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The impact of free choice in alcohol treatment. Primary outcomes of the self-match study

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ABSTRACT

Introduction: A paternalistic approach to treatment planning is common, but there is a growing interest in involving clients in the planning of their own treatment, both in medical care and psychotherapy. Several studies on matching patients to treatment have failed to improve outcome. Studies on Shared Decision-Making in mental health are encouraging but somewhat ambiguous in addiction treatment.
Objective: This study investigated whether self-matching (Informed Choice) to treatment improves alcohol consumption, retention, and quality of life.
Method: 402 consecutive clients (female 46.7 %, mean age 47.4) seeking treatment for alcohol use disorder at the outpatient clinic in Odense, Denmark were enrolled in this single-blinded randomized controlled trial. Clients randomized to the intervention group watched an 8-minute video presentation of the treatments and then chose the treatment they preferred. Clients in the treatment as usual (TAU) group were allocated to treatment by an evidence-based algorithm. Measurements on alcohol consumption, quality of life, and retention in care were completed at baseline and 6-month follow-up.
Results: There was no significant difference on primary and secondary outcome measures between the Informed Choice group and TAU group at 6-month follow-up. 80 % of clients in the Informed Choice group were satisfied with being randomized to self-matching whereas 24 % in the TAU group were satisfied with being assigned by expert matching.
Conclusion: Our hypothesis, that outcome is improved if clients choose their own treatment, was not supported. However, an important finding is that client self-matching is just as beneficial as expert matching.

1. Introduction

A paternalistic approach to treatment planning is common, whereby the clinician is the decision maker and not only recommends but also decides what treatment possibilities to offer the client without asking for the client's preferences (Barry and Edgman-Levitan, 2012). However, within recent years there has been increasing interest in involving patients in the planning of their own treatment, both in medical care and psychotherapy. In patient-centered health care, growing emphasis has been placed on shared decision-making (Barry and Edgman-Levitan, 2012; Elwyn et al., 2014) and patient activation (Hibbard et al., 2004, 2007). In addiction care, a prototypic issue is client/treatment matching, based on expert knowledge and judgement (Babor and Del Boca, 2003; Miller et al., 2019; Orford, 2006). The utility of expert judgment was directly evaluated by the Project MATCH Research Group (Match, 1993) which tested the predictive validity of 21 a priori hypotheses about which clients would respond best to each of three different treatments (Project MATCH Research Group, 1997a; Project MATCH Research Group, 1997b). Few hypotheses were supported and nine of them trended in the opposite direction, questioning whether expert

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matching is any better than random assignment to treatments. Similarly, another large study on treatment matching, the United Kingdom Alcohol Treatment Trial (UKATT Research Team, 2005), could not confirm the matching hypothesis and concluded that treatment outcome was not improved by matching clients to treatment method.

The rather disappointing findings of the expert matching studies has amongst others led to increased focus on client involvement in treatment planning. Approaches to involvement in treatment planning span a continuum from paternalistic assignment at one end to client self-matching (Informed Choice) at the other. An example of paternalistic assignment in addiction treatment is mandatory disulfiram or offering one specific treatment option (for instance cognitive behavioral therapy) in contrast to describing a series of treatment options and treatment goals to clients and allowing them to choose (informed choice). In between these two end points lies Shared Decision Making (SDM), a collaborative approach where clinician and client discuss treatment options and preferences, and then incorporate that information into a treatment plan. Results from the medical field have proved SDM to be fruitful (Elwyn et al., 2012), but studies and systematic reviews from the fields of mental health and addiction treatment are inconclusive (Buchholz et al., 2014; Hell and Nielsen, 2020). It has been argued that SDM in mental health should be considered as a process rather than a single session (Elwyn et al., 2014) and one of the findings from a systematic review (Joosten et al., 2008a) was that positive results were associated with SDM as a process. The third strategy is an Informed Choice approach, which is the focus of this study. In Informed Choice, the clinician provides relevant information to the client who then chooses a preferred approach. Informed Choice may enhance self-efficacy, and clients are more likely to follow through with an approach they have chosen from among options (Miller and Hester, 1986; Deci and Ryan, 1985). A recently published systematic review on Alcohol Use Disorder relapse (Sliedrecht et al., 2019) found that low self-efficacy predicts increased risk of relapse, hence it is important to have a treatment regimen that increases self-efficacy, and one way to do that is to increase volition and autonomy (Ryan and Deci, 2017).

