

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Recreational drug use in the Oslo nightlife setting: Study protocol for a cross sectional time-series using biological markers, self-reported and qualitative data
AUTHORS	Nordfjaern, Trond; Edland-Gryt, Marit; Bretteville-Jensen, Anne Line; Buvik, Kristin; Gripenberg, Johanna

VERSION 1 - REVIEW

REVIEWER	<p>David Wood Guy's and St Thomas' NHS Foundation Trust and King's Health Partners, London, UK</p> <p>I have an extensive clinical, academic and research portfolio in the area of epidemiology of use and acute harms associated with the use of classical recreational drugs and novel psychoactive substances. This includes sub-population surveys (including in situ nightclub surveys that were referenced in this paper) and analysis of seized drugs and/or biological samples (including but not exclusively blood/serum/plasma, urine, sweat, saliva, finger-prick dried blood spot and hair). I have published widely in this area, am co-editor of a textbook in this area, am co-opted to the UK ACMD and an expert advisor EMCDDA.</p>
REVIEW RETURNED	28-Aug-2015

GENERAL COMMENTS	<p>The authors have planned an interesting study to determine the patterns of use of recreational drugs and NPS in Oslo, using a combination of self-reported use and confirmation of use through oral fluid sampling.</p> <p>There are some specific comments that would help the reader understand this study and also for any other groups that wish to conduct similar research.</p> <p>General Comments</p> <ul style="list-style-type: none"> - There is the use of illicit / licit and then recreational drugs / NPS. This is a difficult area, but I think that the better terms would be "recreational drugs / NPS" and then define what an NPS. Illicit / licit is very dependent on individual local / national / international control measures and is also can change over time <p>Introduction</p> <ul style="list-style-type: none"> - The term polysubstance use is controversial and has multiple different meanings, I would suggest you define as two or more drugs being used concurrently (since some groups use polysubstance to mean two or more drugs that can be used independently but within the same year). - The authors use the terms "adolescents", "young individuals", "young adults" – it would be good to truly understand what group the authors wish to include in their study
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	<p>- The reference to 122 “different substances” referring to the NPS, it would be good as the authors appear to have already pre-defined this (although in the methods it appears the panel will be based on the pilot study data), to include what substances will be screened for in an appendix</p> <p>- Similarly, I would include an appendix with which classical drugs will be included</p> <p>Research objectives</p> <p>- These appear well defined, but later the “analyses” section does not really cover what analyses will be undertaken to answer these research objectives</p> <p>Methods and Analysis</p> <p>- Include here how long study will be undertaken for</p> <p>Cross-sectional patron study</p> <p>- Not clear where the inclusion criteria are</p> <p>- What if more or less than 12-15 nightclubs are identified?</p> <p>- Will the same nightclubs be used in each biannual survey? If so, what is the contingency plan if one closes or changes its opening hours / music or patron profile – will it be replaced and how will this be determined?</p> <p>- If they are not to be used repeatedly, how will the authors ensure that there is consistency that the clubs will be representative survey on survey?</p> <p>- The ordering of sample/data collection as written suggests this will all be done, before the study is explained to the participant and consent obtained</p> <p>- What happens if the participant withdraws consent after samples have been collected – can they contact the authors to be removed from the study; if so, how is this done?</p> <p>- What happens if the authors determine someone is intoxicated and then either i) tries to drive away from the venue or ii) is so severely intoxicated they are at risk if they leave on their own?</p> <p>- Do the authors think focusing on nightclubs may fail to capture patterns of drug use in other night-time economy venues (such as bars). The title does not suggest this is only data collection in “nightclubs”, instead it suggests it is more wider across the “nightlife setting”.</p> <p>Cross-sectional staff survey</p> <p>- Can the authors comment on how feasible 500 respondents are? Based on 30 courses, if there are 20 attendees then the authors are looking at very high recruitment rate.</p> <p>- Do the participants complete the survey voluntarily with consent, or is this being done without consent?</p> <p>- What questionnaire will the staff complete – is this the same as the patrons? If so are there implications based on the answers for licence holders etc?</p> <p>Time series</p> <p>- Why lower numbers for the time series than the original study?</p> <p>Semi-structured interviews</p> <p>- The percentage of those recruited seems low, around 3.5%.</p> <p>- The authors need to discuss what number they are thinking of recruiting to contact following the initial survey, and what non-consent rate are they anticipating?</p> <p>- Will those participating be offered time and/or travel expense</p>
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	<p>compensation?</p> <ul style="list-style-type: none"> - If they non-consent will the authors also check that they wish to continue consent to the original study? <p>Assessment / Semi-structured interviews</p> <ul style="list-style-type: none"> - How is NPS going to be defined for patrons in the survey? - Will the substances in the oral fluid screening be adapted over the study period? <p>Analyses</p> <ul style="list-style-type: none"> - These do not address the research objectives - More detail is required on the analyses in relation to time trends, consistency between self-reported and analytically confirmed drug(s) used etc <p>Ethics</p> <ul style="list-style-type: none"> - Can the authors confirm that they have approval to collect biological samples and data from individuals without expressed informed consent? <p>Limitations</p> <ul style="list-style-type: none"> - Need to include discussion that the analytical results may be limited by the extent of the pre-determined analytical screening being undertaken - Discuss what happen if the nightlife scene in Oslo changes and therefore the study is not repeatable over time during the study period
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REVIEWER	<p>Fredrik Spak EPSO Sahlgren Academy U. of Gothenburg</p>
REVIEW RETURNED	07-Sep-2015

