German Medical Students' Beliefs about How Best to Treat Alcohol Use Disorder

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Key Words

Alcohol use disorder · Smoking · Treatment · Medical education · Knowledge

Abstract

Background/Aims: A minority of German medical students believe they know how to support smokers willing to quit. This paper examined whether the same would be true for treating alcohol use disorder (AUD), and individual factors associated with incorrect beliefs about the effectiveness of methods to treat AUD. **Methods:** In this cross-sectional study, 19,526 undergraduate students from 27 German medical schools completed a survey addressing beliefs about the effectiveness of different methods of overcoming AUD. Beliefs about AUD treatment effectiveness were compared across the 5 years of undergraduate education and predictors identified by means of multiple linear regression. **Results:** Even in the fifth year, 28.1% (95% CI: 26.5–29.7) of students believed that willpower alone was more effective for overcoming AUD than a comprehensive treatment program. The only significant predictor of this belief was a similar belief for stopping smoking. **Conclusion:** Our results indicate that a considerable proportion of German medical students overestimate the effectiveness of willpower to treat

smoking and AUD. The addictive nature of these disorders needs to be stressed during undergraduate medical education to ensure that future physicians will be able and motivated to support patients in their quit attempts.

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Introduction

Alcohol use disorder (AUD) is a prevalent, chronic, relapsing condition, characterized by a fluctuating and devastating course, increased mortality and morbidity, and low long-term abstinence rates. It is one of the most frequent psychiatric disorders and causes enormous societal costs [1–5]. Treatment options for AUD include self-help groups [6], support provided by general practitioners [7], and inpatient [8] and outpatient interventions [9] including rehabilitation [5, 10, 11]. Other interventions (e.g. acupuncture) have been used, but their effectiveness in achieving long-term abstinence is unproven [12, 13]. Willpower alone is less likely to lead to recovery than use of behavioural support of some kind [14].

Counselling patients with AUD and advising them about effective treatment options is a core clinical skill that needs to be acquired during undergraduate medical

education. Twenty-five years ago, primary care residents in an American training programme felt more confident treating arterial hypertension than treating AUD [15]. More recently, an analysis of Canadian medical students' examination results revealed knowledge gaps regarding withdrawal treatment protocols, low-risk drinking guidelines and taking an alcohol history [16]. Similar deficits were reported for students from four medical schools in New Zealand, although this longitudinal study found a clear knowledge increase from year 2 to year 6 of medical education [17]. In Germany, 4 out of 5 final-year medical students thought they did not know how to treat problem drinking, and it was hypothesised that these perceptions were related to false beliefs about the effectiveness of interventions used to help these patients [18]. A smaller study suggested that willpower alone is wrongly considered to be an effective method to stop smoking by a large proportion of students [19]. So far, students' views on the effectiveness of willpower to treat AUD have not been assessed in great detail. We hypothesised that students who believe that willpower alone is most effective to overcome tobacco dependence will also believe that willpower alone is most effective to treat AUD.

This study addressed the following research questions:

- (1) Which treatment options for AUD are believed to be effective by medical students in all years of undergraduate education?
- (2) Which student characteristics and features of medical education are associated with correct and false beliefs in final-year students?

Methods

Study Design

The SAME (Smoking and Alcohol in Medical Education) study is a cross-sectional survey of undergraduate medical students in Germany [18]. It assesses student perceptions and knowledge on various topics including smoking, AUD, hypertension and diabetes. Data were collected in summer 2009. For the purpose of this paper, analyses were restricted to items related to AUD. Ethics approval for this study was obtained from the Institutional Review Board of Göttingen Medical School (proposal No. 24/2/09). This investigator-initiated study was funded jointly by Johnson & Johnson GmbH (Johnson & Johnson Consumer Healthcare Germany) and the authors' institutions.

Participants

All 36 German medical schools were invited to participate in the study, and 27 of them asked their students to complete the survey questionnaire. According to enrolment figures provided by participating medical schools, 39,358 students were eligible to take part in the study. Of these, 19,526 completed the questionnaire (response rate 49.6%).

Measures

The questionnaire was based on a survey tool used in a pilot study [19]. The revised questionnaire contained questions on demographic characteristics, smoking status, self-rated knowledge of health consequences and treatment options for AUD, and beliefs about the effectiveness of seven different methods to achieve long-term alcohol abstinence. The wording of the effectiveness question was, "Treatment of alcohol dependent patients is regarded as 'very effective' if continuous abstinence rates are approximately 30% one year after the intervention. Within this context, please give your estimates of the effectiveness of the methods listed below." A similar question addressed the effectiveness of methods to achieve long-term smoking cessation. Students were asked to provide their effectiveness ratings on a 6-point rating scale anchored at 'not effective' and 'very effective'. Self-perceived knowledge on health consequences and treatment options was also captured using identical 6-point rating scales. For the purpose of the present analysis, responses were dichotomised by collapsing the two most positive options into a positive response. Finally, students were asked whether they felt that teaching related to AUD needed to be intensified at their medical school and whether they thought they could name any of the six aspects of FRAMES (feedback, responsibility, advice, menu of options, empathy, self-efficacy, see [20]). This acronym summarises the major factors of motivational interviewing. The question regarding knowledge on FRAMES was included in the questionnaire because it represents an indicator of perceived knowledge on one of the most effective approaches of counselling patients with AUD and advising them about effective treatment options.

