not be a strong need for the app but that students do seem to be open towards the option.

Provided that there was a need for the app, we next investigated facilitating and hindering factors towards app use. The app features that flowed from these facilitating and hindering factors can be found in Appendix D. The main facilitators include having feelings of shame towards partner notification, having control over the notification process, the app aiding personal and partners' risk evaluation, the app being easy to use, and the app being free and practical. On the other hand, barriers to app use were identified as: having a casual attitude towards STIs, feeling indifferent about partner notification, viewing partner

notification as a personal responsibility, having long term sexual partners, and having concerns about anonymity, traceability, data protection, and the risk of false results.

One of the most crucial factors that was found could both facilitate or hinder app use among students. This pertains the social identity of the app. The participants felt that if the app were used by all their peers, they would also use the app. However, the opposite is also true, meaning that they would not use the app if no one else was using it. Here, another issue emerges if app use is not widespread. Some participants mentioned that if app use were not common and someone brings up the app, they think this would signal that this person thinks they either have or are at risk of having an STI, which in turn could lead to stigma and would consequently hinder app use. Finally, the participants were concerned that if only a small number of people would use the app, this would undermine anonymity, which would defeat the whole purpose of the app.

An additional topic that was discussed, was to incorporate an anonymous partner notification function in dating apps instead of making a separate app. The participants were enthusiast about this option and felt that this would simplify the partner notification process and would reach those individuals who may benefit the most from the app. They felt this way since they thought students found one-night-stand partners on dating apps and that those people may have the greatest need for the app.

Implications

An important take-away from this study is that an anonymous partner notification app targeted at students should take in consideration what social implications are associated with it. In order for the app to work, one would have to find a way to make sure that use is widespread among students rapidly, to make sure it is a social norm that students want to conform to. For this reason, strategies aimed at promoting widespread adoption and addressing social norms could prove to be vital to ensuring effective implementation.

Moreover, during the interviews the participants experienced cognitive dissonance when it came to their risk perception of STIs. Since risk perception is considered an important determinant of (health) behaviour like for example in the Health Belief Model (Janz and Becker, 1984), it is valuable to be aware of this dissonance and where possible to address it, as it might help make students feel more at risk and may therefore help with changing their behaviour.

Additionally, it was evident that most participants lacked knowledge about STIs and related topics. For example, students not knowing about asymptomatic infections combined with their aversion of notifying partners they perceive not to be at risk, may very well be a contributor to the high rates of STIs among students. Therefore, educating them about STIs and related topics could help them accurately evaluate which of their partners are at risk and could consequently lead to more partners getting notified.

Limitations

Since this is a first exploration of the need for an anonymous partner notification app among Dutch students, we chose to have interviews to collect rich data. To ensure we would get a diverse view of the (Dutch) student population, we meant to interview a diverse sample of students. Unfortunately, because students were not signing up for the study through the flyers, we had to reach out to our personal environment to find participants. This means that the sample may not be as diverse as we would have hoped. Also, due to this sampling method, the interviewer was familiar with seven out of eight participants, which could have led to participants giving more socially desirable answers. Nevertheless, it is likely that the themes that were established in the current sample will be similar to those in the broader student population.

Future Directions

The findings of this study can be used to guide future studies into an anonymous partner notification app. In these studies, greater and more varied samples can be used to go deeper into the currently

established themes that have been shown to comprise relevant facilitators and barriers towards app use. By investigating these factors, a potential anonymous partner notification app can be developed based on these findings, which would help with its successful implementation and would hopefully prevent it from failing like the WeFlash app did (Lessard et al., 2019).

Additionally, the format of a potential anonymous partner notification app needs some more consideration. Because in the current format, there are concerns about stigma and anonymity. The struggle here lies in making sure that those students who need the app, can also actually use the app without compromising anonymity and getting stigmatized. Future studies should therefore investigate in what format the app would be best suited to cater to students' (anonymous) partner notification needs. Fortunately, as long as app use is accepted among peers, there seems to be sufficient willingness among students to use an app for this purpose.

Moreover, we found that the knowledge students currently have about STIs and everything surrounding it appears to be insufficient. Future research should look into ways to improve knowledge and should determine to what extent the lack of knowledge drives the spread of STIs among students. By addressing misconceptions and increasing awareness, we can work towards improving partner notification among students.

Conclusion

In conclusion, while most participants expressed a willingness and ability to personally inform their partners, the introduction of the Bump' It app was seen as a positive idea. However, concerns about the app's necessity and social identity need to be addressed before a successful anonymous partner notification app can be implemented. Future research should delve deeper in the relevant themes that were found to facilitate and hinder app use and should explore alternative app formats to increase the likelihood of the app becoming a success. Finally, we should focus on improving students' knowledge about STIs to promote informed decision-making and improve partner notification in this group.

