Alcohol prevention in Swedish primary health care

Staff knowledge about risk drinking and attitudes towards working with brief alcohol intervention. Where do we go from here?

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ABSTRACT

Aims: The objectives of this thesis are to: (1) highlight the impact of alcohol on patients' health; (2) describe alcohol-related attitudes among general practitioners and district nurses who work with patients whose alcohol consumption is too high or risky; and (3) focus on the achievements of the Swedish Risk Drinking Project (RDP). Special attention has been devoted to two themes: the gender perspective and general practitioners (GPs) perceptions on the limits of sensible/safe drinking.

Methods: Two main data sources constitute the basis for this thesis. For studies I and II, the material is based on a postal survey that was carried out from December 2001 to February 2002 of all GPs and nurses working in primary health care (PHC) in the County of Skaraborg. For studies III and IV, the material is based on two national postal surveys that were carried out to evaluate the effect of the RDP. One of the surveys was conducted between November 2005 and February 2006 and the other between November 2008 and April 2009. They targeted all GPs, districts nurses (DNs) and registrars working in Sweden. To evaluate if a change in clinical practice that could be related to RDP activities had occurred, we triangulated the results with two population surveys (Vårdbarometern and Monitor surveys) in which the participants reported whether they had been asked about alcohol when visiting PHC in the last year. We also studied changes in the number of alcohol-related diagnoses in PHC in western Sweden between 2005 and 2009.

Results: The importance of drinking alcohol moderately, using counselling skills to reduce alcohol consumption and perceived current effectiveness in helping patients to reduce their alcohol consumption ranked lower than working with other lifestyle behaviours such as smoking, overweight, exercise and stress for both GPs and nurses. For alcohol, the GPs assessed their role adequacy, role legitimacy and motivation higher than the nurses did. The main obstacles for the GPs to carry out alcohol intervention were lack of training in counselling on reducing alcohol consumption, time constraints, and the fact that the doctors did not know how to identify problem drinkers who had no obvious symptoms of excess consumption.

Both the gender of the patients and of the GPs influenced the advice and the referrals that the patients received. Men were more often recommended to reduce drinking (83%) than women (47%) as they were more often advised to stop drinking. Men were less often referred to any treatment, odds ratio 0.33. Male GPs referred excessive drinkers less often to any treatment than female GPs (odds ratio 0.26).

The upper limit of alcohol consumption before GPs advised the patient to cut down was significantly higher for GPs with an AUDIT-C score ≥3. The limit was 146 g/week for male patients and 103 g/week for female patients. Corresponding figures for GPs with an AUDIT-C score ≤2 were 89 and 68 g/week. The mean recommended upper limit for safe drinking was 7.8 standard drinks/week for male patients and 5.3 drinks for female patients. Respondents lacking postgraduate education on handling risk drinking stated significantly lower limits (6.9 drinks for males and 4.7 for females) than those with half a day or shorter education (8.0 drinks for males and 5.5 for females). GPs with higher self-perceived alcohol-related competence suggested significantly higher limits than those who stated lower competence.

Fifty-five percent of the participants in the 2009 survey had participated in alcohol-related education in the past 3 years. For all three competence-related parameters analysed, discussion, knowledge and effectiveness of perceived competence in handling risk drinking, the increase was significant during these 3 years, particularly among DNs. However, the population surveys showed no changes in the patients being asked about their alcohol consumption. There was only a small increase in alcohol-related diagnoses in this time period; 9% in western Sweden from a very low number (in 2006, 1,443 patients had an alcohol-related diagnosis compared with 1,723 patients in 2008).

Conclusion: GPs and DNs estimated their alcohol-related competence as lower compared with many other health-related lifestyles issues. These results can possibly be explained by lack of practical skills and lack of training in suitable intervention techniques; thus unsupportive working environments and negative attitudes may also have an influence. All these elements must be considered when planning secondary alcohol prevention programs in PHC.

Male patients were less likely to be advised to stop drinking altogether than female patients and were also less likely to be referred to other treatments. Taking into account that male patients have a higher prevalence of alcohol problems, this may be of considerable importance for men's health outcomes. These findings show that there is a need for increased awareness of excessive drinking in men and that gendered perceptions might bias alcohol management recommendations.

We found that 9 out of 10 GPs stated limits that were lower than the widely applied recommended levels in Sweden of 14 standard drinks per week for men and 9 for women. Assuming that the GPs would take action at the limits they proposed in this study, it would mean that they would intervene with a very large proportion of their patients, many of whom consume rather modest amounts of alcohol and who do not feel that they have any problems with their alcohol intake. It can be questioned as to whether this is the best approach for screening and brief intervention.

The national RDP is a likely cause of enhanced self-perceived competence in the alcohol field among nurses and GPs. Using a combination of data sources to evaluate the impact of the RDP, it is uncertain whether this mainly educational effort has been sufficient to increase screening and brief intervention in PHC in Sweden.

Keywords: Attitude of Health Personnel, Education, Clinical Competence, Diffusion of Innovation, Organizational Innovation, Alcohol Drinking/*prevention & control, Male, Female, *Primary Health Care.

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SAMMANFATTNING PÅ SVENSKA

Syfte: Målen med denna avhandling är dels att belysa alkoholens inverkan på patienternas hälsa och beskriva alkoholrelaterade attityder hos distriktsläkare (DL) och distriktssköterskor (DS) som arbetar med patienter med för hög eller riskfylld alkoholkonsumtion, dels att fokusera på resultaten av det svenska Riskbruksprojektet (RBP). Särskild uppmärksamhet har ägnats åt två teman; genusperspektiv och att illustrera distriktsläkares uppfattning om gränsen för förnuftig/säker alkoholkonsumtion.

Metod: Det finns två huvudsakliga datakällor som ligger till grund för denna avhandling. Materialet för studier I och II är baserad på en postenkät som genomfördes från december 2001 till februari 2002 till alla läkare och sjuksköterskor som arbetar i primärvården (PV) i Skaraborgs län. Materialet för studier III och IV är baserat på två nationella postenkäter som genomfördes för att utvärdera effekten av RBP. Den första undersökningen genomfördes mellan november 2005 och februari 2006 och den andra mellan november 2008 och april 2009. De riktades till alla DL, DS och utbildningsläkare i allmänmedicin (ST-läkare) som arbetar i Sverige. För att utvärdera om det har skett en förändring i klinisk praxis som kan relateras till RBP-aktiviteter triangulerade vi resultaten med två befolknings-undersökningar (Vårdbarometern och Monitorundersökning) där deltagarna rapporterade om de hade fått frågor om alkohol när de besökte sjukvården det senaste året. Vi har också studerat förändringar i antalet alkoholrelaterade diagnoser i PV i Västra Götalandsregionen mellan 2005 och 2009.

Resultat: Betydelsen av måttligt alkoholdrickande, kunskaper beträffande rådgivning till patienter med riskbruk av alkohol och upplevd nuvarande effektivitet med att hjälpa patienter att minska alkoholkonsumtionen skattades lägre än att arbeta med andra livsstilsrelaterade beteenden som rökning, övervikt, motion och stress, för både DL och DS. För alkohol bedömde läkarna deras roll tillräcklighet, roll legitimitet och motivation högre än sjuksköterskorna. De största hindren för DL för att genomföra alkoholintervention var brist på utbildning i rådgivning för att minska alkoholkonsumtionen, tidsbrist och det faktum att läkarna inte visste hur man kan identifiera riskbrukare som inte har några uppenbara tecken på storkonsumtion.

Både kön på patienterna och på DL påverkar de råd och hänvisningar som patienterna fick: den manlige storkonsumenten blev oftare rekommenderad att minska sin alkoholkonsumtion (83%) jämfört med den kvinnliga storkonsumenten (47%), oddskvot 0,18, som oftare fick rådet att sluta helt

och hållet. Oddskvoten för remittering till någon behandling var 0,33 för den manliga storkonsumenten jämfört med den kvinnliga storkonsumenten. Den manlige DL hänvisade storkonsumenten mindre ofta till någon behandling jämfört med den kvinnliga DL, oddskvot 0,26.

Den övre gränsen för alkoholkonsumtion innan DL skulle rekommendera patienten att minska sin konsumtion var signifikant högre för allmänläkare med AUDIT-C poäng ≥ 3. Gränsen var 146 g/vecka för manliga patienter och 103 g/vecka för kvinnliga patienter. Motsvarande siffror för DL med AUDIT-C score ≤ 2 var 89 och 68 g/vecka. Den rekommenderade gränsen för säker alkoholkonsumtion var 7,8 glas (12 gram) per vecka för manliga patienter respektive 5,3 glas för kvinnliga patienter. Respondenterna som saknar vidare utbildning i hantering av riskbruk anger signifikant lägre gränser, 6,9 glas för manliga patienter respektive 4,7 glas för kvinnliga patienter, jämfört med dem med en halv dag eller kortare vidareutbildning, 8,0 glas för manliga patienter respektive 5,5 för kvinnliga patienter. DL med högre självupplevd alkoholrelaterade kompetens föreslog signifikant högre gränsvärden än de som angett lägre kompetens.

Femtiofem procent av deltagarna i undersökningen 2009 hade deltagit i någon alkoholrelaterad utbildning under de senaste tre åren. Ökningen var signifikant under dessa tre år för de tre kompetensrelaterade parametrar som analyserades; diskussion, kunskap och effektivitet i upplevd kompetens i hantering av riskfylld alkoholkonsumtion, särskilt bland DS. Emellertid visade befolkningsenkäterna inga förändringar om invånarna som tillfrågades om sin alkoholkonsumtion. Vidare fanns det bara en liten ökning av alkoholrelaterade diagnoser under denna tidsperiod, 9% i västra Sverige, från en mycket låg siffra.

Slutsats: Distriktsläkare och distriktssköterskor uppskattade deras alkohol-relaterade kompetens som lägre jämfört med att arbeta med många andra hälsorelaterade livsstilar. Dessa resultat kan förklaras av brist på praktiska färdigheter inom alkoholområdet, brist på utbildning i lämpliga interventions-metoder och inte stödjande arbetsmiljö. Alla dessa faktorer måste beaktas vid planeringen av sekundär alkoholprevention i primärvården.

Manliga patienter fick i mindre omfattning rekommendationen att avhålla sig helt från alkohol samt hänvisades i mindre omfattning till annan vårdinstans. Med hänsyn till att manliga patienter har en högre prevalens av alkohol-problem kan denna vara av stor betydelse för deras hälsa. Dessa resultat visar på behovet att öka medvetenheten om manlig storkonsumtion och att genus-relaterade föreställningar kan inverka på hur praktiskt alkoholrelaterat arbete genomförs i primärvården.

Distriktsläkarna angav i nio fall av tio ett lägre gränsvärde än de som är vanliga att använda för riskbruk och som Folkhälsoinstitutet rekommenderar dvs. att man ej överstiger 14 standardglas för män och 9 för kvinnor. Förutsatt att DLs skulle ”agera” på de gränsvärden som de föreslår skulle innebörden bli att de intervenerade med en mycket stor andel av sina patienter, av vilka många konsumerar ganska blygsamma mängder alkohol och som inte känner att de har några problem med sin alkoholkonsumtion.

Riskbruksprojektet är en sannolik orsak till ökad självupplevd kompetens inom alkoholområdet bland distriktssköterskor och distriktsläkare. Med en kombination av andra datakällor för att utvärdera effekterna av projektet är det mer osäkert om huruvida projektets, i huvudsak utbildningsaktiviteter, har tillräckligt effekt för att öka screening och kort intervention i primärvården.

Nyckelord: Attityder hos vårdpersonal, utbildning, klinisk kompetens, innovationsspridning, organisatoriskt nyskapande, alkoholkonsumtion/ *prevention & kontroll, man, kvinna, *Primärvården

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

I. Geirsson, M., Bendtsen, P. and Spak, F. (2005) Attitudes of Swedish general practitioners and nurses to working with lifestyle change, with special reference to alcohol consumption. *Alcohol Alcohol,* **40,** 388-93.

II. Geirsson, M., Hensing, G. and Spak, F. (2009) Does gender matter? A vignette study of general practitioners' management skills in handling patients with alcohol-related problems. *Alcohol Alcohol* **44**, 620-5.

III. Geirsson, M., Holmqvist, M., Nilsen, P., Bendtsen, P. and Spak, F. When Does Alcohol Consumption Become Risky? – A Swedish National Survey of General Practitioners' Recommendations to Patients. *Manuscript.*

IV. Geirsson, M., Holmqvist, M., Nilsen, P., Bendtsen, P. and Spak, F. The impact of the Swedish Risk Drinking Projekt on clinical practice in primary care. *Manuscript*

*In paper II, heading *Gender and alcohol use*, line 6, reference Bush et al., 1998, is incorrect. The correct reference is Bradley et al., 1998.

Bradley, K. A., Badrinath, S., Bush, K., Boyd-Wickizer, J. and Anawalt, B. (1998) Medical risks for women who drink alcohol. *J Gen Intern Med* **13**, 627-39.

ABBREVIATIONS

ADI	Acceptable daily intake
AUD	Alcohol use disorder
AUDIT	Alcohol Use Disorders Identification Test
AUDIT-C	The 3 alcohol consumption questions from AUDIT
BAC	Blood Alcohol Concentration
BI	Brief intervention
CAS	Community alcohol service
CI	95 % confidence interval
CME	Continuing medical education
DALY	Disability adjusted life years
DI	Diffusion of Innovation
DM	Diabetes mellitus
DN	District nurse
GP	General Practitioner
G/Day	Gram per day
G/Week	Gram per week
H	Hour
HDL	High density lipoprotein
LDL	Low density lipoprotein
N	Number

PARIHS	Promoting Action on Research Implementation in Health Service
PCP	Primary care physician
PHC	Primary health care
RR	Relative risk/risk ratio
RG	Registrar
SAAPPQ	Shortened Alcohol and Alcohol Problems Perception Questionnaire
SAC	Specialised alcohol clinic
SALAR	The Swedish Association of Local Authorities and Regions
SBI	Screening and brief intervention
SD	Standard deviation
SoRAD	The Centre for Social Research on Alcohol and Drugs
TDI	Tolerable daily intake
VAS	Visual Analoge Scale
VGR	Västra Götalandsregionen
VS	Versus

DEFINITIONS IN SHORT

Risk drinking	Drinking exceeding daily, weekly, or per-occasion thresholds. In Sweden there is semi-official definition which defines the risk drinking as being: 15 standard drinks (180 g/week) for men and 10 standard drinks (120 g/week) for women or more. All intoxication drinking is considered as risk drinking, and the limit for this is 5 (men) and 4 (women) drinks per drinking occasion.
Hazardous drinking	Drinking above the safe limit.
Harmful drinking	Drinkers experience physical or psychological harm from their above-threshold alcohol use without meeting criteria for dependence.
Problem drinking	Hazardous or harmful alcohol use, excluding subjects dependent on alcohol.
Alcohol use disorder	Harmful drinking and alcohol dependency

CONTENT

1 INTRODUCTION

The main purpose of this thesis is to highlight crucial aspects related to implementation of secondary alcohol prevention, seen from the general practitioner's (GP) perspective, and to review the knowledge in this field.

1.1 Background

Alcohol has followed mankind throughout the ages, ever since our ancestors first began to evolve and continues to this day. It has been written about throughout the millennia. An overview of the historical background is found in an article written by Mark Keller (Keller, 1979) and here is a brief summary of the article. He begins by stating that "in the beginning there was alcohol". That is why the human liver is endowed with alcohol dehydrogenase, an enzyme necessary for breakdown of alcohol, with a capacity to metabolize 0.25 litre of whisky a day, and does not "seem to have very much else to do".

"The product of natural fermentation was discovered by man in prehistoric time and was soon followed by deliberate production of wines and beers from sugary and starchy plants" (Keller, 1979). In the gathering stage, one can imagine that different fruits were collected in a pit or similar, the sun was shining and microorganisms found in nature (yeasts) influenced the degradation of the fruits, and in this way formed what we now call mash. Then the thirsty and tired collector comes and eats it, gets satisfied and has an experience of well-being, feeling of warmth, etc. Which plants were used at the agricultural stage is unclear but it may be *Vitis*, "the ubiquitous grapevine". One of the best descriptions of this is in the Bible where "Noah began to be a man of the soil, and he planted a vineyard. He drank of the wine and became drunk and lay uncovered in his tent" (Genesis 9:20–21). Archaeology has found written records about the influence of alcohol on individuals and communities around the world as far back as at least 3000 BC.

In addition to what is written in the Bible of the effect of drinking alcohol, there is a wealth of mythology from the ancient Greeks and Romans, as well in ancient writings in the Vedas of India and in the Finnish epic, the Kalevala. From these cultures, there are descriptions of both the positive and negative effects of alcohol, efforts to counteract the harmful effects and descriptions of behaviours that today we call alcohol dependence with all its consequences.

