Check for updates

Received: 4 March 2024 | Accepted: 3 May 2024

DOI: 10.1111/acer.15375

ALCOHOL CLINICAL & EXPERIMENTAL RESEARCH ISBRA

RESEARCH ARTICLE

Are we just talking in circles? Impact of psychoeducation on disease knowledge and relapse in severe alcohol use disorder

Pierre Maurage[1] | Céline Boudehent[2,3] | Louise Ferrié[2] | Nicolas Cabé[2,3] | Anne-Lise Pitel[3]

[1]Louvain Experimental Psychopathology Research Group (LEP), Psychological Science Research Institute, UCLouvain, Louvain-la-Neuve, Belgium

[2]Service d'Addictologie, Centre Hospitalier Universitaire de Caen, Caen, France

[3]UNICAEN, INSERM, U1237, PhIND « Physiopathology and Imaging of Neurological Disorders », Neuropresage Team, Cyceron, Normandie Univ, Caen, France

Correspondence
Pierre Maurage, UCLouvain, Place du Cardinal Mercier, 10, B-1348 Louvain-la-Neuve, Belgium.
Email: pierre.maurage@uclouvain.be

Funding information
Fonds De La Recherche Scientifique - FNRS

Abstract

Background: Psychoeducation constitutes a routine therapeutic practice in most treatment settings for severe alcohol use disorder (sAUD). This technique is considered an efficient way to help patients to learn more about their disease and achieve therapeutic objectives. However, this approach capitalizes on three untested assumptions: namely, that (1) patients with sAUD possess insufficient knowledge about sAUD at treatment entry; (2) patients with sAUD have the cognitive resources to learn new information and benefit from psychoeducation; and (3) psychoeducation positively impacts clinical outcomes.

Methods: We tested these assumptions in two experimental studies. In the first experiment in 66 recently detoxified patients with sAUD and 102 matched healthy controls, we measured baseline knowledge on sAUD through self-reported questionnaires, determined whether an up-to-date psychoeducation program can improve this knowledge, explored the role of cognitive abilities in such learning, and established the impact of psychoeducation on relapse rates. In a second experiment in 23 patients and 17 healthy controls, we examined whether the increased knowledge following psychoeducation is alcohol specific, and whether the motivation to change influences the relation between psychoeducation and clinical outcomes.

Results: At treatment entry, patients with sAUD presented with more sAUD-related knowledge than healthy controls, and were able to increase this knowledge following psychoeducation, independently of their cognitive status. However, psychoeducation did not impact either the motivation to change or relapse rates.

Conclusions: Psychoeducation can increase patients' knowledge about sAUD, but it does not increase the likelihood of abstinence or controlled low consumption after discharge. Thus, clinicians should question whether psychoeducation should occupy a central position in the therapeutic programs and reconsider what can be expected from psychoeducation in terms of achieving therapeutic objectives.

KEYWORDS
alcohol use disorder, memory, psychoeducation, relapse, semantic knowledge

 © 2024 Research Society on Alcohol.

INTRODUCTION

Severe alcohol use disorder (sAUD) remains an omnipresent disorder worldwide, still affecting 2 to 5% of adults, with a higher prevalence among males and in higher-income countries (World Health Organization, 2018). SAUD is directly involved in nearly three million deaths per year (Alcohol and Drug Use Collaborators, 2018). Excessive alcohol consumption generates deleterious consequences at interpersonal and societal levels. In the short run, it increases the occurrence of risky behaviors potentially affecting other individuals (e.g., road accidents, interpersonal violence). In the longer run, it hampers the development and maintenance of fulfilling social bonds, notably due to its impact on interpersonal functioning (Bora & Zorlu, 2017), leading to a weakening of support from family and friends, as well as to educational and professional difficulties. At the individual health level, it provokes widespread impairments on physiological (Schwarzinger et al., 2017) and neurocognitive (Stavro et al., 2013) functions. As a whole, sAUD is thus a major medical and social burden with considerable personal, interpersonal and economic costs (GBD 2017 Disease and Injury Incidence and Prevalence Collaborators, 2018; Nutt et al., 2010). Reducing the emergence and persistence of this disorder has therefore been among the most crucial medical challenges for decades.

However, despite the vast experimental literature that explored the physiological and neurological correlates of sAUD, the core mechanisms underlying this disorder remain little understood. Moreover, numerous care perspectives have been developed at psychiatric and psychological levels, but most available therapeutic proposals have not been empirically validated, and the treatment of sAUD still presents a very limited efficiency (Campbell et al., 2018). First, due to a treatment gap remaining far higher than for other psychiatric disorders, more than 90% of the individuals presenting a sAUD do not seek appropriate treatment, and thus have no contact at all with healthcare professionals (Kohn et al., 2004; Venegas et al., 2021). Second, among the limited number of patients who receive professional help and manage to initiate a change in their drinking scheme (either through abstinence or controlled low consumption), more than 75% re-consume and/or relapse in the months following detoxification process (Moos & Moos, 2006). Although these figures might be debatable and vary across healthcare structures, they lead to the compelling conclusion that the current treatments are able to efficiently treat (i.e., lead to a prolonged abstinence or controlled low consumption) less than 25% of the individuals with sAUD included in a treatment scheme, and less than 3% of the total population presenting sAUD.

The past decade has been characterized by increased efforts to tackle this issue, particularly through the development of new therapeutic perspectives. Several new medications (e.g., Malhotra et al., 2023; Mason & Heyser, 2021) have shown encouraging results, but the most promising evolution has probably been brought by the emergence of neuroscience-based treatment approaches (Verdejo-Garcia et al., 2023). Indeed, some recent studies suggest that neurocognitive levers can be activated during the detoxification process to reduce uncontrolled alcohol consumption, either by lowering the over-activation of the reward system (e.g., approach bias modification; Manning et al., 2021, 2022) or by increasing the activation of the deteriorated frontal control system, notably through cognitive remediation (Nardo et al., 2022) and neurostimulation (Bollen et al., 2022; Maatoug et al., 2021). Capitalizing on the theoretical background offered by the dual-process conceptualization (Lindgren et al., 2019) and more globally by neuroscience models identifying the key neurocognitive systems involved in addictive disorders (e.g., Koob & Volkow, 2016), this innovative perspective has generated efficient patient-tailored treatments identifying the specific processes impaired and rehabilitating them through targeted interventions (Kwako et al., 2017).

A consensus has thus emerged to suggest that widely applying such pioneering tools in clinical settings would increase the efficacy of current treatments to reduce sAUD and promote long-term abstinence. The final step is therefore to ensure the translation from experimental research, suggesting the effectiveness of neuroscience-based interventions, to actual daily therapeutic care. Several challenges persist regarding this clinical implementation (Maurage et al., 2024), notably encompassing the need to train clinicians to these neuropsychological instruments, to correctly determine the criteria that patients have to fulfill to benefit from them, and to set the timing and hierarchy of the interventions. But the main remaining issue might be to integrate neurocognitive tools in current clinical practices, and centrally to find the temporal and human resources needed for their efficient application. A crucial factor hampering the generalization of new therapeutic practices is indeed the fact that healthcare professionals working in addictive disorders, and particularly clinical psychologists, are most often fully occupied by their current therapeutic practices, thus having no time and resources to extend them to new interventions. With such inextensible clinical resources, the key question related to new therapeutic proposals thus becomes to determine how they can be integrated in current practices to optimize them. This question can only be solved through an objective evaluation of the effectiveness inherent to each current therapeutic practice, allowing to disentangle those that are useful and should be kept from those that could be reconsidered and potentially improved by neuroscience-based interventions. Surprisingly however, beyond the persisting debates regarding the respective cost-effectiveness of various psychological interventions in addictive disorders (e.g., Becker & Kayo, 2017; Malinauskas & Malinauskiene, 2019), the usefulness of some widely used and transtheoretical practices has not been tested yet.

