Alcohol prevention in emergency care
Drinking patterns among patients and the impact of a computerized intervention in a Swedish Emergency department

Anna Trinks

Department of Medical and Health Sciences
Linköping University, Sweden
We must not forget that Sweden is the promised land of moderation...
It’s here, and only here, we have decided that ‘lagom’ is the best…
Claes Eriksson
# CONTENTS

ABSTRACT .......................................................................................................................... 5

LIST OF PAPERS ........................................................................................................ 7

1. INTRODUCTION ......................................................................................................... 9

2. ALCOHOL EPIDEMIOLOGY ................................................................................... 11
   2.1. Health consequences of alcohol consumption ................................................. 11
   2.2. Alcohol consumption in Sweden ....................................................................... 12
   2.3. Alcohol policy in the EU and in Sweden ......................................................... 15

3. ALCOHOL PREVENTION ..................................................................................... 17
   3.1. Prevention ......................................................................................................... 17
       3.1.1. Primary prevention ................................................................................. 17
       3.1.2. Secondary prevention ............................................................................ 17
       3.1.3. Tertiary prevention ............................................................................... 18
       3.1.4. The prevention paradox ........................................................................ 19
   3.2. Brief alcohol intervention .............................................................................. 19
   3.3. Behaviour change theories and models .......................................................... 20
       3.3.1. Health Belief Model .............................................................................. 20
       3.3.2. Theory of Reasoned Action ................................................................... 20
       3.3.3. Theory of Planned Behaviour ................................................................. 21
       3.3.4. Social Cognitive Theory ......................................................................... 21
       3.3.5. Self-Determination Theory .................................................................... 22
       3.3.6. Stages of Change Theory ........................................................................ 22
4. ALCOHOL PREVENTION IN THE EMERGENCY DEPARTMENT ...... 24
   4.1. Swedish health care........................................................................................................... 24
   4.2. The ED setting .............................................................................................................. 24
   4.3. Alcohol interventions in the ED ....................................................................................... 25
   4.4. Computerized alcohol interventions in emergency care .................................................. 26

5. AIM........................................................................................................................................ 29
   5.1. Overall aim ....................................................................................................................... 29
   5.2. Specific aims of the studies ............................................................................................. 29

6. MATERIALS AND METHODS......................................................................................... 31
   6.1. Study setting .................................................................................................................... 31
   6.2. Procedure ........................................................................................................................ 32
   6.3. Baseline data collection .................................................................................................. 35
   6.4. Follow-up data collection .............................................................................................. 36
   6.5. Study variables ............................................................................................................... 37
   6.6. Definition of alcohol consumption variables ..................................................................... 39
   6.7. Statistical analysis .......................................................................................................... 40

7. MAIN RESULTS .............................................................................................................. 42
   7.1. Study I ............................................................................................................................. 42
   7.2. Study II ............................................................................................................................ 44
   7.3. Study III .......................................................................................................................... 45
   7.4. Study IV .......................................................................................................................... 47

8. DISCUSSION ...................................................................................................................... 49
   8.1. Patterns of alcohol consumption ..................................................................................... 49
   8.2. Effectiveness of the intervention ................................................................................... 51
   8.3. Predictors for change .................................................................................................... 52
   8.4. Reach of patients ............................................................................................................ 53
   8.5. The use of computerized interventions ......................................................................... 54
   8.6. Ethical considerations .................................................................................................... 55
   8.5. Methodological considerations ..................................................................................... 56

9. CONCLUSIONS ............................................................................................................... 58
SVENSK SAMMANFATTNING ................................................................. 60

ACKNOWLEDGEMENTS ........................................................................ 63

REFERENCES ....................................................................................... 65
ABSTRACT

High alcohol consumption has led to increased recognition of the importance of addressing alcohol problems in Swedish health care settings and the emergency department (ED) has been suggested as an important setting for provision of brief alcohol interventions to achieve reduced alcohol intake. Researchers have suggested the use of computer technology to deliver alcohol interventions in emergency departments.

The aim of this thesis was to generate knowledge about alcohol consumption among patients in a Swedish ED, the reach and effectiveness of a computerized brief intervention delivered in the ED, and factors that are associated with reduced alcohol consumption 6 months after the ED visit. Paper I and paper II are epidemiological studies. Drinking patterns and motivation to reduce drinking among injured and non-injured patients are investigated in paper I and the prevalence of acute alcohol consumption (drinking 6 hour prior to the injury) among injury patients and the factors associated with motivation to reduce alcohol consumption among these patients are investigated in paper II. Paper III and paper IV are intervention studies. The reach of patients and the effectiveness of the computerized alcohol intervention by comparing patients’ drinking patterns at baseline and at 6-month follow-up are investigated in paper III. The factors associated with reduced alcohol consumption among patients who were followed up 6 months after receiving computerized feedback at their ED visit are investigated in paper IV.

The results from the studies show that alcohol consumption was higher among patients who were injured than patients who were not injured. Injury patients had a higher weekly consumption, drank more frequently and drank higher typical quantities than non-injury patients. Patients who were categorized as acute drinkers had higher weekly alcohol consumption and were more frequently engaged in heavy episodic drinking (HED) than non-acute drinkers.

Among the patients who took part in the computerized test, more than 15% stated that they were at the preparation stage or actively motivated to change.
Abstract

Of the patients who were categorized as acute drinkers, 34% were at the action or preparation stage.

Among patients who were categorized as risky drinkers, 48% became non-risky drinkers at follow-up. The relative change in average weekly consumption among risky drinkers was 30% and the relative change in HED occasions per month was 37% from baseline to follow-up.

Motivated to reduce alcohol consumption at baseline, influenced by just visiting the ED, considering the alcohol-related feedback information and impact from a health care provider are independent predictors for reduced alcohol consumption.
LIST OF PAPERS

This thesis is based on the following studies, which are referred to in the text by Roman numerals:


II. Acute alcohol consumption among patients in a Swedish emergency department. (Trinks, A., Festin, K., Bendtsen, P., Cherpitel, C., Nilsen, P. Submitted to *Journal of Addictions Nursing*)


IV. What makes Swedish emergency department patients reduce their alcohol consumption? – a computer-based intervention study. (Trinks, A., Festin, K., Bendtsen, P., Nilsen, P. Submitted to *International Emergency Nursing*)
1. INTRODUCTION

Alcohol consumption in Sweden has increased substantially since the mid-1990s. This increase has largely been attributed to Sweden’s entry into the European Union (EU) in 1995, which has led to a weakening of long-standing approaches, including limitations on private importation of alcohol and high alcohol taxation, thus restraining the Swedish Government’s ability to pursue a restrictive primary prevention strategy based on measures of proven effectiveness (Leifman, 2005). The greatest increase occurred between 1996 and 2004 when consumption increased from 7.8 litres per person to 10.5 litres per person. More recently, consumption has stabilized at about 9.2 litres per person (CAN, 2010).

This development has made it more important to strengthen secondary prevention of alcohol-related harm in health care. Alcohol intervention efforts in health care have been given high priority by the authorities (FHI, 2008). Previously, health care providers were charged with identifying alcohol-dependent persons and referring them for specialized treatment. Today, these providers are increasingly expected to identify and intervene with patients who are not seeking help for alcohol-related problems and who may attend health care without much or perhaps any awareness that their drinking habits are a potential problem (Nilsen et al., 2011).

Although most research attention has focused on the provision of alcohol prevention in primary health care, international researchers and policy makers have also emphasized that the emergency department (ED) is an important setting for the provision of secondary alcohol interventions to achieve reduced alcohol intake (Hungerford et al., 2003; Babor et al., 2005; Cryer, 2005; Dinh-Zarr et al., 1999). Patients presenting to EDs usually have a higher weekly average consumption and more frequently engage in heavy episodic drinking (HED) than the general population in their respective regions (Cherpitel, 1999; Cherpitel, 2007; Nordqvist et al., 2006; Peters et al., 1998). However, the ED setting presents many problems for provision of alcohol interventions. The environment tends to be busy and overcrowded, with the result that patients are rarely assessed for alcohol use in this setting (Barnett et al., 2003; Graham et al., 2000; Neumann et al., 2004; Neumann et al., 2006; Rhodes et al., 2001). There are numerous barriers to ED alcohol prevention such as lack of time,
insufficient knowledge, fear of negative patient responses due to the perceived sensitivity of the subject, as well as overall negative attitudes to and lack of interest in alcohol prevention (Charalambous, 2002; Hadida et al., 2001; Wallace, 2001). The use of computer technology has been suggested as a means of overcoming some of the barriers to delivering alcohol interventions in EDs. This thesis investigates the drinking patterns among patients presenting to a Swedish ED and examines various aspects of a computerized alcohol intervention in this setting.
2. ALCOHOL EPIDEMIOLOGY

This chapter describes alcohol consumption, the consequences and alcohol policy in the western world and in Sweden.

2.1. Health consequences of alcohol consumption

Alcohol consumption has many negative consequences (Room et al., 2005; Babor et al., 2005). High consumption can explain 40% of the global disease burden of injuries, estimated as disability adjusted life years (DALYS) (Rehm et al., 2004). Alcohol consumption is also estimated to be the third leading risk factor for death and disability, after high blood pressure and smoking in the EU (Rehm et al., 2004). Alcohol in large quantities may also increase the risk of hypertension and cardiovascular diseases, disorders of the stomach and intestines, and some forms of cancers (Andréasson et al., 2005; Babor et al., 2003).

Alcohol consumption also contributes to a major public health burden because it is often related to injuries (Rehm et al. 2003). Research shows that people with low average alcohol consumption have a lower risk for injury than people who consume a lot of alcohol on one occasion (Gmel et al., 2006). For example, acute alcohol consumption (drinking 6 hours prior to the injury) has been associated with non-fatal injuries (Borges et al., 2004; Cherpitel, 1992; Cherpitel, 1993; Fillimore et al., 2008; Giancola et al., 2002; Kuendig et al., 2009), intentional fatal injuries such as suicide and homicide (Graham, 2006; Sher, 2006) and unintentional fatal injuries such as traffic-related death (Zador et al., 2000). In Sweden, about 3000 people die each year because of an injury, and of these, one-third are alcohol related. Approximately 125 people die every year in alcohol-related traffic accidents, which comprise about 20% of all fatal traffic accidents in Sweden (MSB, 2005).

The extent to which alcohol has positive effects has been debated. Some research suggests that, for example, one glass of wine per day could have positive effects on coronary disease, diabetes, and cognitive function (Andrade
et al., 2009; Cesena et al., 2011; Corraro et al., 2000; Kechagias et al., 2011). These effects are applicable only to people older than 50 years and apply to men to a greater extent than women (Andréasson and Allebeck, 2005).

2.2. Alcohol consumption in Sweden

Alcohol consumption is common in Sweden, as in most of the western world. Historically, Sweden is part of the “vodka belt” (Figure 1), which is associated with few drinking occasions but a high frequency of HED (Messner and Petersson, 1996). The vodka belt includes countries in northern Europe and Asia. These countries have long traditions of vodka production and consumption. Middle Europe contains the “beer-belt” and the areas around the Mediterranean Sea contain the “wine belt”. The “beer belt” and the “wine belt” are associated with drinking every day, but a low number of drinks (Norström and Ramstedt, 2006).

![Figure 1. The vodka belt.](image)

As Sweden became industrialized and urbanized in the 19th century, industrially produced vodka became more available, and alcohol caused increasing health and social problems. An alcohol monopoly was established in the Swedish town of Falun in 1850, to prevent overconsumption and reduce the sale of alcohol. The monopoly was later implemented throughout the country and in 1905 the Swedish parliament ordered that all sales of alcohol must be through local alcohol monopolies. The Swedish prohibition
referendum in 1922 resulted in continued sales of alcohol with a rationing system, called motbok (CAN, 2010).