Alcohol is present in human lives from the cradle to the grave; in various ceremonies, when in sorrow or rejoicing, fighting or negotiating peace; and not least in health care and medicine. The alcohol culture has developed, especially in our industrial society, with all its consequences. As Keller expresses it: “From the very beginning alcohol was a double-dealer with man. Yet, with few exceptions, man has preferred to pay the price”.

My background is that I became a licensed physician in 1985, working as a GP since then and as a specialist in general medicine at a primary health care (PHC) unit since 1992. At my work place, I meet patients who do not feel well. There can be various reasons for this, both illness (feeling of not being normal and healthy) and disease (objectively measurable pathologic conditions of the body). Many interacting elements may contribute to not feeling well. My own life experiences and what I have gleaned from my patients’ stories have made me reflect more and more about how I, as a GP, can help in the best possible way my patients who do not feel well and who are seeking help from me as a physician, devoting both time and money for this purpose. Based on the historical background, I realized that alcohol, in one or another way, can affect many of the medical conditions that my patients present because alcohol is included in many of the actions of our everyday lives. How can I deal with it in the best possible way under my actual working conditions? In my profession, I work with an overloaded schedule and a multitude of challenges and I am always attempting to apply my medical knowledge correctly for my patients. This is the background to my interest in the alcohol field and I decided to acquire further knowledge on the issue, which has gradually resulted in this thesis.

1.2 Overview of the thesis

This thesis is based on 4 studies numbered from I to IV. First, I begin by describing the damage that alcohol causes in Sweden and internationally. Then I review what is meant by the concept of risk in general and in the alcohol context and the meaning of what one may think of as drinking alcohol moderately. This is what I consider to be important basic concepts that GPs need to be aware of when they should or want to discuss alcohol with their patients. A special section is devoted to alcohol and the disease panorama in which our most common diseases (cardiovascular diseases, diabetes mellitus, cancer and mental illness) are highlighted by the effects of alcohol drinking habits.

Then I review the literature directly related to the 4 studies in my thesis. Studies I and II deal with alcohol-related attitudes, barriers to promoting alcohol prevention in PHC, referral of patients with alcohol-related diseases, especially with regard to gender issues, and recommended drinking limits.

Studies III and IV discuss the impact of alcohol-related education on various parameters such as recommended drinking limits and alcohol-related skills and competence. Finally, the Risk Drinking Project (RDP, Riskbruks-projektet in Swedish) is evaluated to establish if the various efforts have contributed to increased activity in alcohol prevention work carried out at PHC. There are also special sections on the effects of continuing medical education (CME) on clinical skills and practices and how new ideas can be implemented and its effect on promoting the application of new methods.

1.3 Alcohol consumption in Sweden

Consumption of alcohol has changed much in Sweden in the past 20 years. In 1990, total consumption was 7.8 litres of alcohol (100%) per person aged 15 years and older, 8.0 litres in 1995, 8.4 litres in 2000, 10.1 litres in 2005 and 9.3 litres in 2009. The peak consumption of around 10.5 litres was reached in 2004 (Ramsted, 2010). In 2009, men were drinking twice as much as women, nearly 13 litres compared with about 6 litres. In the same year, binge drinking or intensive consumption of alcohol (drinking more than 60 g alcohol for men and 48 g for women at one occasion) once a week or more, was 4 times higher among men than women (10% versus 2.5%). In the same year, 13% of men and 8% of women were drinking above the recommended weekly limit in Sweden (14 standard drinks (12 g alcohol) for men versus 9 standard drinks for women a week) (SoRAD, 2010), which is the semi-official limit for risk drinking in Sweden.

To estimate how many individuals are alcohol dependent is not an easy task, but in a study in 12 municipalities in 2007, 5.2% of men and 3.3% of women fulfilled the criteria for alcohol dependence (Statens folkhälsoinstitut, 2008). The study showed that alcohol dependency increased by 25% for men and 50% for women compared with 2006. This study used a postal survey. The respondents answered 7 questions about signs of dependency which were validated in a clinical interview but not as a screening instrument in a postal survey. Hence, these results may be too high because it can be assumed that the respondents will answer differently in a clinical interview than anonymously in the peacefulness of their own home. Furthermore, the dramatic changes between the years are not likely to be correct in the light of the fairly stable consumption patterns.

An indirect method of estimating prevalence by using the first three questions in the Alcohol Use Disorders Identification Test (AUDIT-C) has been developed following a previous scientific study from the United States (Dawson et al., 2005). (How often do you have a drink containing alcohol? How many standard drinks containing alcohol do you drink on a typical day? How often have you had 5 or more standard drinks or more on a single occasion in the last 12 months?). This method gave approximately the same results as above; 4.38% of the participants over 18 years were alcohol dependent, and combining alcohol dependency and harmful drinking gave a figure of 10.34% (Berglund et al., 2011). However, this method does not use any clinical criteria.

To estimate change in alcohol-related harm over this time period is not a simple task (CAN, 2010). The health care system changes continuously as a result of different reforms, and these complicate comparisons between different time periods. Alcohol-related hospitalization has not changed over this time period for men but has increased for women, especially women over 50 years of age (Ramstedt, 2010). This reflects the fact that the percentile increase in alcohol consumption during this period is highest in this age group of women. There is also a connection between self-reported alcohol consumption and risk consumption in the population, for both gender and alcohol-related hospitalization seen in a Swedish survey between 2002 and 2007 (Engdahl and Ramstedt, 2011). During the period from 1998 to 2009, the number of people with new onset alcohol-related diagnoses increased by just over 30% (CAN, 2010). Mortality due to liver cirrhosis has often been used as an indicator of the harm that alcohol causes in various societies (Norstrom, 1987; Edwards et al., 1994). In Sweden, the number of women who died of alcohol-related liver disease increased by 83% between 1997 and 2007, and for men there was a 65% increase over this time period. In absolute numbers (per 100,000), the figures were 4.0 for men and 1.2 for women in 1997 and 6.6 and 2.2 in 2007. This coincides with the increased alcohol consumption between 1997 and 2007. For both genders, the increase occurred mainly in those aged 50–69 years, but for those aged 30–49 years, there has been no special increase (Ramstedt et al., 2010).

It has been estimated that for the period 1992–1996, alcohol accounted for about 3.5% of deaths in Sweden in all age groups, 25% among those aged less than 50 years, and loss of about 10% person-years of life in Sweden (Sjogren et al., 2000). In 2002, the net economic cost of alcohol consumption was estimated to be 0.9% of the gross domestic product (GDP). In the same year, alcohol consumption led to a loss of 27,962 potential life-years and 121,791 quality-adjusted life-years (Jarl et al., 2008). In 2004, alcohol-related mortality had increased by 12% from 2000 and in 2006, alcohol-related

morbidity had increased by 16% compared with 1998 (CAN, 2007). In 2008, alcohol use disorder (AUD) was estimated to have cost around 49.3 billion Swedish crowns (SEK) (Glenngård et al., 2011). Indirect costs (loss of productivity due to sick leave and early death) accounted for about 28 billion SEK (57%). Government authorities bear about 7 billion SEK (14%) for legal costs and preventive work. Social care bears costs of about 8 billion SEK (16%) and the health care system about 5 billion SEK (10%) (Glenngård et al., 2011). There are many sources of error in these calculations and it is almost certain that these costs are underestimations, partly because of the scientific requirements of only including strict measurable variables.

In the last decades, the World Health Organization (WHO) and the World Bank have developed a measure of the burden of disease called the disability adjusted life-year (DALY), which is a combination of two basic components: the loss of life from premature mortality and loss of function. In Sweden, DALYs for alcohol have been calculated for 2002 and the results were 4.9% of the total burden of disease for men and –0.7% for women (Allebeck et al., 2006). The authors' reflections (in English, my translation) are: "This leads to some remarkable results that alcohol 'as a whole' is harmful to men, but both harmful and beneficial for women. That alcohol has a protective effect against certain diseases, and that the utility may weigh up the damage especially among older women, is well documented but also questioned (Jackson et al., 2005)".

1.4 Alcohol and global health

Alcohol is by definition causally related to more than 30 diseases where alcohol is included in the name and more than 200 diseases in which alcohol is part of a component cause (Rehm et al., 2009a). In 2000, alcohol accounted for 4.0% of the global burden of disease (Ezzati et al., 2002; Room et al., 2005) but it varies greatly by region, from 1.3% in the poorest developing countries with low alcohol consumption to 12.1% in former socialist countries; in western Europe it accounted for 6.8% of the total burden of disease (Room et al., 2005). In 2004, the alcohol-attributable burden of disease increased to 4.6%, 7.6% for men and 1.4% for women, and alcohol accounted for 3.8% of all global deaths, 6.3% for men and 1.1% for women (Rehm et al., 2009b). In those studies, the possible beneficial effects of alcohol are included in the burden of disease. For neuropsychiatric disorders, alcohol accounted for 5.4% of all neuropsychiatric deaths but caused much higher loss of DALYs or 36.4%, which is explained by the fact that alcohol causes much more disability than deaths in these disease categories (Rehm et al., 2009b). Social consequences are another factor that indicate the

magnitude of the problem, e.g. being involved in or associated with accidents, neglect of work and school responsibilities, violent behaviour, arguments and serious conflict (Midanik and Greenfield, 2000; Javier Alvarez et al., 2006; Dawson et al., 2008) with a very high indirect cost for society (Mohapatra et al., 2010). The authors analysed 14 studies from different countries and found that "the weighted average of the total societal cost due to alcohol abuse as percent GDP was 1.58%. The cost due to heavy drinking and/or alcohol dependence as percent of GDP was estimated to be 0.96%". When 20 studies from 12 different countries, including Sweden, were reviewed, and 2 studies partially reviewed, it was found that the economic burden of alcohol was estimated to 0.45–5.44% of GDP (Thavorncharoensap et al., 2009). Both direct and indirect costs were estimated in all the studies and intangible costs in a few studies.

1.5 The risk of alcohol consumption

The Royal Society in the United Kingdom (1992) has defined risk as follows: "the probability that a particular adverse event occurs during a stated period of time, or results from a particular challenge". This definition includes different types of events, consequences of different types of events, different validation of these consequences and different timelines in the risk validation. Using this definition for alcohol-related risk, one can state that the issue is multifaceted and complicated.

The health effects of alcohol and its risks are described in an overview by Thakker (1998) which illustrates the complexities of the alcohol issue. I will start with the toxicological aspects described by Victorin et al. (1998) when they discuss "risk assessment" of alcohol. Their article can be briefly summarized as follows. They divided risk assessment into 4 categories: "hazard identification, dose (concentration)–response (effect) assessment, exposure assessment, and risk characterization". In toxicology, the terms used are "tolerable daily intake" and "acceptable daily (weekly) intake". For hazardous identification, animal studies and in vitro assays are important for documenting the toxicity of the substance and epidemiological data for risk assessment for humans. The problem is that it may be difficult to decide or know if the substance is actually causing the adverse effect, especially if there are complex factors involved. This is the case, for example, in alcohol-related adverse effects (Victorin et al., 1998).

For dose–response assessment, there is a threshold where there is minimal or any change for adverse effect for all substances with the exception of genotoxic substances. There is often a non-threshold effect for carcinogenic

processes and the theoretical explanation is that the adverse effect is initiated by a mutation in a single cell. Alcohol is defined as carcinogenic to humans but the mechanism is not adequately described. One of the theories is that alcohol acts as a tumour promoter or acts as a co-carcinogen, but the metabolite acetaldehyde is genotoxic in animal models and in vitro (Lachenmeier et al., 2009). There are possible additional mechanisms described in more detail by Ringborg (1998).

Concerning the toxic effect of alcohol, most epidemiologic studies have methodological problems; exposure assessment is the main problem (Victorin et al., 1998), with regard to both long-term exposure and peak exposure (binge drinking), which are important for toxicity. Victorin et al. (1998) specified the "lowest-observed-adverse-effect level" for alcohol at about 20 g/day for liver effects in females and for cancer in both sexes and 10–20 g/day for adverse pregnancy effects. Victorin et al. (1998) also pointed out that there is no possibility to define a threshold for the "no-observed-adverse-effect level" because of uncertainties in epidemiologic studies, but most studies indicate that consumption of less than 10 g/day does not result in toxic effects. If alcohol is evaluated in the same way as, for example, food additives, the lowest-observed-adverse-effect level should be divided by a factor of 2–10. However, this is complicated because the indications are that the dose–response curve for alcohol may be U- or J-shaped for some diseases (e.g., coronary and cerebrovascular diseases) and for total mortality. Furthermore, these studies may be misinterpreted, as the claimed protective effect of alcohol possibly can be caused by confounding. The authors conclusion is that "it is doubtful whether the application of a no-observed-adverse-effect level/uncertainty factor approach, as used for food additives and environmental pollutants, is really applicable or meaningful for ethanol" (Victorin et al., 1998).

A group of Swedish researchers did a risk evaluation of alcohol in 1993 (Rudberg et al., 1993). They found that alcohol consumption of less than 50 g/week for males and 40 g/week for females, provided that the person was in good health, was acceptable and practically without risk of harm. Consumption lower than 110 g/week for males and 80 g/week for females was considered without any risk of habituation or other dangerous long-term effects, but could increase the risk of social problems if the whole amount was consumed at the same time. Consuming between 110 and 250 g/week for males and between 80 and 190 g/week for females was considered in the risk zone for adverse health effects and closer to the upper limit, the greater the risk. Consumption between 250 and 400 g/week for males and 190–300 g/week for females was considered to be too high and considerable risk of addiction and damage to organs and the nervous system if continuing.

Consumption above that level was considered dangerous and the advice was: "If you can not readily change your alcohol habit, visit your doctor or a counselor for alcohol problems". According to these authors, moderate drinking was less than 250 g/week for males and 190 g/week for females; a moderate daily intake were set at 40 g for males and 30 g for females (Rudberg et al., 1993).

1.6 Risk perception of alcohol consumption

Different aspects of risk perception of alcohol have been described by Sjöberg (1998) and a brief summary of the article is given here. Risk is a multidimensional concept and refers to both probability and severity of consequences. Risk can be divided into personal risk and general risk (risk perceived to other people) and this is not equal between different risks (Sjoberg, 1998). Generally, personal risk is perceived to be smaller than the risk to other people, a phenomenon called unrealistic optimism. The general alcohol risk is perceived as "old and well known, low in disaster potential, low in dread and about average in fatality among 30 hazards studied" (Fischhoff et al., 1978). In a large, representative sample from Sweden, alcohol and smoking ranked as two of the largest general risks but alcohol was one of the smallest personal risks, a clear difference from smoking where personal risk was closer to general risk. The difference between general and personal risk is related to perceived control over the risk, namely that the higher the level of control over the risk, the larger the difference between personal and general risk. This is characteristic for alcohol consumption risks and express negation or denial, and is unique for alcohol risk (Sjoberg, 1998). People's own alcohol consumption is not related to general risk perception but the perception of the personal risk increases the more alcohol you drink. This is more prominent for men than women. Generally, women rate the general risk of alcohol consumption to be greater than men do, but women rate the personal risks as being lower than men do, irrespective of age. This is despite the fact that studies have shown that women tend to expect more negative effects from alcohol than men do and they usually rate risks as higher than men.

1.7 Moderate drinking, what does it mean?

In the alcohol literature there are many different concepts or terms which are often not defined or defined in a different manner between studies or authors. One of these terms is moderate drinking. An overview by Kalant and Poikolainen (1999) reflected on this term and here is a brief summary of their opinion. The word moderation and its equivalents in different languages is

derived from the Latin “moderare”, meaning to control or restrain. In the alcohol context, this means that drinking alcohol can give rise to impulsive and excessive consumption, which must be controlled or restrained to avoid some undesired consequences. Different studies in various countries show that the average daily amount of moderate drinking ranges from 4.5–50 g/day as a lower limit to between 24 and 89 g/day as an upper limit. This shows the range of variation related to the term drinking in moderation (Kalant and Poikolainen, 1999).

Kalant and Poikolainen’s (1999) view is that the term moderate is used in at least 5 different senses, all with different implications. The sense of non-intoxicating focuses on the immediate adverse effects, which are increased by intoxication. This alcohol limit is difficult to define quantitatively because of genetic factors and acquired tolerance. This means that a different amount of alcohol is required between individuals before they will be intoxicated.

Moderation defined as statistically normal refers to the average amount of alcohol drinking that is typical in a given population. This can be measured but differs considerably from one population or culture to another. This also takes no account of the risk to health or social problems, different drinking habits (daily/occasional drinking, binge drinking, etc.) or different weight or age of the individuals.

The definition of moderation as non-injurious reflects that moderate drinking avoids alcohol-related harm to health and carries no risk of damage to any organ system. One of the oldest limits published is Anstie’s Limit (Baldwin, 1977), which stated that daily consumption of 1.5 ounces of absolute alcohol (43 ml or 35 g) was without risk of deterioration of health. The author’s threshold for non-injurious limit was 30–40 g/day for the average man and 10–20 g/day for a woman.

