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A Qualitative Approach in Understanding Illness Perception and Treatment Needs in Patients with Gamma Hydroxybutyrate Use Disorder

Harmen Beurmanjer[a, b] Eva M. Asperslag[c] Lisette Oliemeulen[b]
Anna E. Goudriaan[c] Cornelius A.J. De Jong[b] Arnt S.A. Schellekens[b, d]
Boukje A.G. Dijkstra[a, b]

[a]Novadic-Kentron Addictioncare, Vught, The Netherlands; [b]Nijmegen Institute for Scientist-Practitioners in Addiction (NISPA), Nijmegen, The Netherlands; [c]Arkin, Amsterdam, The Netherlands; [d]RadboudUmc, Donders Institute for Brain, Cognition and Behaviour, Department of Psychiatry, Nijmegen, The Netherlands

Keywords
Gamma hydroxybutyrate acid · Abuse and dependence · Qualitative research · Attitude · Addiction · Illness perception

Abstract
Background: The party drug gamma hydroxybutyrate (GHB) is highly addictive. GHB use disorder (GUD) has poor treatment outcome, with relapse rates over 60% within 3 months after detoxification. In order to get a better understanding of the limited treatment success, we explored GUD patients' illness perceptions and treatment needs. ***Methods:*** In a qualitative cross-sectional observational study, using a semi-structured interview based on the works of Kleinmann, illness perceptions were explored among treatment seeking GUD patients (n = 20). The analysis was based on the principles of Grounded Theory by the 2 interviewers and an independent researcher. ***Results:*** GUD patients had mainly positive views toward GHB. GHB was perceived as strongly rewarding and perceived as the solution to psychosocial problems, rather than the cause. After repeated readmissions, GUD patients perceived themselves as addicted to GHB and GHB use as more problematic. They reported a need for personalized treatment goals, which were mainly aimed toward dealing with psychiatric symptoms and social reintegration. ***Conclusion:*** GUD shares many characteristics with other substance use disorders, in line with gradual development from positive reinforcement in early-stage GUD to negative reinforcement in later stages of more compulsive GHB use. Future studies should investigate whether personalization of treatment goals, such as social reintegration, lead to better treatment outcomes.

Introduction

The party drug gamma hydroxybutyrate (GHB) is an endogenous neurotransmitter [1], known for its prosocial [2], relaxing, and erotogenic properties [3], but can also be addictive [4–7]. GHB is also registered and widely prescribed for the treatment of narcolepsy [8]. Main motives for using GHB recreationally include social disinhibition, increased sexual drive, forgetting problems, helping to fall asleep, and replacement for alcohol without hangover [9, 10]. While prevalence of GHB use in most European countries is lower than 1% of the gen-

E-Mail karger@karger.com
www.karger.com/ear

Harmen Beurmanjer
Novadic Kentron Addictioncare
Hogedwarsstraat 3
NL–5261 LX Vught (The Netherlands)
E-Mail harmen.beurmanjer@novadic-kentron.nl

eral population, it is the fourth most common substance in emergency room presentations in Europe [11]. Overdosing of GHB is common due to its narrow boundaries between plasma levels required for the desired effect and plasma levels associated with overdose [7]. Overdose commonly results in temporary coma or in more extreme cases in respiratory depression [12]. GHB users themselves counterintuitively seem not to consider these coma's harmful [13]. Several studies show that recurrent use of GHB can lead to a substance use disorder (SUD), in about 4–21% of cases [14–16]. Dependent users take GHB up to 12 times a day or more [17, 18]. Severe withdrawal symptoms occur when they stop using GHB, including severe autonomic dysregulation, anxiety, delirium, and seizures [19–22]. It is therefore recommended for dependent GHB users to stop using GHB with medical support. Most common detoxification methods are tapering off with high doses of benzodiazepines or with pharmaceutical GHB in a clinical setting [9, 4]. Over 60% of patients with a GHB use disorder (GUD) relapse within 3 months after detoxification [9]. GHB-dependent patients consume relatively more (mental) health care than any other group of patients with (SUD) and are frequently hospitalized at emergency rooms for comas and withdrawal [23, 24]. Given the many negative consequences of GHB use, and limited treatment success of GUD on the 1 hand, versus the positive perceptions about GHB among GUD patients on the other we aim to explore how GUD patients see their own condition/situation of GHB use and what they think should be done to help them. We applied a qualitative approach to illness perceptions, using the most widely studied theoretical model of illness perceptions: the self-regulation model (SRM) [25, 26]. This model proposes that patients form common-sense beliefs concerning their illness, in order to understand and cope with health threats. Illness perceptions can be measured using questionnaires [27], assessing patients' drawings [28, 29], and interviews [30].