Registered alcohol sales in Sweden after the Second World War were low compared with most other countries; the average corresponded to about 4 litres of pure (=100%) alcohol per citizen aged 15 years and older (Leifman, 2005). This has been attributed to the rationing system; the average purchase right per ration book and per month was 1.82 litres of liquor. In 1955, the Swedish Government abolished the ration system. The local companies were merged to form a single, national Systembolaget company, which still exists (CAN, 2010).

As in most West European countries, sales increased dramatically after the Second World War until the middle of the 1970s. In Sweden, registered sales were 7.7 litres per person in 1976 and then the registered alcohol sale decreased until 6.0 litres per person in 1984 (CAN, 2010).

Since the middle of the 1980s, the unregistered alcohol consumption has increased as legal private imports, illegal imports and sales of illicitly distilled spirits increased. When Sweden entered the European Union in 1995, alcohol consumption became more continental, and the regulations were relaxed. Systembolaget introduced boxed wine and the legislation allowed private
Enterprises to import and market alcohol, although the retail monopoly remained. The EU approved of Sweden’s retail monopoly, noting that the fundamental purpose of Systembolaget was to protect public health from the harmful effects of alcohol. The approval was contingent upon Systembolaget complying with EU law, including the non-discrimination requirement (CAN, 2010). This means that Systembolaget is not allowed to favour alcohol produced in Sweden (Holder et al., 2008).

In 1998 the registered sales were 5.9 litres of pure (=100%) alcohol per citizen aged 15 years and older and the total consumption was equivalent to 8.2 litres. In year 2000, estimation of the total consumption was 8.4 litres (CAN, 2010). In 2002 consumption was estimated to be 9.9 litres and in 2004 the figure was 10.5 litres. Thus alcohol consumption increased by 28% between 1998 and 2004 (Andréasson and Allebeck, 2005). Since then, consumption has stabilised to about 9.2 litres per person per year (Figure 3) (CAN, 2010).

Figure 3. Alcohol sales and consumption per capita aged 15 years and over, 1989-2010. Source: CAN, 2010.
2.3. Alcohol policy in the EU and in Sweden

The European Commission adopted a comprehensive EU Alcohol Strategy in 2006, with the aim of supporting member states in reducing alcohol-related harm between 2006 and 2010 (European Commission 2010).

The member states agreed to “implement the good practices presented in the EU Alcohol Strategy, and make use of existing evidence” within five priority themes that should be used at EU and national level (Council of the European Union, 2009 p. 4).

This international alcohol strategy urges member states to prevent high alcohol consumption among the EU population with five themes:

- Protect young people, children and unborn children
- Reduce injuries and death from alcohol-related road accidents
- Prevent alcohol-related harm among adults and reduce the negative impact on the workplace
- Inform, educate and raise awareness on the impact of harmful and hazardous alcohol consumption
- Develop and maintain a common evidence base at EU level

(European Commission, 2006)

During the Swedish Presidency of the EU in 2009, the European Commission was urged to prepare a report in 2012 about the effectiveness of the strategy and to continue reducing alcohol-related harm after 2012 (Regeringsproposition, 2010).

The Swedish Government views public health policy as a major threat to public health and seeks to promote peoples' ability to make healthy choices. It builds on joint responsibility and involvement of different societal actors and supports the development of evidence-based health promotion methods (Swedish Government, 2007).

In 2003 the Swedish Government adopted a national plan for public health with 11 strategic objectives. One of these was to establish preventive strategies
for “tobacco, alcohol, illicit drugs, doping and gambling” (Regeringsproportion 2007). In March 2011, the Swedish Government set up a new strategy for Alcohol, Drugs, Doping and Tobacco politics (ANDT politics) that will be used in 2011-2015. The ANDT strategy aims to facilitate coordination to guide all relevant actors at national, regional, and local level. This means that Swedish authorities, for example, should aim to prevent all harmful alcohol consumption by early identification and counselling for a positive community in relation to economics, social issues and health (Regeringsproportion 2010).
3. ALCOHOL PREVENTION

This chapter provides an overview of the theories on prevention, intervention and changing behaviour on alcohol consumption.

3.1. Prevention

Prevention has been defined as the actions taken to prevent ill health and disease, including reducing known risk factors, screening and immunisation (Naidoo and Wills, 2001). Traditionally, three levels of prevention have been identified: primary, secondary and tertiary prevention.

3.1.1. Primary prevention

Before the biological onset of a disease or condition appears, a primary prevention strategy can be used. This can be done in a variety of ways, such as preventing environmental exposure, improving human resistance to disease, or education to diminish risk-taking behaviours (Oldenburg and Burton, 2004). Thus, general environmental and sanitary measures, such as maintaining a safe water and food supply, promoting the use of condoms to prevent sexually transmitted diseases, supplemental restraint systems in automobiles (airbags), and the application of safe and effective vaccines are examples of primary prevention, whereby diseases and injuries do not obtain a foothold in the body (Naidoo and Wills, 2001).

The alcohol monopoly, with high taxes and municipal control over licensed alcohol premises, is a traditional primary prevention strategy in Sweden to reduce the availability of alcohol (Andréasson et al., 2006; Holder et al., 2008).

3.1.2. Secondary prevention

Secondary prevention generally consists of identifying diseases that are present in the body but have not progressed to the point of causing signs,
symptoms, and dysfunction. These preclinical conditions are most often detected by screening and follow-up of the findings. By secondary prevention, it is possible to reduce or prevent future disease or premature death (Orth-Gomér and Perski, 2008). Examples of screening procedures that lead to the prevention of disease emergence include routine mammography for early detection of breast cancer, periodic determination of blood pressure and blood cholesterol levels, and screening for high alcohol consumption (Naidoo and Wills, 2001).

The purpose of secondary alcohol prevention is to identify and intervene with risky drinkers who do not show signs of alcohol dependence, and to promote drinking below the recommended levels of alcohol consumption (Botelho and Richmond, 1996).

### 3.1.3. Tertiary prevention

Tertiary prevention generally consists of the prevention of disease progression and attendant suffering after it is clinically obvious and a diagnosis has been established. This activity also includes the rehabilitation of disabbling conditions. Examples include eliminating offending allergens from asthmatic patients; routine screening for and management of early renal, eye, and foot problems among diabetics; and preventing reoccurrence of heart attack with anti-clotting medications and physical modalities to regain function among stroke patients. For many common chronic illnesses, protocols to promote tertiary preventive interventions have been developed, and are often called disease management. Disease treatments are not usually included, but the boundary of tertiary prevention is not always clear (Naidoo and Wills, 2001).

The purpose of tertiary alcohol prevention is to help people who have developed alcohol dependence to stop drinking in order to limit further adverse effects due to alcohol consumption. In Sweden, this level of preventive action is often organized through special clinics or institutions (Andréasson and Allebeck, 2005).
3.1.4. The prevention paradox

The prevention paradox means that preventive strategies for ill health and disease reach not only the high-risk people. They also reach the population at low or moderate risk. This is because the number of people at high risk is small (Rose, 1985).

The alcohol prevention paradox illustrates the great importance of investing in resources at all levels of prevention. Indeed, individuals exhibiting low-risk behaviour may progress towards high-risk behaviour (Botelho and Richmond, 1996).

3.2. Brief alcohol intervention

Brief intervention (BI) is intended to be a secondary prevention strategy that is time-limited, using a patient-centred approach that focuses on changing behaviour (Fleming and Graham, 2001). In the 1970s, Miller and his research group and Edwards and colleagues shown that less intensive treatment was often as effective as more intensive treatment (Kaner et al., 2007) and in the 1980s, BI was used before or soon after the onset of alcohol-related problems, just to provide early intervention (Babor et al., 2007; Heather, 2011; Moyer et al., 2002).

BI typically consist of 5 to 60 minutes of counselling and education, with usually no more than three to five sessions but a BI can be as brief as 30 seconds and may be involve just one opportunistic session (Babor and Higgins-Biddle, 2001; Heather, 2011; Kaner et al. 2007;).

Most of the BIs for alcohol have been performed in primary health care settings (Nilsen et al. 2007a), but there has recently been an increase in the use of BI in EDs (Daeppen et al. 2007). Bernstein and Bernstein (2008) observed that research in EDs is still in its early stages and that researchers are “running to catch up” with primary health care research (Nilsen et al. 2007a).

BI has been used in other fields than the alcohol field. These strategies are widely used by health professionals for a number of other health-related
behaviours, including changing dietary habits, reducing weight, smoking cessation and reducing cholesterol levels (Fleming and Graham, 2001).

3.3. Behaviour change theories and models

The aim of an alcohol intervention is to promote reduced alcohol consumption. Thus, in order for the intervention to successful, it requires a behaviour change.

Numerous theories and models have been developed to explain and understand behaviour change, including a number of widely applied cognitive theories (Nutbeam et al., 2004), which are presented here.

3.3.1. Health Belief Model

The Health Belief Model (HBM) was developed by researchers in the 1950's and is one of the earliest models used to explain differential behaviour in the utilization of prevention programmes (Becker., 1974; Nutbeam et al., 2004.) It explains how the likelihood of taking action on a particular health problem is dependant on four different types of beliefs or perceptions;

- Susceptibility (they are susceptible to the problem)
- Severity (the problem has serious consequences)
- Benefits (perceive the benefits of the specified actions)
- Barriers (the benefits to action outweigh the perceived costs)

(Nutbeam et al., 2004).

3.3.2. Theory of Reasoned Action

The Theory of Reasoned Action was developed by Fishbein and Azjen (1975) in the 1970s and 1980s. This theory explains that people are rational and the intention to take action is the most determinant of behaviour. This intention is determined by the belief that the positive outcome will occur if a particular behaviour is followed. It is also determined to subjective norms, a person's beliefs about what other people think they should do.

20
3.3.3. Theory of Planned Behaviour

The Theory of Planned Behaviour (Figure 4) is an extended version of the Theory of Reasoned Action which incorporates Social Cognitive Theory and self-efficacy (Bandura, 1977). The Theory of Planned Behaviour predicts that a person changes his/her behaviour if he/her accepts as a true that the behaviour change will increase a good health. A person also changes his/her behaviour if the negative behaviour is socially desirable and there is social pressure to change. It is also positive for the behaviour if they feel they have personal control over the behaviour and the ability to change.

![Figure 4. Theory of Planned Behaviour](image)

3.3.4. Social Cognitive Theory

Social Cognitive Theory attempts to cover the complex relationships between people and their environment and the influences on their actions. It is related to Bandura’s work (1977; 1982; 1986) on self-efficacy. People have greater awareness of the environment and what kind of behave will be rewarding. The social influence has had an impact on the individual’s choice and this is a continuous interaction of the individual Social norms could be seen as a powerful health promotion tool. (Armitage and Conner, 2000; Bandura, 1995; Bandura, 1982).
3.3.5. Self-Determination Theory

Self-determination theory (SDT) was developed by Deci and Ryan in the 1980s and the theory focuses on how motivation affects personal development and wellbeing. It means that people are considered to be rational in their behaviour (Deci and Ryan, 2000).

The theory proposes that all behaviours can be placed along a motivation continuum from relative autonomy or self-determination to external regulations. Relative autonomy or self-determination means that a person is committed and reflects on what they are doing; external regulation means that a person is doing something simply because he has been told by someone authority to do so (Vansteenkiste and Sheldon, 2006). More intrinsically motivated behaviours are done with greater care and quality, and are more stable and likely to be sustained (Deci and Ryan, 2000; Markland et al., 2005).

3.3.6. Stages of Change Theory

The Stages of Change Theory (Motivation to change) was developed by Prochaska and DiClemente in the 1980s to describe different motivational stages to change a negative behaviour (Figure 5). It also indicates the need of support in different stages of the processes movement between stages (Prochaska et al., 1984).

- **Precontemplation**: describe individuals who are not considering changing behaviour or are consciously intending not to change.
- **Contemplation**: the person considers making a change to a specific behaviour.
- **Preparation**: the person makes a serious commitment to change.
- **Action**: the behaviour change is initiated.
- **Maintenance**: sustaining the change, and achieving predictable health gains.
- **Relapse** may also be the fifth stage. A relapse is a part of a changing.
It is also recognized that individuals may relapse and go back round the model again. The patients need attention in the processes of maintaining a changed behaviour (Rollnick et al., 1992). In the health promotion work, the model could identify patients who want to make a change in a specified behaviour, and to identify barriers in the changing process.

