



Implementation of computerized alcohol screening and advice in an emergency department – a nursing staff perspective

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Summary Changes in attitudes towards alcohol prevention among nursing staff are evaluated after implementing an opportunistic computerized alcohol screening and intervention (e-SBI) at an emergency department. After having assessed the patients in the triage room the nurses asked patients to perform the e-SBI on a touch screen computer. Before the start of the project more than 60% of the nurses expected the patients to react negatively when asked about their alcohol habits. After one year of screening only 10% reported experience of negative reactions from the patients. More than 50% of the nurses found it easy or very easy to ask the patients to perform the e-SBI and more than 75% of the nurses agreed that the e-SBI did not affect their workload. The proportion of nurses who considered alcohol prevention to be part of their duties at the emergency department did not change (40%) after implementing the e-SBI. During the two-year study period, 1982 patients completed the e-SBI which constituted 10–20% of all patients between 16 and 70 years of age attending the department for a sub critical condition. The e-SBI seems to have better potential than ordinary alcohol screening and intervention for implementation into routine emergency departments due to its simplicity and low time consumption.
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Introduction

Due to the high number of alcohol-related attendances in emergency departments (ED) this setting has repeatedly been suggested as a suitable arena for secondary alcohol prevention (Anderson

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et al., 2001; Charalambous, 2002; Conigrave et al., 1991; D'Onofrio and Degutis, 2002; Gentiello et al., 1995; Hungerford and Pollock, 2003; Hungerford et al., 2000). A number of randomized studies have shown the potential of various kinds of alcohol intervention in an emergency setting (Dinh-Zarr et al., 1999; D'Onofrio and Degutis, 2002; Gentiello, 2005). Recently, Crawford et al. (2004) reported from a randomized control trial (RCT) on the effectiveness of opportunistic screening for risky drinking i.e. drinking above recommended limits, followed by referral to an alcohol health worker in an ED. A significant reduction in alcohol consumption was seen at 6 month follow up as well as reduced re-attendance at the ED.

However, no studies have so far shown a successful implementation of brief alcohol intervention in routine ED care involving nursing staff (Hungerford and Pollock, 2003; Krishel and Baraff, 1996; Peters et al., 1998; Wright et al., 1998). Factors frequently mentioned in previous reports about alcohol prevention activities in emergency care are organizational constraints and perceived lack of time as well as knowledge of prevention (Anderson et al., 2001; Brooker et al., 1999; Crawford et al., 2004; Dill et al., 2004; Graham et al., 2000; Peters et al., 1998).

Although nurses are well placed to accomplish alcohol screening at the ED, studies have shown that they perceive it to be difficult to find the time to integrate screening into their daily routines (Brooker et al., 1999; Peters et al., 1998). The perceived sensitivity of the subject has also been considered an important obstacle for implementing alcohol preventive measures (Danielsson et al., 1999; Graham et al., 2000; Wallace, 2001).

Thus, for a successful implementation of alcohol-screening in EDs, the screening needs to be fast, simple and easy for the staff to handle. It is also important to find the level of intervention in the ED setting that does not require additional staff resources (Brooker et al., 1999; Charalambous, 2002; Hungerford et al., 2000; Waller et al., 1998). Given these organizational and attitudinal barriers in EDs, it seems reasonable to implement screening and intervention for excessive alcohol consumption using a simple method that is non-intrusive and inexpensive. One method that has repeatedly been suggested is computerized alcohol screening and intervention (e-SBI) which would enhance the possibilities of integrating secondary prevention into routine emergency care (Andréasson et al., 2000; Bothelo and Richmond, 1996; Charalambous, 2002; Hungerford and Pollock, 2003; Roche et al., 2001). In other settings, electronic screening and individualized feedback have

been shown to reduce drinking to an extent similar to practitioner-delivered brief interventions (Kypri et al., 2004) but so far, only a few reports have appeared on the effectiveness and feasibility of various forms of e-SBI in EDs (Crawford et al., 2004; Karlsson and Bendtsen, 2005; Karlsson et al., 2005). There does seem to be an acceptance among ED patients of the e-SBI concept with individualized written feedback (Karlsson and Bendtsen, 2005). However, there seems to be some hesitation from a staff perspective with large variation in how the ED nursing staff perceive the e-SBI concept; considerable attitudinal barriers persisted throughout the introduction of the e-SBI at the beginning of the present project, despite its simplicity (Karlsson et al., 2005).

The present study aimed to evaluate changes in attitudes among nursing staff from the start to after one year of implementation of an opportunistic e-SBI at an emergency department and to describe changes in their practices during a two year period.

