

Syddansk Universitet

Identifying parents with risky alcohol consumption habits in a paediatric unit – are screening and brief intervention appropriate methods?

Bjerregaard, Lene Berit Lydersen; Gerke, Oke; Rubak, Sune; Høst, Arne; Wagner, Lis

Published in:
Scandinavian Journal of Caring Sciences

DOI:
[10.1111/j.1471-6712.2010.00838.x](https://doi.org/10.1111/j.1471-6712.2010.00838.x)

Publication date:
2011

Document Version
Final published version

[Link to publication](#)

Citation for published version (APA):

Bjerregaard, L. B. L., Gerke, O., Rubak, S., Høst, A., & Wagner, L. (2011). Identifying parents with risky alcohol consumption habits in a paediatric unit – are screening and brief intervention appropriate methods? *Scandinavian Journal of Caring Sciences*, 25(2), 383- 393. DOI: 10.1111/j.1471-6712.2010.00838.x

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Identifying parents with risky alcohol consumption habits in a paediatric unit – are screening and brief intervention appropriate methods?

Lene B.L. Bjerregaard MSc (Soc) (PhD student)¹, Oke Gerke PhD (Statistician)^{2,3}, Sune Rubak PhD (Senior Registrar and Associate professor)⁴, Arne Høst DMSci (Professor)⁵ and Lis Wagner Dr.PH (Professor)¹

¹Institute of Clinical Research, Research Unit of Clinical Nursing, the Faculty of Health Sciences, University of Southern Denmark, Denmark,

²Department of Nuclear Medicine, Odense University Hospital, ³Department of Biostatistics, University of Southern Denmark, Denmark,

⁴Department of Paediatrics, Aarhus University Hospital, Denmark and ⁵Department of Paediatrics, H.C.Andersen Children's Hospital, Odense University Hospital, Denmark

Scand J Caring Sci; 2010

Identifying parents with risky alcohol consumption habits in a paediatric unit – are screening and brief intervention appropriate methods?

Background: There is no systematic identification of parents with excessive alcohol use who have a child admitted to hospital. Children in families with excessive alcohol issues form a high risk group as substantial alcohol consumption has a damaging influence on a child emotionally, cognitively, socially and physically. Alcohol consumption is a sensitive issue, and health staff needs knowledge, qualifications and adequate training in communicating with parents about this taboo.

Aim:

- To identify specific patterns in subgroups of parents by comparing results from screening and demographic variables
- To identify systematic patterns in staff members by demographic variables to decide whether these factors influence the screening results.

Methods: During 1 year, screening and brief intervention (SBI) was accomplished, including health staff conducting dialogues with parents of a hospitalized child using motivational interviewing (MI) and screening for risky alcohol behaviour by Cut down, Annoyance from others, feel

Guilty, Early-morning Craving (CAGE)-C. Data were analysed by descriptive statistics, and relationships were tested with a statistical significance level of 0.05, using SPSS (version 16.0).

Results: Motivational dialogues with 779 parents were conducted by 43 staff members, and 11% of the parents were screened positive for risky alcohol behaviour. Drinking alcohol 4 days a week or more and drinking alcohol outside mealtimes were main risk factors. Parents' gender was the strongest predictor of screening positive and OR was 6.8 for men (CI 4.03–11.74) compared to women, $p < 0.0001$. An OR of 1.2 for parents' age (CI 1.02–1.42) indicates the risk of screening positive increases with age, $p = 0.027$.

Conclusions: Brief intervention using CAGE-C and MI has proven successful in mapping parents' alcohol consumption patterns and in identifying parents with risky alcohol consumption habits. Health staff is able to manage health promotion and prevention when having the right competences and when being supervised.

Keywords: screening, opportunistic brief intervention, motivational interviewing, risky alcohol behaviour, children, barriers among health staff.

Submitted 6 July 2010, Accepted 6 September 2010

Introduction

Alcohol is the third most significant risk factor for ill health and premature death in the EU, behind tobacco and high blood pressure. In the EU, it is estimated that one in six

adults drinks at hazardous or harmful levels, defined as at least 40 g alcohol per day for a man and 30 g for a woman (1). In United States, it is estimated that one of every four children is living with an adult who has an alcohol problem (2).

A person's excessive use of alcohol affects close relatives, and especially children are susceptible to their parents' excessive use of alcohol (1, 2).

Children in families with excessive alcohol use constitute a high risk group. Substantial alcohol consumption has a damaging influence on a child's development and can affect the child emotionally, cognitively, socially and

Correspondence to:

Lene Bjerregaard, Institute of Clinical Research, Research Unit of Nursing Sciences, J.B.Winsløvsvej 9 A, 3rd, DK-5000 Odense C, Denmark.

E-mail: lbjerregaard@health.sdu.dk

physically (3–5). These children tend to have frequent contacts to general practitioners and are admitted to hospital more often because of accidents, incontinence, persistent headaches, stomach aches, nausea, muscle and skeletal pain or infections (3, 6, 7).

When children are admitted to hospital with blurred psychosomatic symptoms that needs unravelling, they could originate from alcohol-related problems in the family. Several studies highlight that admission of children is an opportunity to detect parents' excessive use of alcohol, to inform and educate the parents or intervene if necessary and thus prevent the development of further alcohol abuse in the family (4, 8, 9).

A systematic review of hospital screening studies for high-risk alcohol consumption found a prevalence of positive screens from 16 to 26% (8). Although brief advice has proven to be a cost-effective evidence-based treatment method in Europe, <10% of the hazardous and harmful drinkers are identified and <5% of those who could benefit are offered brief advice (10).

Systematic screening of apparently well-functioning parents of children admitted to hospital has not yet been carried out, but will, most likely, produce a different result than when screening adults admitted to hospital.