Most of these theories posit that motivation is a key predictor of behaviour change. Motivation, in turn, is influenced by factors such as attitudes toward the belief, subjective norms, etc.
4. ALCOHOL PREVENTION IN THE EMERGENCY DEPARTMENT

This chapter provides an overview of Swedish health care, EDs and computerized BI in emergency care.

4.1. Swedish health care

According to the World Health Organization, “Health services include all services dealing with the diagnosis and treatment of disease, or the promotion, maintenance and restoration of health.” (WHO, 2011). Health services have a key role in public health work through their specific expertise, authority and extensive contact with people. Health care should initiate and support health promotion and disease prevention efforts at individual and group levels and develop methods so that preventive measures are naturally integrated into care (Breslow, 1999).

Swedish health care is publicly funded, that is, residents are insured by the state, with equal access for the entire population. All fees are regulated by law and are only slightly higher in private practice than in the public health care sector.

The provision of health services in Sweden is primarily the responsibility of the 21 county councils. County councils are relatively independent regional-level administrative organizations with elected council representatives and a right to levy income tax. The county councils must provide medical care and health services of good quality and they have to promote good health in the population (Swedish government, 2007).

4.2. The ED setting

The number of ED visits has steadily increased in Sweden and the ED setting is important in Swedish health care. From 1970 to 2003, the number of in-
patients beds decreased from 120 000 to 27 000, a decrease of 80%. A thorough investigation, diagnosis and treatment means that patients are ready to go home without being admitted to hospital or they go to the right ward directly. In this way, the ED has contributes to a more efficient flow of patients in hospitals (SBU, 2010).

The trend towards increased alcohol consumption in Sweden has led to concern as to whether the number of alcohol-related ED presentations might be on the increase. International studies have estimated that between 30% and 50% of the adult ED and trauma centre presentations are related to alcohol (Cherpitel, 1995; Cherpitel, 1999; Cherpitel, 2007; Maio et al, 1997; Roche et al., 2001). ED patients have a higher weekly average consumption and more frequently engage in (HED) than the general population in their region (Cherpitel, 1999; Cherpitel, 2007; Nordqvist et al., 2006; Peters et al., 1998). This makes the ED an important setting for alcohol interventions (Botelho et al., 1996; Cherpitel, 1999; Cherpitel, 2007; Dinh-Zarr et al., 1999; Hungerford et al., 2003; Nilsen et al., 2008; Nordqvist et al., 2006).

### 4.3. Alcohol interventions in the ED

The effectiveness of providing brief alcohol interventions in the ED setting has been investigated in numerous studies (Bazargan-Hejazi et al., 2005; Blow et al., 2006; Gentilello et al., 1999; Johnston et al., 2002; Leontieva et al., 2005; Longabaugh et al., 2001; Neumann et al., 2006; Walton et al., 2008).

A common finding is that many patients irrespective of the type of intervention reduce their alcohol consumption after the ED visit (Blow et al., 2006; Gentilello et al., 1999; Neumann et al., 2006). However, some studies cannot show any reduction in alcohol consumption among patients who have received a brief intervention in the emergency department (Longabaugh et al., 2001; Daeppen et al., 2007).

In Sweden, four studies concerning alcohol-related visits in ED have been conducted (Table 1).
Table 1. Alcohol-related ED studies in Sweden.

<table>
<thead>
<tr>
<th>Author et al. (Year)</th>
<th>Study location</th>
<th>Intervention study</th>
<th>Follow-up</th>
<th>Question details</th>
<th>General findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romelsjö et al. (1993)</td>
<td>Two EDs in Stockholm</td>
<td>No</td>
<td>No</td>
<td>Alcohol, reason for visit, cause of injury, type of activity, location, alcohol involvement</td>
<td>Drinking was a contributory cause of injury in &gt;10% of ED visits</td>
</tr>
<tr>
<td>Forsberg (2003)</td>
<td>ED in Stockholm</td>
<td>30 min BI and extended counselling</td>
<td>6 months 12 month</td>
<td>Alcohol consumption</td>
<td>No differences between BI and EC. Both groups reduced their alcohol drinking at both 6 and 12 months</td>
</tr>
<tr>
<td>Karlsson and Bendtsen (2005)</td>
<td>ED in Linköping</td>
<td>Computerized simple written advice</td>
<td></td>
<td>Alcohol consumption</td>
<td>Feasibility study. No follow-up</td>
</tr>
<tr>
<td>Nordqvist et al. (2005)</td>
<td>ED in Motala</td>
<td>Simple written advice in a brochure</td>
<td>Telephone interview after 6 months</td>
<td>AUDIT-C, satisfaction with drinking habits, readiness to change, actual change, and alcohol-related injury, where the injury took place</td>
<td>The total consumption among risky drinkers decreased</td>
</tr>
</tbody>
</table>

Despite promising results in ED alcohol intervention research, this setting is not a common site for alcohol interventions. This can be partially explained by the operational difficulties of delivering alcohol interventions in the ED environment, which tends to be busy and overcrowded. Lack of time, fear of negative patient response due to the perceived sensitivity of the subject, negative attitudes to and lack of interest in alcohol prevention, and insufficient knowledge about alcohol-related issues have been cited as key obstacles for implementation of alcohol interventions in ED settings (Charalambous, 2002; Hadida et al., 2001; Nilsen et al., 2009; Wallace, 2001).

4.4. Computerized alcohol interventions in emergency care

The use of computer-generated brief intervention offers a potential means of minimising time restraints (Blow et al., 2006; Karlsson et al., 2005; Neumann et al., 2006; Nilsen et al., 2008). There is a growing body of evidence supporting the effectiveness of computer-generated advice for many health behaviours, including drinking, smoking, diet, obesity, and physical activity (Webb et al., 2010). Computerized concepts in emergency departments have also been positively evaluated in terms of feasibility, acceptability of the approach and patient willingness to participate in and satisfaction with computer-based interventions (Bendtsen et al., 2007; Nilsen et al., 2009; Vaca et al., 2010)
Researchers have suggested that the use of computer technology could overcome the barriers to delivering alcohol intervention into emergency departments (sensitivity of the subject, negative attitudes to and lack of interest in alcohol prevention, insufficient knowledge about alcohol-related issues). No face-to-face counselling and no advice about the patient’s alcohol consumption is delivered by the staff (Blow et al., 2006; Hungerford and Pollack, 2003; Karlsson et al., 2005; Neumann et al., 2004; Neumann et al., 2006; Noell and Glasgow, 1999). Findings have also suggested that patients prefer to reveal information of a personal nature to a computer than a person (Locke et al., 1992; Tourangeau and Smith, 1996).

Patients who are not critically injured spend a lot of time, waiting in the emergency department, and a computerized alcohol intervention in the waiting room is an opportunity to utilize the time (Hungerford et al., 2002; Neumann et al., 2006). The patients who are waiting are typically younger than patients who present with other more chronic medical conditions, and are already familiar with computer technology (Neumann et al., 2004). The use of computerized advice can also improve the effectiveness of behavioural counselling through closer matching of intervention by utilizing the patient’s alcohol consumption characteristics (Noell and Glasgow, 1999; Vaca et al., 2010).

Although empirical support is emerging for computerized interventions, very few studies (e.g. Blow et al., 2006; Neumann et al., 2006) have evaluated computer-based alcohol interventions delivered in ED settings (Table 2). This paucity of research suggests that more studies are needed to explore the use and effectiveness of computerized interventions in ED settings.

Table 2. Computerized interventions evaluated in emergency care

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Study location</th>
<th>Follow-up</th>
<th>Question details</th>
<th>General findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blow et al. (2006)</td>
<td>ED in Michigan, USA</td>
<td>Telephone interviews at 3 months and 12 months</td>
<td>Health and lifestyle survey, alcohol questions</td>
<td>The patients significantly reduced their alcohol consumption between baseline and follow-up</td>
</tr>
<tr>
<td>Neumann et al. (2006)</td>
<td>ED in Berlin, Germany</td>
<td>Telephone interviews at 3 months and 12 months, computerized test at the ED or a mailed questionnaire</td>
<td>AUDIT, RTC-Q, tobacco use, illicit drug use, nutrition, social well-being, exercise, sexual and sleeping problems</td>
<td>The patients significantly decreases alcohol use and at-risk drinking.</td>
</tr>
</tbody>
</table>
Neumann et al. (2006) found that patients who received the computer-based intervention reduced their weekly alcohol consumption by 36% from baseline to 6-month follow-up. Blow et al. (2006) found that 48% decreased their weekly alcohol consumption from baseline to 12-month follow-up and the decrease in HED occasions per month ranged from 20% to 37%.
5. AIM

This chapter presents the aim of this thesis and the specific aims of the four studies that are included in this thesis. The four studies are related to the overall aim.

5.1. Overall aim

The aim of this thesis was to generate knowledge about the alcohol consumption among patients in a Swedish ED, the reach and effectiveness of a computerized brief intervention delivered in the ED, and factors that are associated with reduced alcohol consumption 6 months after the ED visit.

5.2. Specific aims of the studies

I. Alcohol consumption and motivation to reduce drinking among emergency care patients in Sweden.
   To investigate the drinking patterns and motivation to reduce drinking among injured and non-injured patients in an ED.

II. Acute alcohol consumption among patients in a Swedish emergency department.
   To investigate the prevalence of acute alcohol consumption (drinking 6 hours prior to the injury) among injury patients presenting an ED. Also to examine the importance of drinking characteristics and factors associated with motivation to reduce alcohol consumption among these patients.

III. Reach and effectiveness of a computer-based alcohol intervention in a Swedish emergency room.
   To investigate the reach of patients and the effectiveness of a computerized alcohol intervention in an ED by comparing the patients drinking patterns at baseline and the 6-month follow-up.
IV. What makes Swedish emergency department patients reduce their alcohol consumption? – a computer-based intervention study.
To investigate factors associated with reduced alcohol consumption among patients who were followed up 6 months after receiving computerized feedback at their ED visit.
6. MATERIALS AND METHODS

This chapter describes the details of the study setting, procedure and data collection. These are used in the four papers in this thesis.

6.1. Study setting

This study was conducted over a 1-year period at the ED facility of the Motala County Hospital, beginning in March 2007. Motala is located in the southern Sweden near the Lake Vättern (Figure 6). The population of Motala is 42,000 and 80% of these live in the central and residential areas and the remainder in surrounding rural districts.

![Map of Sweden showing the location of Motala.](image)

Figure 6. Map of Sweden showing the location of Motala.

The proportion of employed residents in Motala was 75% at the time of the study, which is close to the Swedish average. The sex and age distribution was also close to the Swedish average. The proportion of adults with elementary or higher school education is the same as the national average, and the income in
Materials and methods

Motala is 91% of the national average. Motala County Hospital is a public hospital with a total catchment area of approximately 80,000 people (SCB, 2007).

6.2. Procedure

All patients aged 18–69 years registered at the ED triage room were given a card (Appendix 1.) by a triage nurse with a request to answer alcohol-related questions on a touch-screen computer that was positioned in the adjacent ED waiting room (Figure 7).

![Figure 7. The ED waiting room with the touch-screen computer.](image)

During the 1-year study period, the ED staff were provided with monthly feedback on the age and sex distribution of those who had performed the computerized alcohol test and information about the patients’ alcohol consumption. The ED staff were also provided with weekly feedback on the number of tests performed. The staff were not supported in any other way although the functional operation of the computer and printer was checked regularly.