Theoretically, there are a series of potential links between client involvement and improved outcome of treatment, one of these being increased motivation due to the involvement. Self-Determination Theory describes how the concept of motivation builds on three basic psychological needs: autonomy, competence, and relatedness. To thrive, all three basic needs must be fulfilled. The Self-Determination Theory thus offers theoretical implications of the different methods of treatment planning. In theory, a paternalistic approach undermines autonomy because the client has no choice, whereas the need for competence and relatedness can, theoretically, be fulfilled. In contrast, Shared Decision Making and Informed Choice can in theory fulfil all three needs, although there may be a risk that relatedness and competence can become undermined in the Informed Choice approach if the client feels left alone with the responsibility for choosing his or her treatment. At the same time, free Informed Choice is the level of patient involvement that differs the most from expert matching. The impact of the client's informed free choice in treatment planning (compared with expert matching) has not yet been investigated in a controlled design. This study was designed to explore the impact of the client's free choice on outcome of treatment.

The present study is a randomized controlled trial, involving clients seeking treatment for alcohol use disorder, comparing the outcome of an Informed Choice approach with paternalistic treatment planning. We hypothesized that clients who choose their own treatment would benefit more from treatment than those allocated to treatment through an algorithm. In the present article, we report main outcomes from the study, being retention, quality of life, and the following three drinking outcome measures: number of heavy drinking days (primary outcome), number of drinking days, and drinks per drinking day. Furthermore, we provide information on clients' satisfaction with the treatment and their perception of the information material provided. See pre-registered hypothesis at clinicaltrials.gov identifier: NCT03278821.

2. Materials and method

2.1. Study design

The study was conducted as a randomized controlled trial. All new clients seeking treatment at the outpatient alcohol treatment center in Odense who fulfilled the inclusion criteria received oral and written information about the study. When clients approach the clinic, they receive a pretreatment course of 1–3 session of Motivational Interviewing. Thereafter, they are invited to participate in the full course program, that starts with a thorough baseline interview to plan the treatment. At this point, a total of 440 consecutive clients were approached for participation in the study and 402 (91 %) were enrolled. Description of power calculation is available in the protocol article (Hell et al., 2018). The main reasons for non-enrollment (n = 38) were unwillingness to participate and language difficulties, such as clients who had language difficulties leading to problems with engaging in Danish or English-speaking therapies. Eight subjects were enrolled but later removed due to baseline interview data missing; hence the analysis is based on n = 396 participants. Reporting of this study follows the guidelines provided by Katie Witkiewitz and colleagues (Witkiewitz et al., 2015).

2.1.1. Setting

The study was performed at the alcohol treatment center in Odense, Denmark. The center offers acute treatment (outpatient treatment of withdrawal symptoms and 1–3 sessions of motivational interviewing) in addition to planned individual treatment courses. All treatment is free of charge, not mandatory, and clients can remain anonymous unless pharmacological treatment is needed. Clients do not need referral to receive treatment, and by far most clients are self-referred to treatment (n = 311, 78.5 %). A few clients are referred to treatment by the GP (n = 44, 11.1 %) or social services (n = 41, 10.4 %). The majority of clients undergo acute treatment before planned treatment. Approximately 350 clients start planned treatment at the outpatient alcohol treatment center in Odense every year. Most clients are native Danish speaking. Before initiating planned treatment, clients participate in an assessment interview, based on the Addiction Severity Index. Following the interview and by means of an algorithm, clients are assigned to planned treatment, i.e. one of five treatment options. The algorithm matches treatment to the client characteristics, collected by means of ASI. The five treatment options are: individual cognitive therapy (CBT), family therapy (based on CBT), contract therapy (a very structured CBT), and environmental therapy (a community reinforcement approach) all with a rather strong evidence of efficacy (Deci and Ryan, 1985; Nielsen and Nielsen, 2015). The fifth treatment option is supportive therapy where there is less evidence of efficacy. Four of the above-mentioned treatment options consist of eight individual sessions that are held every second week. Environmental therapy is more flexible. The treatments are, thus, similar in duration and number of sessions provided, except environmental therapy is less structured, involves more collaboration with other services, and clients can participate in social activities. Further, contrary to the other treatment options, environmental therapy is often not terminated after 6 months. The treatments are described in more detail elsewhere (Ryan and Deci, 2017; Nielsen et al., 1998; Nielsen and Nielsen, 2018). The staff at the treatment center is divided into two teams: an acute-treatment team and a planned- treatment team. The acute-treatment team staff consists of a physician, social workers, and nurses. The physician does diagnostic assessments and prescribe medication if needed. Social workers and nurses undertake acute treatment for withdrawal symptoms (nurses together with the physician), treatment baseline interview and pretreatment Motivation Interviewing. The planned-treatment team consists of social workers and nurses, and Master of Public Health Science staff. All of whom have undertaken years of therapeutic practice. Further, all staff are engaged in all five treatment methods and 3 staff members are appointed to each client to ensure a steady treatment flow and colleague supervision of intervention. Staff from the research unit are not involved in the treatment and treatment staff are not involved in research projects.