The complete questionnaire used in the SAME Study can be found in the online supplementary material (Part A; for all online supplementary material, see www.karger.com/doi/10.1159/000346672) to this article.

Procedure

Paper copies of the questionnaire were sent to all sites after identifying site coordinators (either faculty or students). Between April and July 2009, students were invited to complete the questionnaire during classroom sessions. During a study meeting held in Göttingen in February 2009, site coordinators were trained to take a standardised approach to announcing the study in classrooms. Coordinators were asked to read aloud a text that was identical for all medical schools. As an incentive, a prize of EUR 2,500 was awarded to the study site with the highest response rate (based on enrolment data provided by the deans' offices). After being sent back to the coordinating centre in Göttingen, completed surveys were scanned and analysed.

Statistical Analysis

We calculated the proportion of students who believed they knew the health consequences of and treatment options for AUD and who thought they could name any of the six aspects of FRAMES.

Research Question 1. Options on the 6-point rating scale were coded from 1 (corresponding to low effectiveness) through 6 (corresponding to high effectiveness). Thus, higher mean values refer to higher effectiveness. The mean reported effectiveness of the various treatments was calculated. A repeated measures general linear model was used to determine whether students viewed certain treatments as more effective than others. ANOVA analyses were used to determine whether there was any difference in reports of effectiveness across the 5 years of education. Post hoc analyses were conducted using the Bonferroni correction.

Table 1. Characteristics of respondents by year, % (n)

	Year of medical education				
	1st year (n = 4,534)	2nd year (n = 4,309)	3rd year (n = 3,550)	4th year (n = 3,212)	5th year (n = 3,062)
Female	64.9 (2,847)	64.0 (2,633)	64.1 (2,190)	66.8 (2,064)	62.9 (1,842)
Smoking	19.9 (872)	21.1 (873)	19.9 (681)	19.6 (610)	19.7 (578)
Ex-smokers	11.3 (490)	12.8 (528)	15.2 (513)	16.2 (502)	16.6 (481)
Support public smoking ban	80.9 (3,476)	81.5 (3,293)	84.5 (2,841)	86.4 (2,640)	86.8 (2,521)
Perceived knowledge of health consequences of AUD	54.2 (2,457)	63.5 (2,736)	72.6 (2,576)	76.6 (2,459)	83.7 (2,562)
Perceived knowledge of treatment options for AUD	13.6 (615)	15.1 (651)	11.2 (399)	16.0 (513)	25.7 (788)
Perceived ability to name at least one aspect of FRAMES	15.5 (702)	15.6 (673)	12.6 (447)	12.8 (412)	20.4 (624)
Belief that a smoking cessation program is more effective than willpower alone to help smokers quit	32.2 (1,461)	32.0 (1,380)	34.3 (1,218)	39.4 (1,264)	41.7 (1,278)

Table 2. Characteristics of fifth-year medical students as a function of holding correct beliefs regarding the effectiveness of methods to achieve alcohol abstinence, % (n)

	Holding correct beliefs	
	yes (n = 1,815)	no (n = 860)
Female	62.3 (1,130)	59.9 (515)
Smokers	18.8 (342)	19.7 (169)
Ex-smokers	14.5 (264)	17.6 (151)
Perceived knowledge of health consequences of AUD	85.2 (1,546)	87.4 (752)
Perceived knowledge of treatment options for AUD	26.1 (474)	25.8 (222)
Perceived ability to name at least one aspect of FRAMES	22.4 (406)	19.5 (168)
Belief that a smoking cessation program is more effective than willpower alone to help smokers quit	67.3 (1,107)	9.2 (79)

Research Question 2. In order to address this research question, the dataset was restricted to final year students. To assess the predictors of correct beliefs regarding the effectiveness of methods to achieve alcohol abstinence, fifth-year medical students were split into those with and without ‘essential correct beliefs’, the latter being defined as assuming that a comprehensive treatment programme including detoxification and subsequent alcoholism therapy is more effective than willpower alone in producing long-term abstinence. Although logistic regression is generally used for dichotomous dependent variables, linear regression was used to assess associations between teaching and student characteristics and ‘essential correct beliefs’. The latter was entered as the dependent variable while all other variables reported in table 2 were entered as potential predictors. Linear regression, unlike logistic regression, allows the use of pair-wise as opposed to list-wise handling of missing data. Moreover, linear analyses are often viewed as superior and have been found to provide accurate statistics for dichotomous outcome variables even with small samples and skewed distributions [21]. Both unadjusted and adjusted regression analyses were conducted (the latter adjusted for all the variables under investigation and medical school); 95% CI are given. Coefficients from the linear regression analysis can be interpreted as the difference in probability for having a certain value on the dependent variable for units with different values on an independent variable.