GENERAL COMMENTS	<p>Fairly well written but lacking in details of the actual study protocol. The article is mixture of the rational for doing the study and the study details as such. As there is proposed using four different sampling approaches the paper would be clearer if was better described how the data will be combined (or even if all approaches are necessary). The paper also claims that it can give a picture of the prevalence of the usage of some drugs in the Oslo nightlife. That would require a control of the population denominator. I cannot understand that this requirement is met. I am not convinced that this can be done at all in this study. This can be due to: 1. me not understanding you selection procedure (first paragraph on page 6) i.e. under Procedures), or 2. that it is not all clearly described, Actually I do not think the concept prevalence is the correct choice here. But the study still can give a meaningful picture. Altogether there are numerous variables in the various studies that perhaps can contribute to the understanding of the usage of drugs in the night clubs etc. But there is a lack of theoretical explanations for the selection of the variables.</p> <p>The analyses will encounter difficulties if data the various study parts are combined. Further the small sample in the semi structured interview is problematic. It is, e.g., stated that (page 9) Open-ended questions will be given regarding specific situations and states that may increase patron's tendency to use illicit drugs. Here it to me</p>
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	<p>seems as if the authors have not decided as to if this is a qualitative or a quantitative study. It is further stated that this will focus on shared norms etc. This is weak. Quantitatively the study is severely underpowered and quantitatively far to structured. My suggestion is that this section is reconsidered. And if this is not done, it certainly needs to be problematized. Not only from a methodological perspective, but also from a theoretical.</p> <p>In the list of drugs a lacked tobacco.</p> <p>The authors also claim that this can be a technique by which you better can determined prevalence than by population surveys (showing decreasing response rates). That is however not possible as the population denominator is lacking. IN The second paragraph it is further some loose statements. E.g. that young individuals with a strong propensity to use substances are likely to active seek out the nightlife. For one thing is should be referenced, and for the other, is that not the case also by those that do not have this strong propensity, and lastly, using the vague term substances, this would include the majority of all young adults.</p> <p>Suggestions: Rethink the semi structured interview study ort problematize it Rethink your prevalence concept, Rephrase some statements in the background. Add you theoretical foundations. Provide a better understanding of the study parts shall be combined. Present your study variables more closely.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

1. The authors have planned an interesting study to determine the patterns of use of recreational drugs and NPS in Oslo, using a combination of self-reported use and confirmation of use through oral fluid sampling.

There are some specific comments that would help the reader understand this study and also for any other groups that wish to conduct similar research.

Response: Thank you for a thorough review and for constructive comments which improved the manuscript.

General Comments

2. There is the use of illicit / licit and then recreational drugs / NPS. This is a difficult area, but I think that the better terms would be "recreational drugs / NPS" and then define what an NPS. Illicit / licit is very dependent on individual local / national / international control measures and is also can change over time

Response: We agree with the reviewer. In the revised manuscript we consistently use the term 'recreational use' instead of 'illicit/licit use'. NPS has been defined upon first time use in the manuscript.

Introduction

3. The term polysubstance use is controversial and has multiple different meanings, I would suggest

you define as two or more drugs being used concurrently (since some groups use polysubstance to mean two or more drugs that can be used independently but within the same year).