2.2. Procedure

When seeking treatment at the alcohol treatment center, all clients received treatment as usual and were thus offered pharmaceutical treatment for withdrawal symptoms if needed and had a 1–3 sessions of Motivational Interviewing (MI) before assessment and initiation of one of the five treatment options. At this point clients were invited to participate in the study by a research assistant, who was not part of the clinical staff. If they agreed to participate, they were randomized to either self-matching to treatment (Informed Choice) or allocation to treatment by an algorithm (TAU). The algorithm was developed, based on follow up studies from locally performed trials (Nielsen and Nielsen, 2015; Nielsen et al., 1998), and previously found to increase the overall outcome of treatment, compared to a historic control group, where clients were allocated to treatment based on the expertise of the therapist only (Nielsen and Nielsen, 2018). This is in line with the decision-making literature (Kahneman and Egan, 2011), which argues that systematic evidence-based algorithms outperform expert decisions, probably because expert decisions can be affected by matters such as mood, fatigue, and hunger. The algorithm is based on a composite score from the seven problem areas derived from the Addiction Severity Index (ASI) (Meyers et al., 1995): medical health, employment, alcohol and drug use, illegal activity, social problems, family relations, and psychiatric problems and then clients are matched to the degree of structure of the treatment options.

After randomization, the research staff showed the clients in the self-match group a video presentation of the five treatment options and based on that information the clients chose the treatment they preferred. The algorithm matches clients' characteristics to the structure of the treatment, hence, the focus in the video presentation was on providing information on the structure of the treatment options. The treatment options were shown in random sequence to avoid selection bias. To make sure that the clients' decisions were not affected by others, the clients were asked to choose their treatment after having seen the videos and before they left. The vast majority of clients chose immediately after having seen the videos, and only a few had additional questions, wished to see the videos one more time, or needed to think for some minutes before they chose their treatment.

2.3. Randomization and blinding

Clients were assigned to conditions by the randomization module in REDCap™ (Research Electronic Data Capture), OPEN (Odense Patient data, 2021). The randomization module was programmed by a data manager from OPEN, hence none of the researchers had any influence on the randomization procedure. The treatment staff were blinded to randomization. Clients were aware of the condition to which they were assigned, as was the first author who oversaw baseline interviews, because those clients randomized to Informed Choice had to see a video presentation of the treatment options. A research assistant who was blind to condition assignments performed all follow up interviews. The clinical staff, who delivered the treatment courses, were not informed about whether the client had chosen the treatment option themselves or was assigned to the treatment option by means of the algorithm. We cannot, however, be completely sure that none of the clients told their therapists about whether or not they were randomized to Informed Choice or TAU.

2.4. Participants

The recruitment period was from June 2017 to March 2019. All consecutive clients who sought planned outpatient treatment (i.e. not only seeking acute treatment for withdrawal symptoms) in Alkoholbehandlingen (alcohol treatment center) in Odense, Denmark, were offered to participate in the study if they met all the below inclusion criteria:

1 Fulfilling DSM-IV criteria for alcohol abuse or dependence.
2 Aged 18 or more.
3 Danish or English speaking.
4 Agreeing to participate in the study.

And not fulfilling either of the below exclusion criteria:

1 Having severe psychosis, measured by clinical interview conducted by a psychiatrist
2 Having major cognitive impairment, measured by a mini mental status examination (Folstein and Folstein, 1975).

2.5. Data

The following instruments were administered to provide standardized measures of alcohol problems:

- Addiction Severity Index (ASI) (Meyers et al., 1995).
- Timeline Follow Back (TLFB) (Sobell and Sobell, 1992).

Secondary outcome variables were:

- Retention in care as measured by drop-out during treatment.
- Quality of life as measured by the WHO Quality of Life questionnaire.

These validated and widely used instruments will allow direct comparison with mainstream clinical trials.

2.6. Outcome measures

The three drinking outcomes were measured by drinking status on each of the prior 30 days at baseline and follow-up (Barry and Edgman-Levitan, 2012). An excessive (heavy) drinking day was assessed when the client (both men and women) had 5 drinks or more in one day (Elwyn et al., 2014). Number of drinking days was assessed when the client consumed any alcoholic beverage in a day (Hibbard et al., 2004). Drinks per drinking day were calculated for each day and the total amount of consumed drinks was averaged by number of drinking days.

In the protocol article and in the Trials registration, it was described that number of sessions attended would be used to measure retention in care as outcome. The routine procedure for how to register attendance in the clinic's electronic case notes was, however, changed during the study. Duration of treatment is approximately 4 months and the new procedure involved that treatment staff note if clients are still in treatment every second month. Retention in care to treatment was measured as drop out during the planned treatment course. If the planned treatment course was completed, the client was considered adherent. If clients had their treatment period extended, they were still considered to be adherent to treatment.