Proportions are given as percentages and 95% CI. Responses to dichotomous questions were compared using χ^2 tests. Owing to missing values for specific items in some questionnaires, different denominators apply to all analyses. Statistical analysis was performed using SPSS 18.0 (SPSS Inc., Chicago, Ill., USA). Due to multiple testing being used in this study, alpha levels of 5, 1 and 0.1% were used to assess statistical significance, and these were coded accordingly.

Results

Two thirds of participating students were female (64.6%; 63.9–65.3). The proportion of students who believed they could name any of the six aspects of FRAMES was only 16.4% (15.8–16.9). Table 1 shows the characteristics of respondents by year of education.

The mean scores for reported effectiveness of the various treatment options for AUD were as follows: acupuncture (2.83 ± 1.29), self-help literature (3.02 ± 1.20), GP advice (3.15 ± 1.24), willpower alone (3.88 ± 1.64), inpa-

Fig. 1. Student beliefs about the long-term effectiveness of various methods to achieve continuous abstinence from alcohol. Bar sections represent proportions of students choosing one particular option on the 6-point rating scale. Green colour corresponds to

highest effectiveness (i.e. sustained quit rates of 30% over 12 months) and red to no effectiveness. GP = General practitioner; Tx = treatment.

tient detoxification (4.14 ± 1.19), self-help groups (4.32 ± 1.07) and a comprehensive treatment programme (5.16 ± 0.94). There was a significant difference in reported effectiveness of the various treatments [$F(6,73926) = 7,250.2$; $p < 0.001$].

Figure 1 and table S1 (online suppl. material, Part B) show the mean effectiveness scores and significant tests for the various types of treatment as a function of year of medical education. Compared with less advanced students, more advanced students reported lower perceived effec-

tiveness of willpower, GP advice, acupuncture and inpatient detoxification ($p < 0.05$). No significance differences across the years of undergraduate education were noted for self-help groups and comprehensive treatment programmes (i.e. those interventions that were believed to be most effective by a majority of students).

Students in the fifth year provided substantially more favourable effectiveness ratings for inpatient detoxification and self-help groups than for GP advice. Even willpower alone was rated as more effective than receiving ad-

Table 3. Association between fifth-year medical student characteristics and holding correct beliefs about the treatment of AUD

	Unadjusted β (CI 95%)	Adjusted ¹ β (CI 95%)
Gender	-0.02 (-0.06 to 0.02)	-0.02 (-0.06 to 0.02)
Smokers	-0.01 (-0.06 to 0.03)	0.02 (-0.03 to 0.06)
Ex-smokers	-0.05 (-0.10 to -0.01)*	0.01 (-0.04 to 0.05)
Perceived knowledge of health consequences of AUD	-0.06 (-0.12 to -0.01)*	-0.03 (-0.08 to 0.03)
Perceived knowledge of treatment options for AUD	0.01 (-0.04 to 0.04)	0.02 (-0.02 to 0.06)
Perceived ability to name at least one aspect of FRAMES	0.03 (-0.01 to 0.07)	0.03 (-0.01 to 0.07)
Belief that a smoking cessation program is more effective than willpower alone to help smokers quit	0.50 (0.47 to 0.53)***	0.49 (0.45 to 0.52)***

¹ Adjusted for all the variables in the unadjusted analysis and medical school.

Significance levels: *** $p < 0.001$; * $p < 0.05$.

vice from a physician. Of all the students in this cohort, 59.3% (57.5–61.0) were classified as holding ‘essential correct beliefs’ and 28.1% (26.5–29.7) as holding false beliefs. Thirteen percent (11.5–13.8) were unclassified as they failed to report the effectiveness of willpower and/or comprehensive interventions. Table 1 shows the characteristics of fifth-year medical students as a function of their beliefs. The proportion of male students, active smokers and former smokers was slightly larger in the group holding false beliefs. The most striking difference between students with false and correct beliefs was observed regarding effectiveness ratings for the treatment of smokers: more than 50% of students who thought that, to help smokers quit, a comprehensive intervention was more effective than willpower alone believed that this was also true for the treatment of AUD. These findings were confirmed in the linear regression analysis (table 3). After adjustment, believing that willpower alone was more effective than a comprehensive group intervention for smoking cessation was strongly associated with believing that willpower was also more effective than comprehensive interventions to treat AUD.