Studies on alcohol abuse in parents of hospitalized children

An Australian study screened 7.8% of 193 parents positive for excessive use of alcohol by structured interviews based on the AUDIT CORE screening test in a paediatric emergency department (11). An American study screened 11.5% of 929 parents positive for problem alcohol use by an anonymous, self-administered questionnaire based on AUDIT and TWEAK screening test in a paediatric primary care clinic (12). These two studies concluded that there is an undetected prevalence of parents with risky alcohol behaviour and that parents were generally willing to talk about their alcohol consumption habits.

Health staff facing the topic of alcohol

Unwillingness to face the topic of alcohol and other personal attitudes towards excessive use of alcohol in the clinical staff may cause problems to be ignored or that the patient is exposed to judgmental behaviour (4, 13). Personal attitudes may originate from their own alcohol consumption habits, alcohol abuse problems in their own network or genuine consideration for the child, lack of time and insecurity or fear of reactions when discussing alcohol habits (14, 15).

The greatest barriers, though, for discussing life style factors such as alcohol consumption habits are that staff lacks professional skills and knowledge about alcohol abuse treatment. Moreover, staff may lack appropriate communicative skills concerning life style matters (4, 16).

Brief intervention

Brief intervention, focus on mobilizing own resources for change is empirically proven to work well in relation to life style problems, including alcohol issues (17–20). Studies using the communication method 'motivational interviewing' (MI) have reported better results than traditional counselling, especially regarding life style changes (21–25). MI has proven effective in 15-minute dialogues and has reported no negative side effects (19, 23). To our knowledge, MI focusing on alcohol consumption habits has not previously been applied to parents with hospitalized children.

Aims and objectives

The paper reports results from screening and brief intervention (SBI), including health staff conducting preventive dialogues with parents of hospitalized children. The staff members use the MI method and screen for risky alcohol behaviour using CAGE-C (26). SBI in this context is systematic and opportunistic; the parents have not complained about or asked for advice or help concerning alcohol-related problems.

The intervention is targeted at parents with excessive alcohol habits who are not physically dependent of alcohol.

This study investigates whether it is possible

- to identify specific patterns in subgroups of parents by comparing results from CAGE-C to demographic variables related to the parents
- to identify systematic patterns in the staff members by demographic variables to gain insight into whether these factors influence the results of the CAGE-C screening.

Methods

Participants

The participants were all parents with a child admitted to the Department of Paediatrics, H. C. Andersen Children's Hospital, Denmark, in the period of September 2007 to November 2008; the children were admitted to either the neonatal care unit for infants below 1 months of age or the general medical unit for children aged 1–16 years. A *parent* was defined as any person with legal care obligations towards the hospitalized child, i.e. biological, foster and adopting parents holding full or shared custody of the child as well as cohabiting adults. Exclusion criteria were parents who did not read or speak Danish and parents who had already participated in the study. During the intervention period, 2468 admissions were registered. The number of admissions included mothers and multiple admissions, twins and triplets. Nurses on strike for a period of 8 weeks caused delay in that period. Controlling for these factors, parents of 1384 admitted children were finally included by registration: 763 from the neonatal unit and 621 from the

medical unit. A total of 18 (1.3%) parents declined the invitation directly (eight parents from the neonatal unit and 10 from the medical unit). From 640 admissions, 779 parents, including 139 couples, answered the screening questions. Details on inclusion are shown in Fig. 1.

The intervention

When admitted to the ward, the staff included parents into the project by entering an identification code from the screening sheet to a label with personally identifiable data of the child. These data were kept confidential, leaving the screening sheet only with an identification code and no personally recognizable information. Prior to entering the project, the parents received an information sheet explaining the project, followed by oral information from staff, emphasizing participation as being voluntary and that they could withdraw at any point without consequences for the treatment of the child. The preventive dialogue was conducted by the staff using the MI method.

The preventive dialogue lasted 10–30 minutes.

Data were entered and screened for errors by subsequently selecting a 20% sample by picking out the first 20

of every 100 screening sheets, following entry of all responses from the screening sheet. Two incidental typing errors were detected and corrected in the 20% sample selection according to 1.24% errors in the sample. No systematic errors were detected.

Methods of intervention

Prior to the intervention, the staff had completed a 5-day training course in MI, including basic knowledge of alcohol risk factors and abuse, and the principles in alcohol abuse treatment.

The course was conducted by a qualified *Trainer in MI*, based on the theoretical framework of MI by Miller & Rollnick (27). The course introduced the methods of MI by discussions and training in groups, involving participants in role-plays and workshops to practice the MI skills in the parent–staff relationship, focusing on alcohol consumption habits. As MI is client-centred, learning and being familiar with *the spirit* of the method is of great importance, as well as responding in a flexible and continuous way to a person's readiness to change (28). See *Description of MI* in Box 1 and *Where change must happen* in Box 2.