A meta-analysis of 45 studies on mainly somatic diseases [31] shows that illness perceptions are linked to patients' coping strategies, treatment seeking behavior, adherence, and outcome [31, 32]. For instance, the more patients view their illness as controllable, the more likely they are to use problem focused coping strategies [31]. Patients who perceive their condition as highly symptomatic, chronic and serious, are more likely to use avoidant coping strategies in dealing with their condition. Importantly, in patients with SUD, perceived controllability is a predictor of recovery [33]. No studies have been conducted in individuals with GUD. The current study aims to provide insight in (1) how dependent users perceive their GHB use and (2) what they need from treatment.

Methods

Design

The proposed study is a qualitative cross-sectional observational study. A qualitative approach was used because personal interviews give a more in depth and detailed account of individuals' perceptions than questionnaires. In accordance with the SRM, we explored believes of participants concerning their GHB use and dependence, and how they coped with this during the interview [25, 26]. To do this, we used the approach of the Explanatory Models of Arthur Kleinmann [34–36]. An explanatory model consists of all opinions about the cause of a disease, the beginning of symptoms, the pathophysiology, the course, and treatment of the disease. The interview had 3 main topics: the development of GUD, the perception of GHB use, and the treatment needs of the participants. The study protocol was approved by the intern institute's scientific committee. Participants participated in the study voluntarily and they were guaranteed anonymity.

Participants

Interviews were held between November 2015 and June 2016, with a total of 20 participants, each of which was interviewed once. Recruitment took place through 3 addiction care facilities in the Netherlands: Novadic-Kentron, Jellinek, and IrisZorg, using snowball sampling. The inclusion criteria were between 18 and 40 years old, having had treatment for GUD (according to DSM-IV criteria) in the past 2 years, and willing to provide informed consent. Exclusion criteria include currently in withdrawal, current acute severe psychiatric disorders such as major depression, bipolar disorders, psychotic disorders, and/or suicidal tendencies. Comorbidity was assessed by treating counselors when participants were asked to participate in the study and by the interviewers on inclusion, based on clinical judgment. All counselors were experienced with screening for psychopathology in patients with GUD. No participants were excluded from the study. To determine if participants were still abstinent in the period before and during the interviews self-report was used, though GHB can be reliably detected in urine within a window of about 12 h [37, 38]. Participants were rewarded with a Euro 20, gift voucher after the interview.

Analysis

All interviews were recorded and transcribed. The analysis was performed based on the principles of Grounded Theory [36, 37] by the 2 interviewers (H.B. & E.M.A.) and one independent researcher (L.O.) specialized in qualitative analysis. During this process, a theory is build based on systematically gathered and analyzed reports of the participants, without trying to test preexisting theories. This allows the data to better resemble the reality of the participants and offer a better insight in and understanding of their perceptions. The analysis started with identifying recurring concepts using "open coding" after the first 5 interviews. In this analytic process, the concepts are identified and their properties and dimensions are discovered in the interview data. Each of 3 analysts

did this separately, after which the concepts were compared. Based on these results, questions were added to the topic list of the next 15 interviews. The concepts found with open coding were then related to categories and subcategories and used to identify similarities and dissimilarities between the participant's stories. Then the interviews were analyzed using "selective coding," focusing on the identified concepts and categories relevant for answering the main research questions on illness perception and treatment needs. The results formed a conceptual framework for formulating answers on the research questions. The team met on a regular basis to discuss both the cluster analysis and proposed thematic categories.