Among the tools ubiquitously used in clinical settings worldwide, psychoeducation occupies a central position, as it constitutes a routine or "treatment as usual" approach in many detoxification units worldwide (Ekhtiari et al., 2017), taking significant time and efforts from therapists and patients, and thus reducing the room for complementary psychotherapeutic programs. Psychoeducation is globally defined as a therapeutic method aiming at increasing patients' awareness, knowledge and skills regarding various aspects of their disease (Magill et al., 2021). Its implementation can capitalize on various methods, including verbal explanations with or without visual support, as well as group discussions, notably through a "questions and answers" approach (Kayaoğlu & Şahin Altun, 2022). An important

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

component of psychoeducation is to build on a strong relation between the therapist and the patients, and to promote their active participation (de la Tribonnière et al., 2016). In addictive disorders, psychoeducation aims at enabling patients to better understand the processes underlying the disease and its symptoms, the action levers they can mobilize to achieve their therapeutic objectives, and the mechanisms involved in the proposed treatments. The short-term intent of psychoeducation is thus to help patients knowing their disease better, as it is hypothesized that patients frequently lack such understanding due to reduced cognitive abilities, low insight or significant anosognosia (de Souza Tursi et al., 2013). The ultimate aim is that such improved knowledge helps to increase motivation to change and to achieve long-term therapeutic objectives.

Surprisingly, the actual efficiency of psychoeducation to promote clinical aims has to our knowledge never been experimentally tested. More specifically, psychoeducation in sAUD is based on three core postulates, namely that: (1) patients present a reduced or insufficient knowledge about their addictive disorder; (2) patients are able to benefit from this intervention, namely to efficiently understand, memorize and use information about their disease; and (3) increasing knowledge through psychoeducation has a positive impact on clinical outcomes, and can centrally reduce relapse rates and promote long-term abstinence or controlled low consumption. These three strong assumptions, which must all be fulfilled for psychoeducation to constitute a reliable therapeutic tool, have not received direct empirical support, and the available literature actually brings arguments against them. First, patients with sAUD, due to their long history of alcohol consumption, might present a high level of expertise related to their disease and its related treatment (as notably illustrated by the efficacy of peer-based recovery groups, e.g., Tracy & Wallace, 2016), particularly when they present a high socioeducative level. Second, at the early stages of abstinence, patients with sAUD present widespread cognitive deficits, notably for short- and long-term memory as well as for attentional and executive abilities (e.g., Bernardin et al., 2014), which might make them unable or less able to efficiently learn the new knowledge related to psychoeducation. Third and foremost, no study has tested the specific impact of psychoeducation on clinical outcomes.

The main objective of the present study was thus to evaluate for the first time the veracity of these three core assumptions related to psychoeducation to establish the clinical usefulness of this widely used therapeutic technique, and hence to inform practitioners in their choice to stick with its current use or conversely to improve it through more efficient approaches. We conducted two experimental studies in populations of recently detoxified inpatients with sAUD. The first experiment offered an initial exploration of the three assumptions by (1) measuring the baseline knowledge of patients with sAUD regarding alcohol-related topics; (2) identifying the ability of psychoeducation to improve such knowledge, and the variation of its effect depending on patients' educational and cognitive level; and (3) determining the actual impact of psychoeducation on treatment's key outcomes, mainly relapse rates. The second experiment, conducted on a distinct sample of patients, explored the replicability of the results obtained in the first one and refined them by (1) examining the specificity of the knowledge's improvements generated by psychoeducation and the patients' ability to self-evaluate this knowledge, and (2) the links between patients' knowledge on alcohol, general verbal abilities and motivation to change, conceptualized as a potential moderator between increased knowledge and treatment outcomes.

METHOD

Experiment 1

Participants (Table 1)

We included 168 participants, namely 66 inpatients with sAUD and 102 matched healthy control (HC) individuals (Table 1). We excluded,

TABLE 1 Sociodemographic, alcohol consumption and neuropsychological measures in patients with severe alcohol use disorder (sAUD) and healthy controls (HC) for Experiment 1: Mean (standard deviation).

	sAUD $N = 66$	HC $N = 102$
Age	45.70 (10.06)	45.50 (8.22)
Sex ratio (men/women)	53/13	72/30
Education (in years)	10.50 (2.01)	10.08 (1.45)
Duration of abstinence at inclusion (in days)	11.53 (6.49)	NA
Number of previous alcohol withdrawal hospitalization	2.15 (1.39)	NA
Duration of sAUD (in years)	17.94 (12.55)	NA
Duration of abstinence after hospital discharge (in weeks)	15.57 (17.53)	NA
Daily alcohol consumption before detoxification (in units)	18.44 (11.62)	NA
Working memory (*z*-score)	−0.32 (1.10)	NA
Episodic memory (*z*-score)	−0.28 (1.43)	NA
Executive functions (*z*-score)	−0.22 (1.13)	NA

Note: A unit of alcohol corresponds to 10 g of pure ethanol.
Abbreviation: NA, not appropriate.

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

for both groups, individuals with an history of severe neurological, endocrinal or other infectious disease, psychiatric issues, or other forms of substance use disorder (except tobacco use disorder). During the study, sAUD patients and HC declared being free from any psychotropic substance.

Patients with sAUD were recruited by clinicians while being inpatients in the Addiction department at Caen University Hospital. They all met the DSM-5 criteria for sAUD. Although patients were early in abstinence, none of them presented with physical symptoms of alcohol withdrawal as assessed by the Cushman's scale at inclusion (Cushman Jr. et al., 1985). They were interviewed with a modified version of the semistructured lifetime drinking history questionnaire (Skinner & Sheu, 1982). Measures included the duration of sAUD (in years), the number of previous alcohol withdrawal hospitalizations and daily alcohol consumption prior to treatment (in units, a unit corresponding to 10 g of pure ethanol). All patients reported sAUD as their primary substance use disorder.

We recruited HC to match the demographics of sAUD patients [age: $t(166) = -0.09$; $p = 0.93$; gender: $X2 = 1.99$; $p = 0.16$; education level: $t(166) = -1.08$; $p = 0.28$], using social media advertisements, study flyers, and University participant-pools. We screened them with the AUDIT questionnaire (Saunders et al., 1993) to ensure that they all presented a score below eight (indicating low-risk consumption). We also screened them with the MOntreal Cognitive Assessment (MOCA, Nasreddine et al., 2005) to only include HC with preserved global cognitive abilities (score >25).

All participants provided informed consent.

Procedure

Psychoeducation program

The 1-week psychoeducation program carried out in the Addiction Department of Caen University Hospital is offered to all interested inpatients. Patients only start psychoeducation once they have completed their withdrawal (Cushman's score lower than 3 and no more withdrawal benzodiazepine-based medication, Cushman Jr. et al., 1985). The only exclusion criteria for psychoeducation are the presence of severe memory disorders, significant intellectual impairment or behavioral problems. All patients agreed to take part in the psychoeducation week. The program takes place over 6 consecutive days, in a closed group, to encourage exchanges and trust within the group. The program comprises 12 activities, each lasting around 1 h and follows the most recent guidelines to optimize the efficiency of psychoeducation (Magill et al., 2021). A first type of activities aims to increase knowledge about the disease (e.g., the meaning of "addiction", "standard alcohol unit", "circuits of psychoactive substances"). Another type of activities focuses on the consequences of the disease (explaining terms like "somatic complications", "cerebral and cognitive consequences", "quality of life", "products and laws", "consumption and diet"). A last type of activity encourages thinking on motivations to change behavior and initiates work on modifying habits (including discussions about patient's history with products, decisional balance and dietary workshops). Most activities are based on patients' initial knowledge or false beliefs, which the group and/or therapist can reinforce or modify. Visual aids are always used (diagrams, slideshows), and written material is left for patients to add their personal notes.