Response: The text now reads:

"The concurrent use of two or more substances, i.e. polysubstance use, increases the risk of negative public health effects even further."

4. The authors use the terms "adolescents", "young individuals", "young adults" – it would be good to truly understand what group the authors wish to include in their study

Response: The main group of interest is young adults aged 18-30 years. This has now been defined and the manuscript has been amended throughout to reflect this.

5. The reference to 122 "different substances" referring to the NPS, it would be good as the authors appear to have already pre-defined this (although in the methods it appears the panel will be based on the pilot study data), to include what substances will be screened for in an appendix. Similarly, I would include an appendix with which classical drugs will be included

Response: Thank you for this suggestion. We have added a table in appendix (Table 1A) which shows the planned drug screening in detail. The table includes both the NPS and the classical drugs.

Research objectives

6. These appear well defined, but later the "analyses" section does not really cover what analyses will be undertaken to answer these research objectives

Response: Thank you for this observation. The analyses section has been aligned with the objectives in the revised manuscript. Although the analyses regarding comparisons between respondents and non-respondents are not postulated as part of the research objectives, they are described in the planned analyses section to reflect that we to some extent will try to determine non-response bias in the study.

The text now reads:

"Analyses

Univariate analyses will be used to describe recreational drug use and the characteristics of users. . Multivariate quantitative approaches, including regression analyses, will be undertaken to assess associations between a wide range of characteristics and drug use. The Cohen's Kappa (κ) coefficient will be applied to test the correspondence between self-reported use and results from OFT. We will use time series analysis to investigate trends in drug use over time. Independent samples t-tests and chi-square (χ^2) analyses will be conducted as appropriate to compare gender and age characteristics among respondents and non-respondents.

The qualitative data will be analyzed using an inductive approach [23,24]. This means that predefined themes from the interview guide will be set aside to search for emerging themes from the interviews that the researcher had not specifically looked for. The patterns, categories and themes will be built from the "bottom-up", and organized into increasingly more abstract units of information [23]. The qualitative in-depth interviews will be analyzed after the transcribed text is coded in the HyperRESEARCH software. Some interviews will be coded by two different researchers, to ensure that the themes are coded in the same way, and to strengthen the validity in the study."

Methods and Analysis

7. Include here how long study will be undertaken for

Response: Suggested change has been made. The text now reads:

"During the study we will obtain four types of data: (1) cross-sectional survey data from patrons outside licensed premises, (2) cross-sectional biological data from patrons outside licensed premises, (3) cross-sectional survey data from staff at licensed premises, and (4) data from individual qualitative in-depth interviews (see also Figure 1). Data collection 1-3 will be repeated bi-annually until 2020."

Cross-sectional patron study

8. Not clear where the inclusion criteria are

Response: We have clarified the inclusion criteria, both for the licensed premises as well as for the study participants.

The text now reads:

Cross-sectional data will be collected from a sample of patrons close to the entrance of strategically selected licensed premises. A modified portal survey methodology will be used, where data will be collected once for each participant, instead of twice (upon entering and exiting licensed premises) as done in previous work [15,16]. Our aim is to increase our knowledge about recreational drug use in the nightlife setting, rather than knowledge about drug intake inside licensed premises, which is why we have chosen this modified method.

In order to establish a sample that covers the broad spectrum of the nightlife setting in downtown Oslo, we will obtain a complete list of licensed premises from the municipality administration. The list will be reviewed by an expert group of relevant authorities. Premises that clearly do not match the inclusion criteria will be excluded. A number of licensed premises will be selected by the experts, using the following criteria: (1) popular and frequently visited licensed premises with peak hours between 11 p.m. and 3 a.m., (2) premises with geographic spread in central downtown Oslo, (3) a focus on the 'party factor', e.g., dancing and high alcohol consumption and (4) premises with different profiles and patron characteristics. A sort of "ethnographic mapping" [17,18] will also be used to ensure that the clubs match the criteria. Similar approaches have been used to select licensed premises for studies in Europe [17,19], the United States [20], and Australia [21]. For the biannual follow-up studies, the same inclusion criteria will be used to select licensed premises.