Another concept of moderate drinking is problem free, referring to physical and mental health and social problems. This is difficult to use in quantitative terms because different cultural and situational factors strongly influence social harms, and are considerably more varied than the effect of alcohol on physical health.

At last the authors refer to the concept of moderation as the “optimal” level of alcohol drinking, corresponding to the lowest overall rate of morbidity or mortality. It implies maximal health benefits and minimal risk and is only applicable if there is a U-shaped or J-shaped curve at which the level of alcohol-related harm is minimal. The threshold for optimal drinking is 10–19 g/day for the average man and less than 10 g/day for a woman according

to Kalant and Poikolainen (1999). In recent years, several studies and review articles have been published, providing support for a J-shaped association between low and moderate levels of alcohol drinking (Corrao et al., 2004; Klatsky, 2007; Di Castelnuovo et al., 2010; Mukamal et al., 2010; Ronksley et al., 2011), and also that, despite the possible positive effects of alcohol on health, alcohol provides no health benefits consumed in any amount at all (Rehm et al., 2009b).

1.8 What do physicians say about drinking limits?

A few studies have been investigating what GPs think about alcohol drinking limits before they advise their patients to reduce alcohol consumption. It is somewhat difficult to compare the results from various studies because of the different formulations of the questions and because they are performed over different time intervals and in different cultures. In a Finnish national survey, the GPs regarded the weekly limit as 177.6 g/week for males and 127.2 g/week for females (Aalto and Seppa, 2007). These limits were less than two-thirds of the recommended limits for heavy drinking in Finland (288 g/week for men, 192 g/week for women). The question was formulated as follows: "How many drinks should a male/female patient drink in a week to make you advise him/her to drink less?" In a British survey among both GPs and practice nurses, 44% of the responders recommended a safe level of consumption of 224 g/week for males and 168 g/week for females, against the advice of the British Medical Association (168 g/week for males, 112 g/week for females), but in line with the levels suggested by the British Government (224 g/week for males, 168 g/week for females) (Webster-Harrison et al., 2001). In another British survey, GPs regarded the safe upper limit for alcohol consumption as 143.2 g/week for males and 107.2 g/week for females (Wallace et al., 1985) in contrast with higher limits from the alcohol experts (247.2 g/week for males and 155.2 g/week for females) (Wallace et al., 1985). In another British survey, the limit was 230 g/week for men and 160 g/week for women (Kaner et al., 1999), and the formulation of the question was: "For a healthy adult man/women (not pregnant), what would you consider the upper limit for alcohol consumption before you would advise him to cut down?" In a Canadian survey among GPs actively working in an office-based family practice during 1989, the safe upper limit of alcohol consumption was 86.4 g/week for men and 75.6 g/week for women (Rush et al., 1994a).

There are not many studies on GPs' opinions about low risk drinking. In a Canadian study, early at-risk drinking was defined as "a pattern of drinking

alcoholic beverages that could, in time, lead to and increase the chances of alcohol-related disease, accidents, or disturbed personal relationships at home or at work, but that does not at the moment fit the definitions of alcoholism or problem drinking" (Herbert and Bass, 1997). The limit was 121.5 g/week (9 drinks) for a 75-kg man and 108 g/week (8 drinks) for a 55-kg woman. In a study from the United States, physicians were asked to "indicate the number of drinks that reflect your definition of light, moderate and heavy drinking". The mean results were 60.2 g/week (4.3 drinks), 140 g/week (10 drinks) and 264.6 g/week (18.9 drinks), respectively (Abel et al., 1998). The response rate was only 25%.

1.9 National drinking guidelines and sensible drinking

National recommendations for alcohol consumption do not necessarily coincide with the limits that health care providers convey to their patients. Many countries have introduced drinking guidelines to reduce the contribution of alcohol to the burden of disease. National recommendations vary up to threefold between countries (Harding and Stockley, 2007); the highest recommended weekly limits are 252 g/week for men and 168 g/week for women in South Africa and the lowest limits are 100 g/week for men and 50 g/week for women in Poland (International Center For Alcohol Policies, Report 14, 2003). There is no officially endorsed recommendation in Sweden, but the most commonly cited limits for risk drinking are 15 standard drinks (180 g/week) for men and 10 standard drinks (120 g/week) for women; all drinking leading to intoxication is considered as risk drinking, and the limit for this is 5 (men) and 4 (women) drinks per drinking occasion. Drinking at this level or more is considered hazardous or harmful drinking (usually referred to as risk drinking in Sweden) (Andréasson and Allebeck, 2005). In the last 1–2 years, Denmark and Australia have promoted lower limits than before as a result of the increased knowledge about alcohol-related harm. In Australia, it has been emphasized that "due to the different ways that alcohol can affect people, there is no amount of alcohol that can be said to be safe for everyone. People choosing to drink must realise that there will always be some risk to their health and social well-being" (http://www.alcohol.gov.au/). The limit is set to not more than two standard drinks (20 g) on any day and no more than 4 drinks (40 g) on one single occasion to minimize the risk of injury. In Australia, recommendations for men and women do not differ. In Denmark, the limits for low risk drinking are 84 g/week for females and 168 g/week for males; and a high risk of becoming ill because of alcohol if drinking more than 168 g/week for females

and 252 g/week for males (http://www.sst.dk/Sundhed%20og%20forebyggelse/Alkohol.aspx).

1.10 Alcohol and the disease panorama

The current knowledge on how alcohol influences different diseases has been summarized and described in detail by Rehm et al. (2009a). This section describes the main information from the literature on alcohol consumption and the main disease groups that are highlighted in PHC, i.e. cardiovascular diseases, diabetes mellitus, cancer and psychiatric disorders.

1.11 Alcohol and cardiovascular diseases

Epidemiologic studies and review articles have been published showing that there is a relationship between low and moderate alcohol consumption and reduced risk of ischemic heart disease (Corrao et al., 2004; Klatsky, 2007; Mukamal et al., 2010), reduced overall mortality in patients who have had an ischemic cardiovascular event (Costanzo et al., 2010), and total mortality (Di Castelnuovo et al., 2006; Klatsky, 2007; Di Castelnuovo et al., 2010). The most recent meta-analysis, where the reference group was non-drinkers (lifetime abstainers), confirms these findings (Ronksley et al., 2011). The results were as follows: relative risk for cardiovascular disease mortality 0.75 (CI 0.70–0.80), incidence of coronary heart disease 0.71 (CI 0.66–0.77) and 0.75% (CI 0.68–0.81) for coronary heart disease mortality. This was achieved with the lowest risk of 1–2 drinks a day, which is in line with the results from Rhem et al. (2009a) who also observed a protective effect for ischemic heart disease of 72–90 g/day with causal impact on disease conditions. The result for stroke is not as unequivocal with an increased risk for hemorrhagic stroke but protective for ischemic stroke (Patra et al., 2010). This may be caused by the fact that alcohol increases the blood pressure in a linear way (Taylor et al., 2009). The cardioprotective effect of light or moderate alcohol consumption disappears when irregular heavy drinking occurs (Roerecke and Rehm, 2010). The consequences of binge drinking patterns have been shown in a cohort study. The incidence of myocardial infarct, angina and coronary death among men in Belfast and in three centres in France were compared. The volume of alcohol consumed was similar in these cohorts, but concentrated on a Saturday in Belfast and spread more evenly throughout the week in France. The prevalence of binge drinking (50 g of alcohol at least one day a week) was almost 20 times higher in Belfast and binge drinkers

had double the risk of ischemic heart disease compared with regular drinkers (Ruidavets et al., 2010).

The beneficial effects of light to moderate alcohol consumption have been explained by the effect of alcohol on biological markers in the body (Collins et al., 2009; Di Castelnuovo et al., 2010). The most recent review and meta-analysis (Brien et al., 2011) showed an effect on 4 of 13 biological markers. The most investigated biological marker is cholesterol. Alcohol increases high density lipoprotein (HDL) in a dose–response manner, but has no significant influence on total cholesterol, low density lipoprotein (LDL) or triglycerides. A possible biochemical mechanism for how alcohol acts in the body via cholesterol has been described in detail, affecting both oxidative stress affecting LDL and other complex mechanism not described here (Lakshman et al., 2010). HDL is considered to be a cardioprotective biomarker (Gordon et al., 1977) but studies targeted to increase HDL do not show any change in risk ratios for coronary heart disease deaths, coronary heart disease events, or total deaths (Briel et al., 2009). Alcohol decreases fibrinogen levels but the effects on other hemostatic biomarkers were inconclusive, as were the effects on inflammatory and endothelial biomarkers. Hence there are a lot of alcohol-related mechanisms in the body that have not been studied and more research is required to clarify the real effect of alcohol on different biochemical processes in the human body (Lucas et al., 2005; Collins et al., 2009; Di Castelnuovo et al., 2010).
Results from cohort and observational studies have led to the proposed J- or U-shaped dose–response curve for alcohol consumption (Klatsky, 2010). These studies have been criticized and the results challenged (Jackson et al., 2005; Fuchs and Chambless, 2007; Chikritzhs et al., 2009; Sellman et al., 2009). In many of the studies, the reference group comprised abstainers including those persons who reduced or stopped drinking for health reasons, sick quitters (Shaper et al., 1988; Liang and Chikritzhs, 2011). Lifelong abstainers are a heterogeneous group with special characteristics. A minority does not drink for religious reasons but they have good social support and hence a lower risk of cardiovascular mortality than the general population. Abstainers are generally people who have never married, are older, less educated, have less income, less access to health care service, sick or poor general health and less social networks (Andreasson, 1998; Naimi et al., 2005) and these factors can affect health (Kaplan and Keil, 1993; Matthews et al., 2010). When 54 studies were analysed for these confounders, most of them involved misclassification and the cardioprotective effect disappeared (Fillmore et al., 2007). A Finnish population study carried out in 2000 showed that the protective effects of alcohol eventually disappeared when these factors were taken into consideration. The author's conclusions were:

"The positive associations observed between moderate alcohol consumption and well-being were, at least to large extent, explained by the better than average sociodemographic status of moderate drinkers" (Saarni et al., 2008). However, in a group of men with healthy lifestyles (body mass index less than 25 kg/m^2, non-smoking, moderate to vigorous activity and high diet score), the incidence of myocardial infarct decreased with moderate alcohol consumption, and the risk was lowest in men consuming 5–30 g/day. There were no comments about sociodemographic factors in this study (Mukamal et al., 2006).

1.12 Alcohol and diabetes mellitus

In recent years, a number of meta-analyses have been published showing that light to moderate alcohol consumption is protective for the incidence of type 2 diabetes (Howard et al., 2004; Carlsson et al., 2005; Koppes et al., 2005; Baliunas et al., 2009; Pietraszek et al.,2010) and metabolic syndrome (Alkerwi et al., 2009; Clerc et al., 2010). The effect is in the order of 30%. The studies also show that binge drinking increases the risk of diabetes (Pietraszek et al., 2010) as does heavy alcohol drinking (60 g/day for men and 50 g/day for women) (Baliunas et al., 2009). Patients with type 2 diabetes whose drinking is light to moderate also have better glycemic control (Ahmed et al., 2008) and lower risk of cardiovascular diseases and mortality (Howard et al., 2004; Koppes et al., 2006). The weakness in all these studies is the same as for studies of cardiovascular diseases, namely the choice of reference group, which weakens the significance of these findings. All biological markers that described here for cardiovascular disease also have a favourable effect on type 2 diabetes. In addition, light or moderate alcohol drinking increases insulin sensitivity and decreases insulin resistance (Kiechl et al., 1996; Kawamoto et al., 2009). These effects on biomarkers suggest a lower risk of developing cardiovascular complications and thus improved health.

1.13 Alcohol and cancer

In 2007, alcohol was classified as carcinogenic in humans (Baan et al., 2007). Regular alcohol consumption is causally related to increased risk for cancer of the oral cavity, pharynx, larynx and oesophagus. For drinkers consuming around 50 g/day, the risk is two to three times higher compared with the risk for non-drinkers. The relative risk for colorectal cancer is 1.4 with regular consumption of about 50 g/day of alcohol. For liver cancer, there is a causal relationship with alcohol consumption but the risk is difficult to quantify

(Baan et al., 2007); another study showed the relative risk as 1.19 and 1.4 for drinking 25 g and 50 g of alcohol per day, respectively (Corrao et al., 2004). For breast cancer, the relative risk is 1.5 for drinking about 50 g of alcohol per day (Baan et al., 2007), but even light drinking increases the risk; the relative risk increased by 7.1% for each additional 10 g/day intake of alcohol (Hamajima et al., 2002). For cancer in the stomach and lung, causality has not been found because of the confounding effects of smoking and dietary habits (Rehm et al., 2009a) but alcohol is likely detrimental. For renal cancer and non-Hodgkin lymphoma, alcohol has not been found to be carcinogenic.

A study in 6 countries in Europe analysed the risk of cancer in the upper aerodigestive tract with lifetime alcohol use and showed a significantly stronger dose–response relationship in women compared with men (Weikert et al., 2009). In Europe, current and former alcohol consumption may account for 10% of all cancers in men and 3% in women, mainly among those who were drinking above a recommended limit (24 g/day for men and 12 g/day for women); 3 versus 18 cases per 100 alcohol-related cancers in men and 1 versus 4 cases in women, respectively (Schutze et al., 2011).

In the Million Women Study even low to moderate alcohol consumption was found to increase the risk of certain cancers and every additional of 10 g of alcohol per day on a regular basis led to a total excess of about 15 cancers per 1,000 women up to age 75 years (Allen et al., 2009), which emphasizes the importance of drinking in moderation.

1.14 Alcohol and mental health

A comprehensive review of the connection between alcohol consumption, AUD and psychiatric disorders and suicidal behaviour has been done by two Swedish authors (Berglund and Ojehagen, 1998). They described how alcohol was over-represented among patients with all the common psychiatric diseases, such as depressive disorder, anxiety disorder, and schizophrenia and suicidal tendencies. The problem is whether the psychiatric disorder came first or if the psychiatric disorders caused the AUD. In any case, alcohol impairs the course of the diseases, although in some cases, patients may experience temporary symptomatic relief; however, this is transient and the problems worsen with continued drinking. There is a stronger detrimental effect of alcohol on depression among women than men (Graham et al., 2007) and depression tends to precede alcoholism in a majority of women and in a minority of men (Berglund and Ojehagen, 1998). In the latest overview of alcohol consumption and burden of disease (Rehm et al., 2009a),

alcohol was found to be detrimental for unipolar depressive disorder but studies are lacking to estimate the relative risk or alcohol-attributable fraction "as it could not be determined which portion of the association between alcohol consumption and depressive disorders was caused by alcohol consumption, which portion by depression and which portion by a third cause impacting both alcohol consumption and depression".

Epidemiologic and cohort studies have proposed a positive relationship between light and moderate drinking and mental health and the relationship is J- or U-shaped. In a review of these studies, El-Guebaly (2007) found most of the studies reported as a J-shaped curve. In this review, the author started with reflection about what the terms moderate drinking and mental health mean and the answer was not simple, complicating the interpretation of the various studies. The author's conclusion was that more research was needed and many questions remain to be answered: "Is moderate drinking improving mental health or are mentally healthy individuals more likely to drink moderately?" (El-Guebaly, 2007).

One of the problems in studies on alcohol and mental health is the choice of reference group, as in the studies on the cardioprotective effect of alcohol, and the same arguments apply. The difference is that I have not seen any study discussing biological markers or biochemical processes that can argue for a protective effect of alcohol and better mental health, with the possible exception of a lower risk of dementia, including Alzheimer disease, as light to moderate alcohol consumption can "inducing neuroprotection in the brain" through different mechanism (Collins et al., 2009, 2010). Recently a Norwegian study was published showing a J-shaped relationship between light to moderate alcohol consumption and anxiety and depression, taking into account sociodemographic factors, somatic illness and the sick-quitter hypothesis (Skogen et al., 2009).

1.15 Attitudes to patients with alcohol problems

The attitudes of GPs to patients with alcohol-related problems have been described by Rush et al. (1994b). The issue is very complex with positive attitudes for role legitimacy and role adequacy, but lack of training, practical skills, and self-efficacy are negative factors that make implementation difficult (Anderson, 1985; Aalto et al., 2001, 2003). In a study in England, 83% of the GPs felt prepared to counsel excessive drinkers but only 21% felt effective in helping patients to reduce alcohol consumption (Kaner et al.,

1999). “GPs who received more education on alcohol (OR = 1.5; 95% CI, 1.3–1.7), who perceived that they were working in a supportive environment (OR = 1.6; 95% CI, 1.4–1.9), who expressed higher role security in working with alcohol problems (OR = 2.0; 95% CI, 1.5–2.5) and who reported greater therapeutic commitment to working with alcohol problems (OR = 1.4; 95% CI, 1.1–1.7) were more likely to manage patients with alcohol-related harm” (Anderson et al., 2003). Only a few studies compare alcohol-related attitudes between GPs and nurses (Bendtsen and Akerlind, 1999; Andreasson et al., 2000; Kaariainen et al., 2001; Aalto et al., 2001; 2003; Johansson et al., 2002).