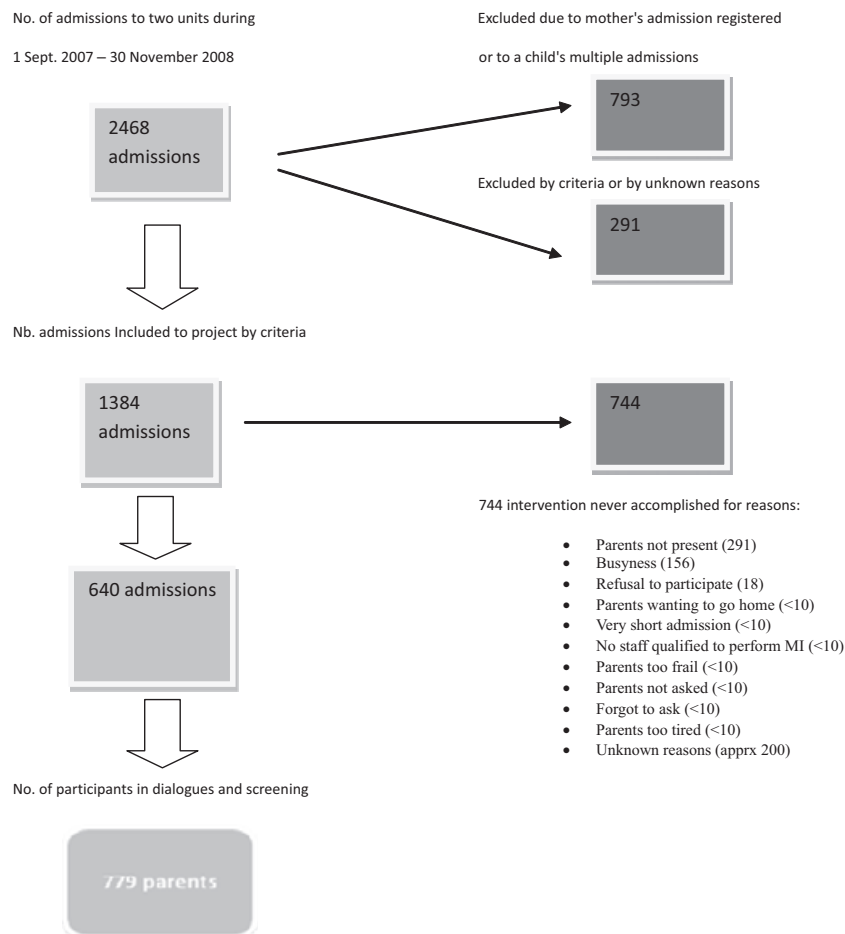


Figure 1 Flow diagram of inclusion and exclusion.

Box 1 Description of motivational interviewing

Definition of MI: Motivational interviewing is a directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence

The spirit of motivational interviewing

Motivation to change is elicited from the client and not imposed from without

It is the client's task, not the counsellor's, to articulate and resolve his or her ambivalence. Direct persuasion is not an effective method for resolving ambivalence

The counselling style is generally a quiet and eliciting one. Direct persuasion, aggressive confrontation and argumentation are the conceptual opposite of motivational

The counsellor is directive in helping the client to examine and resolve ambivalence

Readiness to change is not a client trait, but a fluctuating product of interpersonal interaction. The therapist is therefore highly attentive and responsive to the client's motivational signs

The therapeutic relationship is more like a partnership or companionship than expert/recipient roles. The therapist respects the client's autonomy and freedom of choice (and consequences) regarding his or her own behaviour

Is vital to distinguish between the spirit of motivational interviewing and techniques that we have recommended to manifest that spirit. The counsellor's task is to facilitate expression of both sides of the ambivalence impasse and guide the client towards an acceptable resolution that triggers change

From: Miller & Rollnick 1995 (28)

The screening instrument CAGE-C assesses persons in risk of having an alcohol problem.

Cut down, Annoyance from others, feel Guilty, Early-morning Craving (CAGE) was developed and validated by JA Ewing in the early 1980s (26). CAGE-Copenhagen is a variety of the original instrument, modified by a Danish research team (29). The original CAGE referred to life experience with alcohol, whereas the modification in CAGE-C narrows the experience to the past year (Box 3).

CAGE-C has been tested and compared to diagnostic interviews based on ICD criteria and biochemical markers (Golden Standards) on a randomly selected sample of adult surgical patients in a Danish hospital. CAGE-C was validated with a sensitivity of 0.94 (CI 0.82–0.99) and a specificity of 0.88 (CI 0.83–0.89) and with a positive and negative predictive value of 0.73 (CI 0.63–0.77) and 0.98 (CI 0.93–0.99), respectively (29). Ninety-five per cent confidence intervals (CI) are shown in parentheses.

Among other screening instruments, CAGE-C was chosen because of its short form and by that, easy to administer for the staff members in the clinical practice.

In addition to CAGE-C, demographic data along with the medical diagnosis were obtained. As it was voluntary to participate, reasons for not wanting to participate were

Box 2 Where change must happen to change practice

Staff members qualified by basic training course in MI ⇔

Changed professional behaviour in staff members ⇔

Staff uses MI in dialogues, focusing the parents' alcohol consumption patterns ⇔

Change in parents' attitude (reflections) to own use of alcohol ⇔

Change in parental behaviour

Inspired by Rubak et al. 2005 (23) . MI, motivational interviewing.

Box 3 CAGE-C screening test for risky alcohol behaviour

Within the last year

Have felt you ought to cut down on your drinking? Yes/no

Have people annoyed you by criticizing your drinking? Yes/no

Have you felt bad or guilty about your drinking? Yes/no

Have you had a drink first thing in the morning to steady nerves (eye-opener) Yes/no

How many days per week do you drink alcohol? 0 days... 7 days a week

Do you drink alcohol on weekdays outside mealtimes? Yes/no

A positive result was defined as two or more positive answers in questions 1–4 and 6; or one positive answer in question 1–4 and 6 in addition to alcohol intake on 4 or more days per week. [From: Zierau et al. 2005 (29)]. CAGE, Cut down, annoyance from others, feel guilty, early-morning craving.

asked. Staff members' name, age, years of experience and of employment in the unit were reported.

Medical ICD diagnosis of children was obtained from the patient registration office and examined by frequency tables to determine any systematic tendency of the staff preferring some groups of parents because of the diagnosis of the child.

Statistics

Data were explored using descriptive statistics. For continuous variables, summary statistics were provided by mean and standard deviation. For categorical variables, frequency tables were prepared. Cross-tabulations and graphs supported the investigation of the response pattern.

Underlying assumptions of inference tests were investigated by preliminary analysis to ensure an appropriate

application of the tests. Model fit was tested using Hosmer and Lemeshow's test.

Pearson's correlation coefficient was used to investigate the relationship between continuous variables. Chi-square and Fisher's exact test were used to establish relationships between categorical variables.

Standard multiple regression analysis was employed to assess the causal relationship between the number of negative and positive screens performed by 43 staff members as dependent variable on the one hand and the overall number of dialogues performed by each staff member, age of staff member, years of professional experience and years of employment in the unit as explanatory variables.