Discussion

To our knowledge, this is the largest cross-sectional study addressing student beliefs of the effectiveness of various methods to achieve long-term alcohol abstinence in patients with AUD. Although we found significant differences in knowledge between students in different years of medical education, these differences were small. Even at the end of undergraduate medical education, 28.1% of students wrongly believed that willpower alone was more effective

than a comprehensive treatment program. Believing that willpower alone was also more effective in helping smokers quit than a comprehensive group intervention was the only significant predictor of such false beliefs.

Undergraduate medical education needs to equip future physicians with the basic knowledge and skills needed to treat patients and prevent future harm. Graduates must be aware of preventive strategies and ways of implementing them. This study shows that this goal is not being entirely met by a substantial number of medical students in Germany. However, some important aspects of the students’ beliefs were fairly correct: Thus, the rank order of students’ subjective effectiveness ratings correctly reflects a hypothetical rank order that may be based on the results of treatment outcome research on formal interventions for AUD (see [6, 7, 12, 13, 22–24]). There is, for example, ample evidence that comprehensive treatment programmes are most successful and that self-help literature and GP advice show significant but small effects. Additionally, there is no scientific evidence of any effect of acupuncture on long-term abstinence.

Students’ ratings show a considerable overestimation of the effectiveness of self-help groups and inpatient detoxification as exclusive and sole therapy options to achieve alcohol abstinence in patients with AUD. The most troubling finding of this study is that a substantial proportion of students believed that willpower alone was an effective way of achieving long-term abstinence in patients with AUD. It is not known to what extent willpower might constitute a change factor involved in the process of ‘natural recovery’ of less impaired problem drinkers of community samples [14]. However, there is no evidence that willpower is a major factor of recovery in clinical pop-

ulations. This is also evident from research on the long-term course of alcohol use disorder in treatment-seeking populations [9, 25–29]. Physicians who are unaware of this are likely to provide inadequate counselling, thereby missing a chance to prevent serious health consequences and save lives. The situation may be further aggravated by the fact that students provided particularly low ratings for the effectiveness of GP advice to treat AUD. It may be hypothesised that future physicians who do not believe that general practitioners can make much of a difference are rather unlikely to raise issues like smoking and AUD once they take on full responsibility for patients.

The strongest association found in our linear regression analysis was between beliefs regarding the treatment of AUD and beliefs regarding the treatment of smoking: students who thought that willpower was more effective than a comprehensive smoking cessation intervention were also much more likely to believe that willpower alone is more effective than comprehensive interventions to treat AUD. This suggests that a significant subsample of medical students does not view AUD as an addictive disorder requiring medical treatment. The reasons underlying this misperception remain to be elucidated, but students holding such false beliefs are unlikely to provide adequate counselling to smokers and patients with AUD, thus missing an important chance to guide them towards effective treatments.

Limitations

The SAME study included almost half of all medical students enrolled at 27 medical schools in one European country. There is some evidence that our findings on smoking can be generalised to medical education in the UK [19] and Italy [30]. The response rate of 49.6% suggests that selection bias might have had an impact on our results. However, the proportion of female students in our sample is identical to that reported for medical education in Germany as a whole [31], and our analysis controlled for various potential confounders as well as the medical school individual students were enrolled at. In addition, response rates in individual lecture theatres

were as high as 80–90%. Thus, selection bias was mainly caused by non-attendance at lectures. As student absenteeism is associated with lower performance levels [32, 33], selection bias has most likely led us to overestimate the proportion of students holding correct beliefs, indicating that the situation may in fact be worse than suggested by the data. Because this study aimed at a brief questionnaire that could be completed within several minutes, we did not include many topics that may also have been indicative of students' knowledge on treatment of AUD, e.g. screening questionnaires, diagnostic measures, or the role of different psychotherapy approaches, social work and pharmacological agents like naltrexone, disulfiram and acamprosate. Future studies that have a less restricted timeframe available may consider which of these topics should be assessed next.

Implications for Future Research

Future research needs to assess how teaching on AUD can best be included in undergraduate curricula. This involves the identification of adequate instructional formats and assessment tools as well as evaluation methods to document student progress [34].

Conclusions

Even in their final year of study, 1 in 4 German medical students tends to favour willpower alone as the most effective method of achieving long-term alcohol abstinence in patients with AUD. These students are also highly likely to believe that willpower is effective in helping smokers quit. The impact of undergraduate medical training on these beliefs may be increased by implementing a longitudinal teaching module of practical training sessions on the treatment of addictions. Recent research also suggests that summative assessments are major drivers of student learning so that objective practical assessments of student ability to treat AUD should be a mandatory part of such teaching modules.

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