Several studies highlight the difficulty that GPs have in identifying when alcohol contributes to the clinical picture in the patient (Deehan et al., 1998; Kaner et al., 1999). Many complicating factors have been identified: time constraints and fear of disturbing the patient relationship (Arborelius and Damstrom Thakker, 1995; Holmqvist et al., 2008), lack of confidence in own ability in the alcohol field, diagnostic difficulties and work overload (Durand, 1994) and lack of resources and support from management (Johnson et al., 2010). As these studies describe, there are many factors that interfere with the GPs and nurses work in identifying patients with risk drinking or AUD. None of these studies reflect the fact that patients estimate their own risk of alcohol-related harm to be lower for themselves than for others as described by Sjöberg (1998). This means that when discussing alcohol there may be an underestimation of the problem, and this can be a major aggravating factor in the doctor–patient communication. Another way of phrasing this, as British GPs did, is: “That until patients were willing to accept that their alcohol consumption was problematic they could achieve very little” (Rapley et al., 2006).

1.16 Screening and brief intervention of alcohol use disorder

Clinical guidelines for screening for alcohol problems, treatment and management of abuse and dependence in PHC have been carried out and the complexity of the work has been described (Fiellin et al., 2000). It was concluded that primary care physicians “are uniquely suited to provide comprehensive ongoing care for patients with alcohol problems because they offer a wide variety of preventive and other medical services to keep patients engaged.”

Work on implementing evidence-based methods in PHC to detect and treat risk drinking and/or alcohol abuse has been ongoing for a long time (Garner, 2009), especially in Europe as described in an overview by Heather (2011). In this article, he describes the chronology of events in research of brief intervention (BI) and that it was in Sweden where the first research was conducted by Kristenson et al. (1983) in Malmö. Brief screening and counselling for alcohol misuse is one of the most cost-effective preventive measures that can be implemented in PHC (Solberg et al., 2008). The effectiveness of behavioural counselling intervention in PHC for risk or harmful drinking has been analysed in a meta-analysis of 12 studies (Whitlock et al., 2004). The participants, who received initial contact and at least one follow-up, reduced their average number of drinks per week by 13–34% more than controls did and the proportion of participants drinking at moderate or safe levels was 10–19% greater compared with controls. In all these trials additional staff or systems support were required to provide screening and assessment services and, in some cases, intervention support. Another Cochrane review of screening and brief intervention (SBI) for hazardous and harmful drinking showed a decrease in the average weekly consumption of 38 g/week when 22 randomized controlled trials were combined (Kaner et al., 2009). Another systematic review and meta-analysis (Daeppen et al., 2007), assessing long-term alcohol use reduction in individuals attending primary care facilities but not seeking help for alcohol-related problems, showed a mean pooled difference of 38 g of ethanol in favour of the brief alcohol intervention group. The conclusion was that BI is effective in reducing alcohol consumption at 6- and 12-month follow-up. Benefits have been shown for up to 48 months (Fleming et al., 2002) but one study following ~500 patients for 10 years, with assessment at the beginning and after 9 months, did not show a reduction in drinking levels (Wutzke et al., 2002). Treatment outcomes appear to be similar for both sexes (Ballesteros et al., 2004) but the method is not consistently helpful to women drinkers (Chang, 2002), showing reductions in alcohol consumption for both BIs and the control conditions. The method has the potential to be a cost-effective means of intervention with a benefit–cost ratio of 5.6:1 (Fleming et al., 2000) and has been shown to have middle to high ranking on the list of efficient means to reduce drinking hazards in society (Babor et al., 2010).

In many countries nurses in the PHC system play an important role in promoting health. By providing BI, the nurses can complement the GPs role and give the patients follow-up visits. The effectiveness of using primary care physician–nurse teams has been evaluated when patients with previous trauma were screened for hazardous drinking; a follow-up visit by the nurse was superior to simple advice after 12 months follow-up (Israel et al., 1996).

BI offered by a nurse can give the same results as BI given by a GP (McIntosh et al., 1997). Very brief (5–10 min) advice and counselling by GPs or nurses can reduce alcohol consumption for high-risk drinkers (Ockene et al., 1999). However, in-depth interviews with 24 nurses in general practice in the northeast of England showed that they received little or no preparation for the task of alcohol intervention although they have many opportunities to engage in it in the workplace (Lock et al., 2002). A literature review of the status of clinical nurses in the delivery of SBI showed that there were no meta-analysis of the topic and only a handful of studies that describe the subject from the nurses' perspectives (Hyman, 2006). The conclusion was that "brief intervention is recognized as a legitimate nursing role but little has been done to develop and define the role of the nurse in delivering brief interventions to high-risk drinkers. This represents a major lacuna in both the nursing and alcoholism literature, where only a handful of studies have investigated nurse-delivered brief intervention".

How BI affects a patient's health has been difficult to demonstrate. Fleming et al. (2000) showed a decreased number of hospitalizations and fewer acts of violence and accidents, but another study showed no difference between groups (Bray et al., 2007).

When SBI has been implemented in routine medical care, the results have not been as successful (Roche and Freeman, 2004; Beich et al., 2007) and this means that the method's efficiency (how effective the method is in clinical practice) has been questioned (Beich et al., 2003; Roche and Freeman, 2004). Transferring the recommendations from alcohol specialists or researchers to the GPs (generalists) is not a simple task. One of several reasons is unwillingness to use the consultation time for health promotion advice to a patient who presents no problems, in this case related to alcohol (Rollnick et al., 1997). One quantitative and two qualitative studies in the Nordic countries have described these issues from GPs' perspectives. The first study is from Denmark (Beich et al., 2002) where GPs performing AUDIT in a pragmatic study of SBI for 8 weeks, with 1–3 days of training in SBI, were interviewed. The GPs did not recommend the SBI program, although they thought it was important to counsel their patients about drinking. The conclusion was that "screening for excessive alcohol use created more problems than it solved for the participating doctors". The other studies were performed among Norwegian GPs. The quantitative study was performed among 2000 GPs with a response rate of 45% and revealed that training in the use of SBI did not necessarily increase the use of the method due to social and structural barriers (Nygaard et al., 2010) and this was confirmed in the qualitative study among 40 participants from different regions in Norway

(Nygaard and Aasland, 2011). Some of the reported barriers were that SBI could disturb the doctor–patients relationship and that it was difficult to integrate SBI into existing routines. It has also been reported that some perceptions of alcohol problems, which can be met in some patients, such as that the alcohol issue is associated with shame and stigmatization, makes it difficult to carry out SBI (Nygaard and Aasland, 2011).

1.17 Gender and alcohol use

A comprehensive review of the differences and similarities between men's and women's alcohol consumption and its different consequences has been described (Nolen-Hoeksema and Hilt, 2006). Many factors are involved: biological, psychological, social and cultural factors and the interaction of these factors are complex. In the field of alcohol research, gender issues have not been considered sufficiently (Greenfield, 2002). A male-as-norm bias affects research, assessment and treatment (Wilke, 1994). In general, research does not take into account the difference between male and female drinking habits and biological differences (Bradley et al., 1998). Gender differences were explored in a review by Brienza and Stein (2002), who found that GPs were encouraged to be "aware of lower recommended alcohol consumption levels for women compared to men as well as increased sensitivity to alcohol at lower levels", and this factor accounts for several gender-specific differences in the clinical presentation of AUD in women compared with men, of which GPs should be aware.

Regarding estimation of possible alcohol-related harm, it is important to take into account blood alcohol concentration (BAC) for the sexes. There are two main reasons why women reach a higher BAC given a specific amount of alcohol: differences in average weight and in body-water content (Ely et al., 1999). These factors alone mean that the recommended levels for alcohol intake should be lower for women than men but the literature has not defined how much lower the limit should be (Graham et al., 1998; Sugarman et al., 2009). Other differences, such as possible higher sensitivity to certain alcohol damage and, although only affirmed in some studies, lower first passage metabolism of alcohol in the ventricular mucosa, can add little to explain the sex differences in BAC, if they contribute at all (Lucey et al., 1999).

In another review, Nolen-Hoeksema (2004) described further gender differences. Women appeared to report fewer risk factors for alcohol use than men, e.g. greater social sanction for drinking; they were less likely to have characteristics associated with excessive drinking including aggressiveness,

drinking to reduce stress and sensation seeking. Women also reported more protective factors against excessive drinking, such as desirable feminine traits (e.g., nurturance and warmth). However, results concerning nurturance are not consistent. In previous work from our research group (Hensing et al., 2003), we did not find that nurturance (called caring in our study) was statistically significantly associated with alcohol consumption, albeit the trend went in the same direction as in the Nolen-Hoeksema study.

In the clinical course of alcohol-related problems in alcohol-dependent and non-alcoholic-dependent drinkers, there is little evidence that the natural history of alcohol dependence in women is substantially different from that in men. There is evidence of telescoping, i.e., faster progression to alcoholism in women than men given the same duration and intensity of drinking career (Schuckit et al., 1998). More recently, studies have shown that telescoping is diminishing among younger birth cohorts (Johnson et al., 2005; Keyes et al., 2010) and the newest study from the United States showed no evidence of telescoping(Alvanzo et al., 2011). Gender differences in relation to age of onset of alcohol-related problems were relatively small (Schuckit et al., 1998). Taking into account the quantity and pattern of drinking, there are no substantial differences between the genders according to reporting of alcohol-related problems (Livingston and Room, 2009). However, in Project MATCH, a multi-sided matching study of alcohol treatment, the women began getting drunk regularly at a later age than men, on average, and exhibited shorter progression, in terms of average duration, between first getting drunk regularly and first seeking treatment (Randall et al., 1999). The inconsistency between these studies may be that the cohorts analysed were from treatment samples and therefore the results are less generalizable to the general population (Alvanzo et al., 2011).

1.18 Gender and practitioners' counselling styles

In general, counselling styles of female and male physicians are relatively similar and do not significantly differ in their general influence on the patient–doctor relationship (Roter et al., 2002). Professional level concerning knowledge is similar (Arnold et al., 1988). However, there are also differences. Female physicians have been reported to engage in more active partnership behaviours, positive talk, psychosocial counselling and emotionally focused talk (Hall et al., 1994; Roter et al., 2002; Roter and Hall, 2004; Bertakis, 2009). They also devote more time to the patient (Roter et al., 1991; Roter and Hall, 2004) but when controlling for health status, the

difference disappears (Bertakis et al., 1995).The patients are also more satisfied after visiting female physicians (Bertakis, 2009). Male physicians use the time more for technical practice behaviours, some medical history talk and physical examination (Bertakis, 2009). These differences between female and male primary care physician's counselling styles indicate that female primary care physicians are more likely to enhance the practice of motivational interviewing (MI), an increasingly popular method that requires patient-centred communication and encouragement of dialogue as well as being non-directive (Miller, 1996).

How primary care physicians handle male and female patients with AUD in clinical settings has been sparingly described. If there are such gender differences they could be handled by treatment in separate specialized treatment facilities for women with AUD problems, but there is little scientific support for higher efficiency of sex-specific treatment (Greenfield et al., 2007). Even less is known about whether treatment of men for AUD would be improved in sex-specific care. However, a Swedish study randomized 200 females with AUD to a women-only program or treatment as usual (mixed gender group). "The 2-year follow-up study showed a more successful rehabilitation regarding alcohol consumption and social adjustment for the women treated in the specialized female unit" (Dahlgren and Willander, 1989). Follow-up over 15–20 years of this group showed significant effect on mortality, especially among younger women (Gjestad et al., 2011). According to the authors "it was not possible to separate whether this was in part because it was a more comprehensive programme, as well as being single gender". Given the usual setting, in which both male and female physicians treat both female and male patients, it is important to understand if the gender of the patient or the gender of the primary care physician influences the advice or treatment that is given by the physician to the patient with AUD. If there is a gender difference, which components in the consultation are of importance? I have only found one study dealing with gender differences in PHC concerning alcohol counselling. Roeloffs et al. (2001) analysed patients with depression and hazardous drinking or problematic drug use and found that only 15.6% of the male patients and 4.5% of the female patients received counselling about alcohol use during their most recent primary care visit.

1.19 General practitioners' own alcohol consumption and care-giving

How a primary care physician's own alcohol consumption influences their care of patients with risk drinking is also sparingly described. The physician's own AUDIT score does not influence their activity in offering BI (Aalto et al., 2006). In a qualitative interview study among 29 GPs, Kaner et al. (2006) found that some GPs recognize risk only in those patients whose drinking habits are at least similar to their own (Kaner et al., 2006).

1.20 The Risk Drinking Project

Work with risk drinking has been ongoing in Sweden since the 1980s. In 2004, a large-scale project, the Risk Drinking Project (RDP), was launched to encourage professionals to raise the issue of alcohol with their patients and provide better advice aimed at reducing hazardous drinking habits. The overall objective of the project was to give questions about drinking habits an obvious place in everyday healthcare. The details of the project have been published in a report (Swedish National Institute of Public Health, Östersund 2010).The vision of the RDP was formulated as "Questions about drinking habits have an obvious place in daily healthcare in a way that corresponds to the significance of alcohol to the origins of various harms and diseases". This ambition in turn demands health care personnel who: (1) have a good knowledge of alcohol and hazardous use issues; (2) are confident in their own ability to discuss alcohol with patients and are able to influence patient drinking habits; and (3) have a positive attitude to bringing up the alcohol issue and discussing the patients' drinking habits with them. To reach these ambitious goals, an extensive training and information endeavour was deemed to be the most suitable strategy. The main activities that were carried out to achieve the project's objectives were training, seminars and information efforts concerning alcohol use and hazardous drinking, training in MI and conferences for health care personnel.

The project's training and informational activities were built up of certain cornerstones: (a) a focus on hazardous use of alcohol, (b) defusing the alcohol issue, (c) a patient-centred approach with MI as the benchmark, (d) cooperation with county councils and working life, (e) cooperation with the professions, (f) broad arena strategy.

The RDP was started in 2004 and finished in 2009. Several different training and education programs were conducted with a focus on the projects'

cornerstones in all counties in Sweden. The preliminary report on the impact of the project has been published and the results were positive (Swedish National Institute of Public Health, 2010).

1.21 Effect of continuing education

The RDP is mainly based on education and training in order to enhance staff competence. I will therefore review some of the literature on CME and the effects that it has, as well as how different implementation strategies can be achieved in routine health care.

Alcohol-related education for health care providers may facilitate improved detection and prevention of risk drinking. However, many educational programs for physicians have been poorly conceived and evaluated (Walsh, 1995). In recent years, awareness of these shortcomings have increased and various training programs have been organized that use lectures combined with computer technology, various web-based training programmes, information networking and teambuilding, group discussions, etc. (Polydorou et al., 2008; Seale et al., 2010). The existence of these possibilities should increase opportunities to enhance alcohol-related education and improve the internal medicine residency training programs and CME for physicians in the alcohol field (Jackson et al., 2010).

The process of educating a physician to show what they are doing in clinical practice and what they have learned is complicated and not easy to measure or evaluate (Donabedian, 1988). The theoretical framework is described by Miller (1990) who describes the process from knowledge to action. This learning process has been developed further by Moore et al. (2009) when planning the framework and evaluation of CME. First, the physician must achieve “declarative knowledge” (knows), the next step is “procedural knowledge” (knows how), then “competence” as to what a physician is capable of doing in an educational setting and lastly “performance" (does/action) as to what a physician actually does in regular practice. The doing process is divided into performance, patient health and community health. All these steps can be assessed both subjectively and objectively with different methods (Moore et al., 2009).

Alcohol-related education has been shown to increase cognitive and behavioural skills, but it is harder to change complex attitudinal shifts and the studies have not been extended to the evaluation of change in patient behaviour (el-Guebaly et al., 2000). In general, various educating and

training activities are shown to be effective for physician declarative knowledge and procedural knowledge (Davis et al., 1999; Bordage et al., 2009; O'Neil and Addrizzo-Harris, 2009), but more difficult to improve practice performance and achieve meaningful clinical benefits or health outcomes (Boonyasai et al., 2007; Davis and Galbraith, 2009; Mazmanian et al., 2009); to manage that requires interactive techniques, use of multiple media and multiple educational techniques (Bloom, 2005; Moores et al., 2009).