Figure 8 shows the number of patients who were registered at the triage room each week and the number of patients aged 18–69 years who initiated the test each week during the 1-year study period. The average number of patients registered at the triage room every week was 142 (range 108–177 patients), with slightly lower figures at the outset of the study period and somewhat higher figures towards the end. The number of patients who initiated the computerized test showed a slightly decreasing weekly trend during the first half of the year. However, there were substantial week-by-week variations.
The weekly number of tests initiated ranged from 25 to 65 during the first 25–30 weeks. The trend then stabilized, becoming more or less level for the second half of the year and demonstrating smaller variations week-by-week (Nilsen, et al. 2009)

![Figure 8](image.png)

Figure 8. The weekly number of patients (aged 18-69 years) registered at the triage room and the weekly number of tests initiated during the 1-year study period (Nilsen et al., 2009).

The percentage of patients registered at the triage room who went on to initiate the test ranged from 19% to 43% in the first 6 months, and from 20% to 33% in the second 6 months (Nilsen et al., 2009).

The flow of patients is described in Figure 9.
Figure 9. Flow-chart of patients who were admitted to the emergency department.
Patients who arrived by ambulance or received immediate care without presenting to the triage room were excluded from the study. Patients were also excluded for health and feasibility reasons, e.g. when the triage nurses considered patients to be too ill, injured, intoxicated or fragile to do the computerized test or when the nurses perceived logistical problems such as many patients presenting within a short time period or the ED waiting room being crowded. The remaining patients should have been given a card (Appendix 1) by the ED triage nurses with a request to do the computerized test but some patients were missed by the nurses or the patient chose not to participate. Of those who initiated the test, 25% did not complete the test. Of those who did complete the test, one-third accepted to be followed up. In total, 321 patients could be followed up 6 months later.

### 6.3. Baseline data collection

The computer programme included 23 questions (Appendix 2.). Five questions were related to sociodemographics, five questions were alcohol related, two questions were related to motivation to change, and 11 questions were injury related. The patients identified in the computer program whether they had an unintentional injury, an intentional injury or if they had another reason for the ED visit. In this study, unintentional injury and intentional injury patients are categorized as injury patients. Other reasons are categorized as non-injured patients. According to the ED log, luxation and distortion, injury caused by crushing, fracture, gaping wound and concussion of the brain were common reasons for injury. These causes of injury were also seen in previous research (Nordqvist et al., 2006). Heart diseases, abdominal pain, respiratory disorders, hypersensitivity and headaches were common reasons for presentation of non-injured patients to the ED. Participation was voluntary and the patient could exit the computer program at any point. The programme took between 5 and 10 minutes to complete. The computerized intervention concept was designed to require minimal input by the researchers. The amount of time the researchers devoted to maintaining the intervention did not exceed 2 h/week over the 1-year study period. At the end of the computer programme, the patients were asked if they would be willing to respond to a follow-up postal questionnaire.

Patients who completed the computerized programme received a printout, containing personalized feedback on their alcohol drinking habits, as
calculated by the computer program from the patient’s answers. The patient picked up the printout beside the computer and it was not available to any of the staff. No person-to-person feedback was provided.

Using a randomization algorithm within the computer programme, patients were allocated to one of two types of feedback: short feedback or long feedback (Appendix 3 and 4). The long feedback group received tailored advice and information on the weekly alcohol intake level, frequency of heavy episodic drinking (HED), and motivation to change current drinking patterns. The printout also included a graphic illustration of a traffic light, indicating the patient’s weekly alcohol consumption and frequency of HED, represented as hazardous level, an elevated risk or no risk. The short feedback group received only the traffic light showing the risk levels regarding their weekly alcohol consumption and frequency of HED. The advice, information, and traffic lights were tailored based on the patient’s answers. The decision to use two different types of feedback was based on the ED staff’s wishes to provide feedback to all patients who did the computerized test. A similar methodology was also used in one of the previous computer-based ED studies (Blow et al., 2006).

6.4. Follow-up data collection

Follow-up data were collected by means of a postal questionnaire (Appendix 5) that was mailed to the patients 6 months after their ED visit. Two reminders were sent.

Questions on the patient’s alcohol consumption since the ED visit and if the patients thought that they had reduced their alcohol consumption were included in the questionnaire. Questions about alcohol consumption as a habit were also included. How the patient handled the feedback that they received after finishing the computerized test was measured by asking the patient if they read the information, understood the information easily, remembered the information, discussed the information with a friend/relative or discussed the information with a health care professional. Questions on motivation to reduce alcohol consumption were also included.
6.5. Study variables

Table 3 provides an overview of the study variables used in papers I-IV, including details of the questions, response items, recalculated response items, in which questionnaire they were used and in which paper.

<table>
<thead>
<tr>
<th>Question variable</th>
<th>Response items</th>
<th>Categories used in the analysis</th>
<th>Data collection</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you a man or a woman</td>
<td>Man</td>
<td>18–29 years</td>
<td>Baseline</td>
<td>I–IV</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>30–39 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40–49 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50–59 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60–69 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥70 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How old are you</td>
<td>≤18 years</td>
<td>Unintentional injury</td>
<td>Baseline</td>
<td>I and IV</td>
</tr>
<tr>
<td></td>
<td>18–29 years</td>
<td>Intentional injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30–39 years</td>
<td>Another reason</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40–49 years</td>
<td>Unintentional and Intentional - Injury</td>
<td>Yes</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>50–59 years</td>
<td>Another reason - non-injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60–69 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥70 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the reason for your ED visit today</td>
<td>Unintentional injury</td>
<td>Unintentional and Intentional - Injury</td>
<td>Baseline</td>
<td>I and IV</td>
</tr>
<tr>
<td></td>
<td>Intentional injury</td>
<td>Another reason - non-injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other reason</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much physical distress or pain has your injury caused you</td>
<td>None</td>
<td>Yes</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minor</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much psychological or mental distress has your injury caused you</td>
<td>None</td>
<td>Yes</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minor</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often have you had any kind of alcoholic beverage (The last year in baseline and the last six months in follow-up)</td>
<td>Every day</td>
<td>≥3 times per week</td>
<td>Baseline</td>
<td>I–IV</td>
</tr>
<tr>
<td></td>
<td>Almost every day</td>
<td>1–2 times per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3–4 times per week</td>
<td>1–3 times per month</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2–3 times per month</td>
<td>Less often than monthly Had not been drinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>About once a month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many glasses do you drink in a typical day when you drink alcohol (in the last year at baseline and in the last 6 months at follow-up)</td>
<td>I standard glass</td>
<td>≥ 6 standard glasses</td>
<td>Baseline</td>
<td>I–IV</td>
</tr>
<tr>
<td></td>
<td>2–3 standard glasses</td>
<td>4–5 standard glasses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4–5 standard glasses</td>
<td>2–3 standard glasses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6–7 standard glasses</td>
<td>1 standard glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8–9 standard glasses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥10 standard glasses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often have you drunk ≥5 glasses (for men) or ≥4 glasses (for women) on any one occasion (in the last year at baseline and in the last 6 month in follow-up)</td>
<td>Never</td>
<td>≥4 times per week</td>
<td>Baseline</td>
<td>I–IV</td>
</tr>
<tr>
<td></td>
<td>Less seldom than monthly</td>
<td>1–2 times per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>About once per month</td>
<td>1–3 times per month</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2–3 times per month</td>
<td>Less often than monthly Never</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3–4 times per week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almost every day/ every day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you drink any alcohol within 6 hours preceding the injury</td>
<td>Yes</td>
<td>Baseline</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question variable</td>
<td>Respond items</td>
<td>Categories used in the analysis</td>
<td>Data collection</td>
<td>Paper</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-------</td>
</tr>
<tr>
<td>Do you think there was a connection between the injury and your drinking?</td>
<td>Yes, definitely, Yes, likely, Possibly, No, had not drink, No connection</td>
<td>Yes-definitely, yes-likely, possibly = connection to injury, No-had not drink, no connection = no connection</td>
<td>Baseline</td>
<td>III</td>
</tr>
<tr>
<td>Which of these statements best describes your current attitude toward reducing your alcohol consumption?</td>
<td>Have no thoughts of reducing, I need to consider reducing someday, I'm thinking about how to reduce my drinking, I'm cutting down on my drinking</td>
<td>No thoughts and need to consider = not motivated, I'm thinking and I'm cutting down = motivated</td>
<td>Baseline</td>
<td>I, II and IV</td>
</tr>
<tr>
<td>Has the injury made you more motivated to reduce your alcohol consumption?</td>
<td>My motivation to reduce my drinking was affected to a large extent by the injury, My motivation to reduce my drinking was affected to some extent by the injury, My motivation to reduce my drinking was not affected by the injury</td>
<td>Was affected to a large extent and was affected to some extent = Yes, Was not affected = No</td>
<td>Baseline</td>
<td>III</td>
</tr>
<tr>
<td>What is your highest education?</td>
<td>No formal education, Compulsory school, Secondary school, 2 years upper secondary school, 3- or 4 years upper secondary school, University, University ≥ 3 year, Postgraduate, Other education</td>
<td>No education, Compulsory school, Upper secondary school, University, and Low education, High education</td>
<td>Baseline</td>
<td>I – IV</td>
</tr>
<tr>
<td>What is your current employment?</td>
<td>Employee full time, Employee part time, Self-employed, Student, Unemployed, Pensioners, Disability pensioner, Long-term sickness, Home-worker, Maternity leave</td>
<td>Employee, Student, Unemployed, Pensioners, Long-term sickness, Other, Employee, Student, Unemployed, Other</td>
<td>Baseline</td>
<td>I-IV</td>
</tr>
<tr>
<td>How important has the reason for your visit been on your motivation to change?</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up</td>
<td>IV</td>
</tr>
<tr>
<td>How important has the reason for just visiting the emergency department been on your motivation to change?</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up</td>
<td>IV</td>
</tr>
</tbody>
</table>
## Materials and methods

### Question variable

<table>
<thead>
<tr>
<th>Question variable</th>
<th>Responds items</th>
<th>Categories used in the analysis</th>
<th>Data collection</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>How important has drinking prior to the ED visit influenced your motivation to change</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up IV</td>
<td></td>
</tr>
<tr>
<td>How important was the computerized program and that you considered how to answer the questions been on your motivation to change</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up IV</td>
<td></td>
</tr>
<tr>
<td>How important has the alcohol-related feedback information been on your motivation to change</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up IV</td>
<td></td>
</tr>
<tr>
<td>How important has influence from a friend or relative been on your motivation to change</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up IV</td>
<td></td>
</tr>
<tr>
<td>How important has impact from a health care provider been on your motivation to change</td>
<td>Very important, Important, Little importance, No importance, No opinion/can not answer</td>
<td>Very important, important and little important = Yes, No importance and no opinion/can not answer = No</td>
<td>Follow-up IV</td>
<td></td>
</tr>
</tbody>
</table>

### 6.6. Definition of alcohol consumption variables

To calculate the weekly consumption for each patient, responses regarding frequency of drinking and typical quantities were combined according to a method suggested by Seppä et al. (1995). For example, the response item, drinking 1-2 times per week, was stipulated as 2 times per week and the response item, typical quantity of 4-5 standard glasses was counted as drinking 5 standard glasses, thus yielding a weekly consumption of 10 standard glasses for this person. The size of a standard glass is 12 g of 100% alcohol (Figure 10).
HED is defined as drinking five standard glasses of alcohol or more for men and four standard glasses of alcohol or more for women on a single occasion.

Risk drinking is defined as consumption of 10 or more standard drinks per week for women (≥120 g) and 15 or more (≥180 g) per week for men (i.e. hazardous weekly consumption) and/or engaged in HED once a month or more. This standard is widely applied in the international literature on alcohol (Dawson et al., 2005; Reinert and Allen, 2007).

Acute alcohol consumption was defined as self-reported consumption of alcohol in the 6 hours preceding the injury, a common definition used in international ED studies (Cherpitel et al., 2003; Cherpitel et al., 2005; Kuendig et al., 2008; Kuendig et al., 2009; Watt et al., 2004).

### 6.7. Statistical analysis

In all studies differences in sociodemographic characteristics, drinking patterns, proportion of risky drinkers, acute drinking at baseline, injured at baseline, type of feedback, and motivation to change were analysed using the $\chi^2$-test and the Fisher exact test when appropriate.

