Author's response to reviews

Title: Adult Attention-Deficit/Hyperactivity Disorder and nicotine use: a qualitative study of patient perceptions.

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Author's response to reviews: see over
Dear Editor,

Thank you very much for coordinating the review of our manuscript. We found the reviewer's comments extremely helpful and we have incorporated their points into our paper. We believe the paper is better for it.

REVIEWER 1

The study represents qualitative findings on the link between ADHD and Nicotine Dependence. As such it is an interesting and important contribution to the scientific literature. I recommend publication, however I have the following remarks and questions, that are, in your catagories Major Compulsory Revisions

Thank you for this comment.

Background

Please add the observed rates of nicotine use in the general population, to compare the rates in ADHD subjects as given by the authors (ref 11-13).

We have included estimates given for the general population and cited data for the major European Countries, the USA and Switzerland (ref 14 –16)


We have included a paragraph for this important publication. We thank the reviewer for reminding us. It now reads: “In addition, Ivanov et al. suggest that the observed relationships among ADHD, CD, and SUD might result from the impulsivity present within each disorder, and concluded that underlying deficits in inhibitory control might play a central role in many of the behaviors associated with a high risk for SUD [18].”
In the literature there is debate on the role of stimulant treatment for ADHD and development of SUDs, including nicotine dependence. Given the nature of this study, this literature should be summarized in the background section. Please include the following study: Eur Neuropsychopharmacol. 2013 Jun;23(6):542-54. doi: 10.1016/j.euroneuro.2012.06.004. Long-term relationship between methylphenidate and tobacco consumption and nicotine craving in adults with ADHD in a prospective cohort study. Bron TI, Bijlenga D, Kasander MV, Spuijbroek AT, Beekman AT, Kooij JJ.

We have included the following paragraph in the background section: "Moreover, there are contradicting reports on the effects of stimulant medications on smoking behavior among adults with ADHD. Some reports point toward no effect [21], or a very modest decrease in tobacco consumption [22], while other authors associate stimulant treatment with increased tobacco use and nicotine craving in healthy volunteers [23], as well as in affected individuals [24]."

Methods

We have revised and extended the Method section, addressing the concerns of Reviewers I and II in the hope for clarification.

I have four major concerns:

1) To what extend is the sample representative for the group of subjects with ADHD and nicotine dependence?

We recruited the 12 participants of this study from a larger epidemiological study of 134 adult patients who presented consecutively to the ADHD consultation service at the Centre for Addiction Disorders, an outpatient facility of the Zurich University Hospital over a number of six years.

Although the ADHD consultation service was (at that time) physically located in the Centre for Addiction Disorders, it provided treatment to all patients with ADHD and with a wide variety of comorbidities that did not necessarily have to be substance-use disorders. Typically, a patient is recommended to this service by a family physician or a psychiatrist in a private office to validate the diagnosis and/or to initiate – if necessary – stimulant or non-stimulant treatment. Within this regime there is some flexibility, but usually the patient then returns to his or her referring physician. In some cases (e.g., difficult to treat comorbidities) patients stay on.

We therefore believe that our purposefully chosen sample and our findings are representative for our ADHD consultation service in Zurich, but their generalizability is limited due to sampling methodology. Our results should therefore be verified by further studies involving more diverse patient groups. We have addressed the limitations of our study on page 10 of our manuscript. (We would also like to direct attention to our answer to question 3, by reviewer II.)

2) How about the comorbid mental disorders in this group? How was this measured (in the results section is stated that all but two subjects had a comorbid disorder)? How do we know the ideas given are related to having ADHD or can be attributed to other disorders?

Comorbid diagnoses were assessed according to the 10th revision of the International Classification of Diseases (ICD-10). Although we can not know if some ideas expressed are entirely attributable to ADHD, this becomes less relevant in light of the high rates of
psychiatric comorbidities among adults with ADHD. For example, McGough et al. reported that 87% of adults with ADHD had at least one other psychiatric disorder, and 56% had at least two [2]. If comorbidity is a “naturally” occurring aspect of ADHD, it is important to identify views of patients with a wide variety of comorbidities. Our sample was recruited with this in mind.

Again, it must be noted that a theoretical rather than a statistical approach to sampling means that we did not intend to recruit a “representative” or “typical sample of patients,” but rather one that reflects a wide variety of views.

3) What is the influence of stimulant medication on the ideas subjects have on their nicotine use?