Psychoeducation questionnaire

It assessed the participant's level of knowledge about alcohol, including 10 questions related to recommendations, misuse, dependence and alcohol-related consequences (e.g., the doses of alcohol served in bars; the damage alcohol causes to the brain). Even though these 10 questions do not cover the entire psychoeducation program, we intentionally limited this evaluation to a short version so that it can be easily usable in clinical settings and avoid any fatigue effect among patients. Each question was related to four multiple-choice answers, the participant having to select the correct one. Each correct answer scored one point. The questionnaire was created on the basis of the content of the psychoeducation sessions, with questions exclusively pertained to this content. It could thus be entirely and accurately answered after the psychoeducation program. Patients filled in the questionnaire twice: at treatment entry (after withdrawal) and discharge (after the psychoeducation program). We thus collected three scores: a score at treatment entry (range 0–10), one at discharge (range 0–10) and a learning score [(score at discharge − score at entry)/score at entry]. Seven patients did not fill the questionnaire at treatment discharge.

Neuropsychological abilities

We conducted the neuropsychological examination at treatment entry, after cessation of alcohol withdrawal symptoms (as revealed by the Cushman's score) and at least 2 days after the last use of withdrawal benzodiazepine-based medication. We measured: (1) Episodic Memory, using a French version of the Free and Cued Selective Reminding Test (FCSRT, Grober & Buschke, 1987; Van der Linden et al., 2004) or a French version of the California Verbal Learning Test (CVLT, Delis et al., 1987; Nolin, 1999) depending on the age and education level of the patient. For the FCSRT and CVLT, performance on the delayed free recall was used; (2) Executive Functions, inhibition being assessed by the time (in seconds) needed to complete the interference condition (Word-Color condition) and the associated errors of the Stroop test (Stroop, 1935), and flexibility being assessed by the number of categories found and the number of perseverative errors at the Modified Card Sorting Test (MCST, Cianchetti et al., 2005); and (3) Verbal Working Memory, using the standardized score of the Digit (forward and backward) span subtest of the Wechsler Adult Intelligence Scale (WAIS-III; Wechsler, 1997). For each cognitive domain, we first computed *z*-scores and then a mean *z*-score based on the French published norms for each cognitive domain.

Treatment outcome

We measured treatment outcome through the minimal number of weeks each patient had remained abstinent after discharge (as observed by clinicians or self-reported by patients during follow-up sessions). Data were available for 38 patients.

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

ALCOHOL CLINICAL & EXPERIMENTAL RESEARCH ISBRA

Statistical analyses

We first compared the level of performance on the psychoeducation questionnaire between HC and patients at treatment entry and discharge using two-sample Student's *t*-tests. We then used a paired *t*-test to compare results on the questionnaire between patients at treatment entry and discharge. We also conducted a one-sample *t*-test to determine whether the learning score significantly differed from zero. Pearson's correlations were carried out to investigate the relationships between patients' results at the questionnaire at entry and discharge on the one hand, and education level, neuropsychological abilities and treatment outcome on the other hand.

Experiment 2

Participants (Table 2)

We included 40 participants (Table 2) using the same inclusion and exclusion criteria as in Experiment 1: 23 patients with sAUD recruited by clinicians using a similar procedure as in Experiment 1, and 17 HC. We matched groups for age [$t(38)=0.09$; $p=0.93$] but not for gender [$X2=4.18$; $p=0.04$] nor education level [$t(38)=3.66$; $p=<0.001$].

TABLE 2 Sociodemographic, alcohol consumption, cognitive and motivation scores in patients with severe alcohol use disorder (sAUD) and healthy controls (HC) for Experiment 2: Mean (Standard Deviation).

	sAUD $N=23$	HC $N=17$
Age	52.48 (9.03)	52.24 (7.89)
Sex ratio (men/women)	18/5	8/9
Education (in years)	11.10 (2.75)	14.30 (2.73)
Duration of abstinence at inclusion (in days)	18.04 (12.77)	NA
Number of previous alcohol withdrawal hospitalization	2.00 (1.13)	NA
Duration of sAUD (in years)	20.73 (12.10)	NA
Daily alcohol consumption (in units)	15.28 (9.46)	NA
Information score (WAIS III)	7.91 (3.07)	NA
Vocabulary score (WAIS III)	9.39 (3.33)	NA
URICA score at treatment entry[a]	10.05 (2.45)	NA
URICA score at discharge	10.23 (1.66)	NA

Note: A unit of alcohol corresponds to 10 g of pure ethanol.

Abbreviations: NA, not appropriate; URICA, University of Rhode Island Change Assessment scale; WAIS III, Wechsler Adult Intelligence Scale 3rd Edition.

[a]Missing data for one patient.

Procedure

Psychoeducation program

Patients underwent the same psychoeducational program as described in Experiment 1.

Psychoeducation questionnaire

In addition to the questionnaire used in Experiment 1, we created another 10-item questionnaire evaluating participant's level of knowledge about other substances than alcohol. Each question was related to four multiple-choice answers, the participant having to select the correct one. Each correct answer scored one point. This questionnaire was focused on addiction-related topics, but these topics were not directly addressed in the psychoeducation workshops carried out in the Addiction department. An increased score after the psychoeducation program would thus index a generalization of the knowledge gathered during the program beyond its specific content, and/or a global cognitive improvement following the detoxification process, unrelated to psychoeducation. At the end of each questionnaire, participants also had to estimate their score (between 0 and 10), to measure their ability to self-evaluate. Patients filled in the questionnaire twice: at treatment entry (after withdrawal) and discharge (after the psychoeducation program). We thus collected three scores: a score at treatment entry (range 0–10), one at discharge (range 0–10) and a learning score [(score at discharge − score at entry)/score at entry]. We also obtained two subjective scores (one for the alcohol questionnaire, one for the other substances questionnaire) at treatment entry and discharge.

General verbal knowledge

We used the Information and Vocabulary subtests of the WAIS III to measure general verbal knowledge. The Information subtest consists of 26 questions determining how much general knowledge the patients have accumulated from their environment. The Vocabulary subtest requires the patient to define up to 30 words. For both subtests, we used the standardized score.

Motivation to change

The URICA scale (University of Rhode Island Change Assessment scale, McConnaughy et al., 1989) assessed the patient's motivational stage. The questionnaire consists of 32 items to be judged from "totally disagree" (1) to "totally agree" (5). Each motivational stage (precontemplation, contemplation, action and maintenance) is represented by eight specific items. The total score is obtained using the following formula: contemplation score + action score + maintenance score − precontemplation score. Patients filled in the scale twice: at treatment entry and discharge. There were missing data for one patient at treatment entry.

Statistical analyses

To compare patients' improvement on the alcohol versus other substances questionnaires between treatment entry and discharge, we used a repeated measures ANOVA and Tuckey's post-hoc comparisons. For each participant, each questionnaire and at both treatment entry

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

and discharge, we computed a self-estimation accuracy score (subjective score − objective score). We then conducted one-sample *t*-tests on these scores in sAUD and HC to determine whether they differed from zero. We finally carried out Pearson's correlations to examine the relationships between patients' results on the psychoeducation questionnaire at entry and discharge on the one hand, and general verbal knowledge and motivation to change behavior on the other hand.

RESULTS

Experiment 1

Group comparison on the psychoeducation questionnaire

Patients (Entry: Mean Score = 7.03, SD = 2.08; Discharge: Mean = 8.56, SD = 1.68) presented significantly higher scores than HC (Mean = 5.76, SD = 1.78) at treatment entry [$t(166) = 4.21$; $p < 0.001$] and discharge [$t(159) = 9.78$; $p < 0.001$] (Figure 1).

Improvement of patients' knowledge following psychoeducation

Patients significantly improved their score at the psychoeducation questionnaire between treatment entry and discharge [$t(58) = 6.55$; $p < 0.001$]. The learning score (mean = 0.32, SD = 0.46) significantly differed from zero [$t(58) = 5.41$; $p < 0.001$].

Links between patients' knowledge and education level

Education level tended to correlate with patients' performance on the questionnaire at treatment entry ($r = 0.21$; $p = 0.10$) and significantly correlated with results at treatment discharge ($r = 0.37$; $p = 0.003$). However, the relationship between the learning score and education level was not significant ($r = -0.05$; $p = 0.72$). All correlations are presented in Table 3.