In paper I, logistic regression was applied to analyse a possible relationship between patient group category and sociodemographic characteristics and drinking patterns.

In paper II and paper III, differences in average weekly consumption were tested using the $t$-test. Differences concerning frequency of HED occasions per month were tested with non-parametric tests, the Kruskal–Wallis test and the Mann–Whitney test. In paper III differences in average weekly consumption...
were tested with one-way ANOVA and the $t$-test. Absolute change in consumption was tested with the paired $t$-test (average weekly intake) and with the non-parametric marginal homogeneity test (number of HED occasions per month).

In paper IV, odds ratios (OR) were calculated in order to estimate the relationship between reasons for change and decreased alcohol consumption. The OR is reported for each variable, indicating the power of the relationship when controlling for all other variables in the model.

Statistical significance for all data was set at $p<0.05$ for comparison.
7. MAIN RESULTS

This section presents the results of the four papers, starting with the epidemiological studies (paper I and paper II), followed by the intervention studies (paper III and paper IV).

7.1. Study I

When investigating alcohol consumption and motivation to reduce drinking among injured and non-injured patients, we found that injury patients were in general younger and more often male than non-injury patients. The proportion of employed persons was higher among injury patients than among non-injury patients. Injury patients were to a higher extent employed or students, even when adjusting for sex and age. The difference between sex and age was significant within the injured patient group but not within the non-injured patient group.

Injury patients had more detrimental alcohol consumption (Table 4). They drank alcohol more frequently than non-injury patients and 75% of the injury patients drank more often than monthly, in comparison with 65% of the non-injury patients. The proportion of abstainers was higher among non-injury patients than injury patients. Injury patients drank a significantly higher typical quantity than non-injured patients; nearly 50% of the injured patients typically drank more than 4 standard drinks in comparison with 37% of the non-injured patients. Of the injured men, 35% typically drank 6 or more standard drinks on one occasion and 26% of the non-injured men drank 6 or more standard drinks on one occasion.
Injury patients had a significantly higher level of average weekly consumption than non-injury patients, but nearly all differences between the two patient groups disappeared when taking the differences in sex and age into consideration. Of the injured patients, 12% drank at a hazardous level (≥ 15 standard glasses per week for men and ≥10 standard glasses per week for women), in comparison with 8% of the non-injured patients. Twenty-three percent of the injured men drank more than 10 standard drinks per week, in comparison with 17% of the non-injured men. The difference was smaller between injured and non-injured women: 11% and 9%, respectively.

There were no significant differences between injury and non-injury patients concerning frequency of HED. Nearly half of the injury patients engaged in HED once a month or more in comparison with 39% of the non-injured patients. Men more frequently engaged in HED than women in both patient...
Main results

groups. Twenty-five percent of the women stated that they never engaged in HED in comparison with 15% of the men. When taking the differences in sex and age in the two patient groups into consideration, nearly all differences between the two patient groups disappeared.

There were no significant differences in motivation to reduce drinking between injury and non-injury patients. Men in the non-injury group were significantly more motivated than women to reduce their alcohol intake, but there were no significant differences among the injury patients. Men in the total population were more motivated to reduce their drinking than women, with 18% of the men being categorized as being in the preparation or action stage compared with 13% of the women.

7.2. Study II

When investigating the prevalence of acute alcohol consumption among injury patients in an emergency department we found that of the 566 injured patients, 15% were categorized as acute drinkers and of these, 64% reported that their injury was connected to their alcohol consumption. Acute and non-acute drinkers were significantly different for all sociodemographic and drinking characteristics examined, except for gender. Acute drinkers were in general younger than non-acute drinkers.

Acute drinkers were categorized as risky drinkers to a much greater extent than non-acute drinkers (Table 5), and men had higher alcohol consumption than women. These differences were not present in the acute drinking category.

### Table 5. Characteristics of the acute drinking and non-acute drinking injury patients

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>% of acute drinkers (n=85)</th>
<th>% of non-acute drinkers (n=481)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risky drinkers (p&lt;0.001)</td>
<td>80</td>
<td>42</td>
</tr>
<tr>
<td>Weekly consumption, g/week (mean, SE) (p&lt;0.001)</td>
<td>186.2 (23.8)</td>
<td>54.3 (3.4)</td>
</tr>
<tr>
<td>Number of HED occasions per month (mean, SE) (p&lt;0.001)</td>
<td>6.6 (0.8)</td>
<td>1.9 (0.2)</td>
</tr>
</tbody>
</table>
Acute drinkers reported considerably higher average weekly alcohol consumption (186 g/week vs. 54 g/week) and engaged far more frequently in HED (6.6 events/week vs. 1.9 events/week) than non-acute drinkers.

When we examined the importance of factors associated with motivation to reduce alcohol consumption, we found that acute drinkers were motivated to a greater extent than non-acute drinkers to reduce their alcohol intake; 34% were in the action or preparation stage, compared with 12% of the non-acute drinkers (Table 6).

Table 6. Effects on the injury and motivation differences.

<table>
<thead>
<tr>
<th>Type of distress</th>
<th>% of acute drinkers (n=85)</th>
<th>% of non-acute drinkers (n=481)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation to change (p&lt;0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Preparation</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Contemplation</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>49</td>
<td>81</td>
</tr>
<tr>
<td>Effect of injury on motivation to reduce drinking (p&lt;0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>73</td>
<td>98</td>
</tr>
<tr>
<td>Physical distress of the injury (p=0.095)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69</td>
<td>78</td>
</tr>
<tr>
<td>None</td>
<td>31</td>
<td>22</td>
</tr>
<tr>
<td>Mental distress of the injury (p=0.179)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>42</td>
<td>35</td>
</tr>
<tr>
<td>None</td>
<td>58</td>
<td>65</td>
</tr>
</tbody>
</table>

Of the acute drinkers 27% stated that the injury had led to increased motivation to reduce their drinking. The extent to which the injury caused physical and mental distress did not differ significantly between the acute and non-acute drinkers.

7.3. Study III

When evaluating the computerized alcohol interventions reach (Table 7), we found that 560 patients were categorized as risky drinkers and of those, 415
Main results

did not want to be followed up (non-participants). The remaining 145 patients were followed up with the questionnaire and 93 patients (responders) replied; 52 patients did not respond (non-responders).

Table 7. Sociodemographic and drinking characteristics of the reach.

<table>
<thead>
<tr>
<th>Type of feedback (p=0.197)</th>
<th>Non-participants, n (%)</th>
<th>p-value (non-participants vs non-responders)</th>
<th>Non-responders, n (%)</th>
<th>p-value (non-responders vs responders)</th>
<th>Responders, n (%)</th>
<th>p-value (non-participants vs responders)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long</td>
<td>198 (49)</td>
<td>0.169</td>
<td>29 (60)</td>
<td>0.720</td>
<td>52 (56)</td>
<td>0.251</td>
</tr>
<tr>
<td>Short</td>
<td>206 (51)</td>
<td></td>
<td>19 (40)</td>
<td></td>
<td>41 (44)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>404 (100)</td>
<td></td>
<td>48 (100)</td>
<td></td>
<td>93 (100)</td>
<td>0.251</td>
</tr>
<tr>
<td>Weekly consumption, g/week (p=0.123)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (range)</td>
<td>72 (502)</td>
<td></td>
<td>81 (495)</td>
<td></td>
<td>63 (477)</td>
<td></td>
</tr>
<tr>
<td>Mean (SE)</td>
<td>96.3 (4.3)</td>
<td>0.170</td>
<td>114.7 (15.1)</td>
<td>0.072</td>
<td>83.2 (8.4)</td>
<td>0.189</td>
</tr>
<tr>
<td>Frequency of HED, (p=0.009)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (range)</td>
<td>3 (25)</td>
<td></td>
<td>3 (24)</td>
<td></td>
<td>3 (16)</td>
<td></td>
</tr>
<tr>
<td>Mean (SE)</td>
<td>4.5 (0.2)</td>
<td>0.412</td>
<td>5.6 (0.8)</td>
<td>0.014</td>
<td>3.0 (0.3)</td>
<td>0.005</td>
</tr>
</tbody>
</table>

There were no significant differences between the three groups regarding weekly alcohol consumption, but the number of HED occasions per month differed significantly between the groups. Responders had a lower number of HED occasions per month than non-responders and non-participants.

When evaluating the effectiveness (Table 8) of two different types of tailored feedback on patients’ drinking patterns (i.e. changes from baseline to the 6-month follow-up), we found that patients who received the long feedback decreased their weekly consumption significantly by 26 g between baseline and follow-up (34% reduction). Patients who received the short feedback also improved, reducing their weekly consumption significantly by 24 g between baseline and follow-up (26%).

There were no statistically significant differences between the long and short feedback regarding the frequency of HED at either baseline or follow-up. Patients who received long feedback reduced their frequency of HED significantly by 1.2 occasions per month (40% reduction) between baseline and follow-up. Patients who received the short feedback reduced their HED frequency by 1.0 occasion per month (33% reduction). This was not a significant difference.
Table 8. Effectiveness of the two types of feedback

<table>
<thead>
<tr>
<th></th>
<th>Long feedback n = 52</th>
<th>Short feedback n = 41</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average weekly consumption at baseline, mean (median)</td>
<td>76 g (45 g)</td>
<td>92 g (72 g)</td>
<td>0.330</td>
</tr>
<tr>
<td>Average weekly consumption at follow-up, mean (median)</td>
<td>51 g (27 g)</td>
<td>69 g (72)</td>
<td>0.100</td>
</tr>
<tr>
<td>Absolute change in average weekly consumption</td>
<td>-26 g (p=0.029)1</td>
<td>-24 g (p= 0.039)2</td>
<td>0.940</td>
</tr>
<tr>
<td>Relative change in average weekly consumption</td>
<td>-34%</td>
<td>-26%</td>
<td></td>
</tr>
<tr>
<td>Number of HED occasions per month at baseline, mean (median)</td>
<td>3.0 (3.0)</td>
<td>3.1 (1.0)</td>
<td>0.344</td>
</tr>
<tr>
<td>Number of HED occasions per month at follow-up, mean (median)</td>
<td>1.8 (0.5)</td>
<td>2.1 (1.0)</td>
<td>0.081</td>
</tr>
<tr>
<td>Absolute change in HED occasions per month</td>
<td>-1.2 (p &lt;0.010)3</td>
<td>-1.0 (p= 0.120)4</td>
<td>0.120</td>
</tr>
<tr>
<td>Relative change in HED occasions per month</td>
<td>-40%</td>
<td>-33%</td>
<td></td>
</tr>
<tr>
<td>Changed from risk to no risk</td>
<td>56%</td>
<td>39%</td>
<td>0.144</td>
</tr>
</tbody>
</table>

1) Test for change in average weekly intake within the ‘Long feedback’ group.
2) Test for change in average weekly intake within the ‘Short feedback’ group.
3) Test for change in number of HED occasions per month within the ‘Long feedback’ group.
4) Test for change in number of HED occasions per month within the ‘Short feedback’ group.

The proportions of risky drinkers at baseline who changed to non-risky drinkers at follow-up did not differ between the long and the short feedback. Of the patients who received the long feedback, 56% of the risky drinkers at baseline became non-risky drinkers at follow-up. The corresponding figure for patients who received the short feedback was 39%. In total, 48% of the target population became non-risky drinkers at follow-up.

7.4. Study IV

There were no significant differences between patients who decreased their alcohol consumption from risky to non-risky drinking and all other patients regarding sex, age and education. There were statistically significant differences regarding occupation. Patients who were non-risky drinkers at both baseline and follow-up were to a higher extent categorized as “other”, e.g. on long-term sickness and on maternity leave.