A total of 20 research assistants will conduct the data collection. They will receive training in recruitment and on the study procedures. The assistants will be divided into four groups (five people in each group) and the data collection will be conducted from 11 p.m. – 4 a.m. on Fridays and Saturdays. Data collection stations are going to be placed close to the entrance of the selected licensed premises and an imaginary line will mark out a selection zone. As patrons cross the line, a research assistant will approach them and invite them to participate. They will offer patrons an informed consent statement, verbally and in writing. When the person is part of a group, the whole group will be asked to participate. Previous research has found the refusal rate to be high when single people from a group are invited to participate [19].

Once patrons consent to participate in the anonymous study, they will be asked to give a breath alcohol test (BAC) and then be asked to complete a questionnaire and provide an OFT. Research assistants will help participants to fill out the questionnaire, if requested. We will record the gender and estimated age of persons who decline to participate. The questionnaire will contain a unique serial number for each respondent and the OFT samples will be given a corresponding number. The BAC level measured by a breathalyzer will be noted on each individual questionnaire. As the results from the breathalyzer will be instantly available, the participants will be informed about their BAC levels should they request it. Throughout the data collection process, the participants will be able to withdraw from the study. The questionnaires as well as the BAC tests, OFT procedures (n=80, respectively) and in-depth interviews (n=5) will be pilot tested among relevant user groups before

formal data collection commences.

9. What if more or less than 12-15 nightclubs are identified?

Will the same nightclubs be used in each biannual survey? If so, what is the contingency plan if one closes or changes its opening hours / music or patron profile – will it be replaced and how will this be determined?

Response: We have now underlined that the same criteria for selecting licensed premises will be used in the bi-annual data collection waves.

The text now reads:

"To establish time series data, we will repeat the survey biannually until 2020 using the same methods described above. That is, we will use the same criteria for selecting licensed premises and for recruiting participants."

10. If they are not to be used repeatedly, how will the authors ensure that there is consistency that the clubs will be representative survey on survey?

Response: Please see our reply to comment #9.

11. The ordering of sample/data collection as written suggests this will all be done, before the study is explained to the participant and consent obtained

Response: Thank you for bringing this to our attention. In the revised manuscript it is made more clear that the study procedures are explained to the respondents before any other procedures are carried out:

"As patrons cross the line, a research assistant will approach them and invite them to participate. They will offer patrons an informed consent statement, verbally and in writing."

12. What happens if the participant withdraws consent after samples have been collected – can they contact the authors to be removed from the study; if so, how is this done?

Response: In order to maintain the anonymity of the respondents it will not be possible to withdraw consent in the aftermath of data collection on site. On site the respondents can withdraw their consent and have their responses deleted at any time. This procedure was also recommended by the Regional Committee for Medical and Health Research Ethics in order to ensure that the anonymity and integrity of the respondents are sufficiently maintained.

The following has been added to the Ethics and Dissemination section:

"(...) Outside the licensed premises, an informed consent statement will be presented verbally and also offered in writing to all participants. Signatures will not be collected in order to maintain confidentiality. Identifying information will not be captured, and so it will not be possible for respondents to withdraw their consent after their data are collected and collated. During the process however, the respondents will be free to retract their consent and have their response deleted."

13. What happens if the authors determine someone is intoxicated and then either i) tries to drive away from the venue or ii) is so severely intoxicated they are at risk if they leave on their own?

Response: We appreciate this comment, and have added the following paragraph in the ethics section about intoxicated persons:

"There are also situations in the data collection outside the licenced premises that potentially could raise ethical issues (...). If the research assistants discover someone who are extremely intoxicated and at risk of harming him-/herself or others, they will be trained to call emergency care, such as the police or ambulance services. Each station outside licenced premises will have a team leader, and this person will have a specific responsibility for the security of the research team."

Regarding driving from the venue under intoxication, the research assistants will be trained to call the police in such cases. Further, this is not a very common situation in Oslo as public transportation covers the city, and that is why this particular issue is not elaborated in detail in the text.

14. Do the authors think focusing on nightclubs may fail to capture patterns of drug use in other night-time economy venues (such as bars). The title does not suggest this is only data collection in "nightclubs", instead it suggests it is more wider across the "nightlife setting".

Response: We fully agree with the reviewer and have changed the text accordingly. We define licensed premises to include e.g. nightclubs and bars and use the term "licensed premises" instead of nightclubs.

Cross-sectional staff survey

15. Can the authors comment on how feasible 500 respondents are? Based on 30 courses, if there are 20 attendees then the authors are looking at very high recruitment rate.