Links between patients' knowledge and neuropsychological abilities

Among all correlations conducted between neuropsychological *z*-scores and patients' results on the psychoeducation questionnaires, only working memory *z*-scores correlated with questionnaire scores at treatment entry ($r = 0.28$; $p = 0.02$) and discharge ($r = 0.53$; $p < 0.001$). Executive *z*-scores tended to correlate with score at discharge ($r = 0.24$; $p = 0.07$). None of the neuropsychological scores correlated with the learning score.

Links between patients' knowledge and treatment outcome

Treatment outcome did not correlate with scores on the questionnaire at treatment entry ($r = -0.17$; $p = 0.31$) and discharge ($r = -0.19$; $p = 0.29$). The learning score did not correlate with treatment

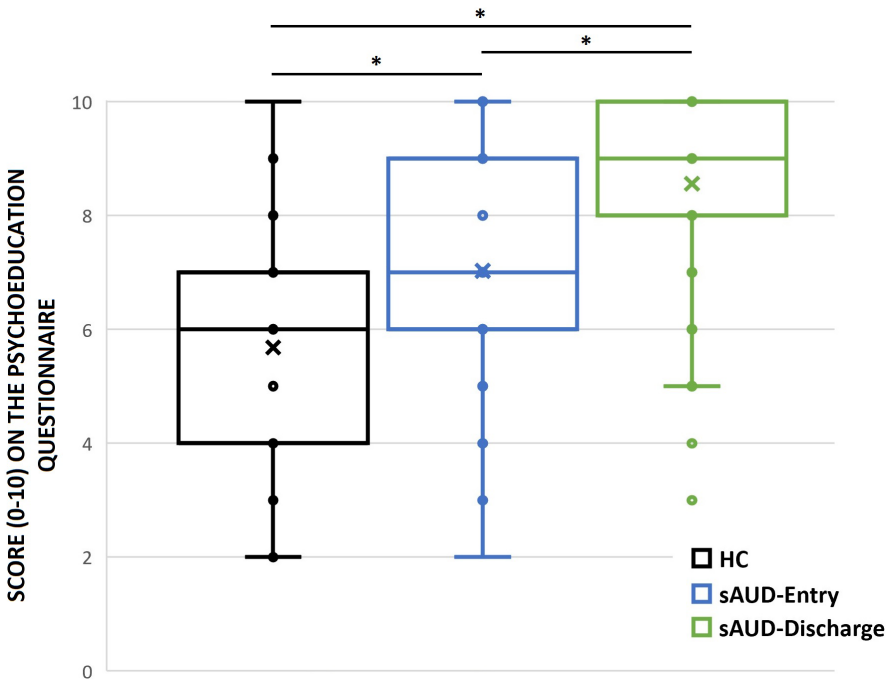


FIGURE 1 Scores obtained in Experiment 1 for the psychoeducation questionnaire among healthy controls (HC) and patients with severe alcohol use disorder (sAUD) at treatment entry and discharge. *$p < 0.001$.

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

ALCOHOL CLINICAL & EXPERIMENTAL RESEARCH

TABLE 3 Pearson's correlations between experimental variables in Experiments 1 and 2: Pearson's *r* (*p*-value).

	Questionnaire at treatment entry	Questionnaire at discharge	Learning score
Experiment 1			
Education level	0.21 (0.10)	***0.37 (0.003)***	−0.05 (0.72)
Working memory *z*-score	***0.28 (0.02)***	***0.53 (<0.001)***	0.05 (0.71)
Episodic memory *z*-score	0.01 (0.94)	0.01 (0.95)	−0.04 (0.76)
Executive functions *z*-score	0.06 (0.62)	0.24 (0.07)	0.01 (0.92)
Treatment outcome (weeks of abstinence)	−0.17 (0.31)	−0.19 (0.29)	0.19 (0.28)
Experiment 2			
Information standardized score	0.29 (0.18)	0.26 (0.23)	−0.01 (0.97)
Vocabulary standardized score	0.20 (0.18)	***0.56 (0.005)***	0.30 (0.16)
URICA score at treatment entry	0.19 (0.40)	0.24 (0.28)	0.08 (0.71)
URICA score at discharge	−0.30 (0.16)	−0.33 (0.12)	−0.01 (0.95)

Note: Significant correlations are in italic bold.

Abbreviations: URICA, University of Rhode Island Change Assessment scale; WAIS III, Wechsler Adult Intelligence Scale 3rd Edition.

outcome either ($r = 0.19$; $p = 0.28$). We conducted a complementary between-group analysis to compare sAUD patients who had remained abstinent for less than 12 weeks from those who managed to be sober more than 12 weeks (initial vs. early remission according to the DSM-5). There was no significant between-group difference regarding the performance on the questionnaire at treatment entry [$t(43) = 0.02$; $p = 0.98$] or discharge [$t(39) = 0.22$; $p = 0.83$], nor on the learning score [$t(39) = 1.28$; $p = 0.21$].

Experiment 2

Group comparisons on the psychoeducation questionnaires

On the alcohol questionnaire, patients' results (Entry: Mean = 6.09, SD = 1.90; Discharge: Mean = 8.04, SD = 2.06) did not differ from those of HC (Mean = 6.35, SD = 1.87) at treatment entry [$t(38) = -0.44$; $p = 0.66$] but they performed higher at discharge [$t(38) = 2.671$; $p = 0.01$]. On the other substances questionnaire, scores for patients (Entry: Mean = 4.96, SD = 1.61; Discharge: Mean = 5.56, SD = 1.95) and HC (Mean = 5.94, SD = 1.56) did not significantly differ at treatment entry [$t(38) = 1.94$; $p = 0.06$] and discharge [$t(38) = 0.65$; $p = 0.52$] (Figure 2).

Improvement of patients' knowledge following psychoeducation

The repeated-measures ANOVA revealed significant effects of time [baseline vs. discharge: $F(1,44) = 26.33$; $p < 0.001$], questionnaire type [alcohol vs. other substances: $F(1,44) = 13.2$; $p < 0.001$], and interaction [$F(1,44) = 7.27$; $p < 0.01$]. Post-hoc analyses revealed a significant improvement on the alcohol questionnaire between entry and discharge [$t(44) = 5.54$; $p < 0.001$], but not on the other substances questionnaire [$t(44) = 1.72$; $p = 0.33$]. Performance at treatment entry was similar for the two questionnaires [$t(44) = 2.18$; $p = 0.15$] but higher on the alcohol questionnaire than on the other substances one at discharge [$t(44) = 4.20$; $p < 0.001$].

Self-estimation of questionnaires' scores

HC self-estimated their performance on the questionnaires with accuracy as underlined by nonsignificant differences between self-estimated (Alcohol: Mean = 6.21, SD = 0.97; Other substances: Mean = 5.64, SD = 0.93) and actual scores [$t(16) = 0.11$; $p = 0.91$ for alcohol; $t(16) = 0.84$; $p = 0.41$ for other substances]. The self-evaluation of patients with sAUD at treatment entry (Alcohol: Mean = 7.62, SD = 1.83; Other substances: Mean = 7.00, SD = 1.67) denoted an overestimation of their performance for both questionnaires [$t(20) = 3.88$; $p < 0.001$ for alcohol and $t(20) = 4.92$; $p < 0.001$ for other substances]. Moreover, their self-evaluation at discharge (Alcohol: Mean = 7.48, SD = 1.83; Other substances: Mean = 6.91, SD = 1.78) demonstrated an overestimation for other substances [$t(22) = 2.71$; $p = 0.01$] but not for alcohol [$t(22) = 1.70$; $p = 0.10$]. Noteworthy, in the patient group, the raw self-estimation score did not differ significantly between treatment entry and discharge [$t(20) = 0.11$; $p = 0.91$ for the alcohol questionnaire; $t(20) = 0.24$; $p = 0.81$ for other substances].

Links between patients' knowledge and general verbal knowledge

We only found a significant correlation between results on the alcohol questionnaire at discharge and the Vocabulary subtest standardized score ($r = 0.56$; $p = 0.005$).