1.22 Implementation of new knowledge into clinical practice

The effect of education on clinical praxis and patient health has been difficult to demonstrate. In the knowledge-to-action cycle (the process of transferring knowledge to clinical praxis), there is a gap between best available evidence and clinical praxis (Kitson and Straus, 2010). This process is complicated and the concept "lost in knowledge translation" has been established (Graham et al., 2006). In the literature, there are many terms with different meanings and researchers are trying to write a map with these definitions (Graham et al., 2006). The scope of this thesis does not include a detailed overview of this complex matter. The terms defined and used by Graham et al. (2006) in the translation–knowledge literature are the following: knowledge translation/ transfer/exchange, research utilization, implementation, dissemination, diffusion, continuing education and continuing professional development. These terms build a continuum from the time point when new knowledge is gathered to deciding when to use it (by professionals or policy makers) in clinical praxis and to the process needed for professionals to develop their competence and clinical performance and stimulate them to acquire more knowledge and skills to facilitate their practice (Graham et al., 2006).

The process of improving patient care and implementing new knowledge in action has gathered a lot of theoretical structure that illustrates the fact that the process is complicated. An overview of these theories is given by Grol et al. (2007). Within the scope of this thesis and according to my opinion on what GPs have to know about the knowledge–action cycle, a more detailed description is given here of two theories on how complex it is to implement new knowledge into clinical action: the theory of Diffusion of Innovations (DI) (Rogers, 2003) and Promoting Action on Research Implementation in Health Service (PARIHS) (Kitson et al., 1998).

Rogers' theory of DI was first described in 1962 and deals with how new ideas, behaviours or knowledge are adopted by their audience and give insight into the process of social change and are usable in many different areas of society. There are 5 components or elements of innovation that are needed for successful dissemination: relative advantage, compatibility, complexity, trialability and observability. Relative advantage is when an innovation is perceived as better than the idea or way of working it supersedes. This can imply advantage for the caregiver and/or the patients, the patients' welfare, the health care system or society or an interplay between all these elements. The greater the perceived advantage of the innovation, the faster is the adoption. Compatibility is a measure of the degree to which an innovation is perceived as being compatible with existing values, past experiences, and the needs of potential adopters; the more compatible, the faster adoption. Complexity is the degree to which the innovation is difficult to understand or difficult to perform; the more simple, the faster adoption. Trialability refers to how the innovation can be tested and modified before being fully adopted and implemented; better trialability, the more likely to be adopted. Observability means that the results of the innovation are visible to others; if the results or effects of the innovation are better seen by others, then it is easier to adopt the innovation.

One of the cornerstones in the theory of DI is reinvention, which means that innovations must be continuously evaluated and the advantages and disadvantages of the process highlighted and new decisions made to make progress. Communication between the adopters or the partners in the process is important for sharing information with each other to achieve common understanding. The time perspective must also be taken into account. Innovation adoption tends to follow an S-shaped curve, meaning that only a few individuals adopt the innovation initially. An adoption starts with innovators who try the innovation, the early adopters who start when benefits become apparent. As the process continues, more and more individuals adopt the innovation; an early majority is established and then a late majority. The remainders are the laggards who are not easy to influence. According to Rogers (2003), the distribution of these segments or categories of individuals in different contexts is 2.5%, 13.5%, 34%, 34% and 16%.

The other theory, PARIHS (Kitson et al., 1998) deals more with the practical aspects of implementation. The theory was first described in 1998 and further developed in 2002 (Rycroft-Malone et al., 2002). The cornerstones in PARIHS are the interactions between evidence, context and facilitation. Evidence is defined "as the combination of research, clinical expertise, and patient choice" (Kitson et al., 1998), and these factors can each have a low or

high level of evidence. Context is defined as "the environment or setting in which the proposed change is to implemented" (Kitson et al., 1998). Context is further divided into culture, leadership and evaluation (Rycroft-Malone et al., 2002) each with low or high influences. Context "takes place in a variety of settings, communities and cultures that are all influenced by, for example, economic, political, fiscal, historical, and psychosocial factors" (Rycroft-Malone et al., 2002). Facilitation is defined as "a technique by which one person makes things easier for others. The term describes the type of support required to help people change their attitudes, habits, skills, way of thinking, and working" (Kitson et al., 1998). The facilitator has to use different techniques, such as empowering, recognition of other's skills and abilities, being pragmatic, risk taking and allowing people to learn by their own processes and many more as described in detail by Harvey et al. (2002).

It is best is to have favourable conditions in all three areas (evidence, context and facilitation) to achieve the best results in the implementation process. For successful implementation, context is regarded as the most important factor in implementing new knowledge into practice (McCormack et al., 2002; Cummings et al., 2007). If there is good evidence for something it should be implemented but it can fail if the other factors are not favourable. Strong evidence can lead to implementation despite bad context if facilitation is strong enough (Kitson et al., 1998).

How to estimate or assess successful implementation in a service organization is a very complex process where many factors must be considered and the results are not given in advance. A summary of the literature in which this process is described is given in an article by Greenhalgh et al. (2004). Those who are interested in further information on this topic are referred to this article.

But how do we measure the quality of the work already carried out in health care or the work carried out after change has been implemented? Quality of care can be assessed as described by Donabedian (1988) in an often cited article. There are two main themes. In the first, the author describes two elements of practitioners' performance: technical performance and interpersonal performance. Technical performance involves everything that has to do with knowledge, how it is collected and how it is used in clinical practice in the context of the care process. Interpersonal relationships include how the staff provide information about the nature of the health problem and its management and motivate the patient to active cooperation in the treatment or change in lifestyle. This in turn enables the patient to adopt

health-improving actions and thereby promote better health for themselves. This is often called the art of medicine.

In order to measure the quality of the care, Donabedian divides it into three categories: structure, process and outcome. Structure means the quality of the setting in which care occurs, including material and human resources and the organizational structure. Process denotes what is actually happening in the care, and applies to both patients and doctors. Outcome denotes the effect of care on the broad definition of health status, included patient's knowledge and positive change in patient's behaviour, and effect on health status of the individual and population. These three factors influence each other as "good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome" (Donabedian, 1988). All these categories can be assessed with different methods. How these assessments are best done is complicated and the different methods used (standard patient, trained observer, audio/video recording) provide limited evidence (Hrisos et al., 2009).

One of the theoretical methods used to assess these different categories is triangulation, which refers to the use of more than one approach or different data sources in the investigation of the quality of the health care or to use eventual changes in health care to enhance the reliability of the results (Patton, 1999; Reif et al., 2011). Triangulation is used when one method is not regarded as good enough to answer the actual question or situation being explored.

In PHC, several methods are available to analyse the quality of the health care system. Reviews of these methods have been done (Rethans et al., 1996). The methods used include patient surveys, use of data from medical records, self-assessments, and so on.

Problems with self-assessment have been pointed out by Jansen et al. (1996). One of the methods of assessing the results of the RDP analysed GPs' and districts nurses' self-assessment at the start of the project and compare the results with those obtained at the end. A systematic review of the accuracy of physicians' self-assessment compared with observed measures of competence showed a weak or no associations with their performance (Davis et al., 2006). The most inaccurate self-assessment was found among those who were least skilled and those who were the most confident. This discrepancy is also found in many other disciplines (Dunning et al., 2004) and in the alcohol field (Miller et al., 2006).

1.23 Effectiveness of different implementation strategies

Changing clinical practice is not an easy task (Dopson et al., 2002; Oxman et al., 1995). Implementation strategies often have small effects. The results from 235 different studies showed 14.1% improvement for reminders, 8.1% for dissemination of educational materials, 7% for audit and feedback and 6% for multifaceted intervention (Grimshaw et al., 2006). Evaluation of implementation efforts for screening and BI of patients with risk drinking has scarcely been done in PHC (Garner, 2009; Nilsen et al., 2006).

2 AIM

The objectives of this thesis are to: (1) highlight the impact of alcohol on patients' health; (2) describe alcohol-related attitudes among GPs and district nurses working with patients with too high or risk drinking; and (3) analyse the achievements of the Swedish RDP. Special attention has been devoted to two themes: the gender perspective and GPs perceptions on the limits for sensible/safe drinking.

2.1 Specific aims of the 4 studies

I. **Attitudes of Swedish general practitioners and nurses to working with lifestyle change, with special reference to alcohol consumption**

The first study was planned to explore alcohol-related attitudes among GPs and nurses, and compare them to attitudes towards other lifestyle behaviours such as smoking, exercise, overweight and stress. The GPs' and nurses' own alcohol consumption was assessed to analyse if it had an influence on their alcohol-related attitudes. We also explored the disincentives and incentives for alcohol intervention in PHC among GPs.

II. **Does gender matter? A vignette study of general practitioners' management skills in handling patients with alcohol-related problems**

The aims of the second study were to analyse male and female physicians' perceptions of the alcohol problems of male and female patients and their perception of sensible levels of drinking for male and female patients. Secondary aims were to examine gender differences in practitioners' recommendations to reduce or abstain from drinking, as well as in practitioners' referral of patients. Specific questions were whether physicians drinking levels were associated with recommendations to cut down or abstain from drinking, with referral patterns and with recommended levels of safe drinking.

III. **When does alcohol consumtion become risky? – A Swedish national survey. General practitioners' recommendations to patients**

The aim of the third study was to investigate what Swedish GPs consider to be weekly limits for safe alcohol consumption, before they would advise a patient to cut down on his or her drinking habits. The proposed limits were related to the GPs' amount of postgraduate education in handling risk drinking, their perceived competence in counselling patients with risk drinking, and their perceived knowledge about the effects of alcohol on health.

IV. **The impact of the Swedish Risk Drinking Project on clinical practice in primary care**

The aim of the fourth study was to describe the possible influence that the RDP has had on PHC staff's self-perceived competence in the field of alcohol and to evaluate if a change in clinical practice occurred that can be related to this project.

3 STUDY POPULATION AND METHOD

Two main data sources provided the basis for this thesis:

1. For studies I and II the material is based on a postal survey that was carried out from December 2001 to February 2002 of all GPs and nurses in the County of Skaraborg.

2. For studies III and IV the material is based on two national-based postal surveys that were carried out to evaluate of the effect of the RDP. Two surveys were conducted, one between November 2005 and February 2006 and the other between November 2008 and April 2009. They targeted all GPs, DNs and registrars (RGs, that is doctors training to become specialists in general practice) working in Sweden.

3.1 The Skaraborg study (papers I and II)

The WHO Collaborative Study Questionnaire for GPs was translated into Swedish by Magnus Geirsson and Fredrik Spak. Its original form is described by Kaner et al. (1999). The Swedish version of the questionnaire is shown in Appendix I. It was abbreviated and adjusted to local conditions. As one part of the instrument, The Shortened Alcohol and Alcohol Problems Perception Questionnaire (SAAPPQ) (Anderson and Clement, 1987) was assessed for problem drinking. We asked about the respondents' current self-perceived effectiveness in helping patients change lifestyle behaviours separately for male and female patients. In addition to the WHO questionnaire, we added 4 items concerning treatment impact and treatment resources in the survey of the GPs, taken from a survey conducted in Philadelphia, USA (Spandorfer et al., 1999) with the addition that we asked about treatment results separately for problem drinkers and alcohol-dependent individuals.

For the purpose of study II, we constructed an additional vignette where the patient was a woman with the same clinical problems as a man but with alcohol consumption at two-thirds that of the man, in order to compensate for biological differences affecting blood alcohol concentration. The participating GPs, regardless of their gender, randomly received a vignette of either a man or a woman. One vignette describes a patient with excessive consumption and clinical problems (sleep disturbance, dyspepsia, blood pressure 144/94, moderate obesity) which can be alcohol related without the

patient showing signs of dependency. The other vignette describes a patient with clinical problems indicating alcohol dependency (pneumonia, hepatomegaly, tremor, blood pressure 180/110).

Using a visual analogue scale (VAS) from 1 to 10 (in the questionnaire the scale was 0–9 but in the analysis the scale was transformed to 1–10), the GPs estimated, the severity of the patient's alcohol consumption, the importance of the patient to stopping drinking altogether and the GPs' confidence in helping patients to alleviate their drinking problems even if not stopping altogether. The participating GPs answered "yes" or "no" to three statements about giving advice: record the patient's weekly alcohol consumption in the chart but otherwise take no action concerning the alcohol consumption, give advice about cutting down, or advice about abstain completely from alcohol. They were also asked about referring the patient using three response categories: give BI by a nurse or welfare officer in their own PHC, refer to the community alcohol service (CAS) or refer to a specialized alcohol clinic (SAC). In Sweden, the municipalities have the main responsibility to take care of inhabitants with alcohol-related problems and have special units for this purpose. The PHC centres work with secondary prevention and give support and specialized treatment mainly to those patients who have risk drinking or whose alcohol addiction is in an early phase. Specialized psychiatry has the responsibility for treatment of more severely addicted patients as well as those with psychiatric co-morbidity.

For a healthy adult man or a non-pregnant woman, the GPs were asked what they considered to be the upper limit for alcohol consumption before they would advise the patient to cut down, calculated as grams of alcohol per week or as number of standard drinks (12 g of alcohol in Sweden) per week, or if they had no opinion on the matter.

The first three AUDIT questions were included to estimate the participants' own drinking habits (Bush et al., 1998). Binge drinking was defined as 5 drinks for males and 4 drinks for females. The respondents were divided into two groups: abstainers or low consumers who scored 2 points or less and moderate to high consumers who scored 3 points or more. The nurses received a shortened version of the questionnaire adjusted to their professional role in the Swedish PHC system. This was done because nurses do not refer patients for treatment in Sweden. Thus, the questionnaire consisted of 115 items for the GPs and 72 items for the nurses. The questionnaire was pre-tested on 12 GPs outside the study region. Pilot testing of the questionnaire used for nurses was not done.

3.2 The national-based surveys (papers III and IV)

The baseline survey questionnaire was constructed by a Swedish team of researchers and clinicians, and is described in detail elsewhere (Holmqvist et al., 2008). The questionnaire consisted of items covering knowledge, attitudes and management of alcohol issues in PHC. The follow-up questionnaire was slightly revised; some questions were removed and supplemented substituted with items that were thought to better capture changes that had occurred since the beginning of the project.

For study III, we analysed the responses to the following question: "There are several options concerning the limit at which alcohol consumption is considered risk-free. When you advise a patient that he/she should reduce his/her alcohol consumption, what level of consumption would you recommend that the patient should not exceed, provided that he/she is otherwise healthy?" The responses were given as the number of standard drinks (12 g) per week, with different response options for men and (non-pregnant) women. There was also a "do not know" option. The levels for men and (non-pregnant) women proposed by the respondents are referred to simply as "safe drinking limits" in this thesis.

The results were correlated to the amount of the respondents' postgraduate education in handling risk drinking and their self-perceived knowledge in counselling patients with risk drinking (measured on a 4-point Likert scale). We also related the drinking limits to the GPs' answers concerning whether they believed more factual knowledge about how alcohol influences health could facilitate SBI (measured on a 4-point Likert scale, with an additional "do not know" option provided).

For study IV, the three main parameters compared between the two periods (2006 and 2009) were in response to the following questions: (1) "How often do you discuss alcohol with your patients?" estimated on a 5-point Likert scale ranging from "always" to "never"; (2) "How do you estimate your current knowledge regarding advice to patients with risk drinking?" estimated on a 4-point Likert scale ranging from "very" knowledgeable to "not specially" knowledgeable; (3) "How effective do you feel you are in helping patients achieve change in risk drinking?" estimated in the same manner ranging from "very" competent/effective to "not specially" competent/effective. For simplicity, the results from these questions are referred to as discussion, knowledge and effectiveness in the remainder of this thesis.

These three parameters were then related to the following question in the 2009 survey: “How much overall education (local, regional or national) have you received in the handling of risk drinking of alcohol throughout your career (with exception of undergraduate)?” The question was phrased somewhat differently in 2006: “How much education have you had in the handling of risk drinking of alcohol (with exception of undergraduate)?” The response alternatives were: none, half day or less, 1–2 days, 3 days and more than 3 days, from which 4 categories were assembled; none, half day or less, 1–2 days and 3 days or more. In the 2009 survey, the participants also answered the following question: “Have you during the past 3 years participated in some form of education (lectures, courses, information, etc.) on alcohol issues, risk drinking or similar?”; response options were “yes” or “no”.