Response: It is very easy to gain access to these courses that are held on a regular basis throughout Norway. The municipalities have previously found it important to contribute to data collection in research projects. Experiences both in Norway and abroad show that almost every participant at the RBS training courses are likely to answer the survey.

16. Do the participants complete the survey voluntarily with consent, or is this being done without consent?

Response: Yes, they will participate voluntarily with consent. This appears more clearly in the text now. Please see our reply to comment #8.

17. What questionnaire will the staff complete – is this the same as the patrons? If so are there implications based on the answers for licence holders etc?

Response: The questionnaire to the staff is not the same as the questionnaire to the patrons. Those completing the forms are anonymous, and so are the venues they work. We have also added the following information to the section about the cross-sectional staff survey to make it more clear that the staff will answer a different questionnaire than the patrons:

"(...) The survey will include items about personal characteristics, participants' observations on drug use at their work place, participants' drug use and their opinions on drug policy"

Time series

18. Why lower numbers for the time series than the original study?

Response: We have changed the text and aim for a similar number of participants as baseline in the follow-ups.

Semi-structured interviews

19. The percentage of those recruited seems low, around 3.5%.

Response: Thank you for this comment, we have clarified the text about the qualitative part of the study. Apparently, the text about the qualitative interviews was misleading, and we have now explicitly written that this is in-depth interviews, and this is why the number of participants is much lower than outside the licenced premises. The text has been rewritten, and the heading has also been changed. 35 in-depth qualitative interviews will, if they are of good quality, constitute a rich qualitative material in this study. Each interview will last for 1-2 hours, and perhaps even longer in some cases. The number of qualitative in-depth interviews will be balanced according to content quality. This is why we have changed the number to 30-40 interviews in the manuscript. The text now reads:

"Qualitative in-depth interviews

The study will also include individual in-depth interviews (n=30-40). We will ask study participants, who report use of recreational drugs other than alcohol within the previous 12 months, to voluntarily leave their phone number to be contacted later for an individual in-depth interview during the day. A similar method to recruit participants has previously been used elsewhere [17,18,22]. The patrons will be able to choose where and when they wish to be interviewed, though they can decline to participate at any time. They will receive a letter of confirmation, which will contain the name, and contact details of the researcher. The patrons will be informed about the voluntary nature of the interviews, that they can withdraw their consent and have their data deleted at any point in time. The interviews will particularly focus on use of MDMA, ecstasy, cocaine, amphetamines and NPS, and informants who report use of these drugs will be purposefully selected to the interviews. We will obtain written consent for the interviews to be recorded. The interviews will be recorded by a digital recorder, and are expected to last for 1-2 hours. The participants will receive compensation of about 32€/300 NOK. The recorded interviews will be anonymously transcribed into text."

"A semi-structured interview guide will be used to explore central themes regarding attitudes, motivations and experiences related to use of alcohol and recreational drugs, with a particular focus on MDMA, ecstasy, cocaine, amphetamine and NPS. The patrons will be encouraged to speak freely, and the semi-structured interview guide will ensure that two core topics are covered. The first topic will be motivation for recreational drug use. This section will delve into positive and negative psychological (e.g. reducing distress and tension, enhanced positive mood, unpleasant psychological feelings of 'coming down' from the drug), social (e.g. peer pressure and social enhancement), somatic (e.g. increased physical performance), and contextual (e.g. lack of alternative rewarding activities to drug use) factors underlying use. Open-ended questions regarding specific situations and states that might increase a patrons' tendency to use recreational drugs, will also be included. This component will focus particularly on shared norms, values and beliefs between the individual and their peers (i.e. cultural factors), which could be relevant to recreational drug use. The second core topic will focus on positive and negative consequences of recreational drug use. This section includes questions related to perceived consequences of drug use on mental and somatic health, social relationships, and work and educational activities."

20. The authors need to discuss what number they are thinking of recruiting to contact following the initial survey, and what non-consent rate are they anticipating?

Response: Since this component consists of qualitative in-depth interviews, we will contact as many as needed to get a sufficient number of interviews for the study (see our response to comment #19). It is difficult to estimate how many informants will decline when called on phone by the researcher, but this is not necessarily a big issue if we get enough phone numbers. The fact that these data do not aim to achieve statistical representativity also mitigate this issue.

21. Will those participating be offered time and/or travel expense compensation?

Response: Thank you for this comment. We agree that this should be explicitly stated in the text. The following has been added to the manuscript: "The participants will receive compensation of about 32€/300 NOK."