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

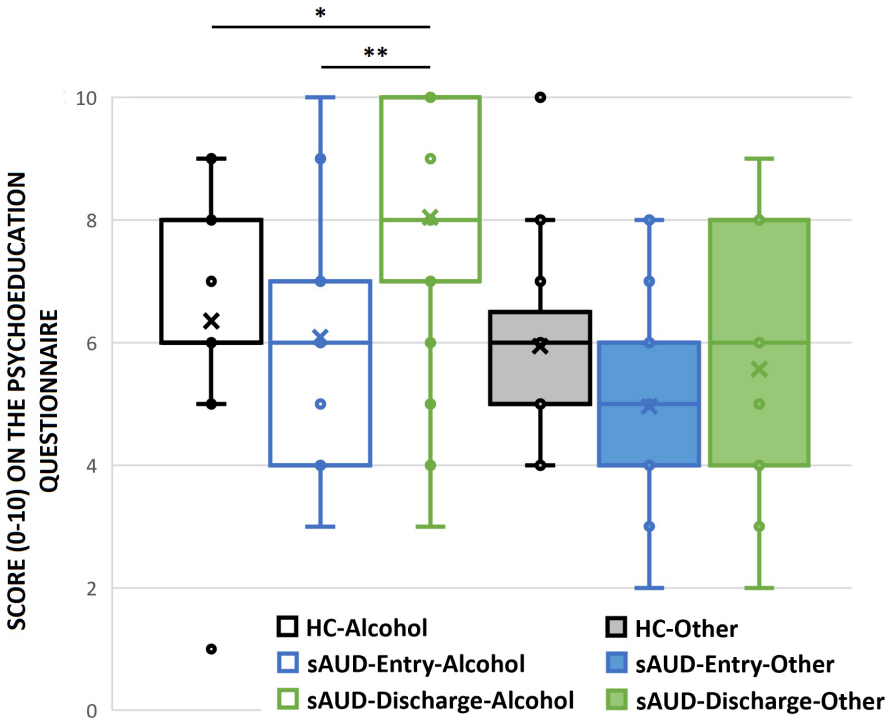


FIGURE 2 Scores obtained in Experiment 2 for the psychoeducation questionnaire related to alcohol (left part of the figure) and other substances (right part of the figure) among healthy controls (HC) and patients with severe alcohol use disorder (sAUD) at treatment entry and discharge. $^{*}p < 0.01$; $^{**}p < 0.001$.

Links between patients' knowledge and motivation to change

URICA scores did not significantly change between treatment entry and discharge [$t(21) = 0.62$; $p = 0.55$]. There was no significant correlation between URICA scores and results on the alcohol questionnaire at treatment entry or discharge, nor on the learning score.

DISCUSSION

We proposed two complementary studies testing the ability of psychoeducation programs to improve prognosis among recently detoxified patients with sAUD. More specifically, we tested the validity of three core implicit assumptions made by psychoeducation, which are all necessary conditions for this approach to fulfill its aims. First, we examined whether patients with sAUD actually need psychoeducation to improve insufficient knowledge about their disease, to answer the question "*Is psychoeducation needed?*" (i.e., do patients present limited knowledge on their disease before psychoeducation?). Second, we tested whether patients with sAUD can benefit from psychoeducation, to answer the question "*Is psychoeducation possible?*" (i.e., can psychoeducation improve patients' knowledge?). We also measured whether this ability to learn new information about their disease was related to educational, neuropsychological and verbal level, and whether it was specific to the information given during the psychoeducation program (or was related to an unspecific cognitive improvement following the detoxification process). Third and finally, we determined whether psychoeducation has an impact on prognosis and treatment outcome, to answer the question "*Is psychoeducation efficient?*" (i.e., do patients have a lower relapse rate after psychoeducation?). We also examined the potential mechanistic factors involved in the links between psychoeducation and reduced relapse by exploring whether psychoeducation modulated motivation to change, a well-established predictor of abstinence.

Regarding the first question, we centrally show that patients with sAUD have, before any psychoeducation program, a higher expertise about alcohol-related disorders than the lay people included in our control group (Experiment 1), or at least do not have a deficit in alcohol expertise compared to HC (Experiment 2). A core principle of psychoeducation is that it aims at compensating the postulated deficiencies in alcohol-related knowledge at treatment entry among patients with sAUD, as these deficits might hamper their ability to understand their disease, the proposed treatment and the clinical objectives. We rather suggest that patients with sAUD already present a good level of knowledge about their disease when starting detoxification, and that spending time to offer them even more information might be unnecessary. Such result supports recent evolutions in the conceptualization of addictions (notably criticisms towards the dominant brain disease model; Heather et al., 2018), proposing to switch from considering patients as passive subjects to be treated towards envisaging them as educated actors involved in the therapeutic process. Patients are to be considered as experts

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

in their disease and as active partners in the recovery process, as illustrated by the emergence of self-help programs and peer-support groups (Balbinot et al., 2023; Mohamed et al., 2022). Of note, as the alcohol questionnaire was of affordable difficulty, the quite low results obtained by HC show that the mean knowledge about alcohol and sAUD among lay people is low. Such ignorance and misconceptions could foster the persistence of erroneous stereotypes about people with sAUD as well as of stigmatization towards mental diseases. Although this is not the main focus of the present paper, we thus offer complementary evidence that developing psychoeducation intended for the general population might help (1) facilitating interpersonal contact with psychiatric populations, and hence reducing their social isolation, a key factor for the maintenance of mental disorders; (2) raising awareness among lay people about their own potential excessive alcohol consumption (as notably promoted by the "Dry January" campaigns), and thus promote prevention and early interventions in this population.

Regarding the second question, we demonstrate that patients with sAUD have a preserved ability to learn new information and to improve their understanding about alcohol-related disorder. Indeed, the proposed psychoeducation program efficiently increased patients' score at the questionnaire, as indexed by a learning score significantly different from zero. This demonstrates that, despite the cognitive deficits in attentional, memory and executive abilities repeatedly reported in this population, patients with sAUD are still able to encode and recall key information related to their disease. In other words, we show that psychoeducation is an efficient tool to further improve the semantic knowledge related to alcohol among recently detoxified patients. Our complementary analyses showed that the knowledge level at discharge is influenced by education level, working memory and general verbal abilities, patients with stronger educational background and more preserved cognitive abilities being better at the questionnaire. However, the learning score, namely the ability to improve knowledge between the beginning and end of the psychoeducation program, was not related to these intellectual and cognitive factors. This means that, even though there might be a minimal cognitive threshold under which psychoeducation is ineffective (e.g., among patients with severe cognitive impairments), most patients included in our sample were able to benefit from psychoeducation (i.e., to improve their alcohol-related knowledge), independently of their pre-existing intellectual level. Furthermore, it should be noted that such increased knowledge appears circumscribed to the specific information disseminated in the psychoeducation program, as we found no improvement in Experiment 2 regarding the more global understanding of addictive disorders. This result confirms that the increased knowledge following the program is not due to the mere unspecific effect of cognitive improvement resulting from the detoxification process. Finally, patients overestimated their self-knowledge about alcohol at treatment entry but no more at discharge, underlining that psychoeducation might constitute, among other tools, a lever to increase self-evaluation and insight abilities in sAUD.