Findings on the influence of prescription drugs on tobacco use patterns were heterogeneous. Given that existing literature on the effects of stimulant medication on smokers with ADHD presents conflicting conclusions, we were intrigued to learn how subjects would describe the influence of stimulant medication on their tobacco-use patterns. However, only a few subjects made a clear assertion. The majority believed that the effects of stimulant therapy on nicotine craving wore off quickly, resulting in only a transient decrease in smoking, or that stimulants had no effect on cigarette use or even reinforced it. This supports Hurt et al., Winhusen et al., and Rush et al. [21-23].

4) It is stated that the level of nicotine use and dependence varies greatly. It might be that heavy smokers have different ideas/views towards smoking than less heavy smokers. Is there a rationale for this heterogeneity in the sample?

This is a very interesting question for future research (possibly for a quantitative or mixed-method approach). In this very small sample, we found no such differences.

Results

I have difficulties in distinguishing theme I from theme III. Theme III is also poorly worked out.

After careful consideration of our codes, deliberation, between coders and review of the interviews and our codes we chose to exclude Theme III. (See also the remarks of Reviewer II).

I am surprised to find within theme II both the rebellious/sensation seeking issues and the peer-pressure issues. These seem to me two different types of motivation for smoking?

The second theme, smoking as sensationalism and the search for a positive self-image, demonstrated that some participants primarily initiated tobacco use not to attenuate symptoms of inattention or hyperactivity (differentiation to Theme I “self-medication”), but to live a more exciting lifestyle, to undermine perceived social norms, to enhance their self-image, and to gain access to a desired non-conformist peer-group. Although these issues are different motivations per se, we subsumed these ideas into one theme in an effort to abstract and collapse, following recommendations of qualitative content analysis.

Discussion

The first theme is discussed comparing the results with beliefs in non-ADHD smokers. Why isn’t this done for theme II and III?
We have reworked the Discussion and removed Theme III. For further explanation please see below.

Moreover, "self-medication" in non-ADHD smokers is somewhat strange. So is it possible to use the general population's believes of the effects of nicotine to compare the 'self medication effects' with? What I mean is: "I smoke cause it helps me doing my tasks, which I cannot do without smoking" = theme 1: selfmedication. "I smoke, for it helps me calming down" might be the general effect of nicotine use.

We agree with the reviewer and have added the following paragraph:

“At first glance, the views of our study participants do not differ greatly from explanations given by cigarette-smokers without ADHD. For example, a recent qualitative study of cigarette-smoking college students found that smoking “served as an aid in alleviating anticipated stress”; “helped clear the mind when shifting from one subject to another”; “helped to refocus thoughts during a study session, facilitating greater concentration”; “served as a reward to celebrate the completion of a study session or an examination”; and helped to change the mindset when “transitioning from studying to being social” [61]. However, it must be noted that nicotine effects in adults with ADHD might exceed those in healthy volunteers, because they improve the attention of the former, as well as their clinical symptomatology [62]. Comparisons with healthy volunteers or the general population might therefore be misleading.”

The discussion states: "We had anticipated that subjects would describe a significant influence of stimulant medication on tobacco use patterns.” As mentioned in the 'background' part, I would like to have this better introduced and discussed with more existing literature on this subject.

We have rephrased this passage and added existing literature. It now reads:

“Finally, findings on the influence of prescription drugs on tobacco use patterns were heterogeneous. Given that existing literature on the effects of stimulant medication on smokers with ADHD presents conflicting conclusions, we were intrigued to learn how subjects would describe the influence of stimulant medication on their tobacco-use patterns. However, only a few subjects made a clear assertion. The majority believed that the effects of stimulant therapy on nicotine craving wore off quickly, resulting in only a transient decrease in smoking, or that stimulants had no effect on cigarette use or even reinforced it. This supports Hurt et al., Winhusen et al., and Rush et al. [21-23].

Furthermore, Vansickel et al. recently reported that immediate-release methylphenidate used by smokers with ADHD actually increased both the total number of cigarettes smoked and their carbon monoxide levels [63]. Other investigators did not find significantly increased daily smoking rates in adults with ADHD [22]. It has been suggested that differences in formulation might explain this discrepancy [22]. In our sample, we did not find evidence for a link between smoking patterns and stimulant formulations. “

The final lines of the limitation paragraphs says: "While the views of our study participants did not appear to be significantly different from views of cigarette-smokers without ADHD reported in other studies...” I don’t think the manuscript makes this clear. In discussing theme 1 three other studies are mentioned. But the scale on which the given themes in the
ADHD sample in this study are comparable or are different from the general population is just not clear. To investigate this, the same study should be done in non-ADHD smokers.