Logistic regression was performed to assess the impact of a number of factors on the likelihood that the parents would be screened positive. The model contained five independent variables (gender of parents, age of parents, age of staff, educational level of staff members and years of employment of staff member in the unit).

Statistical significance level was 0.05 for all statistical tests. Data were entered in and analysed by the statistical software package SPSS (version 16.0).

Ethical issues and approval

This study follows the recommendations in the Declaration of Helsinki (30) and was presented to and approved by the Ethical Committee of Science in the Region of Southern Denmark. According to Danish law, a formal permission is needed only if a biomedical study includes human tissue or blood samples.

Informed consent was given by all study participants. All personally identifiable data were kept safe and confidential following general recommendations (31). The study was not considered to strain the parents or children unnecessarily. Participation was optional, and the screening instruments and communicative methods applied are known and acknowledged in Danish clinical practice.

Results

Comparing results from CAGE-C to demographic variables related to the parents

Screening and brief intervention was accomplished in 779 parents, 501 women (64%) and 278 men (36%).

Age resembled a normal distribution with a minimum of 17 years and a maximum of 67 years, a mean of 35 years and a median of 35 years. A total of 53% of the parents were aged between 31 and 40 years.

In the group of 779 parents, 693 (89%) were screened negative and 86 (11%) were screened positive for risky alcohol behaviour. Among the screened positive parents were 66 men (76.7%) and 20 women (23.3%). The proportion of positively screened men (66 of 278, or 23.7%) was significantly larger than the proportion of positively screened women (20 of 501, or 4.0%), $p < 0.0001$ by Fisher's exact test, indicating a statistically significant difference in screening concerning gender.

In the group of parents screened positive, minimum, mean and maximum age was 23, 37.45 and 67 years, respectively. In the group of negatively screened patients, age ranged from 17 to 64 years with a mean value of 34.92 years.

The risk of getting positively screened increased with increasing age ($p = 0.037$, Freeman-Halton test with age classified into 10-year intervals).

Mating. In the group of 86 parents screened positive, there were 10 couples. This means that in 5 of 81 couples, both parents were screened positive (6.2%). In 61 cases (75.3%), the father was screened positive; in 15 cases (18.5%), the mother was screened positive.

CAGE-C. The results of CAGE questions 1, 2 and 3 (Table 1) demonstrate that 31–36% of the parents screened positive for risky alcohol behaviour agreed that they should decrease their alcohol consumption; they had been annoyed by others criticizing their alcohol behaviour, or

Table 1 Results CAGE-C, question 1–4, 6, and 7

Results by Cage-C N = 779	Group	Women	Men	Group	Screen pos Yes n = 86 (%)	Screen neg Yes n = 693 (%)
	Yes N = 779 (%)	Yes n = 501 (%)	Yes n = 278 (%)	No N = 779 (%)		
Cage1. Felt ought to cut down on drinking	37 (4.7)	15 (3.0)	22 (8.0)	742 (95.3)	31 (36.0)	6 (0.9)
Cage2. Annoyed by criticizing drinking	33 (4.2)	6 (1.2)	27 (9.8)	746 (95.8)	31 (36.0)	2 (0.3)
Cage3. Felt bad or guilty about drinking	46 (5.9)	19 (3.8)	27 (9.8)	732 (94.1)	27 (31.4)	19 (2.7)
Cage4. Had a drink first thing in the morning (eye-opener)	4 (0.5)	1 (0.2)	3 (1.1)	775 (99.5)	4 (4.7)	0 (0.0)
Cage6. Drink on week-days outside meals	158 (20.3)	48 (9.7)	111 (40.7)	621 (79.7)	66 (76.7)	94 (13.6)
Cage7. Want contact to alc. Treatment clinic	20 (2.6)	12 (2.4)	8 (2.9)	737 (94.6)	7 (8.1)	13 (1.9)

CAGE, cut down, annoyance from others, feel guilty, early-morning craving.

they felt bad or guilty about their own drinking in the past year, as opposed by 0.3–2.7% in the group of negatively screened parents.

Few persons in both groups agreed they have had a drink first thing in the morning (CAGE 4).

In the group of parents screened positive, three of four (76.7%) stated that they drank alcohol on weekdays without accompanying food (CAGE 6). The corresponding number was 13.6% in the group of parents screened negative.

Regarding CAGE question 5 'how many days a week do you drink alcohol' (Table 2), 77% of the group screened negative answered 0–1 time a week, opposed by 75% of the group screened positive stating they drank alcohol 4–7 days a week. In the group of people screened positive, 11% drank alcohol every day, whereas this was not the case for any of the people screened negative.

Few parents, 20 (2.6%), wanted contact information to an alcohol treatment clinic (CAGE 7) of whom seven persons originated from the group of positively screened parents (8.1%) and 13 belonged to the group of parents screened negative (1.9%). In all CAGE variables, there was a male dominance towards risky alcohol behaviour.

The combination of answers in the group of parents screened negative compared to the group screened positive was quite different. In the group screened negative, 83.26% of parents answered 'no' to the CAGE questions 1–4, and 'yes' to the use of alcohol at 0–2 days a week. A total of 7.36% of this group agreed they drank alcohol on weekdays outside mealtimes, and 4% of this group said 'yes' to at least one of the CAGE questions 1–4.

In the group that screened positive, 31.39% agreed they drank alcohol 4 days a week or more and they drank alcohol outside mealtimes on weekdays, but answered 'no' to the CAGE questions 1–4.

Dropouts. Based on information from the patient registration office, an analysis was run to identify the group of missing cases. Comparing the two groups based on the dialogues that took place and the missing cases, no sys-

tematic, detectable reasons for the missing cases were found.

Comparing results from CAGE-C to demographic variables related to the staff

The 43 staff members performing SBI were nurses (34), nurse assistants (7) and pedagogues (2), with a mean age of 45 years (age range from 27 to 58 years). Their mean experience since basic training was 18 years (ranging from 1 to 37 years), and they had been employed for 11 years on average (range: 1 to 29 years) in the department of paediatrics.