22. If they non-consent will the authors also check that they wish to continue consent to the original study?

Response: This will not be possible because data are anonymously collected and there is no way to track individual participants in the original study.

Assessment / Semi-structured interviews

23. How is NPS going to be defined for patrons in the survey?

Response: In the survey, NPS will be broadly operationalized by giving examples of NPS drug classes (e.g. synthetic cannabis, legal highs, spice, research chemicals etc.). This has now been reflected in the manuscript. In the qualitative in-depth interviews the respondents and the researcher will look at a list of all NPS possible to detect in saliva tests. This list will be shown at the end of the in-depth interview. During the in-depth interviews the participants' own definition of NPS will also be discussed.

24. Will the substances in the oral fluid screening be adapted over the study period?

Response: Before new data collection waves are carried out the oral fluid screening repertory will be reviewed. The repertory will be updated with new drugs based on seizures by police and customs as well as updated expert information about new drugs detected in Norway. This has been made explicit in the revised manuscript:

"Before new data collection waves are conducted, the oral fluid screening repertory will be critically reviewed and possibly revised. The repertory will be updated with new drugs based on seizures by police and customs as well as updated expert information about new drugs detected in Norway."

Analyses

25. These do not address the research objectives

Response: Please see our response to comment #6

26. More detail is required on the analyses in relation to time trends, consistency between self-reported and analytically confirmed drug(s) used etc

Response: We have added more information about analyses regarding time trends, consistency between self-reports and OFT as well as the qualitative analyses to the analyses section. Please see our response to comment #6 for further details.

Ethics

27. Can the authors confirm that they have approval to collect biological samples and data from individuals without expressed informed consent?

Response: This is an important question. The study procedures have been carefully reviewed and approved by the Regional Committee for Medical and Health Research Ethics (application No. 2014/192). An integral part of this review was to ensure that the study procedures were in accord with Norwegian health care and data security legislations. Since the quantitative data (questionnaire, BAC

and saliva tests) that will be collected in the study are anonymous, a written consent was not considered necessary for this component by the ethical committee. However, we will present both oral and written information about the study and data storage procedures to all potential respondents. The respondents will also be explicitly informed that participation is voluntary before they give their oral consent or decline to participate in the quantitative part of the study. The in-depth qualitative interviews will obtain explicit written consent as required by Norwegian legislations, and the participants in this part of the study will receive written information about the possibility to withdraw their consent and have their data deleted at any point in time.

Limitations

28. Need to include discussion that the analytical results may be limited by the extent of the pre-determined analytical screening being undertaken. Discuss what happen if the nightlife scene in Oslo changes and therefore the study is not repeatable over time during the study period

Response: The reviewer has a valid point and we have now included a new paragraph in the limitations:

"Further, given the large number of new psychoactive substances (NPS) appearing on the illicit market, and the rapid changes in availability, it is possible that the oral fluids testing will miss some new psychoactive substances being used by the participants. As mentioned earlier, the drugs that will be tested for, will be determined by the results from the very broad spectrum of drugs used in the pilot test samples and also by the list of drugs being confiscated by police and customs in recent years. The likelihood of overlooking many NPS should be limited, as we would expect that a frequently used drug, would be confiscated by the authorities, at some point. Also, we will ask the participants to name the new psychoactive drugs they have used. The same procedure will be used in the follow-ups to ensure that the oral fluid samples are examined for the most relevant drugs."

Reviewer 2:

1. Fairly well written but lacking in details of the actual study protocol. The article is mixture of the rational for doing the study and the study details as such. As there is proposed using four different sampling approaches the paper would be clearer if was better described how the data will be combined (or even if all approaches are necessary).

Response: Thank you for a thorough review and suggestions that helped us to improve the manuscript. Please note that the study does not aim to combine the different data sources. Please see our response to comment #4 for further elaboration regarding this issue.

2. The paper also claims that it can give a picture of the prevalence of the usage of some drugs in the Oslo nightlife. That would require a control of the population denominator. I cannot understand that this requirement is met. I am not convinced that this can be done at all in this study. This can be due to: 1. me not understanding you selection procedure (first paragraph on page 6) i.e. under Procedures), or 2. that it is not all clearly described,

Actually I do not think the concept prevalence is the correct choice here. But the study still can give a meaningful picture.