Regarding the third and most important question, we found no links between alcohol-related understanding before/after psychoeducation and the key therapeutic aim in addiction clinical settings, namely the ability to avoid relapse after the detoxification process. Neither the initial knowledge presented by the patients at treatment entry nor the improvement of this knowledge allowed by the psychoeducation program, provided useful levers to promote abstinence or moderate consumption. Although this absence of relationships between psychoeducation benefits and treatment outcomes may be explained by our relapse measure, which may be considered as limited and not nuanced enough, motivation data give further arguments on the limited clinical impact of psychoeducation. Indeed, psychoeducation did not even constitute an efficient mean to help patients evolve in their way towards abstinence, as we showed no link between questionnaire's scores and motivation to change measured by the URICA: psychoeducation might increase patient's awareness and knowledge regarding their disease, but it does not make them evolve through the motivation stages (i.e., from precontemplation/contemplation to action/maintenance), as the URICA score did not change at all between treatment entry and discharge. This is in line with previous results (Yeh et al., 2017) showing that motivation-focused psychoeducation increases awareness about sAUD (i.e., promotes the evolution from precontemplation to contemplation) but has no incentive impact on actual behaviors to quit drinking (i.e., do not make patients switch from contemplation to action). Such result might appear surprising when conceptualizing, as proposed in most classical cognitive-behavioral models (e.g., Hendershot et al., 2011; Marlatt & Gordon, 1985; Prochaska & DiClemente, 1983), addictive disorders as being anchored in a lack of motivation towards abstinence combined with a reduced understanding of the ways to achieve it. Such approach is at the heart of psychoeducation, with the hypothesis that increasing patients' awareness and knowledge of their addictive state will help them realize the severity of the disorder, will increase their motivation to change and will finally give them cognitive or behavioral action tools to initiate this change. However, more recent theoretical proposals have strongly put in doubt such assumptions, particularly by underlining that the addictive process generates cerebral and psychological changes reducing the willpower and cognitive resources needed to increase motivation and voluntarily act towards abstinence (Noël et al., 2010). The persistence of sAUD is thus not merely related to a lack of motivation or semantic knowledge about the disease but also, and mostly, to modifications in conditioning/learning (Lewis, 2018), biased reward processing (Acuff et al., 2023), incentive sensitization (Berridge & Robinson, 2016) or reduced frontal control (Volkow et al., 2016), all these processes being beyond the patient's direct control and unreachable through psychoeducation.

As a whole, on the positive side, we showed that patients with sAUD are able, independently of their baseline cognitive and intellectual level, to benefit from psychoeducation programs, namely to learn new information about their disease and its related treatment. In other terms, psychoeducation is feasible in this population. However, we also demonstrated that (1) patients with sAUD

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

are, before any psychoeducation, better or at least as good as the general population regarding alcohol-related knowledge, raising questions about the interest to spend time and resources to further improve such knowledge in a population already expert about their disease; (2) psychoeducation does not improve disease's prognosis, as it was not related to the key variable targeted by the detoxification process, namely abstinence duration. This finding is in line with previous ones showing that group-based psychoeducation does not present a higher efficacy on relapse reduction than other classical psychological approaches (e.g., cognitive behavioral therapy; Harada et al., 2022) and has no impact on relapse at 3-month follow-up (Kayaoğlu & Şahin Altun, 2022). It should be noted that this result cannot be explained by weaknesses or deficiencies in the proposed psychoeducation program. Indeed, this program was extensive, encompassing several sessions for 1 week, and complied with the most recent guidelines (Magill et al., 2021): it notably encouraged interactivity and patients' empowerment, it focused on up-to-date and understandable alcohol-related knowledge, it stated clear goals, and it capitalized on a previously established therapeutic alliance with the patients, favoring the individualization of the sessions. This validity of our psychoeducation approach is further proven by our results showing that our program efficiently improved patient's knowledge.

The present paper is the first to experimentally clarify the value of psychoeducation in sAUD treatment. However, as it presents a single study based on limited sample sizes, it should be replicated by other research groups in other clinical settings with larger and more diversified (e.g., outpatients, patients with addictive/psychiatric comorbidities, patients with psychotropic medication) cohorts. In addition, our real-world experimental design has limitations. First, therapeutic alliance is a key predictor of success for most therapeutic interventions, including psychoeducation. Our design focused on the evaluation of the specific output related to psychoeducation (i.e., increased alcohol-related knowledge) and hence did not allow to disentangle the effects of other mechanisms involved in psychoeducation (among which therapeutic alliance) from that of psychoeducation per se. Second, since psychoeducation is included in all alcohol detoxification programs in France, there is no possible access to a true control group (i.e., without any psychoeducation), hampering the comparison between treatment outcome with and without psychoeducation.

In conclusion, psychoeducation and the related increase in alcohol-related knowledge is possible in sAUD, but it might be unnecessary as patients are already experts in alcohol-related questions, and its contribution to long-term abstinence or controlled consumption is questionable. Such results are not intended to definitely discourage clinicians from using psychoeducation as a therapeutic tool, but rather to specify what can be reasonably expected from it for caregivers to better fit their therapeutic interventions to the targeted clinical objectives. On the one hand, preliminary studies have suggested that psychoeducation might be useful to reduce alcohol consumption in subclinical samples (e.g., Gilder et al., 2017), to lower the impact of psychopathological comorbidities on alcohol use (e.g., post-traumatic stress disorder; Bujarski, 2015) and to facilitate abstinence in the longer run (e.g., after more than 6 months postdetoxification; Kayaoğlu & Şahin Altun, 2022). Moreover, psychoeducation might be useful to improve major clinical variables (e.g., therapeutic alliance, insight, self-evaluation, metacognition, e.g., Rezapour et al., 2021), to increase patients' awareness that their consumption is problematic, or to prepare patients to take an active part in the therapeutic program (e.g., neuroscience-informed psychoeducation, Ekhtiari et al., 2017). On the other hand, however, it does not constitute by itself a powerful tool to promote long-term abstinence. To attain such key clinical objectives, psychoeducation should be either refocused/reduced (leaving more time and resources for other approaches efficiently promoting abstinence), optimized (notably by including neuroscience-based approaches, even though the effectiveness of these approaches remains a matter of debate) or individualized (by testing knowledge at treatment entry for each patient and adapting psychoeducation to patient's specific needs, potentially through computerized programs).

AUTHOR CONTRIBUTIONS

Conceptualization: C. Boudehent, N. Cabé, A.L. Pitel; Methodology: P. Maurage, C. Boudehent, N. Cabé, A.L. Pitel; Formal Analysis: P. Maurage, C. Boudehent, A.L. Pitel; Investigation: C. Boudehent, L. Ferrie, N. Cabé; Resources: P. Maurage, A.L. Pitel; Writing—Original Draft: P. Maurage, A.L. Pitel; Writing—Review & Editing: C. Boudehent, L. Ferrie, N. Cabé; Supervision: A.L. Pitel; Project Administration: C. Boudehent, N. Cabé.

FUNDING INFORMATION

PM (Senior research associate) was funded by the Belgian Fund for Scientific Research (F.R.S.-FNRS, Brussels, Belgium). This funding body did not exert any influence or censorship on the present work. The authors are grateful to Ioana Cioata and Caroline Davidsen for their help in collecting data. ALP is funded by the Institut Universitaire de France (IUF).

CONFLICT OF INTEREST STATEMENT

The authors declare that there were no conflicts of interest with respect to the authorship or the publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Pierre Maurage https://orcid.org/0000-0003-0197-0810
Anne-Lise Pitel https://orcid.org/0000-0001-8573-9506

REFERENCES

Acuff, S.F., MacKillop, J. & Murphy, J.G. (2023) A contextualized reinforcer pathology approach to addiction. *Nature Reviews Psychology*, 2, 309–323. Available from: https://doi.org/10.1038/s44159-023-00167-y

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Alcohol and Drug Use Collaborators. (2018) The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990-2016: a systematic analysis for the global burden of disease study. *Lancet Psychiatry*, 5, 987–1012. Available from: https://doi.org/10.1016/S2215-0366(18)30337-7

Balbinot, P., Pellicano, R., Patussi, V., Caputo, F. & Testino, G. (2023) Alcohol use disorders, self-help groups as a supplement to pharmacological and psychological therapy? A retrospective study in a population with alcohol related liver disease. *Minerva Gastroenterologica*, 69, 479–485. Available from: https://doi.org/10.23736/S2724-5985.22.03292-2