They had been performing an average of 18 motivational dialogues with parents, individually ranging between 1 and 58 dialogues.

At the general medical unit, 23 staff members conducted 425 dialogues (18.5 dialogues on average) and 12.8% of the parents screened positive for risky alcohol behaviour.

At the neonatal care unit, 20 staff members conducted 354 dialogues (17.7 dialogues on average) and 9.1% of the parents screened positive for risky alcohol behaviour.

Looking at the interrelation of the staff's position and the outcome, there seemed to be a slight, but statistically insignificant difference ($p = 0.8272$, Fisher–Freeman–Haltontest), to whether the motivational dialogues were performed by pedagogues, nurses or nurse assistants (Table 3).

Predicting results of screening by logistic regression. The full model containing all predictors was statistically significant ($p < 0.0001$), indicating that the model was able to distinguish between parents that were screened negative or positive. Using SPSS Classification Table, 88.8% of cases were classified correctly by the model. Two of the independent variables made a statistically significant contribution to the model (gender of parent, $p < 0.0001$, age of the parent, $p = 0.027$). The strongest predictor for screening positive was gender of the parent with an odds ratio for being screened positive of 6.8 for men (CI 4.03–11.74)

Table 2 CAGE-C question 5: How many days per week do you drink alcohol?

Days	0–1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	Total (%)
Group N = 779	596 (76.5)	94 (12.1)	31 (4.0)	37 (4.7)	11 (1.4)	1 (0.1)	9 (1.2)	100
Women n = 497	424 (85.1)	49 (9.8)	11 (2.2)	6 (1.2)	3 (0.6)	1 (0.2)	3 (0.6)	100
Men n = 275	164 (59.6)	45 (16.4)	20 (7.3)	32 (11.6)	8 (2.9)	0 (0.0)	6 (2.2)	100
Screen pos n = 86	13 (15.1)	12 (14.0)	5 (5.8)	36 (41.9)	10 (11.6)	1 (1.2)	9 (10.5)	100
Screen neg n = 689	579 (83.8)	81 (11.7)	26 (3.8)	2 (0.3)	1 (0.1)	0 (0.0)	0 (0.0)	100

CAGE, cut down, annoyance from others, feel guilty, early-morning craving.

Table 3 Distribution of positive/negative screening according to staff position

Result screen	Pedagogue (%)	Nurse assistant (%)	Nurse (%)
Negative n = 663	18 (94.7)	132 (90.4)	513 (89.1)
Positive n = 78	1 (5.3)	14 (9.6)	63 (10.9)
Total	19 (100)	146 (100)	576 (100)

compared to women. The odds ratio of 1.2 concerning age of the parent (CI 1.02–1.42) indicates that the risk of screening positive increases with age.

Predicting outcome of screening by staff's experience with linear regression. Using the variable *number of positive screenings* or *number of negative screenings* as dependent variable, the R^2 estimate revealed that 67.4 and 99.1%, respectively, of the variance was explained by the model. In both analyses, it turned out that the variable that seemed to be the best predictor for the outcome of the screening (positive/negative) was the *number of dialogues performed by the staff*. The unstandardized B-coefficient for number of dialogues was significant, $p < 0.0001$. The number of dialogues performed by the staff was the independent variable that primarily contributed to the outcome of the dependent variable.

Difference in mean value of expected number of parents screened positive was 0.12 (CI 0.91–0.15) for each additional dialogue performed by the staff.

The scatter plots (Fig. 2) illustrate a moderate linear relation between number of parents screened positive and number of dialogues performed ($R^2 = 0.514$) and a strong linear relation between number of parents screened negative and number of dialogues performed ($R^2 = 0.987$).

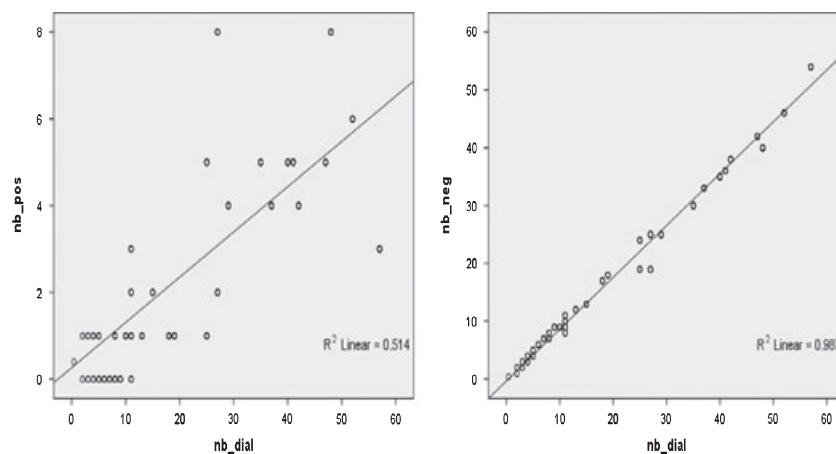


Figure 2 Scatter plots showing linear relation between the dependent variables *number screened positive/negative*(nb_pos/nb_neg), respectively, and the independent variable *number of dialogues performed*(nb_dial).

Discussion

The main findings in this study are that 11% of parents with a child admitted to a paediatric unit screened positive for risky alcohol behaviour and that a majority of parents accepted being screened and expressed positive reactions to the intervention. Using a brief intervention in relation to screening for a topic that might cause embarrassment or worry with the parents seems feasible for producing data representing the parents' actual drinking behaviour. Ammentorp et al. (32) investigated the effect of communication skills training for clinicians on parents of hospitalized children. Although they found no statistically significant differences, an indication that parents perceive communication more positively when the staff members had been qualified by training course in communication was established, underpinning the importance on focusing on the staff members' communication skills. When staff members want to address and discuss difficult topics with parents of hospitalized children, it is possible and more likely to be successful if this is carried out acknowledging and respecting the parents' autonomy.