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Appendix A. Design Flyer

university of groningen

PARTNER NOTIFICATION STUDY

Hi there, are you a heterosexual student engaging in casual sex? We are looking for you!

In this study we will interview participants about a new approach to the decrease the spreading of Sexually Transmitted Infections (STIs). In particular we are investigating partner notification – the uncomfortable messages you either receive or have to send after a positive test. The interview can be done in Dutch or in English and will take about 45 to 60 minutes. Would you like to share your opinion over a complementary cup of coffee/tea and a snack? Send us an email! Take one of the contact strips or scan the QRcode.

Please be aware that you will be asked personal questions about your sex life. Naturally, all your answers will remain anonymous.

Partner notification study
sex.research.RUG@gmail.com

Scan me!

Appendix B. Information and Consent Form

INFORMATION ABOUT THE RESEARCH AND INFORMED CONSENT

**Facilitators and Barriers to using app-based
partner notification?**

PSY-2223-S-0199

Why do I receive this information?

You are being invited to take part in a study about app-based partner notification for Sexually Transmitted Infections (STIs) and the Human Immunodeficiency Virus (HIV). In particular, the present research investigates possible facilitators and barriers to this novel method of reaching out to sexual contacts. This information is to inform you about what you can expect from this specific study.

The project aims to run between 23/1/2023 and 31/08/2023, and it has been approved by the Ethical Committee of Psychology at the University of Groningen. This study is being conducted by the Master students Beatrice Gänzler and Britte Carabain. The project is supervised by Dr. Yasin Koc (Assistant Professor, University of Groningen).

You will first be asked for consent to participate, then you will be asked questions relating to your sexual habits, experiences with and attitudes towards STIs, HIV, partner notification for STIs and HIV. Furthermore, your attitudes and suggestions for a partner notification app will also be assessed. The expected duration for the study is approximately 45 to 60 minutes.

Do I have to participate in this research?

Participation in the research is completely voluntary. However, your consent is needed. Therefore, we ask you to please read this information sheet carefully. If anything is unclear, or you wish to ask questions about the research, please contact y.koc@rug.nl before agreeing to participate. If you decide to not participate, you do not need to explain why, and there will be no negative consequences for you. You have the right to withdraw from the study at all times, including after you have consented to participate in the research.

What do we ask of you during the research?

First, you will first be asked for consent to participate. This will be on paper without your name or signature, and we will ask you to give your consent in the audio recording too. You will be asked to indicate the following personal information: your name, your gender, your place of origin, and your profession (studying, working, etc). Then, you will be asked a number of open questions about the aforementioned topics (See: Why do I receive this information?).

How will we treat your data?

The interview data will be transcribed and used for qualitative analysis. The data will be pseudonymized (i.e., your name will be replaced with another name) and anonymized (i.e., any possibly identifying information such as your place of birth which you might mention during your interview will be changed with a non-identifying information such as a small town or a big city) and will be used for presentation and publication in scientific journals. You will be asked to indicate your gender, name, age, your profession (studying, working, etc) and address during the interview but this information will be anonymized. No other personal information will be asked. If you decide not to provide this information, you are free to do so.

The interviews will only be listened to and transcribed by Beatrice Gänzler and Britte Carabain. They will anonymize the data while transcribing. Dr. Yasin Koc will only read the anonymized transcribed data with pseudonyms used. And the audio recordings will be deleted after transcription (15/05/2023), and transcriptions will be securely saved for 10 years. Therefore, the identity of the participants will not be disclosed to anyone.

If you would like to withdraw your data from the study, you may contact Beatrice Gänzler (b.h.ganzler@student.rug.nl) or Britte Carabain (b.b.carabain@student.rug.nl) before (15/05/2023). After that, your personal data will no longer be considered as such, due to pseudonymisation and anonymisation of the identifiable data. We will have made sure that you cannot be identified from the transcripts and processed data. If we recruited you through the flyer and you sent us an email, you should know that email address only created for the purpose of this study and it will be deleted on May 16th 2023.

What else do you need to know?

If you have any questions about the research, you can email dr. Yasin Koc at y.koc@rug.nl.

If you have any questions or concerns regarding your rights as a research participant, you may also contact the Ethics Committee of Psychology of the University of Groningen: ecp@rug.nl.

If you have questions or concerns regarding your privacy or regarding the handling of your personal data, you may also contact the Data Protection Officer of the University of Groningen: privacy@rug.nl.

As a research participant, you have the right to a copy of this research information.

Please indicate below that you have read the information about the research, and you understand what the research is about, what is being asked of you, which consequences participation can have, how your data will be handled, and what your rights are.

In relation to participation and in relation to consent to processing my personal data (age, gender, name, email address):

[ ] Yes, I consent to participate

[ ] No, I do not consent to participate

[ ] Yes, I consent to the audio recording, and I consent to the processing of my personal data as mentioned in the research information form above.

[ ] No, I do consent to the audio recording, and I do consent to the processing of my personal data as mentioned in the research information form above.