Becker, P. & Kayo, M. (2017) Cost-effectiveness of interventions for the treatment of alcohol and other substance use disorders. In: Razzouk, D. (Ed.) *Mental health economics: the costs and benefits of psychiatric care*. New York, NY: Springer International Publishing, pp. 323–338. Available from: https://doi.org/10.1007/978-3-319-55266-8_21

Bernardin, F., Maheut-Bosser, A. & Paille, F. (2014) Cognitive impairments in alcohol-dependent subjects. *Frontiers in Psychiatry*, 5, 78. Available from: https://doi.org/10.3389/fpsyt.2014.00078

Berridge, K.C. & Robinson, T.E. (2016) Liking, wanting, and the incentive-sensitization theory of addiction. *The American Psychologist*, 71, 670–679. Available from: https://doi.org/10.1037/amp0000059

Bollen, Z., Dormal, V. & Maurage, P. (2022) How should transcranial direct current stimulation be used in populations with severe alcohol use disorder? A clinically oriented systematic review. *Clinical EEG and Neuroscience*, 53, 367–383. Available from: https://doi.org/10.1177/15500594211001212

Bora, E. & Zorlu, N. (2017) Social cognition in alcohol use disorder: a meta-analysis. *Addiction*, 112, 40–48. Available from: https://doi.org/10.1111/add.13486

Bujarski, S.J. (2015) An examination of psychoeducation and its potential modifying influence on alcohol use patterns among adults reporting co-occurring posttraumatic stress symptoms and hazardous alcohol consumption. Graduate Thesis. Retrieved from; https://scholarworks.uark.edu/etd/2137

Campbell, E.J., Lawrence, A.J. & Perry, C.J. (2018) New steps for treating alcohol use disorder. *Psychopharmacology*, 235, 1759–1773. Available from: https://doi.org/10.1007/s00213-018-4887-7

Cianchetti, C., Corona, S., Foscoliano, M., Scalas, F. & Sannio-Fancello, G. (2005) Modified Wisconsin card sorting test: proposal of a supplementary scoring method. *Archives of Clinical Neuropsychology*, 20, 555–558. Available from: https://doi.org/10.1016/j.acn.2004.12.002

Cushman, P., Jr., Forbes, R., Lerner, W. & Stewart, M. (1985) Alcohol withdrawal syndromes: clinical management with lofexidine. *Alcoholism, Clinical and Experimental Research*, 9, 103–108. Available from: https://doi.org/10.1111/j.1530-0277.1985.tb05527.x

de la Tribonnière, X., Jacquet, J.M., Vidal, J. & Donnadieu Rigole, H. (2016) Contribution of therapeutic patient education to addiction medicine. *Santé Publique*, 28, 591–597.

de Souza Tursi, M.F., von Werne Baes, C., Ribeiro de Barros Camacho, F., de Carvalho Tofoli, S.M. & Juruena, M.F. (2013) Effectiveness of psychoeducation for depression: a systematic review. *The Australian and New Zealand Journal of Psychiatry*, 47, 1019–1031. Available from: https://doi.org/10.1177/0004867413491154

Delis, D.C., Kramer, J.H., Kaplan, E. & Ober, B.A. (1987) California Verbal Learning Test—Second Edition (CVLT—II). APA PsycTests https://doi.org/10.1037/t15072-000

Ekhtiari, H., Rezapour, T., Aupperle, R.L. & Paulus, M.P. (2017) Neuroscience-informed psychoeducation for addiction medicine: a neurocognitive perspective. *Progress in Brain Research*, 235, 239–264. Available from: https://doi.org/10.1016/bs.pbr.2017.08.013

GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. (2018) Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the global burden of disease study 2017. *Lancet*, 392, 1789–1858. Available from: https://doi.org/10.1016/S0140-6736(18)32279-7

Gilder, D.A., Geisler, J.R., Luna, J.A., Calac, D., Monti, P.M., Spillane, N.S. et al. (2017) A pilot randomized trial of motivational interviewing compared to psycho-education for reducing and preventing underage drinking in American Indian adolescents. *Journal of Substance Abuse Treatment*, 82, 74–81. Available from: https://doi.org/10.1016/j.jsat.2017.09.004

Grober, E. & Buschke, H. (1987) Genuine memory deficits in dementia. *Developmental Neuropsychology*, 3, 13–36. Available from: https://doi.org/10.1080/87565648709540361

Harada, T., Aikawa, Y., Takahama, M., Yumoto, Y., Umeno, M., Hasegawa, Y. et al. (2022) A 12-session relapse prevention program vs psychoeducation in the treatment of Japanese alcoholic patients: a randomized controlled trial. *Neuropsychopharmacology Reports*, 42, 205–212. Available from: https://doi.org/10.1002/npr2.12248

Heather, N., Best, D., Kawalek, A., Field, M., Lewis, M., Rotgers, F. et al. (2018) Challenging the brain disease model of addiction: European launch of the addiction theory network. *Addiction Research and Theory*, 26, 249–255. Available from: https://doi.org/10.1080/16066359.2017.1399659

Hendershot, C.S., Witkiewitz, K., George, W.H. & Marlatt, G.A. (2011) Relapse prevention for addictive behaviors. *Substance Abuse Treatment, Prevention, and Policy*, 6, 17. Available from: https://doi.org/10.1186/1747-597X-6-17

Kayaoğlu, K. & Şahin Altun, Ö. (2022) The effect of combined cognitive-behavioral psychoeducation and music intervention on stress, self-efficacy, and relapse rates in patients with alcohol and substance use disorders: a randomized controlled trial. *Perspectives in Psychiatric Care*, 58, 968–977. Available from: https://doi.org/10.1111/ppc.12884

Kohn, R., Saxena, S., Levav, I. & Saraceno, B. (2004) The treatment gap in mental health care. *Bulletin of the World Health Organization*, 82, 858–866.

Koob, G.F. & Volkow, N.D. (2016) Neurobiology of addiction: a neurocircuitry analysis. *Lancet Psychiatry*, 3, 760–773. Available from: https://doi.org/10.1016/S2215-0366(16)00104-8

Kwako, L.E., Momenan, R., Grodin, E.N., Litten, R.Z., Koob, G.F. & Goldman, D. (2017) Addictions neuroclinical assessment: a reverse translational approach. *Neuropharmacology*, 122, 254–264. Available from: https://doi.org/10.1016/j.neuropharm.2017.03.006

Lewis, M. (2018) Brain change in addiction as learning, not disease. *The New England Journal of Medicine*, 379, 1551–1560. Available from: https://doi.org/10.1056/NEJMra1602872

Lindgren, K.P., Hendershot, C.S., Ramirez, J.J., Bernat, E., Rangel-Gomez, M., Peterson, K.P. et al. (2019) A dual process perspective on advances in cognitive science and alcohol use disorder. *Clinical Psychology Review*, 69, 83–96. Available from: https://doi.org/10.1016/j.cpr.2018.04.002

Maatoug, R., Bihan, K., Duriez, P., Podevin, P., Silveira-Reis-Brito, L., Benyamina, A. et al. (2021) Non-invasive and invasive brain stimulation in alcohol use disorders: a critical review of selected human evidence and methodological considerations to guide future research. *Comprehensive Psychiatry*, 109, 152257. Available from: https://doi.org/10.1016/j.comppsych.2021.152257

Magill, M., Martino, S. & Wampold, B. (2021) The principles and practices of psychoeducation with alcohol or other drug use disorders: a review and brief guide. *Journal of Substance Abuse Treatment*, 126, 108442. Available from: https://doi.org/10.1016/j.jsat.2021.108442

Malhotra, A., Drexler, K., Hsu, M. & Tang, Y.L. (2023) Medication treatment for alcohol use disorder in special populations. *The American Journal on Addictions*, 32, 433–441. Available from: https://doi.org/10.1111/ajad.13455

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Malinauskas, R. & Malinauskiene, V. (2019) A meta-analysis of psychological interventions for Internet/smartphone addiction among adolescents. *Journal of Behavioral Addictions*, 8, 613–624. Available from: https://doi.org/10.1556/2006.8.2019.72

Manning, V., Garfield, J.B.B., Reynolds, J., Staiger, P.K., Piercy, H., Bonomo, Y. et al. (2022) Alcohol use in the year following approach bias modification during inpatient withdrawal: secondary outcomes from a double-blind, multi-site randomized controlled trial. *Addiction*, 117, 2837–2846. Available from: https://doi.org/10.1111/add.15989

Manning, V., Garfield, J.B.B., Staiger, P.K., Lubman, D.I., Lum, J.A.G., Reynolds, J. et al. (2021) Effect of cognitive bias modification on early relapse among adults undergoing inpatient alcohol withdrawal treatment: a randomized clinical trial. *JAMA Psychiatry*, 78, 133–140. Available from: https://doi.org/10.1001/jamapsychiatry.2020.3446

Marlatt, G.A. & Gordon, J.R. (1985) *Relapse prevention: maintenance strategies in the treatment of addictive behaviors*, 1st edition. New York: Guilford Press.