The study is part of a long-term project that seeks to introduce opportunistic e-SBI in the ED at Linköping University Hospital in the southern part of Sweden. This is seen as the first step in developing a realistic model for alcohol intervention in an emergency department setting (Karlsson and Bendtsen, 2005; Karlsson et al., 2005).

Materials and methods

Implementing e-SBI at the emergency department

Before starting the implementation of the e-SBI at the ED, discussions with the management were held in the last part of 2002 on how to adopt the alcohol intervention concept within the department. In addition, during a six-month preparation phase the staff were involved in action-oriented research with interviews and a series of meetings with senior members of staff. During these meetings the research team introduced the ideas concerning opportunistic alcohol screening as well as gaining an understanding of the demands of the staff. This led to a mutual agreement on the e-SBI concept with minimum extra workload for staff and short time for completion with each patient. It was agreed that patients between 16 and 70 years of age attending the department for a sub critical condition should be included and the screening would only be offered if not too many patients was waiting to be attended to.

The opportunistic e-SBI started as a pilot project at the end of 2002 when a touch screen was placed in the triage room at the ED and the nursing staff were instructed to ask patients to participate in the computerized screening test. The e-SBI was implemented as a new routine from the beginning of 2003. During the first six months the research team had two 30-min meetings with all nursing staff at the ED in order to motivate the staff to recruit patients to the e-SBI. During the following six months no meetings were held. At the beginning of the second year a meeting was held to present the results from the first year. At the end of the second year a poster with the screening results from the first 18 months was displayed in the ED but no further meetings were conducted.

The e-SBI concept

After having assessed the patients in the triage room the staff asked the patients to participate in the computerized alcohol screening on a touch screen computer. Participation was voluntary and their answers were anonymous. After two initial questions about sex and age the patients were asked to state the reason for their visit to the ED by choosing one of seven alternatives. Then the patients could exit the e-SBI programme or choose to complete the second part consisting of the alcohol screening. The second part began with two questions exploring the patient's readiness to change their alcohol habits and was followed by the AUDIT-C screening test consisting of two questions about the quantity and frequency of drinking followed by a third question about the frequency of heavy episodic drinking. The patients who completed the alcohol screening received a printout from the triage nurse with a personalized feedback on their drinking habits as calculated by the computer. No further person to person feedback was offered. The results presented here on screened patients originate from the electronic screening procedure.

The study of change in staffs' attitudes

At the end of the preparation phase, i.e. a few weeks before the screening started, a questionnaire with 11 questions was distributed to all nurses. The first four questions covered their experiences with alcohol screening and advice and their perception of patients' reactions to questions about alcohol. The next three questions explored the nurses' attitudes towards alcohol prevention

in the emergency department: feasibility, responsibility and their own role adequacy. The last four questions inquired about their opinions concerning computerized screening, its effectiveness and perceived influence on their workload as well as on their relationship with patients. The results from the baseline study are further described in [Karlsson et al. \(2005\)](#).

One year after the implementation of the e-SBI routine, the same questionnaire was distributed to all nurses in order to explore possible changes in attitudes, practices and feasibility of the e-SBI concept.

In total, 27 registered nurses and 27 assistant nurses returned the first questionnaire. The second questionnaire, one year later, was returned by 31 registered nurses and 17 assistant nurses. They answered the questionnaires anonymously and analysis of the drop off was therefore impossible, i.e. it was not possible to control if the nurses included in the first questionnaire had terminated their employment at the ED or if there were new employees included in the second questionnaire. According to the staff register at the ED around 75% of all nurses participated. The main reason for not participating was absence on leave.

Statistical methods

The Mann–Whitney test was used to test changes in attitudes among the ED staff. In case of significant differences, z-tests with Bonferroni adjustments were used in order to understand the characteristics of the differences.

Results

Changes in staff attitudes to alcohol screening

The staff estimates of the proportion of risky drinkers among the patients seeking care at the ED displayed a significant change ($p < 0.05$) towards a higher estimated proportion after one year of screening ([Fig. 1](#)). The largest differences were found in the categories of nurses who estimated the proportion of risky drinkers among patients as less than 5% and more than 20%.

There was no significant change one year after starting the e-SBI concerning nurses' perception of their opportunities to discuss alcohol habits with the patients in other situations than when giving instructions to patients about the computerized screening ([Fig. 2](#)).

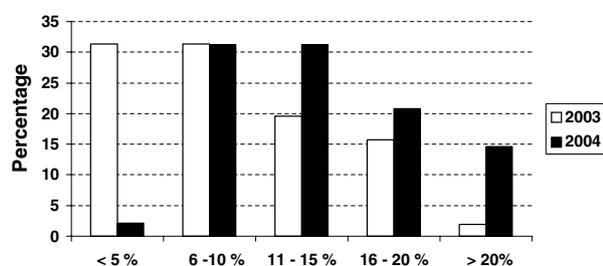


Figure 1 Change in the staff's estimation of the proportion of risky drinkers among patients seeking care at the emergency department ($n = 51$, 2003; $n = 48$, 2004).