Participant #

Signature

Appendix C. Interview Scheme

MSc Thesis Project: Partner Notification App (Student & MSM Sample)

Interview Questions

First of all, could you tell me about yourself?

  Could you describe yourself?

    How old are you?

    What is your level of education?

    Are you from the Netherlands?

      If yes, do you have a migration background?

      If not, where are you from? Do you have a migration background?

    Do you work? If yes, what do you do for work?

This study is about sexuality and sexual behaviour. I would like to now talk about your sex life.

  First of all, what is your sexual orientation/identity? How do you identify yourself?

  Do you engage in casual sex? (Assuming this is a YES)

  Can you tell me more about this?

  How many partners are we talking about? for example, think about the last 6 months

  How do you find these casual partners?

  Do you engage in safer sex practices? (provide a definition of safer sex)

  Can you elaborate more? Why?

  Do you perceive yourself at risk for STIs or HIV? Why?

  Do you feel it is serious to contract STIs or HIV?

  Have you ever got tested for STIs or HIVs?

    If yes, how often?

    If no, why not? What kind of barriers do you see?

  Are you familiar with PrEP?

    If yes, are you using it?

Now, I want to talk about the concept of partner notification. Have you ever been in a situation where you had to notify someone about a test result?

Do you remember when this happened?

Did you end up notifying your partner(s)? Why? Why not?

How did you notify your partners? (personally, through health care professionals, etc.)

How did you feel when you needed to contact them?

Do you generally have the contact information of those that you have had sex with?

Imagine if you were to test positive for an STI today, would you be able to inform your previous partners that you recently had sexual contact with? Why?

Imagine if you were to test positive for an STI today, would you want to inform your previous partners? Why?

Now, I would like to talk about the other side of the coin. Have you ever been in a situation where you were notified by someone about a test result?

How did you receive notification?

How did you feel when you received the notification?

Would you have preferred this to be anonymous?

Did you end up getting tested? Or did you receive treatment? How?

In this study, we are specifically interested in people's perceptions of an APP designed for partner notification. In this part, we will ask you questions about this app.

(Show the app pictures and explain the procedure) - something like CORONA app but an anonymous version

To what extent would you be willing to use this app? Why?

What would prevent you from using this app? Why?

Would you trust this app? Why?

Privacy, anonymity, reliability

What would make you trust this app? Why?

For instance, if this app was merged with your dating apps, how would you feel?

Or if this app was merged with your general healthcare data through your GP/huisarts or testing centre, how would you feel?

Do you think there is a need for such an app? If so, why?

Would there be other reasons for you to use or not to use this app?

If were to talk about your intentions to use this app, I have some more questions:

Would you be willing to download an app for this purpose? Why?

Do you think your peers / sexual partners would use this app?

If they were to use this app, would you be more willing to use it?

Do you think this app would help you inform more sexual partners or would do this more easily?

I would like to talk a bit more about the general features of this app:

How do you feel about anonymous partner notification in case of STD diagnosis? (provide a definition)

If you were to choose between sending anonymous or identifiable notifications, which one would you prefer? (Pause) Why?

Are there additional functions you would like this app to have?

What features would make you feel your privacy is protected?

Would you be open to receiving messages -besides messages about possible infection- from the app, for example to get reminders to get tested?

Overall, what kind of information would you feel comfortable putting in this app?

What kind of information would you feel comfortable shared with partners in this app?

Any other points you would like to share with us?

Bedankt en tot ziens!

Appendix D. App Features Suggested by Participants

Here, an overview of all features suggested by the participants is provided. The features are grouped by theme.

1) *Personal attitude, Affect and Knowledge about STIs*

Provide comprehensive information about STIs, STI prevention and testing

Provide links to informational websites and phone numbers

Would like if the app told them what to do after testing positive for a STI

2) *Perceived risk and Personal relevance*

Being able to enter which partner infected them

Being in control of what partners are notified

Getting an overview of what partners are at risk

Being able to enter negative test results

Being able to enter condom-use

Receive information about when their partner tested positive

Know what STI partner tested positive on

Would like it if cold sores were included in the app

Get an indication of approximately how long ago the sexual encounter that put you at risk was

Know the sexual orientation of the partners that may have infected them

3) *Relationship strength and Social norms*

Do not need possibility of sending personal message in app

4) *Effort, Accessibility and Feasibility*

Should be easy to use

Should be free

Get a notification to get tested after having linked with a certain number of partners

Incorporate anonymous partner notification in dating apps

Integrate testing appointments, order test kits, access test results, and anonymous partner notification all in one place.

5) Confidentiality Concerns and Authenticity

Having a passcode (and double authentication)

Send discreet messages through the app, SMS, or email to check app when notified by partner

Have visual indicator of new messages on app icon

Would like to be able to change the icon of the app

The name of the app should not indicate that it's about STD's