Mason, B.J. & Heyser, C.J. (2021) Alcohol use disorder: the role of medication in recovery. *Alcohol Research: Current Reviews*, 41, 7. Available from: https://doi.org/10.35946/arcr.v41.1.07

Maurage, P., Rolland, B., Pitel, A.L. & D'Hondt, F. (2024) Five challenges in implementing cognitive remediation for patients with substance use disorders in clinical settings. *Neuropsychology Review*. Available from: https://doi.org/10.1007/s11065-023-09623-1

McConnaughy, E.A., DiClemente, C.C., Prochaska, J.O. & Velicer, W.F. (1989) Stages of change in psychotherapy: a follow-up report. *Psychotherapy*, 26, 494–503. Available from: https://doi.org/10.1037/h0085468

Mohamed, R., Wen, S. & Bhandari, R. (2022) Self-help group attendance-associated treatment outcomes among individuals with substance use disorder in short-term residential facilities. *Journal of Studies on Alcohol and Drugs*, 83, 383–391. Available from: https://doi.org/10.15288/jsad.2022.83.383

Moos, R.H. & Moos, B.S. (2006) Rates and predictors of relapse after natural and treated remission from alcohol use disorders. *Addiction*, 101, 212–222. Available from: https://doi.org/10.1111/j.1360-0443.2006.01310.x

Nardo, T., Batchelor, J., Berry, J., Francis, H., Jafar, D. & Borchard, T. (2022) Cognitive remediation as an adjunct treatment for substance use disorders: a systematic review. *Neuropsychology Review*, 32, 161–191. Available from: https://doi.org/10.1007/s11065-021-09506-3

Nasreddine, Z.S., Phillips, N.A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I. et al. (2005) The Montreal cognitive assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, 53, 695–699. Available from: https://doi.org/10.1111/j.1532-5415.2005.53221.x

Noël, X., Bechara, A., Brevers, D., Verbanck, P. & Campanella, S. (2010) Alcoholism and the loss of willpower: a neurocognitive perspective. *Journal of Psychophysiology*, 24, 240–248. Available from: https://doi.org/10.1027/0269-8803/a000037

Nolin, P. (1999) Analyses psychométriques de ladaptation française du California Verbal Learning Test (CVLT). *Revue Québécoise de Psychologie*, 20, 43–60.

Nutt, D.J., King, L.A., Phillips, L.D. & Independent Scientific Committee on Drugs. (2010) Drug harms in the UK: a multicriteria decision analysis. *Lancet*, 376, 1558–1565. Available from: https://doi.org/10.1016/S0140-6736(10)61462-6

Prochaska, J.O. & DiClemente, C.C. (1983) Stages and processes of self-change of smoking: toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, 51, 390–395. Available from: https://doi.org/10.1037//0022-006x.51.3.390

Rezapour, T., Barzegari, M., Sharifi, E., Malmir, N., Ghiasvand, H., Salehi, M. et al. (2021) Neuroscience-informed psychoeducation for recovery: a program to promote metacognition in people with substance use disorders. *Basic and Clinical Neuroscience*, 12, 597–606. Available from: https://doi.org/10.32598/bcn.2021.809.3

Saunders, J.B., Aasland, O.G., Babor, T.F., de la Fuente, J.R. & Grant, M. (1993) Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption—II. *Addiction*, 88, 791–804. Available from: https://doi.org/10.1111/j.1360-0443.1993.tb02093.x

Schwarzinger, M., Thiébaut, S.P., Baillot, S., Mallet, V. & Rehm, J. (2017) Alcohol use disorders and associated chronic disease—a national retrospective cohort study from France. *BMC Public Health*, 18, 43. Available from: https://doi.org/10.1186/s12889-017-4587-y

Skinner, H.A. & Sheu, W.J. (1982) Reliability of alcohol use indices: the lifetime drinking history and MAST. *Journal of Studies on Alcohol*, 43, 1157–1170. Available from: https://doi.org/10.15288/jsa.1982.43.1157

Stavro, K., Pelletier, J. & Potvin, S. (2013) Widespread and sustained cognitive deficits in alcoholism: a meta-analysis. *Addiction Biology*, 18, 203–213. Available from: https://doi.org/10.1111/j.1369-1600.2011.00418.x

Stroop, J.R. (1935) Studies of interference in serial verbal reactions. *Journal of Experimental Psychology*, 18, 643–662. Available from: https://doi.org/10.1037/h0054651

Tracy, K. & Wallace, S.P. (2016) Benefits of peer support groups in the treatment of addiction. *Substance Abuse and Rehabilitation*, 7, 143–154. Available from: https://doi.org/10.2147/SAR.S81535

van der Linden, M., Coyette, F., Poitrenaud, J., Kalafat, M., Calicis, F., Wyns, C. et al. (2004) L'épreuve de rappel libre/ rappel indicé à 16 items (RL/RI-16). In: van der Linden, M., Adam, S., Agniel, A. & Membres du GRENEM (Eds.) *L'évaluation des troubles de la mémoire: présentation de quatre tests de mémoire épisodique avec leur étalonnage*. Marseille: Solal, pp. 25–47.

Venegas, A., Donato, S., Meredith, L.R. & Ray, L.A. (2021) Understanding low treatment seeking rates for alcohol use disorder: a narrative review of the literature and opportunities for improvement. *The American Journal of Drug and Alcohol Abuse*, 47, 664–679. Available from: https://doi.org/10.1080/00952990.2021.1969658

Verdejo-Garcia, A., Rezapour, T., Giddens, E., Khojasteh Zonoozi, A., Rafei, P., Berry, J. et al. (2023) Cognitive training and remediation interventions for substance use disorders: a Delphi consensus study. *Addiction*, 118, 935–951. Available from: https://doi.org/10.1111/add.16109

Volkow, N.D., Koob, G.F. & McLellan, A.T. (2016) Neurobiologic advances from the brain disease model of addiction. *The New England Journal of Medicine*, 374, 363–371. Available from: https://doi.org/10.1056/NEJMra1511480

Wechsler, D. (1997) Wechsler Adult Intelligence Scale—Third Edition (WAIS-III). APA PsycTests https://doi.org/10.1037/t49755-000

World Health Organization. (2018) *Global status report on alcohol and health 2018*. Geneva: World Health Organization.

Yeh, M.Y., Tung, T.H., Horng, F.F. & Sung, S.C. (2017) Effectiveness of a psychoeducational programme in enhancing motivation to change alcohol-addictive behaviour. *Journal of Clinical Nursing*, 26, 3724–3733. Available from: https://doi.org/10.1111/jocn.13744

How to cite this article: Maurage, P., Boudehent, C., Ferrié, L., Cabé, N. & Pitel, A.-L. (2024) Are we just talking in circles? Impact of psychoeducation on disease knowledge and relapse in severe alcohol use disorder. *Alcohol: Clinical and Experimental Research*, 48, 1383–1394. Available from: https://doi.org/10.1111/acer.15375

29937175, 2024, 7, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/acer.15375 by Bibliothecaire En Chef Uni Catholique De Louvain (Ucl), Wiley Online Library on [14/02/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License