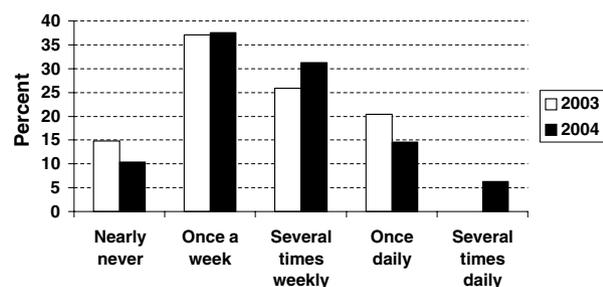


Figure 2 Change in staffs' perception of opportunities to discuss alcohol habits, besides the e-SBI situation, with the patients after one year of implementing the computerized concept.

The nurses' perception of the ED's responsibility concerning alcohol prevention did not change significantly from the start of the implementation to one year later. Around 20% stated that the ED's responsibility was quite negligible and 40% stated that it was considerable. In addition, no significant change was seen in the nurses' perception of whether alcohol prevention is considered to be part of their work tasks. Thus, both before and after one year of e-SBI around 60% of the nurses considered that alcohol prevention is their duty only to a certain extent, whereas 20% claimed that it is not part of their duty.

Perception of patients' reactions to the e-SBI

The 31 registered nurses that work in the triage room at the ED were asked to evaluate the patients' reactions when asking them to perform the e-SBI. Only 10% of the nurses indicated that the patients reacted negatively, whereas 40% perceived that the patients found it positive or very positive to be offered the e-SBI. This is in contrast to a similar question in the first application of the

questionnaire, before the start of the project, when more than 60% expected the patients to react negatively if asked about their alcohol habits ($p < 0.05$). More than 50% of the nurses found it easy or very easy to ask the patients to perform the e-SBI, and 7% considered it to be difficult, which is a significant difference compared to the expectations before the implementation ($p < 0.05$).

After the implementation more than 75% of the nurses agreed that the e-SBI did not affect their workload but 24% considered the concept to be relatively disturbing which should be seen in contrast to 39% before the start of the project. The change was yet not significant.

No significant change was seen in how the nurses considered that their relationship with the patients would be influenced by asking them to perform the e-SBI. However, before the implementation of the e-SBI, around 10% of the nurses expressed some concern but after one year none of the nurses perceived this to be a problem. An overall majority considered the e-SBI to have neither positive nor negative influence on their relationship with the patients. Some non-significant changes were seen in the belief of the effectiveness of the e-SBI concept after the first year of implementation and feedback to the nurses. Thus, before the implementation of the e-SBI around 25% of the nurses considered the concept to be ineffective, whereas after one year only 13% stated the methods to be ineffective. Furthermore, the percentage agreeing that the concept was effective increased from 22% to 36% (non-significant) after one year.

The nurses' practice of the e-SBI routine

During the 2 year study period of the e-SBI routine in practice, 1982 patients completed the e-SBI. The variation in frequency of completed questionnaires coincided with the time of training and feedback sessions offered to the participating staff, which occurred at the beginning of the screening and after one year, i.e. the number of patients asked to participate was higher in the spring in both years and then declined over time (Fig. 3).

The number of patients asked to participate in the alcohol screening was 10–20% of all eligible patients between 16 and 70 years of age attending the department for a sub critical condition. The reasons for attending the ED among the patients invited to participate in the alcohol screening and the proportions of risky drinkers among the patients in the different groups are shown in Table 1.

Among both the female and male respondents, the most common reasons for the visit were injuries

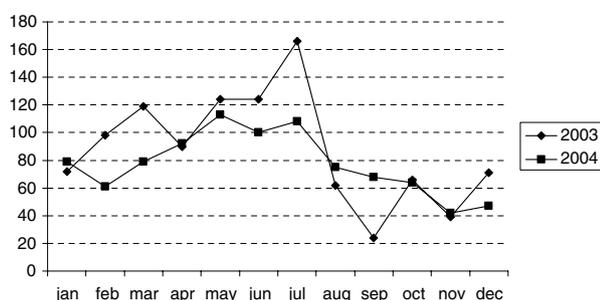


Figure 3 Number of patients included in the e-SBI during 2003 and 2004 at the emergency department.

and gastrointestinal disorders. Among the youngest participants in the e-SBI, the most common reason for the visit was violence.

The largest proportion of risky drinkers was found among both the male and female respondents reporting injuries or violence as the reason for their visit to the ED. The proportion of risky drinkers was larger among males for all the various reasons for the visit.