Results

Description of Participants

Participants were between 25 and 35 years (μ = 31 years) old, 60% were male (n = 12). They had a GHB use history of 2–10 years and had been admitted for GHB treatment with an average of 4 times (range 2–30). The treatment consisted of detoxification in a clinic followed by either inpatient or outpatient programs, based on cognitive behavioral therapy for GUD. All participants had also received prior treatment for other comorbid psychiatric disorders, mainly anxiety, (unipolar) mood, and personality disorders. Out of 20 participants, 18 reported to be abstinent for GHB at the time of the interview, 2 participants were using GHB again. Their stories did not differ from the other 18 abstinent participants. Saturation started to occur after 12 interviews.

Development of GUD

Most participants reported regular substance use, mainly cannabis and stimulants such as amphetamine and ecstasy, before they first tried GHB. Substance use started between the age of 12 and 25 years. Most participants were introduced to GHB through friends at parties and after parties. After using GHB, they experienced that they were able to party longer and harder, that they felt more self-assured, had more intense sex, and no hangover the next day. Using GHB was, at first, something one did occasionally in the weekend.

"I only used (GHB) in the weekend, but when I felt bad during the weekdays I sometimes took some GHB and I felt fine again. This use increased over time and GHB became part of my routine."

During this early phase, GHB was often combined with amphetamines, as this allowed participants to party longer. When participants started using GHB during weekdays, the frequency of use increased rapidly. Physical dependence commonly developed over a time period of at least 2 years, with some exceptions of weeks. The combination with amphetamines became less common when participants became dependent on GHB; instead, benzodiazepines were more frequently used to cope with withdrawal.

Reasons to start using during weekdays were feeling hangover from parties in the weekend, skipping a night of sleep, and boredom. Initially, GHB use during weekdays resulted in better functioning at work or study because participants felt more confident, less stressed, and experienced more pleasure in their daily activities. Participants who had depressed moods or were socially anxious felt that GHB made them feel and function better. This was confirmed by their social networks. Under the influence of GHB, people were more active and satisfied with their lives. Participants reported only positive effects of GHB use during this period and experienced no down sides at all. They described it as "wonder drug," "solution for everything," and "perfect antidepressant." Under the influence of experienced positive effects, frequency of use increased. The occasional passing out due to overdosing was not perceived as problematic.

"GHB changed my personality, it's like liquid competences, it made me a 2.0 person instantly. You almost had to do nothing and you got so much in return for using GHB."

After using GHB daily, for a while participants started to feel anxious and experienced tremors/trembling when they weren't using GHB. First, participants did not associate these complaints with GHB use and they solved these by taking more GHB. This process repeated itself to a point where withdrawal symptoms were so severe that participants started becoming aware that they needed to take GHB in order to prevent withdrawal. At this point, school, work, and relationships started to suffer, and it became harder to maintain functioning in everyday situations. When participants were no longer able to maintain their daily activities, the frequency of GHB use increased further. Participants now felt stressed, gloomy, and bored each time the effects of GHB faded out. This led to the point where using GHB was just to prevent withdrawal. GHB was then used in a frequency between once every 15 min to 2 h, and participants were intoxicated 24 h a day. Severe sleeping problems occurred, which were dealt with by using more GHB and overdosing to pass out in order to get some sleep. Participants additionally used benzodiazepines to sleep or prevent withdrawal. These GHB-induced comas would eventually happen on a daily basis.

"You need more and more GHB and it basically controls you day and night, because you need to have it. At one point you start using almost anything (e.g., benzodiazepines) in order to sleep for a few hours."

Perceptions of GHB

Participants generally reported a transition in their perceptions of GHB with increasing use. Initially, they had a rather positive attitude toward GHB. They mentioned that using GHB mainly had advantages for them and quitting GHB mainly disadvantages. Mainly when not using GHB, during periods of abstinence, and after detoxication, participants felt empty and lonely.

Participants compared GHB with alcohol, which they perceived much more harmful for them. They reasoned that after drinking alcohol they felt hungover, and after GHB, they felt fine the next day. GHB use didn't cause any harm to them in the short term. According to the participants, their GUD didn't leave any damage, either physical or psychological. Passing out was mainly a problem for the bystanders and family members, not for participants themselves. When they woke up, they felt fine. Participants described passing out as something positive because they didn't feel anything when they passed out and they could sleep for a while. Even waking up in a hospital was something they got used to and was not considered a relevant issue.