A total of 11% of parents with excessive alcohol behaviour was low compared to the general population. This number may reflect a group of parents demonstrating well-developed parenting responsibilities, or that parents with excessive drinking habits refuse to participate or underreport their alcohol consumption habits. Self-reported alcohol consumption in parents was, according to Sharma et al.(11), underreported in 25% because of loss of memory, embarrassment and intimidation and desire to produce socially acceptable responses or because they were not sure of the consequences whether they revealed to have an excessive alcohol abuse problem. Fear of losing custody to the admitted child seems an obvious threat in this study even though a motivational approach was demonstrated during the intervention.

Sharma et al. (11) screened 7.8% of 193 parents in a paediatric emergency department positive for hazardous drinking, using the 10-item Audit questionnaire in a face-to-face interview. Wilson et al. (12) screened 11.5% of 189 parents positive for problematic or hazardous use of alcohol in an anonymous questionnaire using the five-item Tweak questionnaire and the 10-item Audit questionnaire. Although the studies are performed using different methods, instruments and measures, there is a common trend indicating that parents are willing to discuss their alcohol consumption habits in relation to the child's admittance.

Although the number of parents with risky alcohol consumption habits in this study may be low according to national figures, a criterion for success in this study is not necessarily the actual number of parents screened positive. The major goal of motivational dialogues is causing reflection among the parents concerning their life style. In that respect, SBI can still have a positive effect, given that the parents may reflect on the dialogue long after it took place, and subsequently start altering their alcohol consumption patterns. Results from a single-session brief intervention may not be captured in a simultaneous screen, but could be detected in a follow-up.

Considering the reservations mentioned previously, a presumably underestimated result of 11% of parents agreeing to having excessive drinking habits calls for serious concern for the clinical staff, as excessive alcohol behaviour in families has a negative impact on children in many aspects. The parents need to be informed and educated, and the preventive dialogues revealed areas where parents may have little or no knowledge. The relation between alcohol-related events in the home and the child's symptoms are not always obvious to the parents. Helping the parents to reflect and acknowledge their life-style and its impact on the child could potentially motivate the parents to change their habits (7, 12, 33).

Identifying subgroups of parents with risky alcohol behaviour

Two of the independent variables of the model were statistically significant: gender and age of parent. The odds ratio 1.2 concerning age of parent (CI 1.02–1.42) indicated the risk of being screened positive increased with age.

In all CAGE variables, there was a male dominance towards risky alcohol behaviour even though the predominance of female caregivers in this study was 64%. These findings are consistent with research on alcohol gender issues proving that men drink more alcohol in general and in binge-drinking and consider their alcohol consumption pattern less problematic than women (8, 34, 35). In a critical review of alcohol screening questionnaires comparing gender responses and sensitivity, Bradley (36) found the CAGE questionnaire insensitive to women in some cases. Evidence of gender differences in developing alcoholism is established by Flensburg-Madsen et al. (37).

They found the risk of developing alcoholism increased significantly by very low alcohol intake in women, while the risk for men increased at much higher intake. In an explorative Swedish study, Birath et al. (38) identified a new group of women with alcohol problems: fairly well-educated, younger women of child-bearing age and suggested alternative treatment. Even though the CAGE questionnaire is considered a valid tool, there may be undetected gender issues in using it that are often referred to as 'natural' gender differences based on the assumption that more men than women have problematic alcohol habits. Bradley (36) suggests a lower threshold for a positive screening result should be used for women than for men to identify equal proportions of men and women with alcohol-related problems. Wilson et al. (12) found mothers who screened positive to be less comfortable about it than fathers and ascribed these findings to drinking being more acceptable in men than in women. Women's excessive use of alcohol may be attributable to feelings of embarrassment, shame or even stigmatization causing them to underestimate their drinking habits. Accordingly, the 4.0% of women screened positive in this study may well be an underestimation.

Do the staff members influence the results of the CAGE-C screening?

How well the staff adhered to using MI needs to be discussed. Project Match (39) suggested that MI therapists vary considerably in their overall skills despite rigorous training and monitoring of performing MI. In a systematic review, Dunn et al. (40) included staff training in MI. Training ranged from 2 to 30 hours (mean 15 hours), but no conclusion to these findings was made. Lundahl and Burke (41) concluded that a minimum of 2 days of interactive workshops followed by ongoing supervision and coaching was optimal training for learning the MI skills. Rubak et al. (23) found that an effect of MI was not dependant on the counsellors educational background, but on other aspects such as duration of training and experience of performing MI. Gaume et al. (42) found that counsellors with better MI skills achieved better overall results and that avoidance of MI-inconsistent skills was more important than the frequency of using MI-consistent skills, concluding that assimilation of the MI spirit is of greater importance than reproducing particular MI techniques. In this study, the 25-lesson basic training course in MI was followed by supervision and coaching throughout the intervention period to monitor and improve MI skills. Even then, a large variation in number of dialogues performed presumably influenced the quality of the dialogues.

This study found that the more dialogues performed, the more positive screenings were obtained. This finding indicates that the more familiar the staff becomes with

performing motivational dialogues the better the outcome of the dialogues. Looking at the significance of the position of the staff and the outcome, there seemed to be little difference whether the motivational dialogues were performed by pedagogues, nurses or nurse assistants. Although the group of pedagogues was very small in number (two persons), the results support the conclusions by Rubak et al. (23) and Lundahl and Burke (41), who found no significant influence on outcome related to level of professional training.

Barriers towards addressing the topic of alcohol to parents have been an issue in the basic training course in MI, as well as difficulties in changing professional behaviour. These issues might influence the number and quality of the dialogues performed. Steps to further investigate this have been taken by videotaping dialogues and subsequently analysing them using the MI Treatment Integrity Manual version 3.0(43), and qualitative interviews have been conducted to assess the staff perspective (unpublished data).