The WHO Quality of Life (QOL) questionnaire is a 26-item scale divided into four domains; physical health, psychological health, social relations, and environment. Each domain is a compilation of various questions measured on a 5-point Likert scale where 1 = very unsatisfied and 5 = very satisfied.

The duration of assessment interview was approximately 3 h in total. The assessment was divided into two sessions to avoid fatigue. Randomization was done at the end of the last interview.

2.7. Statistical analyses

At baseline we examined differences in dichotomous variables using Pearson's χ^2-test and independent t-tests for continuous variables. Multiple linear regression analyses were conducted to evaluate and compare the two groups (TAU and Informed Choice) at follow-up on number of days with drinking, excessive drinking, drinks per drinking day and the four QOL domains, and multiple logistic regression was used on retention in care. The proportion of clients assigned to the five treatments differed between the two groups; hence, type of treatment was integrated as a confounder in the analyses. Since randomization secured that baseline characteristics did not differ between groups, the only auxiliary variable used in the regression analyses were treatment method. Treatment method was used as confounder because the distribution of treatment method differed between Informed Choice group and TAU.

We investigated the differences in baseline variables between those participants who completed the study (n = 325) and those who dropped

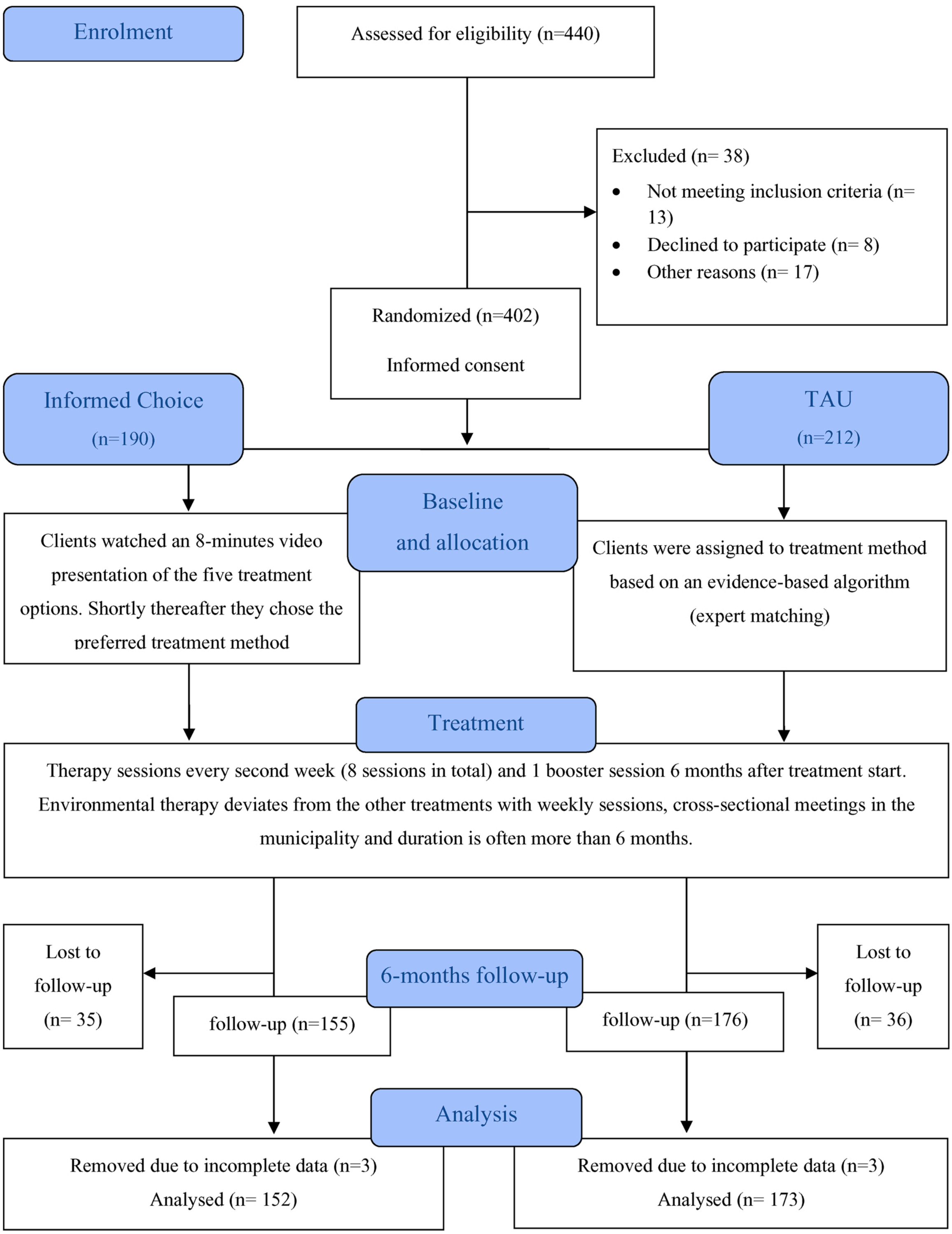

Fig. 1. CONSORT flow diagram.

out (n = 71), using Pearson's χ^2-test and independent t-tests for continuous variables. These results, along with sensitivity analysis, are available by request to the first author. The baseline characteristics did not differ significantly between dropouts and completers (p values > 0.05).