"Oh yes, I passed out all the time and ended up in hospital. It was kind of normal for me. At afterparties it was very common that people passed out. We called it GHB sleep. I don't think it's bad, it's something you accept."

During the interview, participants mentioned that finally their GHB use became problematic and they called themselves dependent. All of them mentioned that it took them multiple treatment admissions to reach this conclusion. Participants reported their main burden to be physical dependence. The schedule of taking GHB every 2 h to prevent withdrawal was perceived as inconvenient. Participants dealt with withdrawal by taking more GHB. Withdrawal symptoms started with heavy sweating, followed by shaking, palpitations, anxiety, and visual hallucinations. When they became hardly able to keep up with withdrawal further on in their GHB dependence they wanted to stop being dependent on GHB. This was the moment to develop more negative perceptions about GHB and the main motivation for detoxification.

"Without GHB I felt like I was dying. My hart pounded so hard in my chest. Everything around me was frightening and intimidating, everything was too much to cope."

During withdrawal, participants experienced high levels of anxiety, panic attacks, and hallucinations. They referred to this as psychological dependence, meaning a combination of complaints such as anxiety, depressive moods, and feeling suicidal. All these problems and negative feelings disappeared instantly when GHB was used again. Depressed mood and anxiety were the main reasons to start using GHB again. During the long period of GHB use, a wide range of problems developed, such as loneliness, high debts, loss of work, and sometimes homelessness. Realizing these problems when being sober increased stress and the need to use GHB again.

Participants reported severe sleeping problems after detoxification. They considered this one of their main problems and were aware that these were the result of their GHB use. During the night they woke up every few hours to take GHB in order to prevent withdrawal and induce sleep. After detoxification, sleeping problems often continued for several months.

Treatment Needs

Participants found it hard to pin point what they needed from treatment. Participants initially tried to quit GHB on their own at home, but few managed to significantly reduce their GHB intake. During home detoxification without medical support the development of delirium and psychotic symptoms was common. The reason why participants first tried to detoxify themselves, instead of seeking professional care, was that they didn't perceive themselves as "addicted", requiring professional treatment.

When participants were "admitted in crisis," after for example being found in a delirious state, they didn't remember the actual admission itself. As their mental state improved during detoxification, they realized that they were admitted and often left the clinic because of lack of motivation for treatment. After failed attempts to quit on their own, participants had themselves admitted in addiction care. Family, particularly parents, played an important role in seeking help. Especially during the first few treatment episodes, participants reported that they didn't want to let their family down and agreed to go through detoxification for the sake of their family. Prior to detoxification, most participants had limited or no expectations about the treatment programs they would enrol after detoxification.

"I had myself admitted to comfort my mother. I thought I will fool the counsellors for a few weeks and then go back to GHB again."

The initial treatment goal of participants was detoxification, so they were no longer physically dependent on GHB. Abstinence was not their goal due to the perceived positive effects of GHB. The suggestion from therapists that it might be better not to use GHB overwhelmed them and caused fear and irritation. Participants wanted to use GHB without being physically dependent on it. Some said that they just played being motivated for abstinence in order not to upset their family. After several relapses they started to realize that control over their GHB use was hard to maintain and motivation for abstinence started to emerge.

"Well, I feel split about quitting GHB. On the one hand I feel so in love with it, it solves all my problems! But on the other side I know that it won't bring me anything in the long run. However, I've never came across something that would make me say that I don't want to use GHB anymore. Even a friend who overdosed on GHB didn't make me want to quit fully."

Participants' treatment needs were mainly aimed toward their psychological and emotional problems. After detoxification, they felt overwhelmed with psychological complaints. Learning how to deal with setbacks, stress, anxiety, depression, and boredom without GHB were often mentioned as main treatment needs. Participants felt that the treatment after detoxification focused too much on GUD, while this was not perceived as their main problem after detoxication.

"As soon as you quit with GHB everything gets far worse. I never felt as bad as after detoxification. Stress and anxiety, it all comes back 10 times stronger as it has ever been. The only solution to this is the evil (GHB) itself, you want to start using again so everything goes away again. This makes it so hard to really make the choice to quit."