We have also tried to triangulate the results in this study with other available data. That data has not been presented in scientific publications but we will attempt to present it here in such a way that meaningful comparisons are possible. For this purpose, we used two population surveys. Each year, the Swedish Association of Local Authorities and Regions (SALAR) perform a care study (Vårdbarometern) where at least 1,000 randomly selected inhabitants are interviewed by telephone in each county in Sweden with the exception of one small county (Gotland). The results from this survey are available at http://www.vardbarometern.nu/. The inhabitants are asked: “Did the doctor/district nurse raise lifestyle issues last year when visiting the PHC?”. In the other population survey, The Centre for Social Research on Alcohol and Drugs (SoRAD) in the Monitor project in 2006–2009, asked 1,500 inhabitants randomly each month if the doctor had asked about their alcohol habits at their last visit. The results from this survey are presented in Engdahl and Nilsen (2011). The response rate was 45% for 72,079 patients interviewed in this period. In relation to the SALAR national survey in 2009, 94,662 patients were asked if they had discussed lifestyle issues, including alcohol habits, during visits to their physician. The results from this survey are available at http://www.indikator.org/publik. This survey was also done in a county in western Sweden, Västra Götalandregion (VGR), in 2009 and 2010 and analysed specifically to obtain the frequency of alcohol-related diagnoses in this county. Finally, using the patient record system, we analysed whether the number of alcohol-related diagnoses (alcohol problems and alcohol dependence) had changed in PHC in western Sweden between 2006 and 2008, and the first 9 months (January to September) of 2005 and 2009. The reason for choosing the first 9 months of these 2 years was because from October 2009 the Health Authority launched an administrative reform called Vårdvalet (Choice of Care). This reform does not allow comparisons after October 2009 (15–20% of the population changed from a public medical

centre to a privatized health care centre and disappeared from the database). The inhabitants in this county constituted 16.8% of the population in Sweden in 2009. We received the information from the patient records from the Primary Care Office in Skövde, Sweden.

4 MAIN RESULTS

In this part of the thesis, the response rate and some geographic data are described and then the results for each study are presented separately.

4.1 Response rate and geographic data

For studies I and II, 68 GPs (46 males and 22 females) and 193 nurses (10 males and 183 females) in Skaraborg answered the questionnaire. The response rates were 52% and 67%, respectively. The mean age of the GPs was 47 years (standard deviation (SD) = 9.1), 68% were male, 72% were specialists in general practice, and their mean number of years in practice was 12.6 (SD = 7.5). The corresponding data for the nurses were 48 years (SD = 8.2) and 14.3 (SD = 8.6) years in practice. The average time working in general practice was 35 h/week (SD = 8.6) for the GPs; 19% of them had up to 29 patient visits per week, 54% had between 30 and 59 patients visits, and 25% had 60–90 patient visits. The nurses were not asked how many patient visits they had per week.

The study III cohort was all GPs in Sweden but in study IV the cohort was limited to GPs who were specialists in general medicine. In study IV, we analysed only DNs who participated in active patient work in PHC (had their own patients) and had the authority to issue certain prescriptions. For RGs, we analysed only those who indicated that they were employed as physicians in training to become specialists in general medicine. The demographic data were very similar in the two studies in 2006 and 2009. In study III, the number (*n*) of responses analysed for the GPs was 1,807 and the response rate was 47%. In 2009, the RGs had the lowest response rate (47%; *n* = 399) and GPs had the highest (62%; *n*= 2,440); the response rate for DNs was 54% (*n* = 2,452). For the GPs, 54% were male; 37% of RGs were male, and 98% of the DNs were female. In 2009, 78% of the GPs had worked for 11 years or more in PHC, as had 58% of the DNs. For the GPs, 68% had an average of 40 patient visits/week or more, compared with 62% of the RGs and 36% of the DNs.

4.2 Study I

Forty-seven percent of GPs and 62% of the nurses were abstainers or low consumers; 52% of GPs and 37% of nurses were moderate or high consumers. When obtaining information about the different lifestyle behaviours, alcohol consumption ranked the lowest compared with working with the other lifestyle behaviours for both GPs and nurses. Smoking ranked the highest. The difference for all items compared with alcohol consumption was statistically significant for the nurses, but there was only a statistically significant difference between drinking and smoking and exercise, in the case of GPs. Nurses who had received 4 h or more of education on alcohol obtained information on alcohol more often than nurses who had received less education (mean 2.45; CI 2.24–2.66 vs 2.01; CI 1.85–2.16; $P = 0.002$); there was no difference for the GPs. The respondents rated the importance of lifestyle behaviours in promoting the health of the patients. Drinking alcohol moderately ranked lower than the other behaviours, except for "not drinking alcohol at all" for both GPs and nurses. Only 29% of the GPs believed that moderate drinking was very important for promoting health compared with 50% of the nurses. Over half of the respondents had received no education (GPs 25%, nurses 41%) or <4 h of postgraduate education (GPs 29%, nurses 17%) on alcohol and alcohol-related problems.

4.2.1 Attitudes to intervening for various health-related behaviours

Both GPs and nurses rated their counselling skills and current effectiveness for reducing alcohol consumption significantly lower than for counselling on smoking, exercising regularly and avoiding excess calories. The nurses rated their potential effectiveness, given adequate information and training, higher than the GPs in all lifestyle behaviours studied. The nurses who had received 4 hours or more of postgraduate education on alcohol scored significantly higher for counselling skills (mean 2.68; CI 2.48–2.89 vs 2.35; CI 2.19–2.52; $P = 0.04$) and for current effectiveness for female patients (mean 2.54; CI 2.36–2.73 vs 2.21; CI 2.08–2.33; $P = 0.01$).

4.2.2 Attitudes to working with problem drinkers

The results from the 5 variables of role acceptance according to the SAAPPQ are shown in Table 1. The GPs rated significantly higher on role adequacy, role legitimacy and motivation than the nurses. GPs with moderate to high alcohol consumption scored significantly higher on role adequacy than light consumers (mean 4.84; CI 4.46–5.22 vs 4.22; CI 3.84–4.60; $P = 0.03$). The nurses who had received 4 h or more of postgraduate education on alcohol, scored higher on role adequacy (mean 4.03; CI 3.69–4.38 vs 3.55; CI 3.32–

3.78; $P = 0.03$), role legitimacy (mean 5.78; CI 5.54–6.02 vs 5.12; CI 4.89–5.34; $P = 0.0003$), and task-specific self-esteem (mean 4.66; CI 4.28–5.02 vs 4.10; CI 3.86–4.34; $P = 0.02$) than nurses who had received less education.

Table 1. Mean ratings[a] and 95% CI by GPs and nurses on the SAAPPQ for problem drinkers

Item of role acceptance	General practitioner	Nurses
Role adequacy	4.56 (4.26–4.86)	3.72 (3.54–3.90)
Role legitimacy	6.07 (5.85–6.28)	5.35 (5.18–5.52)
Motivation	4.41 (4.34–4.49)	3.87 (3.71–4.03)
Task-specific self-esteem	4.49 (4.12–4.87)	4.36 (4.17–4.55)
Work satisfaction	3.79 (3.51–4.08)	3.83 (3.67–3.99)

Scale graded in 7 steps: 7 = strongly agree; 1 = strongly disagree.

4.2.3 Treatment resources and the success of alcohol treatment

The majority of the GPs (about 85%) believed that resources for treating early problem or alcohol-dependent patients are not adequate. Seventy-four percent of GPs considered that intervention has a positive impact on patients with alcohol problems/dependency. However, only 28% believe that treatment of problem drinkers is successful at least 50% of the time.

4.2.4 Incentives and disincentives for brief alcohol intervention in primary care

The most commonly endorsed disincentive was lack of training in counselling for reducing alcohol consumption; 75% answering strongly agree/agree for difficulties in screening because of time constraints (67%) and that doctors do not know how to identify problem drinkers who have no obvious symptoms of excess consumption (65%). The most common incentives were readily available support services to refer patients to (81%), availability of quick and easy screening questionnaires (74%) and availability of training programs for early intervention on alcohol (72%).

4.3 Study II

The GPs rated the severity of the patients' drinking in the vignettes and the importance of the patient stopping drinking altogether significantly higher for the dependent drinker than the excessive drinker but reported no difference in their confidence in helping the patient to alleviate drinking problems between the two cases. The excessive male drinkers were more often recommended to cut back on drinking than their female counterparts, who instead more often received the advice to abstain completely; 83% (*n*=25) of the male excessive drinkers received this recommendation compared with 47% (*n*=16) of the females, odds ratio 0.18 (CI = 0.06–0.57). In the case of female excessive drinkers, 61% (*n*=14) of the male GPs advised complete abstention from alcohol compared with 36% (*n*=4) of the female GPs, odds ratio 4.9 (CI= 0.80–29.93).

4.3.1 Referral patterns

The GPs endorsed that they would more often refer female than male excessive drinkers to BI in their own health centre; 47% (*n*=17) versus 19% (*n*=6) of cases. In 50% of instances, male excessive drinkers were not referred, compared with 25% for female excessive drinkers (*P*=0.03). The odds ratio for referral to any treatment (BI and/or CAS and/or SAC) was 0.33 (CI= 0.12–0.93) for the male excessive drinker compared with the female excessive drinker. The male GPs referred the excessive drinker to any treatment (BI and/or CAS and/or SAC) less often than the female GPs, odds ratio 0.26 (CI= 0.08–0.90). Male GPs referred male excessive drinkers to BI in 9% (*n*=2) of cases and 64% (*n*=14) were not referred. The corresponding results for female excessive drinkers were 42% (*n*=10) and 29% (*n*=7), respectively.

4.3.2 Sensible drinking limits

The results for the upper limit of alcohol consumption before the GPs would advise the patient to cut down were 112 g/week (CI=100–139) for men and 86 g/week (CI=72–99) for women. GPs with an AUDIT-C score ≥3 endorsed a significantly higher limit for both male (146 g/week, CI=118–173) and female patients (103 g/week, CI=82–123) than did GPs with AUTIT-C score ≤2 (89 g/week, CI=65–112, for male patients versus 68 g/week, CI=52–83, for female patients). There was no difference between male and female GPs. About three-quarters of the GPs (81% of the male GPs, 76% of the female GPs) endorsed limits that were lower than the levels for risk drinking recommended by the Swedish National Institute of Public Health (≤168 g for males, ≤108 g for females) (Andréasson and Allebeck, 2005).

4.4 Study III

The mean value of all the GPs' suggestions for a safe drinking limit was 7.8 standard drinks (SD 4.2; CI 7.6–8.1) per week for male patients (93.6 g) and 5.3 standard drinks (SD 2.9; CI 5.2–5.5) for female patients (63.6 g). For male patients, 57% of the GPs stated the safe limit as 7 drinks or less, and for female patients 45% stated the safe limit as 4 drinks or less (which is half the Swedish upper recommended limit for risk drinking). Ninety-two percent of the participants suggested safe drinking limits lower than the semi-official limits in Sweden. Among the GPs, 21% (*n*=383) did not provide a safe limit for male patients and 21% (*n*=375) with regard to female patients (i.e. they answered "do not know").

4.4.1 Education and safe drinking limits

Respondents lacking postgraduate education stated lower limits for safe drinking (6.9, CI 6.6–7.7 for male patients; 4.7, CI 4.4–4.9 for female patients) than those with some education. This association was significant already for those with education of a half day or less (8.0, CI 7.6–8.5 for male patients; 5.5, CI 5.2–5.8 for female patients). Respondents with 1–2 days of postgraduate education in handling risk drinking stated a higher limit (8.8, CI 8.2–9.3 for male patients; 5.8, CI 5.5–6.2 for female patients).

4.4.2 Alcohol-related competence and safe drinking limits

The GPs with higher self-perceived alcohol-related competence suggested significantly higher limits than those who stated lower competence. The GPs who stated that they were more competent in counselling patients with risk drinking suggested higher limits for both male and female patients than those who stated lower competence; 8.2 (CI 7.9–8.5) versus 7.1 (CI 6.8–7.5) drinks per week for male patients and 5.5 (CI 5.3–5.7) versus 4.9 (CI 4.6–5.1) drinks per week for female patients, respectively. The GPs who stated that they needed more knowledge about the influence of alcohol on health set lower limits than those who did not need more knowledge; 7.3 (CI 7.0–7.7) versus 8.2 (CI 7.9–8.5) for male patients and 4.9 (CI 4.7–5.1) versus 5.6 (CI 5.4–5.9) for female patients.

4.5 Study IV

Fifty-five percent of the GPs and DNs in the national 2009 survey had participated in some kind of alcohol-related education in the past 3 years as had 66% of the RGs.

4.5.1 Education and alcohol-related competence

The results for discussion, knowledge and effectiveness of the caregivers for 2006 and 2009 are presented in Table 2. There was a significant increase in all three parameters with larger change among DNs compared with the other caregivers. Education influenced DNs more for all the parameters, after receiving education for half a day or more.

Table 2. Respondents self-perceived rating (mean and confidence intervals) on discussing alcohol, knowledge about advice to patients with risk drinking and effectiveness about helping patients achieve change in risk drinking

	GPs 2006	GPs 2009	DNs 2006	DNs 2009	RGs 2006	RGs 2009
Discussing *	2.52 2.48–2.55	2.39 2.36–2.42	2.99 2.95–3.03	2.49 2.45–2.52	2.61 2.53–2.69	2.39 2.32–2.47
Knowledge **	2.30 2.26–2.34	1.98 1.95–2.00	2.95 2.92–2.99	2.31 2.28–2.35	2.61 2.53–2.69	2.22 2.15–2.29
Effectiveness ***	2.91 2.88–2.95	2.54 2.51–2.57	3.27 3.24–3.30	2.72 2.69–2.76	2.99 2.92–3.07	2.64 2.57–2.70

* How often do you discuss alcohol with your patients, estimated on a 5-point Likert scale ranging from 1 (always) to 5 (never).
** How do you estimate your current knowledge regarding advice to patients with risk drinking, estimated on a 4-point Likert scale ranging from 1 (very knowledgeable) to 4 (not specially knowledgeable).
*** How effective do you feel you are in helping patients achieve change in risk drinking, estimated on a 4-point Likert scale ranging from 1 (very competent/effective) to 4 (not specially competent/effective).

4.5.2 Alcohol-related activities in clinical practice

The results of Vårdbarometern showed that there was no change in the proportion of inhabitants who stated that they have been asked about their lifestyle habits by physicians or DNs between 2006 and 2009 (~30%). Nor did the Monitor survey show a change in the proportion of inhabitants who stated that they have been asked by physicians about their drinking habits (about 14% each year from 2006 to 2009).

In the SALAR national survey in 2009, 94,662 inhabitants were asked if their physician discussed their lifestyle (response rate 57.8%). Of those, 16% stated that they had been counselled about eating habits, 23% about exercise

habits, 15% about tobacco habits and 9% alcohol habits. The same survey in VGR in 2009 and 2010 showed similar results. Among those from VGR who in 2010 answered no to discussing alcohol with their physician, 86% answered “No, it was not needed” and 3% answered “No, but I would have liked to do it”.

In 2006, 1,453 patients in PHC in Västra Götalandregion were diagnosed with alcohol dependence or an alcohol problem, which was 0.22% of the number of patients. This number increased to 1,723 patients in 2008 or 0.24% of all patients (9% increase in the number of patients from 2006) or 0.124% of all diagnoses made in the VGR. For the first 9 months of 2005, 1,053 patients were given an alcohol diagnosis and this constituted 0.121% of all diagnoses in that period. For the same time period in 2009, 1,937 patients were given an alcohol diagnosis and this increased to 0.149% of all diagnoses, which was also a 20% increase from 2008. The later observation shows that most of the increase in alcohol-related diagnoses occurred between these two years.

5 DISCUSSION

5.1 General view and integration of the results

These 4 studies provide knowledge that may be useful for Swedish primary care in promoting alcohol-related activities in clinical practice and thus promote better patient health.
In the first study we showed that GPs and nurses obtain information about alcohol consumption relatively seldom. They rated their counselling skills and perceived current effectiveness in reducing alcohol consumption as lower than for many of the other lifestyle behaviours investigated (smoking, exercise and overweight). GPs scored higher than nurses on questions related to competence in the alcohol field and that they have more authorization to do the job, but both occupational groups are lacking in motivation, role satisfaction and self-confidence to do the job.

The nurses scored their potential effectiveness considerably higher than that of GPs for all of the lifestyle behaviours, and their alcohol competence may therefore increase more than that of GPs if they acquire more postgraduate education on alcohol. This was conformed in study IV when all three parameters analysed (discussion, knowledge and effectiveness) increased more for the DNs than for GPs and RGs after the extensive educational effort of the RDP from 2004 to 2009.

The majority of the GPs (74%) think that intervention has a positive impact on alcohol consumption. This could stimulate them to undertake alcohol-related work in their practice. At the same time, only 28% of GPs endorse that treatment is successful in at least 50% of problem drinkers. This indicates ambivalence concerning what they think can be achieved by treatment and what happens in clinical practice. This may partly be explained by the fact that they are working in an environment where there is lack of treatment resources in the alcohol field; only 6% endorse the response category strongly agree/agree that there are adequate resources for treatment of early problem drinkers; the corresponding figure is 4% for alcohol-dependent patients. Furthermore, 67% endorse that there are time constraints and 65% that there is a lack of knowledge on how to identify problem drinkers who have no obvious symptoms of excess alcohol consumption. This ambivalence may possibly, in combination with insufficient counselling skills for reducing alcohol consumption, explain why they do not identify

more patients with alcohol problems. This deduction is supported by study IV; as only 0.24% of the patients in VGR had an alcohol-related diagnosis. The participants reported asking less frequently about alcohol use compared with other lifestyle issues, and other studies confirm that the patients are infrequently asked about their alcohol consumption (Aalto et al., 2002; Andreasson and Graffman, 2002). Study IV further provides support for the fact that few patients are identified. Despite increased self-perceived alcohol-related competence among the participants between 2006 and 2009, we found no evidence supporting a relevant increase in secondary alcohol prevention in PHC over this time period.