Logistic regression revealed four statistically significant independent predictors for reduced alcohol consumption from risk to non-risk drinking: being motivated to reduce alcohol consumption at baseline, influenced by just visiting the emergency department, considering the alcohol-related feedback information and impact from a health care provider (Table 9).
### Table 9. Logistic regression analyses for independent predictors for decreased alcohol consumption, controlled for all other variables

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injured at baseline</td>
<td>1.07</td>
<td>0.56 – 2.03</td>
<td>0.533</td>
</tr>
<tr>
<td>Acute drinkers at baseline</td>
<td>0.64</td>
<td>0.07 – 4.89</td>
<td>0.185</td>
</tr>
<tr>
<td>Motivated to reduce alcohol at baseline</td>
<td>2.30</td>
<td>1.13 – 4.72</td>
<td>0.022</td>
</tr>
<tr>
<td>ED visit</td>
<td>5.40</td>
<td>1.72 – 8.95</td>
<td>0.004</td>
</tr>
<tr>
<td>The reason</td>
<td>2.82</td>
<td>0.78 – 5.01</td>
<td>0.113</td>
</tr>
<tr>
<td>The program</td>
<td>2.64</td>
<td>0.85 – 8.20</td>
<td>0.093</td>
</tr>
<tr>
<td>The information</td>
<td>4.18</td>
<td>1.32 – 7.28</td>
<td>0.015</td>
</tr>
<tr>
<td>Friend or relative</td>
<td>1.37</td>
<td>0.46 – 4.10</td>
<td>0.569</td>
</tr>
<tr>
<td>Health care provider</td>
<td>3.79</td>
<td>1.08 – 8.32</td>
<td>0.038</td>
</tr>
<tr>
<td>Drink related</td>
<td>2.36</td>
<td>0.35 – 6.33</td>
<td>0.377</td>
</tr>
</tbody>
</table>
8. DISCUSSION

The four papers in this thesis have investigated differences in drinking patterns, the prevalence of acute alcohol consumption, motivation to reduce alcohol consumption, and the proportion and representativeness of patients who participated in the intervention. The papers also included an evaluation of a computerized alcohol intervention and the effectiveness of two different types of tailored computer-generated feedback. Moreover, the papers identified factors associated with reduced alcohol consumption.

8.1. Patterns of alcohol consumption

In this thesis there were differences in drinking patterns between injury and non-injury patients. Injury patients had higher weekly consumption, drank more frequently, and at higher typical quantity than non-injury patients. Injury patients in our study engaged in HED more often than non-injury patients although this difference was not significant. This was a slightly unexpected finding considering that HED is widely considered to be a critical risk factor for injuries (Cherpitel, 1999; Cherpitel, 2007; Nordqvist et al., 2006). A possible explanation for this finding is the relatively low cut-off level used in our study to measure HED, i.e. 4 standard drinks or more for women and 5 standard drinks or more for men on one occasion. A HED cut-off of 6 standard drinks on one occasion, for both men and women, has been used in some studies (Bergman et a., 1998; Nilsen et al., 2007b). Higher cut-off levels for HED may differentiate better between injury and non-injury patients. This interpretation is supported by our study findings showing a trend towards higher proportions of injury patients drinking higher typical quantities than non-injury patients. These results were not seen between acute and non-acute drinkers; acute drinkers were significantly more engaged in HED than non-acute drinkers.

When just controlling for injured patients and the relationship between acute alcohol consumption and general drinking patterns, the acute drinkers demonstrated more detrimental alcohol consumption than non-acute drinkers, i.e. drinking a considerably higher weekly quantity and engaging in HED
more often. Risk drinking was more prevalent among the acute drinkers; 80% of the acute drinkers were categorized as risk drinkers compared with 42% of the non-acute drinkers.

The overall proportion of risk drinkers seen in our study was very high; 47% of the injury patients were categorized as risk drinkers. Thirty-one percent of the Swedish general population were categorized as risk drinkers in a recent study (Nilsen et al., 2011) using the same definition as in our study. Earlier research in the Motala area has documented that ED patients have a higher weekly average consumption and more frequently engage in HED than the general population (Nordqvist, et al., 2006).

We could not find any differences in motivation to reduce drinking between injury and non-injury patients. This finding was somewhat surprising in view of the research that suggests injury patients are particularly more motivated to change their drinking behaviour if they perceive a causal link between their drinking and the injury. Researchers have also suggested that an injury provides a teachable moment when the adverse experience naturally produces a period when the individual is contemplating behaviour change. (Blume et al., 2005; Longabaugh et al., 1995; Minugh et al., 1997; Nilsen et al., 2007b). According to the ED log, heart diseases, abdominal pain, respiratory disorders, hypersensitivity, and headaches were common reasons for presentation of non-injury patients to the ED. It is quite possible that many of these health conditions could be alcohol-related aside from injuries and could also yield increased motivation to reduce drinking if patients perceive a causal link between their illness and their alcohol consumption.

The drinking culture might be an obstacle for an individual’s willingness to change. HED and drunkenness are acceptable within the Swedish drinking culture. A lower level of acceptance would probably have a positive influence on drinking and people would drink less. One solution is a preventive strategy focused on HED rather than on average weekly consumption, because the number of heavy drinking occasions has been found to be a stronger predictor of changing (Bombardier et al., 1999; Gmel et al., 2001; Rehm et al., 1996). Heavy episodic drinkers are over-represented at EDs, and as seen in this study, therefore such settings have to be considered appropriate for secondary preventions. There is evidence from the literature that EDs are especially favourable from a pedagogical viewpoint (Longabaugh et al., 1995; Nilsen et al., 2007b). Longabaugh et al. (1995) found that patients who experience
distress that they attribute to alcohol involvement may be ready to change their drinking.

High alcohol consumption is considered to be risky in most societies, whereas low alcohol consumption is considered non-risky and accepted. The exact limit at which consumption can be categorized as risky is difficult to determine because the risk varies with sex/gender, individuals, drinking patterns and situations. This makes it difficult to reach all patients with an intervention and increases the importance of personalized secondary prevention of risky alcohol consumption. In this study, we defined risk drinking as weekly consumption of 10 or more drinks for women (≥120 g) and 15 or more (≥180 g) for men (i.e. hazardous weekly consumption) and/or engaged in HED (as defined above) once a month or more often. This composite risk drinking definition has been promoted in Sweden by the National Public Health Institute and The National Board of Health and Welfare (Andréasson and Allebeck, 2005).

### 8.2. Effectiveness of the intervention

Among those categorized as responders and risk drinkers at baseline, almost every second person reduced their drinking to become non-risk drinkers 6 months later. There is a solid evidence base that supports the effectiveness of brief alcohol interventions at reducing hazardous and harmful alcohol consumption in non-dependent, non-treatment-seeking patients in a variety of settings, including the ED environment (Nilsen et al., 2010). However, many patients also increased their drinking from being non-risk drinkers at baseline to become risk drinkers at the follow-up. Thus, there was a relatively small difference in the proportions of risk/non-risk drinkers at baseline and follow-up. Most intervention studies do not follow up patients who screen negative for the outcome of interest, which makes it difficult to compare our findings with other studies.

The risk drinkers who reduced their weekly alcohol consumption and number of HED occasions per month received either a long feedback or a short feedback. The long feedback was slightly more effective than the short feedback, but the difference was not statistically significant. The decrease in weekly alcohol consumption and number of HED occasions per month from baseline to 6-month follow-up ranged between 26% and 40% for the two types
Discussion

of feedback. These effects are consistent with the large body of literature on brief face-to-face alcohol interventions. There is evidence-based research that supports the effectiveness of brief alcohol interventions at reducing high alcohol consumption in non-dependent, nontreatment-seeking patients in a variety of settings, including the ED environment (Nilsen et al., 2008). This effectiveness has also been seen in previous ED studies, using a computerized test (Blow et al., 2006; Neumann et al., 2006).

8.3. Predictors for change

The alcohol-related feedback information was a significant predictor for reduced alcohol consumption. Also impact from a health care provider was a predictor. This could be related to theories that explain that behaviour intentions are influenced by attitudes and norms, that is, the individual’s belief about what significant others think he or she should do, and the wish to comply with those norms (Ajzen et al., 1986; Conner et al., 2005; Fishbein et al., 1975; Nutbeam et al., 2004; Prochaska et al., 1992). On the other hand, impact from a friend or relative was not a significant predictor for reduced alcohol consumption.

The visit to the ED was associated with reduction from risk to non-risk drinking levels These results are largely consistent with other studies that suggest that an injury and an ED visit provides a teachable moment when the adverse experience naturally produces a period when the individual is contemplating behaviour change (Gentilello et al., 1999).

People are at different stages of motivation for behavioural change (Prochaska et al., 1992), and changes occurs if the patient believes that he or she is capable of changing and that change will be rewarding (Bandura, 1986; Dunn et al., 1997). Taking action on a particular health problem is also dependent on different types of beliefs or perceptions (Becker, 1974; Nutbeam and Harris, 2004). In this study, being motivated to change at baseline is a key predictor for reduced alcohol consumption. Our findings are consistent with previous studies (Barnett et al., 2010; Leontieva et al., 2005).

The acute drinkers demonstrated more detrimental alcohol consumption than non-acute drinkers, but acute alcohol consumption was not identified as a predictor for reduced alcohol consumption. This was a somewhat unexpected
finding considering that patients with acute alcohol consumption were motivated to change their current alcohol consumption. However, these patients were younger and those patients who actually did reduce their alcohol consumption were older.

The BI method has been found to reduce alcohol consumption among hazardous and harmful drinkers. However, many BI studies have reported significant reductions in control group drinking measures that are comparable with those in the BI group (Nilsen et al., 2008). Some of these studies had small sample size, but in other cases unexpected improvement in control groups can not be explained by low statistical power (Heather, 2011).

8.4. Reach of patients

The computerized test was completed by two-fifths (41%) of the target population, i.e. patients who should have been given a card with an instruction to do the computerized test. Unquestionably, this proportion is smaller than in most conventional alcohol intervention studies, even though the loss of patients in such studies tends to vary a great deal and is not always reported in sufficient detail to allow for comparisons among studies (Edwards and Rollnick, 1997). Obviously, higher participation rates can be achieved by applying more researcher-supported procedures, e.g. with researchers on hand in the ED to encourage patients to initiate the test and even help them complete the test.

Relatively few patients who received a card with a request to do the computerized test declined to participate. Our refusal rate of 7% of the target population compares favourably with many ED intervention studies (e.g. Crawford et al., 2004; Forsberg et al., 2000; Johnston et al., 2002; Maio et al., 2000; Neumann et al., 2006), in which attrition due to patient refusal typically ranges from about 15% to 35%. The fact that nearly nine out of ten patients who received the instruction card chose to initiate the test could possibly be seen as an indicator of patient interest in computerized assessments.

Three-quarters of the patients who initiated the test completed it and received the tailored feedback. Those who completed the test were younger than those who did not complete the test. Of those patients who completed the test, the responders (those who responded to the follow-up questionnaire) had
somewhat less detrimental drinking patterns than non-participants (those who did not want to be followed up) and non-responders (those who did not respond to the follow-up questionnaire), with responders having a significantly lower number of HED occasions per month. Our findings are in line with previous brief alcohol intervention studies (e.g. Beich et al., 2007; Littlejohn, 2006; Richmond et al., 1995; Wallace et al., 1988) that found that patients who do not want to be followed up after an intervention tend to drink more than those who are followed up. This could be related to the sensitivity of the subject and patients with high alcohol consumption feeling they are being monitored.

8.5. The use of computerized interventions

Our findings suggest that the use of computerized BIs in emergency care could have some public health impact, if sustained. The effectiveness of the intervention must be considered promising. Research on computer-assisted health behaviour interventions in general has indicated that computer solutions may have several advantages over conventional face-to-face counselling. For instance, the use of computers has been found to decrease the effect of social desirability and increase the amount of information disclosed (Robinson et al., 1992; Tate et al., 2001; Thomas et al., 1997). Researchers have also found that patients prefer to answer personal questions on a computer than to a person (Locke et al., 1992; Tourangeau et al., 1996). The use of computer-generated interventions can also achieve improved consistency of interventions and closer matching of intervention to patient characteristics and recommended guidelines (Noell and Glasgow, 1999).