Participants mentioned that treatment should also focus on social problems. During treatment, they end the contact with their "user-friends," however, these were usually the only social contacts they had left besides family. Participants wanted help with making new, non GHB-using friends. Without GHB, meeting new people was difficult to them, because they felt insecure to act amongst people when abstinent. This made them socially anxious, which negatively influenced initiating social contacts in order to develop friendships. For some it was almost impossible not to continue meeting other dependent users, because family members or partners were GHB dependent as well. Some wanted to find a new place to live, in order to get away from their old lives and have a fresh start. Others became homeless and needed help in finding proper housing in order to benefit from treatment. Having high debts made this difficult. The latter was also mentioned as something participants would like to have help with in order to get their lives back on track. Another problem that participants faced was how to fill the days with activities now that they were abstinent/sober, especially when school was dropped and/or jobs were lost when they were dependent on GHB. Therefore, they expressed the need for help in finding new employment or education. Without proper meaningful daytime activities boredom became a big problem, which tended to lead back to using GHB in order to fill their empty lives. Social problems caused a lot of stress in participants after detoxification. This combination of problems led to the loss of overview making it hard to adhere to and profit from treatment.

Discussion

The goal of this study was to get a better understanding of the illness perceptions of people with GUD and to identify their treatment needs. Participants in the current study mainly had positive associations with GHB, despite many negative consequences. Participants considered psychological and social problems (e.g., depression and anxiety) their main burden. GHB was mainly seen as a solution to these problems. Concerning treatment needs, participants stated that counselors should focus on psychological problems instead of talking mainly about GUD and abstinence. Participants wanted to learn to deal with their emotions and anxieties and needed help in getting their lives back on track, by getting daytime activities, normal friends, and housing.

Interpreting the data in the context of the SRM [25, 26] of illness perceptions it becomes clear why many GHB-dependent patients get stuck in a loop of relapses. While GHB use was seen as a health threat by clinicians, participants perceived GHB as a solution for other problems that they experienced as health threats. Thus, negative reinforcement was a main driver of continued use of GHB, as also seen in patients with other SUDs [39].

From the interview data, we identified 3 phases in the course of development, which showed similarities to described phases in other SUDs [40]. Based on the reports of the participants, the first phase can be characterized as positive reinforcement phase. During this phase, participants experienced strong rewarding effects of GHB, bigger life satisfaction, no downsides, and a gradual increase of GHB use. By combining GHB with stimulants, such as amphetamines, participants tried to extend their parties.

Second is the dose escalation phase, in which GHB is used every day of the week and multiple times a day. While some of the first signs of GUD started to emerge, users didn't connect these to their GHB use. Taking more GHB instantly solved problems of withdrawal. They had to adapt their daily activities to their increased use because it became harder to function without GHB. This developed into the third phase, which can be categorized as the negative reinforcement phase. GHB had to be used day and night every few hours in order to suppress withdrawal symptoms and negative affect. Participants often turned to combination use with benzodiazepines in reaction to withdrawal symptoms. The initial positive associations with GHB use remained present in this phase. Although users did become aware that something is wrong, consecutive GHB use made them forget this. This led to a situation where they were either awake and intoxicated or sleeping due to a GHB-induced coma by intentional overdosing. During this phase, GHB use was perceived as both the source and the solution to their problems. The described changes in affect and subsequent changes in behavior could be caused by changes in the neurocircuitry, which are also described in the development of other SUDs [41–43].

In our study, participants showed a mainly positive view toward the use of GHB, "it made them a better person." One explanation for the positive view toward GHB was explained by the absence of negative feedback loops. The substance has strong rewarding effects and participants feel no negative effects such as a hangover after alcohol or stimulants use [1]. This and the almost instant intoxicating effects of the substance could explain why the participants remain to have positive associations with GHB. Another explanation is that some studies suggest that GHB has antidepressant properties [44, 45].