In study II, we showed that gender can matter. Male excessive drinkers were more often advised to cut down on drinking while females were advised to stop (odds ratio 0.18), especially if the GPs were men. Also, the women were referred to complementary treatment more often than men (odds ratio 0.33) for the male excessive drinker compared with the female excessive drinker. This may also indicate that male alcohol problems are not treated adequately as men are less often advised to abstain and less often referred to other treatments. Female GPs referred patients to further treatment to a greater extent, especially to BI in the same health centre. This is in accordance with the literature which shows that female GPs are more engaged in psychosocial counselling and active partnership behaviours, which may contribute to more referrals to supportive treatment (Roter et al., 2002; Bertakis, 2009).

Studies II and III explore what GPs considered to be sensible or safe drinking. In study II, the upper limit for alcohol consumption before they would advise the patient to cut down was relatively low (112 g/week for men and 86 g/week for women), about three-quarters of the GPs endorsed limits that were lower than the levels for risk drinking recommended by the Swedish National Institute of Public Health (≤168 g for males, ≤108 g for females). These limits were higher for GPs who drank at moderate or high levels themselves. In study III we asked about the upper limit for safe drinking. There the GPs endorsed even lower limits, 93 g/week for men and 63.6 g/week for women. These limits were higher for those with more alcohol-related education and better alcohol-related competence.

It was somewhat surprising that GPs who had participated in alcohol-related education and training suggested limits well below the recommended levels for men and women. These GPs can be expected to be familiar with the recommendations promoted by the Swedish National Institute of Public Health. Then why did they propose lower limits? One explanation may be that they wished to be on “the safe side”, something which also could explain why the GPs who were less familiar with alcohol issues suggested even lower

limits. However, it is also possible that many GPs consider the national recommendations to be relatively high. Also it is possible that GPs consider the concept of risk drinking as ambiguous and poorly defined and this further reinforces the difficulties of using this concept in consultation with individual patients.

5.2 Gender and alcohol consumption

How does gender affect treatment seeking and handling of alcohol issues? This topic can be highlighted by the results from Courtenay (2000) who has written about health and gender from social constructivist, relational and feminist perspectives (Courtenay, 2000). He proposes that gender is continuously constructed in relations, e.g. between men and women, and that women generally are subordinate to men. One way for a male to dominate is by being strong and this concept includes not being affected by illness and pain. In this relationship women are more emotional, relate more to other people and pay more attention to their bodies and health issues. With a bearing on our results in this study, his observations have two possible implications. First, men may be more likely to volunteer information on their alcohol consumption and, second, treatment staff (both men and women) may be more inclined to underestimate men's treatment needs than women's. However, Courtenay points out that there is also a power relationship between various groups of men. Men at the lower end of this power scale tend to take particularly detrimental stands on health issues thereby establishing a clearer masculine identity, including heavy substance use. If this observation is correct, men's inappropriate health conceptions should be made a vital issue in alcohol treatment.

How can these results be translated into Swedish general practice? The reflection stated above may, if taken seriously, mean that GPs should be more alert when a male patient is seeking help for a suspected alcohol-related illness or indicate drinking amounts that may be considered too high. This is especially important because male patients have a higher prevalence of alcohol problems (risk drinking and AUD) and males in general are less likely to seek help from GPs. However, for the same types of clinical problems, a man seems to be less likely than a woman to get the advice to stop drinking or to get adequate psychosocial help (study II). These findings can probably have an impact on how PHC takes care of this group of patients and how health authorities organize alcohol prevention in the health care system and in the community. If a patient's gender influences how he or she is advised or referred, this can have considerable implications for his or her future. It seems that male patients will be offered too little treatment. This

could also be the result of lack of concern about men's drinking habits, as such habits are considered to be the norm.

5.3 Recommended drinking limits and primary health care

In study II, about three-quarters of the GPs stated limits that were lower than the widely applied recommendations in Sweden of 14 standard drinks for men and 9 standard drinks for women per week (Andréasson and Allebeck, 2005); the same applied in 9 out of 10 GPs in study III. Assuming that the GPs would take action at the limits they proposed in these studies, they would intervene with a very large proportion of their patients, many of whom consume relatively modest amounts of alcohol and who do not feel that they have any problems with their alcohol intake. Interventions with patients who do not feel that they have any alcohol or health problems may violate the trustful relationship GPs have with many of their patients (Nygaard and Aasland, 2011). Another issue is whether the limited health care resources should be utilized to influence these patients when there are other, less healthy patients, who need care or treatment. Aalto and Seppä (2007) have cautioned that low limits could impede efforts to achieve more widespread implementation of BI in the health care system since interventions with a large number of patients will increase the workload for GPs.

More worrisome is whether the recommended drink limits depend on the physician's own drinking habits or if the patients cannot get any recommendation from their GP because the GP does not know the recommended limits for safe drinking (one-fifth of the GPs did not know about safe drinking limits). There is evidence that, for other lifestyle choices, the physician's own habits influence their advice to patients concerning exercise and smoking (Brotonsc et al., 2005). Recommending to patients to drink small amounts of alcohol cannot harm the patient's health (Sellman et al., 2009) but the difficulty is to get the patient to accept the advice and follow it.

Early research on SBI assumed that all patients attending PHC facilities should be screened and a GP (or someone from another professional category) should offer intervention to all patients screening positive for hazardous or harmful drinking (Saunders et al., 1993). However, health care providers and researchers have increasingly questioned this blanket screening approach, which many consider unrealistic on workload grounds and even potentially harmful for the provider–patient relationship (McCormick et al., 2010; Nygaard and Aasland, 2011)). In order to be adopted, an innovation should provide a relative advantage for those who shall adopt it (Rogers,

2003; Gravel et al., 2006), in this case the GPs and the nurses in PHC. The needs of the patient should further be perceived and taken into consideration (Boivin et al., 2010; Facey et al., 2010); for example, have the patients asked to be screened or will they at all comply with screening and give the right answer about their drinking habits. More attention has to be devoted to these issues before broad scale screening and implementation of alcohol-related activities in primary care is feasible. Preliminary results from a Swedish study on SBI in PHC strongly support systematic screening over other ways of acknowledging risk drinking (Fredrik Spak, personal communication)

5.4 The effect on clinical practice of the Risk Drinking Project

To our knowledge, this is the first time that research teams in Sweden have obtained information about alcohol-related diagnoses from the PHC medical records and used the data to evaluate possible changes in clinical praxis over a time period (study IV). Available official statistics about patients with alcohol dependence or alcohol problems is collected from inpatient care, specialized psychiatric care or addiction health care, where GPs are not involved. That there are such low numbers of patients with alcohol-related diagnoses can partly be explained by the fact that diagnoses of alcohol dependence or alcohol problems (which is actually a term in the Swedish diagnostic system) are delicate diagnoses and therefore the GPs may refrain from making an such an entry in the medical records due to perceived respect for the patient. However, one of the objectives of the RDP was to make it more natural, or less sensitive, to talk about alcohol with the patient and this also means that more patients with these problems would be indentified and has the problem recorded in their medical records. Another explanation is that the main purpose of the RDP was to stimulate the caregiver to identify risk drinking and not just detect patients with more severe problems. Medical conditions such as risk drinking or hazardous drinking are, unlike the diagnoses of dependence and harmful use, not consistently registered in medical records in Sweden. If more doctors and nurses attended properly to the alcohol issue, that should have shown up in the surveys where patients were asked about their lifestyles and alcohol consumption patterns, but our data shows that this does not appear to be the case. We should also remember that there was a greater increase in asking about alcohol among DNs than among the physicians. A tradition in Swedish health care is that the physician, and not the nurse, establishes the diagnosis. However, a nurse should report to a physician if they discover that a patient has a serious health problem and therefore in each case a doctor should be consulted and a diagnosis recorded in the chart if appropriate.

If study IV is analysed according to the theories of Donabedian (1988) in which he divides the quality of the staff performance into two parts, one technical and the other interpersonal, we can say that it is likely that the technical performance has not changed over this period (the staff do not ask more often about alcohol). The interpersonal performance of the staff includes provision of information about the nature of the health problem and its management and motivating the patient to active cooperation in the treatment or change in lifestyle. This, in turn, would enable the patient to take up health-improving actions and thereby promote better health for themselves. However, we do not know if and how the physician/DN communication skills have changed over this time period, if they have improved and whether interpersonal performance has improved. The project used a patient-centred approach and learning MI was the core of the conversation technology, with emphasis given to empathy and respect for the patient's perception of his own medical conditions as well as to encourage their self-efficiency. The question is whether training and education of the differential elements in this project have achieved alteration enough to improve patient's health or to promote lifestyle changes by the patients. To learn and perform MI is not a simple task and in practice it has been difficult to show how it is best done way or show the clinical effectiveness of the method (Daeppen et al., 2007; Madson et al., 2009; Guydish et al., 2010).

If we assume that the PHC staff have not transferred more knowledge and self-perceived increased competence into increased action or performance, then we can argue why this gap has emerged according to the theory of DI (Rogers, 2002) (see p. 26). Regarding the relative advantage, one can say that learning new methods and performing screening for risk drinking more frequently is a strain in itself and thereby increases the workload of the staff and hinders implementation of the work (Beich et al., 2002). Regarding compatibility, we do not know if the PHC staff asked about the educational activities offered by the RDP. Was the RDP approach perhaps too complex, comprising both learning about the term risk drinking and using MI if the patient has a risk drinking habit? Different methods are appropriate in different clinical situations and perhaps MI is not always the best way to help the patient (Witkiewitz et al., 2010). Regarding trialability, we do not know if the PHC staff are willing to screen or if the patient wants or requests it as was shown in the SALAR national survey in 2009; 86% of the patients felt that they did not need any questions about their alcohol habits. Concerning observability, it often takes a long time to see whether patients develop diseases to which alcohol may contribute. The same applies to the public health benefit of reducing the alcohol consumption of the population. Furthermore, it is often difficult for clinicians to know how much alcohol the

patients actually consume (Høger et al., 1996; Klatsky, 2008) or if the patient actually changes their drinking habits over a time period.

Projects have previously been carried out to promote the effectiveness of alcohol-preventive work in PHC. A summary of three projects from England, New Zealand and Catalonia has been published (McCormick et al., 2010). It appears that different approaches contributed to the staff becoming more positive towards working with alcohol screening and BI and increased the staff's perceived skills in the field of alcohol. It does not describe anything about what happened in clinical practice in terms of increased activity in alcohol-related intervention in patients with risk drinking or with more severe alcohol-related conditions. A systematic review of the effectiveness of strategies to implement brief alcohol intervention in PHC (Nilsen et al., 2006) revealed that there had been success as measured by increased activities in screening, BI and material utilization, but the overall effectiveness was rather modest. The methods reported in this systemic review to assess a possible effect were mainly questionnaires or self-monitoring reports, neither of which necessarily reflects what happens in clinical praxis (Davis et al., 2006). Another meta-analysis (el-Guebaly et al., 2000) pointed out that training increased cognitive and behavioural skills although it was harder to change complex attitudinal shifts. The studies did not extend to the evaluation of change in patient behaviour. Two studies in Sweden have tried to encourage practical activities in primary care; they revealed high willingness to carry out the work, but very little happened in practice (Arborelius et al., 1997; Andreasson et al., 2000).

5.5 Methodological considerations, limitations and generalizability

The strength in studies I and II is that the participants came from a homogenous area (Skaraborg) with a common administration and the treatment culture across various treatment centres is very similar. The response rate (52%) in a postal survey like this is also acceptable in a study of GPs (Barclay et al., 2002). Because of anonymity, we have not been able to analyse the characteristics of the non-responders. It has been shown that non-responders in survey research are sometimes quite different from those who participate. It is well known that more motivated and opinionated people are more likely to respond to surveys (Brodie et al., 1997). Hence, it is likely that those who responded to the survey had more favourable attitudes towards alcohol issues in PHC. One weakness is that the number of responses, especially for female GPs (22), was low. One consequence may have been

that we did not achieve statistical significance when analyses were done between male and female physicians (a possible type II error).

Vignettes studies are useful when measuring the competence and practices of a group of physicians (Veloski et al., 2005) and produce better measures of quality of care than medical record reviews when used to measure differential diagnosis, selection of tests and treatment decisions (Veloski et al., 2005). Therefore, the results of this study provide valuable information on how primary care physicians handle males and females with AUD in their practice, even if handling of real case' may naturally be adjusted to individual circumstances.

The author of this thesis and his main supervisor (Fredrik Spak) translated the questionnaire from English to Swedish. We discussed if we should use a professional translator to do the work but our economic resources did not allow such an approach. Our conclusion was that such an approach would possibly change some words in the questions but the meaning and content of the questions would be better conserved if we did the work ourselves as we are very familiar with both the English and the Swedish language in the alcohol filed and have thorough knowledge about the context (PHC in Skaraborg) where the questionnaire was used.

Studies III and IV also have some methodological shortcomings that should be considered when interpreting the results. The response rate varied between 46% and 62%, which can be considered acceptable and expected in this type of research in PHC. It was not possible to analyse the non-responders and their responses can differ. On the other hand, it is a considerable strength of the study that it is a national survey; all currently active GPs in Swedish PHC were given the opportunity to answer the questionnaire. We also do not know if the same people answered the survey in 2006 and 2009 and therefore it is difficult to know if the educational efforts of the RDP may have influenced them. However, it is likely that a significant proportion of the participants were the same for these two surveys, because those who are more interested in the topic usually reply more often to a survey such as this (Brodie et al., 1997) and because such a large proportion of the PHC staff participated.

Another limitation is that the question regarding education was restructured in the 2009 survey compared with 2006. In 2006, the question was: "How much education have you received in the handling of risk drinking of alcohol (with the exception of undergraduate education)?" In 2009 the question was: "How much overall education (local, regional or national) have you received in the handling of risk drinking of alcohol throughout your career (with the

exception of undergraduate education)?" There has been a major increase in the number of employees who have received postgraduate education in PHC and this was the case in all occupational groups, especially so among DNs. However, one should be cautious in interpreting these results because of the reformulation of the question in 2009. The later formulation may have caused the participants to think extra carefully about their education in the alcohol field, this also emphasized by underlining, and therefore this may to some extent explain the increase between 2006 and 2009.

The Ethical Committee of the Sahlgrenska Academy at the University of Gothenburg approved the Skaraborg survey (reference number Ö 406-00).

6 MAIN CONCLUSION

GPs and the nurses estimated their alcohol-related competence as lower than working with many other health-related lifestyle issues. These results can possibly be explained by lack of practical skills and lack of training in suitable intervention techniques. Unsupportive working environments and negative attitudes may also influence them. All these elements must be considered when planning secondary alcohol prevention programs in PHC.

Both the gender of the patient and the gender of the GP are important when identifying and handling alcohol-related problems in PHC. Male patients were less likely to be advised to stop drinking altogether than female patients; they were also less likely to be referred to other treatments. The GP's own alcohol consumption may also influence whether a patient is advised to cut down on drinking. Taking into account that male patients have a higher prevalence of alcohol problems, this may be of considerable importance for men's health outcomes. The implications of these findings are the need to increase awareness of male excessive drinking and that gendered perceptions might bias alcohol management recommendations. These elements must be considered when planning secondary alcohol prevention programs in PHC to increase the quality of the health service.

We found that 9 out of 10 GPs stated limits that were lower than the widely applied recommendation in Sweden of 14 standard drinks for men and 9 for women. This limit may be higher if the GPs have more alcohol-related competence and more alcohol-related education. Assuming that the GPs would take action at the limits they proposed in this study, it would mean that they would intervene with a very large proportion of their patients, many of whom consume rather modest amounts of alcohol and who do not feel that they have any problems with their alcohol intake. It can be questioned as to whether this is the best approach for screening and BI.

There is a profound and interesting increase in health care staff's self-perceived knowledge in the field of alcohol and effectiveness in helping patients with risk drinking as well as a perception that they ask the patients more often about alcohol. These changes were particularly profound among the DNs. A reasonable conclusion, albeit based only on self-reported staff changes between two cross-sectional studies, is that the main reason for these changes has been the extensive education delivered by the RDP. A more crucial observation would be to show that these changes have also resulted in more secondary prevention, regardless of how such activity is measured.