The ED has been suggested as an important setting for provision of brief alcohol interventions to achieve reduced alcohol intake among patients who have risky alcohol consumption (Babor et al., 2005; Cryer, 2005; Dinh-Zarr et al., 1999; Hungerford et al., 2003). However, patients with low-risk behaviour may progress towards high-risk behaviour. Investment at all levels may therefore help in reducing any risk of progression towards high-risk behaviour (Botelho and Richmond, 1996). The majority of the patients in this thesis did not have high alcohol consumption and there were just a few patients with alcohol-related problems. However, many patients are categorized as risky drinkers; they drink a lot but are not alcoholics. If this secondary prevention reaches these patients and if they consider their alcohol consumption and
reduce it, this computerized intervention could be an important BI for ED settings.

8.6. Ethical considerations

When providing an intervention, there are some ethical issue that must be considered. According to Beauchamp and Childress (2001), bioethics can be summarised in the following four primary ethical principles:

- The principle of respect for autonomy
- The principle of non-maleficence
- The principle of beneficence
- The principle of justice

The principle of respect for autonomy implies that people’s right to autonomy must always be respected. That is, the right to make choices and commit acts based on their own values and beliefs. It also includes respect for the individual's behaviour and attitude (Beauchamp and Childress, 2001). Respect for this principle has been a major barrier in implementing alcohol-preventive measures in various health care settings (Charalambous, 2002; Hadida et al., 2001; Wallace, 2001).

This is one of the things that could make ED staff negative to secondary BI. The ED staff are afraid that the patients feel that they do not respect their autonomy when they are asking about alcohol consumption.

The principle of non-maleficence means that there is an obligation not to harm people, either physically or mentally, or reduce their welfare. The principle of beneficence involves preventing and reducing harm and promoting the good. The principle of justice means that people should be treated fairly; equals should be treated equally and non-equals should be treated differently. These treatments should be accorded to need, effort, contribution, merit, and the exchange on the open market (Beauchamp and Childress, 2001).

The principles are so-called prima facie principles, which mean they are not absolute in the sense that they must be followed at all costs, but allow exceptions in cases where they conflict with any other of the principles. There is no particular order of the principles (Beauchamp and Childress, 2001).
When providing an alcohol intervention, some conflict may arise. For example, when asking about a patient’s alcohol consumption, the patient may find that the health care professional does not respect the principle of autonomy. On the other hand, the patient may not have recognized how much he or she was drinking and may have been unaware of the risks associated with this level of alcohol consumption.

So, it is only after the patient has been asked about their drinking and informed of the risks that the autonomy principle is applicable. By asking about alcohol consumption, the patient is given an opportunity to not become addicted or worsen his or her alcohol consumption, and then the health care professionals have used the principle of beneficence.

8.5. Methodological considerations

Quantitative research methodologies were used in the studies. The aim was to investigate alcohol consumption in a population of patients presenting at the ED during a 1-year period and to follow-up this population 6 month later. This type of cohort study makes it possible to see the development of the patient’s alcohol consumption. The computerized concept was created to be used without any staff support. This approach with the computer is relatively economical and if it remains at the ED, it could reach a large sample of patients. However, a wider reach of patients could result in a greater public health impact.

In both the baseline and follow-up questionnaires we used self-reports of alcohol use. Although self-reports are widely assumed to have reasonable validity (Babor et al., 2005; Midanik, 1982), several factors influence these self-reports, such as the measuring instrument, the types of questions, and how they are administered (Del Boca et al., 2003; Gmel et al., 2003). By using a blood alcohol concentration (BAC) instrument for alcohol measurement at baseline, we could have recorded exact alcohol consumption, but when the computerized concept was created to be used without any staff support, we decided to use self-reports.

The questions on frequency and typical quantity of drinking and frequency of HED were based on the Alcohol Use Disorders Identification Test (AUDIT-C).
This instrument has been validated and is considered to be a good measurement of alcohol consumption (Bradley et al., 1998; Dawson et al., 2005). It is very difficult to determine the extent to which under-reporting may have occurred and whether a study set in Sweden produces greater bias than studies conducted elsewhere.
9. CONCLUSIONS

The findings of the four studies support a number of conclusions concerning the research questions:

- Nearly 90% of the patients who received the instruction card and choose to initiate the computerized test and three-quarters of these completed the test and received the tailored feedback.

- The alcohol consumption was higher among patients who were injured than patients who were non-injured.

- Patients categorized as acute drinkers had higher average weekly alcohol consumption and engaged more frequently in HED than non-acute drinkers.

- Of all patients who answered the computerized test, more than 15% stated that they were in the action or preparation stage on motivation to change. Of the patients who were categorized as acute drinker, 34% were in the action or preparation stage.

- Relative change, for both short and long feedback, in average weekly consumption among the risky drinkers was 30% and the relative change in HED occasions per month was 37% from baseline to follow-up.

- Of those patients who were categorized as risky drinkers, 48% became non-risky drinkers at follow-up.

- Motivated to reduce alcohol consumption at baseline, influenced by just visiting the ED, considering the alcohol-related feedback information and impact from a health care provider are independent predictors for reduced alcohol consumption.

The studies have provided knowledge about alcohol consumption among patients in a Swedish ED and the reach and effectiveness of a computerized alcohol intervention provided in this setting. The thesis has also examined factors that are associated with reduced alcohol consumption 6 months after
the ED visit. The effectiveness of the intervention is promising, but its reach was relatively limited. There is a need for further research into computerized solutions in emergency care.
SVENSK SAMMANFATTNING

Idag har vi den högsta alkoholkonsumtionen i Sverige på 100 år. Andelen storkonsumenter av alkohol i Sverige har ökat i takt med att den totala alkoholkonsumtionen har ökat från 7,8 liter 1996 till 9,2 liter 2009. EU-inträdet anses vara en viktig förklaring till denna utveckling, eftersom de traditionella svenska styrmedlen i form av begränsad tillgänglighet och höga priser inte längre fungerar lika effektivt. Den svenska hälso- och sjukvården har i uppdrag att arbeta preventivt för minskad alkoholkonsumtion och akutmottagningar har föreslagits som en bra arena för att undersöka alkoholvanor och för alkoholpreventiva interventioner, då de patienterna som besöker akutmottagningen har påvisats dricka mer än befolkningen i övrigt.


Tidigare studier har visat att flera av svårigheterna kan överbyggas om patienterna svarar på alkoholrelaterade frågor och får en återkoppling via dator. Alkoholprevention kan på så sätt integreras i rutinarbetet på akutmottagningen. Denna typ av alkoholintervention har visat sig vara effektiv tidsanvändning eftersom många patienter spenderar lång tid på akutmottagningen i väntan på att få träffa läkare, få testresultat eller fortsatt
behandling. Datorn kan också överbygga problematiken med att sjukvårdspersonal inte vågar ställa frågor kring alkohol samt att patienterna svarar mer sanningsenligt då de är anonyma. Detta medför att datoriserade råd kan bli mer exakta för individen och utgå från hur personen svarat på frågorna.

Syftet med denna avhandling är att ge fördjupad kunskap om alkoholkonsumtion bland patienter på en akutmottagning, effekten av det datorbaserade testet och hur många som vi når med testet. Vi ville också undersöka faktorer som är förknippade med minskad alkoholkonsumtion sex månader efter besöket.

Alkoholkonsumtionen var högre bland patienter som var skadade än patienter som var icke-skadade. Patienter kategoriserade med akut alkoholkonsumtion (druckit inom 6 timmar innan skadan) hade högre genomsnittlig veckokonsumtion och hade oftare HED tillfällen (tillfällen med hög alkoholkonsumtion) än patienter som inte var kategoriserade med akut alkoholkonsumtion. Av alla patienter som svarade på det datoriserade testet, uppgav mer än 15% att de var motiverade att minska sin alkoholkonsumtion eller hade redan börjat minska. Av de patienter som kategoriseras med akut alkoholkonsumtion (druckit inom 6 timmar innan skadan) var 34% motiverade att minska sin alkoholkonsumtion eller hade redan börjat minska. I genomsnitt var den relativa förändringen i veckokonsumtion bland patienter med riskbruk 30% och den relativa förändringen av HED tillfällen (tillfällen med hög alkoholkonsumtion) per månad var 37% från mätningen på akutmottagningen till den andra mätningen sex månader senare. Av de patienter som klassades med riskbruk, minskade 48% sin alkoholkonsumtions så de inte längre klassas som riskbrukare.

Motiverade att minska alkoholkonsumtionen då de gjorde det datoriserade testet på akutmottagningen, påverkan av att bara besöka akutmottagningen, läsa den alkoholrelaterade återkopplingen och påverkan från en vårdgivare var prediktorer för minskad alkoholkonsumtion bland patienter som besökte akutmottagningen och som kunde följas upp sex månader senare.
ACKNOWLEDGEMENTS

First of all, I want to thank Per Nilsen, my main supervisor for all your support during this thesis and for all wise comments on my papers. Also for letting me be a part of the Motala emergency department study.

Preben Bendtsen, my co-supervisor for letting me be a part of the Lifestyle intervention research group, teach me about computerized interventions and for giving me the opportunity to become a PhD student.

Karin Festin, my second co-supervisor for all the statistical support.

I want to give a thank to all the staff at the emergency department in Motala for letting us do this study and for all the help and support.

A special thank to Kajsa Bendtsen, administrator at the Division of social medicine and public health science, for all service and guidance in all paperwork.

A thank to all of you who have been members of the LIR-group. It’s been helpful to have your support during this years and it have also been helpful to be your support.

To all my colleagues at the Division of social medicine and public health science, for all support and amusing time in the coffee room.

To my brother Mats for illustrating the front page of this thesis.

To all my family and friends, and a special thank to my parents.

The biggest thank to Andreas, Elsa and Nils. You made this possible. I love you!
REFERENCES


Andrade AC., Cesena FH., Consolim-Colombo FM., Coimbra SR., Benjó AM., Krieger EM., Luz PL. (2009) Short-term red wine consumption promotes differential effects on plasma levels of high-density lipoprotein cholesterol, sympathetic activity, and endothelial function in hypercholesterolemic, hypertensive, and healthy subjects. *Clinics* 64: 435-442


Breslow L. (1999) From disease prevention to health promotion. JAMA 281: 1030-1033


References


Prochaska JO., DiClemente CC., Norcross JC. (1992) In search of how people change. Applications to addictive behaviours. The American psychologist 47: 1102-1114


References


HEJ!

Vi skulle uppskatta om Du kunde ta Dig tid att svara på några frågor om Dina alkoholvanor på den piskärmdator som är uppställ i vånrummet. Svaren anges genom att Du pekar på det alternativ som stämmer för Dig!

Det tar cirka 5 minuter och Du svarar givetvis helt anonymt. Du kan avstå från att delta i studien och kan när som helst avbryta att svara på frågorna. Detta påverkar givetvis inte Din nuvarande eller framtida behandling.

När Du besvarat frågorna får Du en "alkoholprofil" på ett papper som skrivs ut vid datorn. Detta papper är endast avsett för Dig (personalen får inget).

Läs mer om projektet på baksidan av lappen!

Denna datainmatning ingår i ett forskningsprojekt kring alkoholverksamheter som drivs av forskare i LIK-gruppen (Lifestyle Intervention Research), vid Läkemedelsverket, Institutionen för Hälsa och samhälle, avdelning Sö. Det finansieras av Stockholms läns landsting.

Syftet med detta studie är att undersöka om alkoholhandel är en risk för alkoholisk skadskraft och att analysera eventuella samband mellan skador och alkoholhandel. Detta gäller dock endast personer med alkoholproblematik som har anmänts av Patientverket och är ansvariga för att skicka dem till en specialiserad behandling.

Det är avsett att delta i en uppsöktst uppslag av alkoholpatroner som är anmärkta inom tre månader från detta svar. Uppgifterna ges med en enskild svarsteg slapplag för att säkerställa personens rätt att hoppa ur projektet eller att hoppa ur projektet på samma tid.