Missing outcomes due to lost to follow-up were assumed to be missing at random (MAR) and were addressed by the MICE (multivariate imputation by chained equations) method of multiple multivariate imputation. Age, sex, cohabiting status, level of education and employment status were included as auxiliary variables in the imputation model. The auxiliary variables for multiple imputation were chosen if they either correlated with the variables to be imputed or explained the mechanism leading to missing data. A total of 20 imputed datasets were generated and analyzed separately, and results were combined using the rules by Rubin (Rubin (1976)). Furthermore, sensitivity analyses in form of complete case and baseline-observation-carried-forward computation were carried out.

All analyzes were conducted in Stata version 16. A two-tailed alternative was used with a significance level of p = 0.05.

2.8. Client and public involvement

Clients and the public were not involved in designing, planning, conducting, or dissemination of this study.

3. Results

3.1. Enrollment and follow-up

Fig. 1 summarizes the client flow through the study. A total of 78 (20 %) were lost to follow-up.

3.2. Sample characteristics

There was no significant difference between groups on baseline characteristics (Table 1). Mean age was 47.41 and 46.7 % were female. Marital status was compiled into cohabiting or not. Employment status was separated into three categories: employed, unemployed (out of work but available for the job market), and other. The category "other" includes ordinary retirement, premature retirement or other circumstances that categorize clients as not available to the job market. Full time students are also categorized as other. Cooccurring substance use was cannabis (n = 17, 4.3 %), cocaine (n = 12, 3.0 %), Benzodiazepine (n = 11, 2.8 %), amphetamine (n = 5, 1.3 %), and methadone (n = 1, 0.3 %). There was no difference between groups on any substance.

3.3. Treatment exposure and satisfaction

There was a statistically significant difference between Informed Choice and TAU regarding the distribution of treatment methods that the clients received. Table 2 shows how the Informed Choice group chose supportive therapy twice as much as the TAU group, and in contrast the TAU group was assigned to contract treatment more often than was chosen by the Informed Choice group. There was no difference between Informed Choice and TAU-group in how many clients received cognitive therapy, family therapy, and environmental therapy. Because of this difference, treatment type was adjusted for in the primary and secondary outcome analyses (Fig. 2).

In the Informed Choice group, 53 (28 %) chose the same treatment options as the algorithm would have assigned them to. On all the outcome measures there were no significant differences between those who chose the same treatment as the algorithm prescribed, and those who did not.

There was no significant difference between Informed Choice group and TAU regarding treatment satisfaction. In the Informed Choice group, 75 % reported they were either satisfied or very satisfied with the

Table 1
Client characteristics.

Factor	Level	Total	Informed Choice	TAU	p-value
N		396	187	209	
Sex	Female	185 (46.7 %)	83 (44.4 %)	102 (48.8 %)	0.38
Age at baseline, years mean (SD)		47.41	47.27 (13.9)	47.53 (13.6)	0.85
Cohabiting		161 (40.7 %)	77 (41.2 %)	84 (40.2 %)	0.94
Level of education	None	96 (24.2 %)	46 (24.6 %)	50 (23.9 %)	0.94
	Undergraduate	189 (47.7 %)	91 (48.7 %)	98 (46.9 %)	
	Graduate	87 (22.0 %)	40 (21.4 %)	47 (22.5 %)	
Employment status*	Employed	184 (46.5 %)	89 (47.6 %)	95 (45.5 %)	0.22
	Unemployed	76 (19.2 %)	41 (21.9 %)	35 (16.7 %)	
	Other	136 (34.4 %)	57 (30.5 %)	79 (37.8 %)	
Received Treatment before	Yes	208 (52.5 %)	99 (52.9 %)	109 (52.2 %)	1.00
Cooccurring substance use	Yes	59 (149%)	35 (187%)	24 (115%)	0.07
Pharmaceutical treatment	Yes	88 (22.2 %)	43 (23.0 %)	46 (22.0 %)	0.12
Years with excessive drinking	<10	151 (38.1 %)	72 (38.5 %)	79 (37.8 %)	0.89
Age at drinking debut	<16	221 (55.8 %)	105 (56.1 %)	116 (55.5 %)	0.90
Number of drinking days baseline, mean (SD)		18.68 (10.44)	19.38 (10.12)	18.06 (10.70)	0.21
Number of heavy drinking days baseline, mean (SD)		16.24 (10.77)	17.14 (10.60)	15.45 (10.88)	0.12
Drinks per drinking day baseline, mean (SD)		11.74 (8.40)	12.15 (8.58)	11.38 (8.23)	0.37
QoL** physical domain, mean (SD)		14.11 (3.13)	13.90 (3.19)	14.28 (3.07)	0.23
QoL** psychological domain, mean (SD)		12.18 (2.47)	11.98 (2.62)	12.36 (2.32)	0.13
QoL** social relationship domain, mean (SD)		12.55 (3.29)	12.49 (3.33)	12.60 (3.26)	0.73
QoL** environment domain, mean (SD)		14.32 (2.30)	14.25 (2.30)	14.38 (2.31)	0.57