In total, 19.8% of the females and 32.9% of the males were risky drinkers, i.e. drinking above the maximum weekly recommended amount of alcohol (110 g pure alcohol for men and 80 g for women) and/or heavy episodic drinking once a month or more often, i.e. more than 60 g alcohol at the same occasion for men and more than 48 g for women.

Discussion

Despite strong evidence for the efficacy of screening and brief intervention for reducing risky drinking in health care in general, implementation into routine care so far has been slow. This applies not least in emergency care although the proportion of patients with risky drinking is considerably higher than in the general population (Charalambous, 2002; Maier, 2005; Roche et al., 2001).

One important reason for the slow dissemination, besides attitudes and knowledge about preventive measures among staff, may be that the ED is a busy environment with high patient turnover, making alcohol intervention a difficult task (Charalambous, 2002; DiClemente, 2005; Hungerford and Pollock, 2003). Seeking medical care for an alcohol related injury might serve as a "teachable moment" or a window of opportunity to identify risky drinkers and offer advice (Maier, 2005). However, offering advice about alcohol habits should not be delayed too long and appears to have the highest impact if given the same day as the emergency visit (Williams et al., 2005).

In this study, nursing staff performed the screening and brief intervention with the help of a touch screen computer in the triage room. The electronic alcohol screening and brief intervention routine was opportunistic, i.e. when the staff considered that time and the patient's health status allowed the intervention. Although this concept of e-SBI has been suggested repeatedly in the research literature very few projects have evaluated whether e-SBI could be a feasible and effective alternative to referral to an alcohol health worker (Charalambous, 2002; Hungerford and Pollock, 2003; Karlsson and Bendtsen, 2005; Karlsson et al., 2005; Neumann et al., 2004).

On average the number of patients invited to perform the e-SBI was between 10 and 20% of the potential eligible patients between 16 and 70 years of age, even though 75% of the staff stated that the screening procedure did not influence their workload and none of the staff was concerned after the first year that the screening would influence their relationship with the patients. The screening frequency also stands in contrast to the increasing awareness among staff that there are a considerable number of risky drinkers among the ED patients. One explanation for this paradox may be

Table 1 Distribution of patients completing the e-SBI in the emergency department based on reasons for the ED visit (%)

Reason for attending the ED	Female (n = 840)	Male (n = 1142)
Injury	30.4 (22.4)	42.2 (36.9)
Violence	1.0 (50.0)	5.2 (61.0)
Heart	3.1 (11.5)	2.9 (24.2)
Gastrointestinal	16.7 (16.4)	11.0 (24.6)
Muscle/joints	4.6 (15.4)	5.9 (25.4)
Allergy/infections	4.9 (14.6)	5.7 (29.2)
Unspecified	39.4 (20.2)	27.1 (28.1)
Total	100.0 (19.8)	100.0 (32.9)

The Proportion of risky drinkers within the different groups are in parentheses.

found in the limited proportion of the staff that perceived alcohol screening and prevention as part of their duty and the limited conviction about the effectiveness of this alcohol preventive strategy. The screening frequency obtained in this study could be regarded as a failure to implement the routine on a larger scale but may also be considered as a reasonable start for a new routine that managed to reach more than 500 patients with risky drinking without allocating additional staff resources.

However, the introduction of a very simple inoffensive routine such as the e-SBI was hypothesized to increase staff motivation to screen patients over time, which appeared not to be the case. Instead the numbers screened diminished over time, especially during the autumn seasons when no meetings or contact took place with staff from the project team. Previous research has highlighted the importance of support to staff in order to maintain a reasonable level of intervention. The present study confirms this and there seems to be considerable motivational and information work to do in order to reach high sustainability (DiClemente, 2005).

Study limitations

The focus of this study was on changes in staff attitudes and the numbers of patients invited to perform the e-SBI. We did not evaluate the effect of the e-SBI on the patients' drinking pattern which is necessary before considering large scale implementation of e-SBI.

As the study was carried out in a routine care setting without extra resources, some data became incomplete; for example, the total number of patients for possible screening. As the health status of the patients differed greatly, we had to rely upon the judgement of the staff on whether screening was convenient or not, which made this estimate difficult.

Conclusions

The e-SBI was perceived by the majority of nurses as a non-intrusive intervention that hardly affected their workload but despite this it was not implemented to a greater extent. Possible reasons may be lack of confidence in the e-SBI concept and the staffs' perception that their responsibility for prevention is limited. However, the e-SBI seems to have more potential to be implemented than a time consuming person to person alcohol screening and intervention in routine EDs because of the sim-

licity and low time consumption. Still, it appears to be important to offer feedback and support to ED nurses over a long period in order to reach sustainability of a reasonable number of patients offered screening and advice.

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