The realization that GHB has downsides usually came during the negative reinforcement phase, when participants enrolled into treatment. After detoxification, they realized that the years of active GUD led to limited education, unemployment, social isolation, and or loss of a sense of purpose. This and the remaining positive association toward GHB can lead to a vicious cycle when there is no reasonable alternative for the substance use [46]. For GUD patients, their experienced psychological problems (mainly anxiety and depression) increased after detoxification, this is then followed by renewed GHB use, relapse, and another detoxification, at which point the burden of psychological problems increased again. This process is seen often in patients with SUD, for instance in alcohol [47]. Patients with alcohol use disorder who suffered from comorbid anxiety disorders were more prone to show early relapse after detoxification.

The expressed treatment needs by participants were mainly aimed toward dealing with depression and anxiety and not toward GHB or abstinence. Participants in the current study mentioned that their "real" problems started only after detoxification. According to the participants, treatment for GUD should focus on psychological problems, helping patients get proper housing, a supportive social network, and meaningful daytime activities and/or work. Abstinence was initially not rewarding to the participants, but made them feel worse. This is not uncommon in substance-dependent patients, as after long-term substance use they sometimes have few positive reinforcements left in their life, outside the drug itself [46, 48].

Besides psychological problems, treatment for GUD should, according to the participants, be focused on helping patients get proper housing, a supportive social network, and meaningful daytime activities and/or work. Previous studies also showed that a lack of these basic needs predicts relapse in both alcohol and drug-dependent patients [48]. A review of treatment effects in patient with SUD, and comorbid disorders showed that motivational interviewing is effective in establishing a therapeutic alliance, personal goals, and subsequent treatment retention. Highly structured therapy programs with intensive outpatient treatments, case management, and contingency management are most effective for complex groups of patients [49]. Given the complexity that is seen often in patients with GUD, a similar approach in treating both GUD and comorbid problems could be considered. It is important that the treatment goals are personal and not necessarily directly aimed toward abstinence. Besides psychosocial treatment, pharmacotherapy might also support patients during the process of recovery. Recently, studies [50, 51] prescribing baclofen to GHB-dependent patients after detoxification showed promising results in lowering relapse and increasing treatment adherence.

The current qualitative study was the first in which illness perception in GHB-dependent users was studied. All participants had prior treatment for GUD, and 90% was abstinent at the time of the interview. This suggests selection bias toward a sample of participants motivated for and able to reach abstinence. Participants had a GHB use history of 2–10 years and had been admitted for GHB treatment with an average of 4 times. All participants had also received treatment for other disorders, mainly anxiety, (unipolar) mood, and personality disorders This corresponds to GHB-dependent patients in treatment, as relapse rates, treatment consumption, and treatment reen-

rolment are high [9, 23]. This makes the group likely a good representation of the treatment-seeking patients with GUD. However, the results cannot be extrapolated to the entire GUD population, as nontreatment-seeking GUD users were not included in the study. A recall bias should also be taken into account as participants had to remember what they thought and felt during a period of almost permanent intoxication. In future studies, a longitudinal approach, where participants are interviewed during use, treatment, and after treatment could solve this issue.

Most participants used multiple substances, making it hard to classify certain effects as GHB specific. Differences were clarified as much as possible during the interview, in order to pinpoint which effects were GHB specific. Future studies should explore differences in illness perceptions and treatment needs between patients with different SUD's.

Conclusion

Participants in the current study had mainly positive views toward GHB, while at the same time being aware of their GUD. On the one hand, they mainly perceive GHB as a solution to their psychosocial problems, rather than the cause. On the other hand, they see themselves as dependent on GHB, with many negative consequences. The substance is considered strongly rewarding, without short-term downsides, possibly due to the absence of a negative feedback loop. Problems start mainly after detoxification, when they are confronted with anxiety and dysphoria. The positive associations with GHB use stay even during severe GUD. This is likely to contribute to the high relapse and drop-out rates observed in this population. Participants reported a need for personalized treatment goals, which were mainly aimed toward dealing with psychiatric symptoms and social reintegration. Treatment programs might initially explore patients' perceptions toward GHB and their treatment needs on psychosocial areas. Given the wide range and severity of problems that come with GUD, intensive treatment programs with attention for personal treatment goals could be considered. Future research should focus on studying the effectiveness of this approach.

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None of the authors have a conflict of interest to declare.

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