* Unemployed (out of work but available for the job market), where the category "other" includes ordinary retirement, premature retirement or other circumstances that categorize clients as not available to the job market. Full time students were also categorized as other.

** WHO Quality of Life Questionnaire.

Table 2
Treatment chosen in Informed Choice group compared to what the algorithm would have chosen.

Algorithm\Chosen	Contract treatment	Cognitive therapy	Family therapy	Supportive therapy	Environmental therapy	Total
Contract treatment	8 (4.5 %)*	16 (9.0 %)	1 (0.6 %)	12 (6.8 %)	1 (0.6 %)	38 (21.5 %)
Cognitive therapy	8 (4.5 %)	33(18.6 %)*	5 (2.8 %)	20 (11.3 %)	4 (2.3 %)	70 (39.5 %)
Family therapy	5 (2.8 %)	20 (11.3 %)	3(1.7 %)*	12 (6.8 %)	1 (0.6 %)	41 (23.2 %)
Supportive therapy	4 (2.3 %)	7 (4.0 %)	0	7 (4.0 %)*	4 (2.3 %)	22 (12.4 %)
Environmental therapy	1 (0.6 %)	4 (2.3 %)	0	0	1 (0.6 %)*	6 (3.4 %)
Total	26 (14.7 %)	80 (45.2 %)	9 (5.1 %)	51 (28.8 %)	11 (6.2 %)	177 (100 %)

Cross table showing where the algorithm would have placed clients from the Informed Choice group. For example, 26 chose contract treatment whereas the algorithm would have placed 38 in contract treatment.
* Match between algorithm and self-matching (n = 52 (29.4 %) chose the same treatment as the algorithm would have chosen).

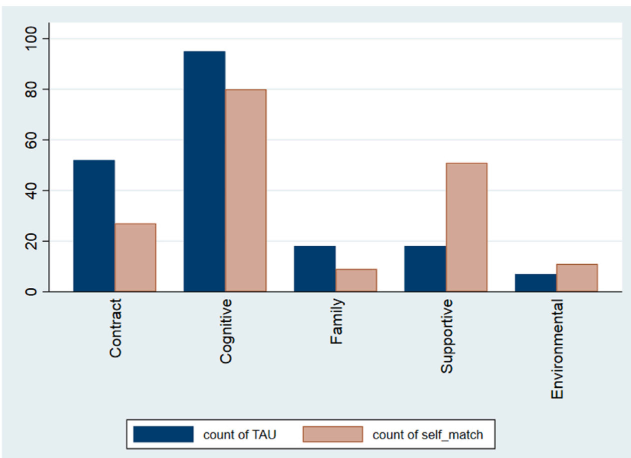

Fig. 2. Distribution of treatment method.
There is significant difference between Informed Choice group (self-match) and TAU on allocation to contract treatment and supportive therapy.

treatment. In the TAU group, 74 % reported that they were either satisfied or very satisfied.

There was, however, a significant difference (p-value <0.001) regarding satisfaction on whether the client got the opportunity to choose. 120 (80 %) in the Informed Choice group were satisfied with being randomized to self-matching whereas only 43 (25 %) in the TAU group were satisfied with being randomized to expert matching.

3.4. Primary outcome

The primary outcome measure of this study is number of heavy drinking days. Both groups showed great reduction in number of heavy drinking days. The Informed Choice group reduced number of heavy drinking days from 17.14 (SD 10.60) to 3.43 (SD 6.63) and the TAU group reduced heavy drinking days from 15.45 (SD 10.88) to 3.58 (SD 7.02) For a complete overview of the outcome measures see Table 3. There were no significant differences between Informed Choice and TAU; likewise, regression analyses showed no significant differences between the groups (see Table 4).

3.5. Secondary outcomes

All four QOL domains were improved after treatment, but there was no statistically significant difference between Informed Choice and TAU (see Table 3). Further, the secondary drinking outcomes also improved overall, but there was no statistical difference between Informed Choice and TAU. Likewise, there was no statistical significance on retention.