Strengths and limitations of the study. The study is strengthened by the methods involved being evidence-based and validated in clinical contexts. The CAGE-C questionnaire has proven easy to use and understand by staff and by parents, even though the critics according to gender issues pointed by Bradley et al. (36) and Birath et al. (38) should be considered.

There are certain limitations in using a simple questionnaire. Very few demographic factors were obtained from the parents; gender and age. Information on social and educational background would have contributed to clarify a more detailed view of parents in risk groups and their children.

Despite the large number of parents included in this study (779 parents from 640 admissions), a large dropout of parents was detected according to the number of eligible parents from the 1384 admissions during the intervention period. Although no systematic dropouts were detected, selection bias cannot be ruled out.

It is possible that the parents declining participation or those who were not invited to participate were those having the most severe alcohol problems. In that case, our results underestimate the real problem.

A group of parents were registered to enter the project, but the SBI was not accomplished. The staff was asked to state the reason for not accomplishing the SBI and qualitative analysis showed a variety of reasons such as *Parents not present* (291), *Business* (156), *Parents refuse due to topic* (18), *Parents want to go home* (<10) etc.

Length of admission was an important explanatory factor to dropouts, as 52.3% of admissions lasted <24 hours and 77.3% of this group (597 admissions) were never included in the study. The short admissions left little time for the staff to inform about the project and to accomplish

the dialogues. The trend reveals that the longer admissions, the more dialogues were accomplished.

Conclusions and implications for further research

A widespread focus including the parents' life style habits is necessary. The statistical analysis revealed two significant risk factors, drinking alcohol outside mealtimes on weekdays and drinking alcohol 4 days a week or more.

By implementing SBI in paediatric hospital settings, the health staff obtains information on parents' drinking habits and an opportunity to intervene at an early stage. By reducing alcohol consumption among people with risky alcohol behaviour or relatively mild alcohol problems, a potential of breaking the continuum of excessive use of alcohol leading to dependency is possible.

Brief intervention using the methods CAGE-C and MI has proved to be adequate tools to approach parents in a motivational and respectful manner, as most parents accepted and welcomed initiatives regarding their own alcohol consumption patterns.

The number of parents (11%, N = 779) identified as having excessive behaviour regarding alcohol consumption underpins the need for health promotion and preventive initiatives in paediatric hospital settings. The discussions indicate that approach according to gender needs further investigation and should be considered when screenings involve sensitive topics.

This study shows that health promotion and preventive initiatives in the clinical practice can be undertaken by any clinical staff member, providing staff members are supported by adequate training and supervision of their skills.

Acknowledgements

The authors wish to thank the parents for participating in SBI and the staff at the H.C.Andersen Children's Hospital in Odense, Denmark for taking part in the study. We also wish to thank Else-Marie Lønvig, health consultant at Odense University Hospital for initiating the project and Lene Sjöberg, health consultant and trainer in MI at Odense University Hospital, for teaching and supervision throughout the project.

Author contributions

Lene Bjerregaard was responsible for the study design, data collection, data analysis and drafting of the manuscript. Oke Gerke supervised the data analysis and provided statistical expertise and critical revision of the manuscript. Sune Rubak, Arne Høst and Lis Wagner supervised the study and contributed with critical revision of the manuscript.

Funding

The project was funded by grants from the Department of Paediatrics, H.C.Andersen Children's Hospital, and Odense

University Hospital, by the Faculty of Health Sciences, University of Southern Denmark and by the TRYG-Foundation.