We agree with the reviewer and have deleted this paragraph. It now reads:

“The results we have presented should therefore be verified by further studies with more diverse patient groups. Finally, we did not include a non-ADHD comparison group, which could significantly enhance our understanding of the perceived differences in nicotine effects between adults with ADHD and the general population.”

REVIEWER 2

The background was well-written and well-researched with data on comorbidity rates and two theoretical models (self-medication and behavioral disinhibition). The authors also highlighted the value of qualitative research on the perceptions of smoking among individuals diagnosed with ADHD. My enthusiasm for the paper, however, was dampened by weaknesses in the research questions, sample size, methods, qualitative analyses, and interpretation findings. I hope the authors find my comments useful for future revisions of their paper.

We were very grateful for this reviewer’s comments on methodology, especially since it allowed us to clarify this section. We believe that qualitative research can be an important contribution to our understanding of ADHD.

On page 3, the authors described the purpose of their study. The description does not provide enough detail to allow the reader to understand their research questions and assess whether they successfully answered them. Did the authors specifically ask the patients for them to identify “links between ADHD and cigarette smoking”? How did they define “links” in the study and interview? It is also unclear what the authors studied with regards to “role of context” and “influence of prescription medications on tobacco use.” Further elaboration is needed to fully understand what the authors investigated.

We elaborated in more detail the research question and completely rephrased this paragraph. In addition, we have included a shortened version of the topic guide to give the reader a more comprehensive view of our methodology.

“The current study explored how patients with an adult ADHD, who currently smoked, viewed the relationship (- or link) between nicotine use and ADHD, using an inductive qualitative approach that made no initial assumptions about the relationship between ADHD and nicotine use. We further explored how patients perceived the influence of prescription medications (both stimulants and non-stimulants) on patterns of tobacco use.”

Topic Guide (abbreviated)

Main questions

“Can you tell me about your smoking?”

“Have you ever thought about your reasons for smoking?”

“What is the purpose of smoking?”

“What are the effects if you smoke?”
“In your opinion, is there a relationship between symptoms of ADHD and your personal patterns of smoking?”

“If you used prescribed drugs for treatment of ADHD (and/or other mental disorders) now or in the past, did you notice a relationship between your use of these drugs and your patterns of smoking?”

Additional questions

“Did you (do you) notice any changes in (your symptoms of ADHD) when you were smoking?”

“If you ever stopped smoking, did it have an effect on you? What kind? For how long?”

Clarifying questions

“Can you expand a little on this?”

“Can you tell me anything else?”

“Can you give me some examples?”

It would also be helpful to provide more detail about what they examined with regards to other non-prescribed psychotropic substances. It is not until page 8 in the results section that it became clear that they examined the role of these substances on ADHD and not tobacco use.

In the light of reviewer II’s concerns about the inclusion of this research question in general, we decided to remove this section entirely.

2. In general, the inclusion of the research question and findings on the role of non-prescribed substances on ADHD in the paper was not well justified. Given that the main purpose was examining the experiences and perceptions of tobacco use, I would recommend removing that part of the study from the current paper.

As stated above, we followed the advice of the reviewer and removed this part from the current paper.

3. On page 3, the authors indicated that the sample consisted of 12 individuals who participated in a larger study consisting of 134 adult patients with ADHS. I felt there was insufficient detail regarding the recruitment methods of the 12 individuals. I recommend that the authors provide information about selection of participants from the larger study, including inclusion and exclusion criteria. I also suggest that they indicate how many participants were contacted, how many agreed to participate, how many declined, and how many could not be reached. It was unclear if the authors conducted convenient or purposeful sampling.

We have amended the methodology section. It now states:

“We recruited 12 participants from a larger epidemiological study of 134 adult patients with ADHD who had presented to the ADHD consultation service at the Centre for
Addiction Disorders, an outpatient facility of the Zurich University Hospital, Switzerland [13, 42] *(For a description of this service please see our answer to the question one of reviewer 1)*

The larger epidemiological study was conducted to obtain knowledge about the association between ADHD and tobacco consumption in a Swiss sample of adult ADHD patients; previously, research on this subject had stemmed primarily from North America. Our findings were based upon complete data from 100 adult ADHD patients. In this study, which is only published in German, we reported a significantly elevated rate of current smokers in our sample (55%), as compared to 31% in the general Swiss population [13].