4. Discussion

First, our hypothesis that clients would profit more from treatment if they chose their own intervention was not confirmed, hence simply letting people choose did not reduce drinking more than TAU. Put differently: clients who chose their own treatment had outcomes just as good as those assigned to treatment by an evidence-based algorithm.

Next, we found that when given a free choice, clients tended to choose treatment methods that are less evidence-based than what the algorithm would have assigned, and less structured than the most evidence-based methods. It may be that treatment methods that are labeled as supportive and described as less firmly structured are perceived by the clients as a more person-centered and flexible

Table 3
Outcome measures at baseline and 6-month follow-up, by Informed Choice (experimental group) compared to Expert choice (TAU) in allocation to treatment option for Alcohol Use Disorder.

	Group	Baseline	6-month follow-up	p-value[1]
Primary outcome				
Number of heavy drinking days[2], mean (SD)	Informed Choice	17.14 (10.60)	3.43 (6.93)	0.15
	TAU	15.45 (10.88)	3.58 (7.02)	
Secondary outcome				
Number of drinking days[2], mean (SD)	Informed Choice	19.38 (10.12)	5.99 (8.16)	0.36
	TAU	18.06 (10.70)	6.29 (8.39)	
Number of drinks per drinking day[2], mean (SD)	Informed Choice	12.15 (8.58)	4.44 (6.61)	0.69
	TAU	11.38 (8.23)	4.04 (6.14)	
Retention in care[3]	Informed Choice	–	60.5 %	0.85
	TAU	–	66.5 %	
QoL[4] physical domain, mean (SD)	Informed Choice	13.90 (3.19)	15.26 (2.83)	0.22
	TAU	14.28 (3.07)	15.23 (2.75)	
QoL[4], psychological domain, mean (SD)	Informed Choice	11.98 (2.62)	13.54 (2.10)	0.16
	TAU	12.36 (2.32)	13.65 (2.06)	
QoL[4], social domain, mean (SD)	Informed Choice	12.49 (3.33)	13.75 (2.78)	0.19
	TAU	12.60 (3.26)	14.45 (2.80)	
QoL[4], environment domain, mean (SD)	Informed Choice	14.25 (2.30)	14.53 (2.06)	0.81
	TAU	14.38 (2.31)	14.67 (2.07)	

[1] P-value is referring to the difference between Informed Choice and TAU at 6-month follow-up.
[2] Drinking outcomes is measured by Timeline Follow Back that measures drinking the preceding 30 days.
[3] Retention in care is measured on drop out.
[4] Quality of life is measured by WHO Quality of Life Questionnaire which is a 5-point Likert scale. Each domain is an average score of questions in the respective domain.

Table 4
Outcome of Informed Choice (experimental group) compared to Expert choice (TAU) in allocation to treatment option for Alcohol Use Disorder* (N = 396).

	Unadjusted (95 % CI)	Unadjusted p-value	Adjusted[4] (95 % CI)	Adjusted[4] p-value
Number of heavy drinking days[1]	1.22 (−1.30;3.75)	0.3395	1.40 (−1.23;4.02)	0.2944
Number of drinking days[1]	1.17 (−1.73;4.06)	0.4257	1.36 (−1.62;4.34)	0.3676
Drinks per drinking day[1]	0.74 (−1.60;3.08)	0.5320	0.94 (−1.51;3.38)	0.4504
QoL[2] physical domain	−0.03 (−0.97;0.91)	0.9524	−0.21 (−1.16;0.75)	0.6724
QoL[2] psychological domain	−0.31 (−1.02;0.40)	0.3888	−0.51 (−1.22;0.21)	0.1621
QoL[2] social relationship domain	0.02 (−0.94;0.97)	0.9750	−0.08 (−1.02;0.86)	0.8701
QoL[2] environment domain	−0.68 (−1.36;0.01)	0.0535	−0.88 (−1.58; −0.17)	0.0154
	Unadjusted OR (95 % CI)	**Unadjusted** p-value	**Adjusted**[4] OR (95 % CI)	**Adjusted**[4] p-value
Retention in care[3]	0.94 (0.48;1.82)	0.8520	0.83 (0.41;1.67)	0.6026

*TAU is reference group. Continues outcome data is analyzed by means of linear regression analyses, binary outcome is analyzed by means of logistic regression analysis.
[1] Number of days with 5 or more standard units per day during the 30 days prior to 6 months follow-up.
[2] Quality of life at 6 months follow up, measured by WHO Quality of Life Questionnaire which is a 5-point Likert scale. Each domain is an average score of questions in the respective domain.
[3] Retention in care is measured as premature drop out from planned treatment.
[4] Adjusted analysis is controlled for differences in the treatment options that the clients chose/were allocated to.

approach, and thus found appealing. Treatment method was adjusted for in the analysis and there was no difference between Informed Choice and TAU on the outcome from any treatment. It is not within the scope of this article to analyze each treatment methods impact on outcome, only the impact of Informed Choice; hence, a further analysis and discussion of this topic is suggested for further research. Nonetheless, it seems that it does not matter if clients choose differently from what experts would recommend, - the overall outcome was the same.