Vi är även intresserade av att kena om i lighet med visst skadepatroner i samband med utmatningsskador i rika orsaken. Vi har dock dock endast personer med alkoholproblematik som har anmänts av Patientverket och är ansvariga för att skicka dem till en specialiserad behandling.

Ansvarig för projektet är professor Preben Bendtsen, Läkemedelsverket, Institutionen för Hälsa och samhälle (Sö), avdelningen för Socialmedicinska och hälsosamsverkan.

Vil Du kona i kontakt med någon av oss omstör. 

Per Nilsson: tlf. 013/221547; per.nilsson@hls.liu.se
Alkoholvanetest 2007

Du anger Ditt svar genom att trycka med fingret på det alternativ som stämmer bäst för Dig.

När Du har besvarat frågorna får Du en skriftlig återkoppling på hur dina alkoholvanor ser ut.

Du får själv ta utskriften direkt från skrivaren här nedan. Svaren är helt anonyma och kan inte ses av personalen på akutmottagningen.

Observera att det går bra att trycka eller peka på hela raden där svarsalternativet finns, inte bara på raden längst till vänster. Detta gäller hela testet!
Hur mycket fysiskt lidande eller smärta har skadan vällat Dig?

- Ingen
- Lätt
- Mättig
- Svår

Var befann Du Dig när skadan inträffade?

- Bostad eller bostadsområde
- Institutionellt boende
- Skola, annan institution eller offentlig lokal
- Idrotts- eller sportanläggning
- Data eller väg
- Butiks-, handels-, eller serviceområde
- Industriområde, byggarbetarets
- Lastbilköra
- Andra plats

Ungefär hur lång tid tog det från skadetillfället tills Du kom till akuten?

- 0-29 minuter
- 30-60 minuter
- 1-3 timmar
- 4-6 timmar
- Mer än 7 timmar men mindre än ett dygn
- Mer än ett dygn

Under det senaste året, ungefär hur ofta har Du druckit någon sorts alkoholhaltig dryck?

- Varje dag
- Nästan varje dag
- 3 eller 4 gånger i veckan
- 1 eller 2 gånger i veckan
- 2-3 gånger i månaden
- Mer än 7 gånger i månaden
- Mer än 2 gånger i veckan
- Har inte druckit någon alkohol under det senaste året, men jag har druckit tidigare

Vad gjorde Du då skadan inträffade?

- Idrott, sport, motion
- Lek eller annan fritidsverksamhet
- Förvärvsarbete
- Vila, sömn, måltid eller personlig hygien
- Annan sysselsättning
I vilken utsträckning tror Du att alkohol var orsaken till skadan?

- Alkohol var en mycket viktig orsak till skadan
- Alkohol var en ganska viktig orsak till skadan
- Alkohol var inga orsak till skadan

Tror Du att Din skada hade inträffat även om Du inte hade druckit?

- Ja, absolut
- Ja, troligen
- Kanske
- Nej, troligen inte
- Nej, absolut inte

Vilket av följande påståenden beskriver Din nuvarande inställning till att förändra Dina alkoholverkaner?

- Jag har inga funderingar på att minska min alkoholkonsument
- Jag barde fundera på att minska min alkoholkonsument några gång
- Jag funderar på hur jag ska minska min alkoholkonsument
- Jag har börjat minska min alkoholkonsument

Har skadan gjort Dig mer motiverad/beredd att minska Din alkoholkonsumentiion?

- Min motivation att minska min alkoholkonsument har inte påverkats av skadan
- Min motivation att minska min alkoholkonsument har i viss mån påverkats av skadan
- Min motivation att minska min alkoholkonsument har påverkats mycket av skadan

Prövar Du för spänningens skull saker som kan innebära risk för skada?

- Åldrig
- I mycket liten utsträckning
- I ganska liten utsträckning
- I ganska stor utsträckning
- I mycket stor utsträckning

I vilken utsträckning gör Du saker som man normalt sett anser vara riskylda?

- Åldrig
- I mycket liten utsträckning
- I ganska liten utsträckning
- I ganska stor utsträckning
- I mycket stor utsträckning
Vilken är Din högsta utbildning?
- Sektorn formellt utbildning
- Grundskola eller folkiskola
- Realskola eller fritidskola
- 2-årigt gymnasium eller yrkesskola
- 3- eller 4-årigt gymnasium
- Universitet eller högskola, 2.5 år eller kortare (mindre än 120 hp)
- Universitet eller högskola, 3 år eller längre (120 hp eller mer)
- Forskarsutbildning
- Annan utbildning

Vad är Din nuvarande sysselsättning?
- Yrkesarbetar heltid
- Yrkesarbetar deltid
- Egen företagare
- Studerar, praktiserar
- Arbetarled
- Ålders- eller garanti pensionsår
- Förståelse- eller sjukpensionår
- Långtidssjukkriven (mer än 3 månader)
- Hemurhållande (överlåstad)
- Föäljarekig
- Annat

Alkoholvanetest 2007
För att få mer kunskap om vad patienter tycker om att svara på frågor om alkoholverkan kommer vi att skicka ett kort frågeformulär i ett vanligt kuvert till alla som tacker ja till detta?

Alla som tacker ja och svarar på frågeformuläret får en blodbiljett!

- Ja, det går bra
- Nej, jag vill inte svara på ett frågeformulär

Alkoholvanetest 2007
Nu är testet klart!
Datorn skriver ut resultatet av Ditt alkoholvanetest. Observera att det kan ta en liten stund innan pappret kommer ut.

Stort tack för Din medverkan!
Återkoppling på alkoholvanetest

Dryckesmönster

<table>
<thead>
<tr>
<th>Ingen risk</th>
<th>Ökad risk</th>
<th>Klar risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldrig</td>
<td>&lt; 1 gång/mån</td>
<td>1 gång/mån 2-3 gånger/mån</td>
</tr>
<tr>
<td>&gt; 1 gång i veckan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Veckokonsumtion

<table>
<thead>
<tr>
<th>Ingen risk</th>
<th>Ökad risk</th>
<th>Klar risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindre än 10 glas per vecka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-14 glas per vecka</td>
<td>15 glas eller mer per vecka</td>
<td></td>
</tr>
</tbody>
</table>

De tre nivåerna (ingen - ökad - klar risk) bygger på svenska och internationella rekommendationer.

Antal standardglas varje dryck innehåller

<table>
<thead>
<tr>
<th>1 standardglas</th>
<th>1.5 standardglas</th>
<th>2 standardglas</th>
<th>3 standardglas</th>
</tr>
</thead>
<tbody>
<tr>
<td>BurkFürst, Reska sterköl/starkölverk, glas vin, 40 sprit, 33 cl alkoholik, 30 cl alkoholika</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burk sterköl/starköl stark 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burk sterköl 7-8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burk sterköl 10%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alkoholvänstetet är utarbetat av en forskargrupp vid Linköpings Universitet, Lifestyle Intervention Research-gruppen (LIR), under ledning av professor Perben Bendsen (perbe@al.a.lnu.se)
Återkoppling på alkoholanetest

Dryckesmönster (5 standardglas eller mer, vid ett och samma tillfälle)

<table>
<thead>
<tr>
<th>Ingen risk</th>
<th>Ökad risk</th>
<th>Klar risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldrig</td>
<td>&lt;1 gång/mån</td>
<td>1 gång/mån 2-3 gånger/mån</td>
</tr>
<tr>
<td>&gt;1 gång i veckan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Veckokonsumtion

<table>
<thead>
<tr>
<th>Ingen risk</th>
<th>Ökad risk</th>
<th>Klar risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mindre än 10 glas per vecka</td>
<td>10-14 glas per vecka</td>
<td>15 glas eller mer per vecka</td>
</tr>
</tbody>
</table>

De tre nivåerna (ingen - ökad - klar risk) bygger på svenska och internationella rekommendationer.

Sammanfattning av dina alkoholanor och rekommendationer

Dryckesmönster

Veckokonsumtion
Din veckokonsumtion av alkohol räknat i standardglas är upptill 34 glas per vecka. Detta innebär att din konsumtion medför en klar risk för negativa hälsosamma konsekvenser. Du bör därför inte äta och dricka medan du är nöjd med alkoholkonsumtion och vara medveten om att inte äta och dricka medan du är nöjd med alkoholkonsumtion.

Skadans samband med alkohol

Inställning till att förändra alkoholanor

Antal standardglas varje dryck innehåller

<table>
<thead>
<tr>
<th>Antal standardglas</th>
<th>1 standardglas</th>
<th>1.5 standardglas</th>
<th>2 standardglas</th>
<th>3 standardglas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burk folköl, flaska starköl/starkcidr, glas vin, 4cl sprit, 33 cl alkoholk, ekta starkvín</td>
<td>Burk starköl/starkcidr, glas vin, 4cl sprit, 33 cl alkoholk, ekta starkvín</td>
<td>Burk starköl 7-8%</td>
<td>Burk starköl 10%</td>
<td></td>
</tr>
</tbody>
</table>

Alkoholanetestet är utfört av en forskargrupp vid Linköpings Universitet, Lifestyle Intervention Researchgruppen (LIB), under ledning av professor Preben Bendtsen (prebe@ibs.liu.se).
UPPFÖLJNING AV INFORMATION OM ALKOHOLVANOR PÅ MOTALA LASARETTS AKUTMOTTAGNING


Vi vore mycket tacksamma om Du tar Dig tid att besvara frågorna så noggrant som möjligt. Syftet är att få information om alkoholvantar bland patienter som besöker en akutmottagning. Enkäten innehåller 14 frågor och tar cirka 5 minuter att fylla i. Inga enskilda svar kommer att synas i redovisningen. Använd gärna bifogade svarsduvor (det är adresserat och frankerat – bara att lägga på brevlådan). Vi skickar en biocheck när vi fått Dina svar på enkäten!

Några frågor handlar om hur många "standardglas" man dricker – dessa frågor hänvisar till bilden nedan:

Antal standardglas varje dryck innehåller

<table>
<thead>
<tr>
<th>1 standardglas</th>
<th>1.5 standardglas</th>
<th>2 standardglas</th>
<th>3 standardglas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burk folköl, flaska starköl/ starkcider, glasvin, 4cl sprit, 33cl alkoholisk, 8cl starkvin</td>
<td>Burk starköl/ starkcider/ stor stark 5%</td>
<td>Burk starköl 7-8%</td>
<td>Burk starköl 10%</td>
</tr>
</tbody>
</table>

1. Sedan besöket på akutmottagningen (för cirka 6 månader sedan) ungefär hur ofta har Du druckit någon sorts alkoholhaltigt dryck?

☐ Varje dag
☐ Nästan varje dag
☐ 3 eller 4 gånger i veckan
☐ 1 eller 2 gånger i veckan
☐ 2 eller 3 gånger i månaden

☐ Ungefär 1 gång i månaden
☐ Mer sällan än 1 gång i månaden
☐ Har inte druckit alkohol sedan besöket på akutmottagningen ⇒ hoppa till fråga 5!

2. Sedan besöket på akutmottagningen, hur många standardglas (se bild ovan!) har Du druckit en typisk dag då Du dricker alkohol?

☐ 1 standardglas
☐ 2-3 standardglas
☐ 4-5 standardglas

☐ 6-7 standardglas
☐ 8-9 standardglas
☐ 10 standardglas eller fler

3. Sedan besöket på akutmottagningen, hur ofta har Du som är MAN druckit 5 standardglas eller fler eller Du som är KVINNA druckit 4 standardglas eller fler, vid ett och samma tillfälle (t.ex. under en kväll)?

☐ Aldrig
☐ Mer sällan än 1 gång i månaden
☐ Ungefär 1 gång i månaden
☐ 2-3 gånger i månaden

☐ 1 eller 2 gånger i veckan
☐ 3 eller 4 gånger i veckan
☐ Nästan varje dag eller dagligen