In order to more thoroughly examine patients’ beliefs and perceptions about links between ADHD and cigarette smoking, we conducted a series of qualitative interviews using a purposeful sampling plan. All participants included in this study were adults with a diagnosis of ADHD and a current use of tobacco. They were also at least 18 years old and willing to give written informed consent for the study and the digitally recorded interviews. The sample was selected to provide diversity in relation to: (1) level of nicotine dependence (very low to very high); (2) clinical experience (previous in- and outpatient treatment episodes, including comorbidity (ICD-10 F3, F4 + F6); (3) gender (m/f) and age (25-52); (4) marital status (married, single, divorced); and (5) social class (professional, skilled, unskilled, unemployed, recipient of welfare or disability compensation). We also sampled for participants who had participated in a smoking cessation program (8) and for those who had not (4). Fifty-five participants of the larger epidemiological study qualified for inclusion. We were able to reach 48 of them and 12 agreed to participate."

4. On page 3, the authors described the interview procedures and questions. A number of questions were raised that made it difficult to assess the quality of the data collection methods. For example, what “narrative opening questions” were used? Did they include a question about “links between ADHD and cigarette smoking”? The authors’ description of the interview guide did not include a question about “links.”

We have included a shortened version of our topic guide to clarify these concerns.

They also indicated that they explored themes from earlier interviews, but there was no information about the earlier interviews. Who conducted them? When were they conducted? How was that past data used in the current study? I recommend that the authors address these questions as well as indicate whether the past interviews were conducted for the larger study or were from medical records from the outpatient facility. If the latter, did the authors have permission to use that data?

All interviews were conducted by the same researcher. During the larger epidemiological study, no interviews were conducted. Sampling started as described above. We apologize for causing confusion. We intended to explain to the reader that themes and motives identified during the first interviews were explored in the ones that followed—a common procedure in qualitative studies.

5. There were other critical details missing that limited the assessment of rigor of the qualitative analysis. The authors indicated that the patients received German versions of standardized instruments. It was unclear if the qualitative interviews were conducted, transcribed, and analyzed in German. I recommend that the authors provide this
information and describe the process used to translate the findings into English. It was also unclear what experience the research team had with qualitative research and analysis, and what happened when there was disagreement between the two coders.

We have included the following paragraph:

“All interviews were conducted by the same researcher in Swiss German (an Alemannic dialect spoken in the “German-speaking” parts of Switzerland). They were digitally recorded and transcribed verbatim into Standard-German, since Swiss German is not a “written language” by AF. Transcripts were compared with recordings by the research team and validated with patients if necessary. Content analysis was carried out in German. Interpretation of findings and selected quotes from German to English was carried out by ML. Translation errors (grammatical) were discussed between ML and CF, and corrected by CF.”

Translation errors (grammatical) were discussed between ML and CF and corrected by CF.

(It might be interesting to know that German nationals usually do not understand Swiss German; therefore, when a Swiss German movie is shown on German TV, subtitles or dubbing are required.)

Previous research included a qualitative study on the causal beliefs of cannabis using patients with schizophrenia.

Categories were discussed by the research team to validate ratings and achieve consensus. AF applied the final code.

6. On pages 4-9, the organization and large number of quotes made it difficult to understand the study findings. I recommend that the authors provide longer narrative descriptions of findings, and be more selective of the quotes included in that section. I suggest they include quotes that are particularly insightful or illustrative of a key finding.

We follow this suggestion of the reviewer and have revised and greatly shortened the Results section.

7. My concerns about the small sample size of 12 individuals were partially addressed by the authors’ comment that they ended recruitment after reaching saturation. However, repeatedly in the results section, the authors indicated that a finding was reported by one participant or two. It was unclear how saturation was achieved with one or two people’s reports. I wonder if the authors have opportunities to collect more data to fully achieve saturation of some critical findings.

We believe that we reached saturation in our analysis because later interviews did not generate new themes—only additional examples (categories) of the themes that had already emerged and had been subsumed. It may be pointed out that both reviewers suggested collapsing ideas even further (abundance of theme III). A further investigation with this specific sample is unfortunately not possible, since recruitment ended in 2006.

8. In general, theme 3 on “tobacco use as a consequence of comparisons with peers” was unclear and not as well elaborated or supported (only one quote was provided) compared
to the other 2 themes. The title of the theme was confusing when read alone and when read in context of the findings.

Since reviewer I voiced the same concerns, we have carefully deliberated about this issue and reviewed the codes and transcripts of the interviews. We chose to exclude Theme III (See also remarks of Reviewer II), since one of its main elements constitutes peer-group related, induced or mediated, behavior – explanatory models that we subsumed in Theme II. To reflect this element more clearly, we have rephrased Theme II: “Theme II: Smoking as sensationalism, the search for a positive self-image and peer-group-mediated behavior.”

Thank you for continuing to consider our manuscript.

Yours sincerely,

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Dominique Eich