Patients who take part in treatment decisions perceive their care as better quality and rate clinicians' trustworthiness higher (Pham et al., 2020); further, Pham and collegues, found that the Informed Choice approach had no negative impact on the perception of those who preferred a paternalistic approach (Pham et al., 2020). The most important point from this study is that clients are not disadvantaged by choosing their own treatment options, so why not let them choose? According to Self-Determination Theory (Deci and Ryan, 1985), the fulfilment of all three basic psychological needs - autonomy, competence, and relatedness - are essential for people to experience intrinsic motivation. Informed Choice would indeed improve autonomy; however, the other two needs might be thwarted. The need for competence can be fulfilled if clients feel well-informed and capable of choosing between the options. In this study, the majority reported that they found the information adequate and satisfactory, therefore we believe that the need for competence was fulfilled. The need for relatedness was, however, perhaps thwarted since the person informing about the treatment was not the one delivering the treatment. In a paternalistic approach, there is a risk of all three needs being thwarted, hence we argue that Informed Choice is preferable. A third approach, Shared Decision Making, has been studied elsewhere (Joosten et al., 2008b, 2009) and has shown that outcome from treatment is somewhat improved for substance use disorder and psychiatric treatment. We did not investigate SDM in this study, but it is likely that all three psychological needs are met, especially, when SDM is a process throughout the treatment and not reduced to a single session at the beginning of treatment. It has been argued that true SDM in mental health must be a process throughout treatment (Elwyn et al., 2012; Joosten et al., 2008b). In addition to the "why" question, there is the "how" question. Clients can be involved in decision making at the organizational level in addition to decision making at the individual level. Could treatment centers profit from having an advisory board of former clients? At the treatment center in Odense, clients are assigned 3 staff members that undertake the therapy. This is done to avoid a mismatch and to secure a stable treatment course; however, it might interrupt a fruitful therapeutic alliance, hence future research should include decision making at the organizational level.

5. Conclusions

This study has clearly illustrated that clients can be invited to participate in treatment selection. Clients did choose more in favor of less structured therapies, and this had no effect on treatment outcome. About 80 % of clients preferred to choose treatment by themselves, so why not let them choose? One might even argue that in case of limited staff resources, the resources should be used on treatment and simply let clients do the matching. Our data do not support the paternalistic belief that people with substance use disorders are unable to choose what is best for them.

6. Limitations and strengths

The present study has some limitations. All clients who enter the Odense clinic are given 1–3 sessions of MI before enrollment in treatment, which could mask a motivatonal effect of self-matching. It is possible that Informed Choice might have a larger impact without prior MI. It has been argued that MI could be applied as a method for doing SDM (Elwyn et al., 2012), and therefore our finding of no benefit from Informed Choice (relative to TAU) cannot be generalized to clinics not using MI priori to enrollment in a planned treatment course for AUD.

It is also a limitation that we have no information about the reasons why the clients in the Informed Choice-group made the particular choices that they made. Future studies could investigate what clients find appealing and prioritize when making decisions about treatment. Further, 52.9 % in the Informed Choice group had received treatment previously which could influence their choice of treatment in this study; hence, it is a limitation that we did not ask which treatment method they previously received. It can also be considered a limitation that the treatment options are not analyzed separately; this is, however, not within the scope of the present paper.

Finally, it is a limitation that the design is not a double blinded RCT because knowledge of the opposite allocation to treatment might have influenced clients' perception of the treatment they received.

Nevertheless, the present study also has a series of strengths. It is the first study of its kind, investigating the impact of choice in treatment for AUD. It was performed in daily clinical practice with consecutives clients and few exclusion criteria. In addition, very few clients refused participation in the study, the study group is large, and the follow-up rate was high.

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Author contribution

Anette Søgaard Nielsen, Morten Ellegaard Hell, Bent Nielsen, and

William R. Miller have contributed to all sections of the manuscript. Anna Mejldal contributed to the method and results sections and designing graphs and tables. Anette Søgaard Nielsen, Morten Ellegaard Hell, Bent Nielsen, and William R. Miller designed the study. Statistical analyses were performed by Anna Mejldal and Morten Ellegaard Hell.

Statemen of ethics

All participants of the study gave a written informed consent. The study protocol was accepted by the Regional Scientific Ethical Committee for Southern Denmark, Reference number: S-20170027. All procedures in the study are in accordance with the second Declaration of Helsinki.

Declaration of Competing Interest

The authors report no declarations of interest.

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