References

- WHO Regional Office for Europe. *Handbook for Action to Reduce Alcohol-Related Harm*. 2009, World Health Organization Regional Office for Europe, Copenhagen.
- Grant BF. Estimates of US children exposed to alcohol abuse and dependence in the family. *Am J Public Health* 2000; 90: 112–5.
- Christoffersen MN, Sothill K. The long-term consequences of parental alcohol abuse: a cohort study of children in Denmark. *J Subst Abuse Treat* 2003; 25: 107–16.
- Mundt K, Jensen M, Kann A, Søgaard Nielsen A, Grønbaek M, Tønnesen H. *Alkohol – forebyggelse på sygehus. Fakta, metoder og anbefalinger (Alcohol Prevention in Hospitals. Facts, Methods and Recommendations)*. 2003, Klinisk Enhed for Sygdomsforebyggelse, Bispebjerg Hospital, København, Danmark.
- Nordlie E. Alkoholmisbruk – hvilke konsekvenser har det for familimedlemmene? (Alcohol abuse – consequences for family members?) *Tidsskr Nor Laegeforen* 2003; 123 (1): 52–4.
- Christensen HB, Bilenberg N. Behavioural and emotional problems in children of alcoholic mothers and fathers. *Eur Child Adolesc Psychiatry* 2000; 9:219–26. Steinkopff Verlag 2000.
- Wilson CR, Knight JR. When parents have a drinking problem. *Contemp Pediatr* 2001; 18(1): 67–79.
- Roche A, Freeman T, Skinner N. From data to evidence, to action: findings from a systematic review of hospital screening studies for high risk alcohol consumption. *Drug Alcohol Depend* 2006; 83: 1–14.
- Wilson CR, Knight LS. Parental alcohol problems: parents' preferences for screening and intervention in the pediatric office setting. *J Clin Outcomes Manag* 2006; 13(3): 146–56.
- WHO Regional Office for Europe. Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm. 2009, World Health Organization Regional Office for Europe, Copenhagen.
- Sharma S, Llewelyn K, Jureidini J. Alcohol use by parents who present their child to a paediatric emergency department. *J Paediatr Child Health* 1999; 35: 196–8.
- Wilson CR, Harris SK, Sherrit L, Lawrence N, Glotzer D, Shaw JS, Knight LS. Parental alcohol screening in pediatric practices. *Pediatrics* 2008; 122: 1022–183.
- Howard MO, Chung SS. Nurses attitudes towards substance Misusers II. Experiments and studies comparing nurses to other groups. *Subst Use Misuse* 2000; 35(4): 503–32.
- Hadida A, Kapur N, Mackway-Jones K, Guthrie E, Creed F. Comparing two different methods of identifying alcohol related problems in the emergency department: a real chance to intervene. *Emerg Med J* 2001; 18: 112–5.
- Beich A, Gannik D, Malterud K. Screening og kort intervention for excessivt alkoholforbrug (Screening and brief intervention for excessive use of alcohol). *Ugeskr Laeger* 2003; 165(19): 1985–9.
- Lock CA, Kaner E, Lamont S, Bond S. A qualitative study of nurses attitudes and practice regarding brief alcohol intervention in primary health care. *J Adv Nurs* 2002; 39(4): 333–42.
- Burns C. Early detection and intervention for hidden alcoholic: assessment guideline for the clinical nurse specialist. *Clin Nurse Spec* 1994; 8(8): 296–303.
- Andréasson S, Eklund AB. Metodik för screening och motiverande samtal (Methods for screening and motivational interviewing). *Läkartidningen* 1999; 96(13): 1594–8.
- Britt E, Hudson SM, Blampied NM. Motivational interviewing in health settings: a review. *Patient Educ Couns* 2004; 53: 147–55.
- Kaner EF, Dickinson HO, Beyer FR, Campbell F, Schlesinger C, Heather N, Saunders JB, Burnand B, Pienaar ED. Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database Syst Rev* 2007; 2. CD004148. DOI: 10.1002/14651858.CD004148.pub3.
- Bradley KA, Busk KR, McDonell MB, Malone T, Fihn SD. Screening for problem drinking. *J Gen Intern Med* 1998; 13: 379–88.
- Bien TH, Miller WR, Tonigan JS. Brief interventions for alcohol problems: a review. *Addiction* 1993; 88: 315–36.
- Rubak S, Sandbaek A, Lauritzen T, Christensen B. Motivational interviewing: a systematic review and meta-analysis. *Br J Gen Pract* 2005; 55: 305–13.
- Rubak S, Sandbaek A, Lauritzen T, Borch-Johnsen K, Christensen B. An education and training course in "Motivational Interviewing" influence GPs' professional behaviour ADDITION Denmark. *Br J Gen Pract* 2006; 56(527): 429–36.
- Rubak S, Sandbaek A, Lauritzen T, Borch-Johnsen K, Christensen B. Effect of motivational interviewing on beliefs and behaviour among people with screen-detected Type 2 diabetes ADDITION Denmark. *Diabetes Care* 2007; 30: 2832–7.
- Ewing JA. Detecting alcoholism The CAGE questionnaire. *JAMA* 1984; 252: 1905–7.
- Miller WR, Rollnick S. *Motivational Interviewing*. 2002, The Guilford Press, New York.
- Rollnick S, Miller WR. What is motivational interviewing? *Behav Cogn Psychother* 1995; 23: 325–34.
- Zierau F, Hardt F, Henriksen H, Holm SS, Jørring S, Melsen T, Becker U. Validation of a self-administered modified CAGE test (CAGE-C) in a somatic hospital ward: comparison with biomedical markers. *Scand J Clin Lab Invest* 2005; 65: 615–22.
- WHO: *Declaration of Helsinki*. 1964, World Health Organization, Helsinki, Finland.
- Det Ethiske Råd. *Screening – en redegørelse (Screening – An Exposition)*. 1999, Det Ethiske Råd (Danish Ethical Council), København.
- Ammentorp J, Sabroe S, Kofoed P-E, Mainz J. Effects of a communication course for clinicians on parents' per-

- ception of care – a randomized controlled trial. *Scand J Caring Sci* 2009; 23: 506–17.
- 33 Carroll KM, Libby B, Sheehan J, Hayland N. Motivational interviewing to enhance treatment initiation in substance abusers: an effectiveness study. *Am J Addict* 2001; 10: 335–9.
- 34 Kristiansen L, Ekholm O, Grønbaek M, Tolstrup JS. *Alkohol I Danmark. Voksnes alkoholvaner og holdning til alkoholpolitik (Alcohol in Denmark. Adult's Alcohol Habits and Attitudes to Alcohol Politics)*. 2008, Statens Institut for Folkesundhed, SDU København.
- 35 Hearne R, Conolly A, Sheenan J. Alcohol abuse: prevalence and detection in general hospital. *J R Soc Med* 2002; 95: 84–7.
- 36 Bradley KA, Boyd-Wickizer J, Powell SH, Burman ML. Alcohol screening questionnaires in women A critical review. *JAMA* 1998; 280(2): 166–71.
37. Flensburg-Madsen T, Knop J, Mortensen EL, Becker U, Grønbaek M. Amount of alcohol consumption and risk of developing *alcoholism in men and women*. *Alcohol Alcohol* 2007; 42: 442–7.
38. Birath CS, DeMarinis V, af Klintebjerg B. Moods and expectancies of female alcohol drinking – an explorative study. *Scand J Caring Sci* 2009; 3: 472–81. DIGITAL OBJECT IDENTIFIER (DOI) 10.1111/j.1471-6712.2009.00737.x About DOI.
39. Project Match Research Group. Therapist effect in three treatments for alcohol problems. *Psychother Res* 1998; 23: 1300–11.
40. Dunn C, Deroo L, Rivara FP. The use of brief intervention adapted from motivational interviewing across behavioural domains: a systematic review. *Addiction* 2001; 96: 1725–42.
41. Lundahl B, Bourke BL. The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses. *J Clin Psychol* 2009; 65(11): 1–14.
- 42 Gaume J, Gmel G, Faouzi M, Daepfen J-B. Counselor skill influences outcomes on brief motivational interventions. *J Subst Abuse Treat* 2009; 37: 151–9.
- 43 Moyers TB, Martin T, Manuel JK, Miller WR, Ernst D. *Revised Global Scales: Motivational Interviewing Treatment Integrity 3.0(MITI 3.0)*. 2007, University of New Mexico, Center on Alcoholism, Substance Abuse and Addictions (CASAA), Albuquerque.