Response: We agree with the reviewer that the population denominator is lacking and that the study cannot yield exact information about the prevalence in the population. We have thus removed all instances referring to population prevalence in the revised manuscript.

3. Altogether there are numerous variables in the various studies that perhaps can contribute to the understanding of the usage of drugs in the night clubs etc. But there is a lack of theoretical

explanations for the selection of the variables.

Response: The study variables were carefully selected based on previous research findings. We have added one sentence to the questionnaire section in the manuscript to reflect this: "A questionnaire was devised on the basis of variables found to be important in previous work [e.g. 11,12]."

4. The analyses will encounter difficulties if data the various study parts are combined. Further the small sample in the semi structured interview is problematic. It is, e.g., stated that (page 9) Open-ended questions will be given regarding specific situations and states that may increase patron's tendency to use illicit drugs. Here it to me seems as if the authors have not decided as to if this is a qualitative or a quantitative study. It is further stated that this will focus on shared norms etc. This is weak. Quantitatively the study is severely underpowered and quantitatively far to structured. My suggestion is that this section is reconsidered. And if this is not done, it certainly needs to be problematized. Not only from a methodological perspective, but also from a theoretical.

Response: The study does not aim to combine the different sources of data (e.g. qualitative and quantitative data). These two components are included in the study to investigate different aspects of the same phenomena by different methodological approaches. The quantitative approach will allow us to obtain a picture of recreational drug use in the Oslo nightlife setting and may also allow for identification of high risk groups. The qualitative approach will yield in-depth knowledge about motives and consequences of use of recreational drugs. For more information about the changes made to the qualitative part of the study, please see our response to comment #19 by reviewer 1. The text about analyses now contains a part where we describe how the qualitative material will be analyzed. The text about qualitative analyzes now reads:

"The qualitative data will be analyzed using an inductive approach [23,24). This means that predefined themes from the interview guide will be set aside to search for emerging themes from the interviews that the researcher had not specifically looked for. The patterns, categories and themes will be built from the "bottom-up", and organized into increasingly more abstract units of information [23]. The qualitative in-depth interviews will be analyzed after the transcribed text is coded in the HyperRESEARCH software. Some interviews will be coded by two different researchers, to ensure that the themes are coded in the same way, and to strengthen the validity in the study."

5. In the list of drugs a lacked tobacco.

Response: We would like to thank the reviewer for this comment. We have added tobacco to the list of surveyed drugs.

6. The authors also claim that this can be a technique by which you better can determined prevalence than by population surveys (showing decreasing response rates). That is however not possible as the population denominator is lacking. IN The second paragraph it is further some loose statements. E.g. that young individuals with a strong propensity to use substances are likely to active seek out the nightlife. For one thing is should be referenced, and for the other, is that not the case also by those that do not have this strong propensity, and lastly, using the vague term substances, this would include the majority of all young adults.

Response: Please see our response to comment #2 regarding the population denominator. We have added a reference to the manuscript which supports the statement that young adults with a propensity to use drugs are likely to seek out the nightlife setting.

Regarding the second issue raised by the reviewer, we agree that the nightlife setting may be attractive also for those who are not likely to use drugs in a risky pattern. However, the main point of this statement is to inform the readership that we are likely to reach out to the high-risk groups in the

nightlife setting. We do not intend to imply that young adults with less risky patterns of use are absent in nightlife.

Suggestions:

7. Rethink the semi structured interview study or problematize it

Response: We have rewritten and explained more about the qualitative part of the study. We sincerely hope that the rationale and conduct of this component appears more clearly in the revised manuscript.

8. Rethink your prevalence concept

Response: Please see the response to comment #2. The prevalence concept has been removed from the manuscript.

9. Rephrase some statements in the background.

Response: Based on evaluations and feedback from the editor and the two reviewers we have rephrased several statements included in the introduction. These cover the issues related to the population denominator and specifications of our target group as well as the research setting.

10. Add you theoretical foundations.

Response: For the qualitative part of the study, the theoretical foundations for in-depth interviews and analyzes are now described in the text (see also our response to comment #4). We have also added information about the fact that the quantitative study variables were carefully selected on the basis of previous empirical work.

11. Provide a better understanding of the study parts shall be combined.

Response: Please see the response to comment #4. The different study components are intended to investigate different aspects of recreational drug use in the nightlife setting.

12. Present your study variables more closely.

Response: We have added more information about the variables to be included in the questionnaire in the revised manuscript.