When we take other available data sources into account, such as asking patients more frequently about alcohol or recording more alcohol-related diagnoses in the charts, it is doubtful whether such activity has actually increased. In PHC in Sweden, if our observations are correct, it seems reasonable to conclude that these findings confirm other studies in finding that education as a sole implementation strategy are an insufficient means of implementing a new strategy.

7 FUTURE PERSPECTIVES

A study by Cheeta et al. (2008) showed that GPs in England identify about 2% of patients with hazardous or harmful drinking habits. There is no reason to believe that the situation is better in Sweden, as the data from the patients' medical records show in VGR. Patients do not usually seek their physicians to ask if they are drinking to much alcohol. It is up to the GPs to establish if the patient's symptoms may be related to alcohol consumption and they should therefore ask the patient about their alcohol habits. The answers to this question may not necessarily be consistent with the actual consumption of alcohol. Studies directed to take advantage of science and proven experience must take into account this context and possible research questions should be based on those circumstances.

Those who are interested in promoting alcohol-preventive work in PHC should read an article by McCormick et al. (2010). The literature is revised about alcohol screening and BI and the article describes how multifaceted the issues are in the context of PHC. It is emphasized that screening and BI should be done in an "innovative way", "be a multidisciplinary process", "be tailored to meet the needs of differing groups", "start with the patient's own concerns", "behaviour change should be negotiated with the patient rather than be prescribed or imposed" and "need for realism all round".

Can alcohol in small or moderate amounts improve the health of my patient? As described in this thesis, there is scientific evidence for both protective and harmful effects of alcohol consumption. A weakness in this science comes from case–control or epidemiologic studies (Jackson et al., 2005). Because of the proposed protective effect of light to moderate alcohol consumption on our main national diseases, we now need a long-term prospective randomized trial to provide further knowledge about this issue (Kloner and Rezkalla, 2007; Di Castelnuovo et al., 2010) because of the multifaceted effects that alcohol has on health with both detrimental and beneficial mechanisms on biological markers (Lucas et al., 2005).

Can I as a GP, presently, tell my patient that the current consumption of alcohol that you report to me is beneficial to your health, as Mukamal (2010) proposed that we should do in a recent article in *JAMA*? I have no clear answer to this question but there is one reflection I wish to present. I should, as a GP, be able to discuss this subject with my patient in a transparent manner, keeping my preconceived ideas under control, and stimulate a

discussion on the advantages and disadvantages of alcohol use, and thus assist the patient to make their own decision.

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10 APPENDIX

Frågeformulär om alkohol och attityder för läkare.

1 I hur många år har du arbetat i primärvård.
[ ]

2 När är du född
19[ ]

3 Kön.

[ ] Kvinna
[ ] Man

4 Vilken tjänst har du för närvarande.

[ ] Läkare med utbildningstjänst
[ ] Distriktsläkare
[ ] Annat

5 Har du specialistkompetens i allmän medicin.

[ ] Ja
[ ] Nei
Annan specialitet vad? ----------

6 Hur många timmar i veckan arbetar du i primärvården. [ ]

7 Hur stor procent av din arbetstid går till preventivt arbete. [ ]

8 Hur många patienter i veckan träffar du i genomsnitt då du arbetar i öppenvården.

[ ] 0-29
[ ] 30-59
[ ] 60-89
[ ] >90
[ ] Vet ej

9 Hur mycket vidareutbildning (i timmar) har du fått inom alkoholområdet efter din legitimation.

[ ] Inget
[ ] < 4 timmar
[ ] 4-10 timmar
[ ] 11-40 timmar
[ ] > 40 timmar
[ ] Vet ej

10 Hur ofta tar du själv upp alkohol till diskussion i konsultationen om patienten inte frågar dig.

[ ] Alltid
[ ] Oftast
[ ] Ibland
[ ] Sällan
[ ] Aldrig

11 Hur högt prioriterar du preventivt arbete i din yrkesroll.

[ ] Mycket högt
[ ] Ganska högt
[ ] Ganska lågt
[ ] Mycket lågt

12 Följande påstående är beteenden som sjukvårdspersonal anser är relaterade till hälsa. Hur viktigt tycker du att vart och ett av följande beteenden är för att motvärka ohälsa hos enskild individ? (Sätt cirkel runt siffran).

	Mycket viktigt	Viktigt	Relativt oviktigt	Oviktigt
A. Inte röka	4	3	2	1
B. Motionera regelbundet	4	3	2	1
C. Måttlig konsumtion av alkohol	4	3	2	1
D. Ej dricka alkohol överhuvudtaget	4	3	2	1
E. Motverka övervikt	4	3	2	1
F. Minska stress	4	3	2	1
G. Ansvarsfull användning av beroendeframkallande mediciner	4	3	2	1
H. Inte använda narkotika	4	4	2	1

13 Hur ofta frågar du varje enskild patient som söker om följande områden? (Sätt cirkel runt siffran).

	Alltid	Ofta	Ibland	Sällan/aldrig
A. Rökning	4	3	2	1
B. Motion	4	3	2	1
C. Alkoholkonsumtion	4	3	2	1
D. Kost	4	3	2	1
E. Stress	4	3	2	1
F. Användning av beroendeframkallande mediciner.	4	3	2	1
G. Narkotika	4	3	2	1

14 Läkare har olika kompetens och träning i rådgivning/omhändertagning av olika tillstånd. Hur kunnig/insatt är du vad gäller dessa områden? (Sätt cirkel runt siffran)

	Mycket Kunnig/insatt			Lite kunnig/ insatt
A. Inte röka	4	3	2	1
B. Motionera regelbundet	4	3	2	1
C. Minska konsumtion av alkohol	4	3	2	1
D. Motverka övervikt	4	3	2	1
E. Stresshantering	4	3	2	1
F. Ansvarsfull användning av beroendeframkallande mediciner	4	3	2	1
G. Inte använda narkotika	4	3	2	1

15 Hur kompetent anser du att du är i att hjälpa **kvinnliga patienter** att åstadkomma förändring på följande områden? (Sätt cirkel runt siffran)

	Mycket kompetent			Mycket inkompetent
A. Inte röka	4	3	2	1
B. Motionera regelbundet	4	3	2	1
C. Minska konsumtion av alkohol	4	3	2	1
D. Motverka övervikt	4	3	2	1
E. Bättre stresshantering	4	3	2	1
F. Ansvarsfull användning av beroendeframkallande mediciner	4	3	2	1
G. Inte använda narkotika	4	3	2	1

16 Hur kompetent anser du att du är i att hjälpa **mannliga patienter** att åstadkomma förändring på följande områden? (Sätt cirkel runt siffran)

	Mycket kompetent			Mycket inkompetent
A. Inte röka	4	3	2	1
B. Motionera regelbundet	4	3	2	1
C. Minska konsumtion av alkohol	4	3	2	1
D. Motverka övervikt	4	3	2	1
E. Bättre stresshantering	4	3	2	1
F. Ansvarsfull användning av beroendeframkallande mediciner	4	3	2	1
G. Inte använda narkotika	4	3	2	1

17 I allmänhet, efter att ha fått adekvat utbildning och träning, hur effektiv tror du att läkare kan bli i att hjälpa patienter ändra sitt beteende på följande områden? (Sätt cirkel runt siffran).

	Mycket effektiv			Mycket ineffektiv
A. Inte röka	4	3	2	1
B. Motionera regelbundet	4	3	2	1
C. Minska konsumtion av alkohol	4	3	2	1
D. Motverka övervikt	4	3	2	1
E. Stresshantering	4	3	2	1
F. Ansvarsfull användning av beroendeframkallande mediciner	4	3	2	1
G. Inte använda narkotika	4	3	2	1

18

Kent Nilsson är en 48 årig man som kommer för undersökning. Han bor ensam och har gått på din mottagning i tre år. Han har besökt dig oregelbundet under den tiden. Nu söker han för sömnbesvär. Vaknar upp efter 3-4 timmar och har sedan svårt att somna om igen. Han berättar också att han har vid enstaka tillfällen fått sveda i mellangärdet som förbättras av syrehämmande medicin. På din förfrågan berättar han att han har slutat röka för fyra år sedan. Han berättar också att han dricker 20 burkar (50cl) starköl och 1 flaska vin i genomsnitt i veckan. Sjukhistorian är i övrigt utan anmärkning. Vid undersökning visar sig patienten ha måttligt övervikt, vara välvårdad och frisk till utseendet. Pulsen ligger på 88 slag per minut, regelbunden. Blodtrycket är 144/94. Hjärt-lungauskultation är normal. I övrigt normal undersökning.

Med hänsyn till patientens användning av alkohol: (Ringa in ett nummer till varje fråga.)

A.	Skatta svårigheterna av patientens drickande.									
	Inget problem									Mycket svårt problem
	0	1	2	3	4	5	6	7	8	9
B.	Skatta betydelsen för denna patient att sluta dricka helt och hållet.									
	Inte viktigt									Mycket viktigt
	0	1	2	3	4	5	6	7	8	9
C.	Hur är din förmåga att hjälpa denna patient att minska sitt drickande även om han inte slutar helt?									
	Ingen förmåga									Mycket stor förmåga
	0	1	2	3	4	5	6	7	8	9

Vad skulle du göra för denna patient om du var hans läkare. (Ringa in ditt svar på varje fråga)

D.	Fråga mera ingående om alkoholvanor för att se om han har alkoholproblem	Ja	Nej
E.	Förklara för honom att alkohol kan vara orsak till en del av hans problem	Ja	Nej
F.	Kartlägga hans veckokonsumtion och jämföra med t.ex. genomsnittskonsumtion hos befolkningen, därefter inte göra mera denna gång	Ja	Nej
G.	Kartlägga hans alkoholförbrukning och rekommendera honom att minska sin alkoholkonsumtion	Ja	Nej
H.	Kartlägga hans alkoholförbrukning och rekommendera honom att avhålla sig helt från alkohol	Ja	Nej
I.	Hänvisa honom till annan personal, sköterska/kurator, på din arbetsplats för omhändertagande inom ramarna för kortvarig behandling	Ja	Nej
J.	Hänvisa till kommunens alkoholmottagning	Ja	Nej
K.	Remittera patienten till specialistmottagning inom alkoholområdet	Ja	Nej

19 Gunnar Nilsson är en 54 årig man som söker för nedre luftvägsinfektion. Patienten bor ensam och har gått på din mottagning i tre och ett halvt år. Han har besökt dig oregelbundet under den tiden. Hans luftvägsinfektioner är återkommande och kommer nu för tredje gången på tolv månader. Patienten har varit storrökare men slutade för fem år sedan. Han berättar också att han dricker alkohol och att hans veckokonsumtion är 20 burkar (50cl) starköl och en flaska starksprit (70cl) i veckan.

Undersökning visar tecken på begynnande lunginflammation. Vid bukundersökning palperas förstorad lever. Han har lätt handtremor och blodtrycket är 180/110.

Med hänsyn till patientens användning av alkohol: (Ringa in ett nummer till varje fråga.)

L.	Skatta svårigheterna av patientens drickande.									
	Inget problem									Mycket svårt problem
	0	1	2	3	4	5	6	7	8	9
M.	Skatta betydelsen för denna patient att sluta dricka helt och hållet.									
	Inte viktigt									Mycket viktigt
	0	1	2	3	4	5	6	7	8	9
N.	Hur är din förmåga att hjälpa denna patient att minska sitt drickande även om han inte slutar helt?									
	Ingen förmåga									Mycket stor förmåga
	0	1	2	3	4	5	6	7	8	9

Vad skulle du göra för denna patient om du var hans läkare. (Ringa in ditt svar på varje fråga.)

O.	Fråga mera ingående om alkoholvanor för att se om han har alkoholproblem	Ja	Nej
P.	Förklara för honom att alkohol kan vara orsak till en del av hans problem	Ja	Nej
Q.	Kartlägga hans veckokonsumtion och jämföra med t.ex. genomsnittskonsumtion hos befolkningen, därefter inte göra mera denna gång	Ja	Nej
R.	Kartlägga hans alkoholförbrukning och rekommendera honom att minska sin alkoholkonsumtion	Ja	Nej
S.	Kartlägga hans alkoholförbrukning och rekommendera honom att avhålla sig helt från alkohol	Ja	Nej
T.	Hänvisa honom till annan personal, sköterska/kurator, på din arbetsplats för omhändertagande inom ramarna för kortvarig behandling	Ja	Nej
U.	Hänvisa till kommunens alkoholmottagning	Ja	Nej
V.	Remittera patienten till specialistmottagning inom alkoholområdet	Ja	Nej

20 Ange hur mycket du instämmer i eller tar avstånd från följande påstående om patienter som du arbetar med och som har alkoholproblem(Ringa in ditt svar)

		Instämmer helt	Instämmer i hög grad	Instämmer delvis	Varken instämmer eller tar avstånd	Tar avstånd delvis	Tar avstånd i hög grad	Tar helt avstånd
A.	Jag känner att jag kan tillräckligt mycket om alkoholproblem för att arbeta med patienter med alkoholbesvär	7	6	5	4	3	2	1
B.	Jag känner att jag på ett bra sätt kan informera mina patienter om alkohol och dess följder	7	6	5	4	3	2	1
C.	Jag känner att jag har rätt att fråga patienterna om deras alkoholvanor när det behövs	7	6	5	4	3	2	1
D.	Jag känner att mina patienter tycker att jag har rätt att fråga dem om deras alkoholvanor när det behövs	7	6	5	4	3	2	1
E.	Jag vill jobba med patienter med alkoholproblem	7	6	5	4	3	2	1
F.	På det hela taget känner jag mig misslyckad när det gäller att arbeta med patienter med alkoholproblem	7	6	5	4	3	2	1
G.	Jag känner att jag inte har mycket att vara stolt över när jag jobbar med patienter med alkoholproblem	7	6	5	4	3	2	1
H.	Pessimism är den mest realistiska attityden i arbete med patienter med alkoholproblem	7	6	5	4	3	2	1
I.	I allmänhet är det givande att arbeta med patienter med alkoholproblem	7	6	5	4	3	2	1
J.	I största allmänhet tycker jag om patienter med alkoholproblem	7	6	5	4	3	2	1

21
Om du ser till din vardagssituation i dag, hur är din uppfattning om följande påståenden. (Ringa in ditt svar)

		Instämmer helt	Instämmer delvis	Varken instämmer eller tar avstånd	Tar avstånd delvis.	Tar avstånd helt
A.	Det är svårt att screena för alkoholproblem på grund av tidsbrist	5	4	3	2	1
B.	Läkarna vet inte hur man identifierar riskbrukare som ej har uppenbara tecken på storkonsumtion	5	4	3	2	1
C.	Läkarna har inte tillgång till lämpliga screening instrument för att identifiera riskbrukare som ej har uppenbara tecken på storkonsumtion	5	4	3	2	1
D.	Läkarna har inte tillgång till lämpligt informationsmaterial om alkohol att ta till vid konsultationen	5	4	3	2	1
E.	Läkarna är inte tränade i metodik för att minska alkoholkonsumtion	5	4	3	2	1
F.	Läkarna har själva liberala attityder till alkohol	5	4	3	2	1
G.	Läkarna tror att patienterna tar illa vid sig av att bli tillfrågade om sin alkoholkonsumtion	5	4	3	2	1
H.	Det finns tillräckligt med resurser för att behandla patienter som är alkoholberoende	5	4	3	2	1
I.	Det finns tillräckligt med resurser för att behandla patienter med tidigt riskbruk/missbruk	5	4	3	2	1
J.	Intervention har positiv inverkan på alkoholmissbruk/beroende	5	4	3	2	1
K.	Behandling är framgångsrik i åtminstone 50 % av fallen när patienten är alkoholberoende	5	4	3	2	1
L.	Behandling är framgångsrik i åtminstone 50 % av fallen när patienten har riskbruk/missbruk	5	4	3	2	1
M.	Jag har ej tillgång till/befogenhet över stödresurser som krävs för att kunna skriva ut medicin som minskar alkoholsug eller minskar återfallsrisken(Campral,Revia).	5	4	3	2	1

22
Läkare i olika länder har kommit med förslag om olika åtgärder som kunde öka deras engagemang i förebyggande arbete mot skadlig alkoholanvändning. Vad skulle kunna uppmuntra **dig personligen** och öka ditt engagemang i detta arbete. (Ringa in ditt svar)

	Stämmer helt och hållet	Stämmer ganska bra	Stämmer någorlunda	Stämmer inte alls	Vet ej
A. Bättre tillgång till snabba och enkla screening instrument	5	4	3	2	1
B. Att vid konsultationen ha bättre tillgång till lämpliga hjälpmedel, t.ex. skriftligt informationsmaterial, blanketter att fylla i alkoholkonsumtion	5	4	3	2	1
C. Om träningsprogram i tidig intervention skulle vara tillgängliga	5	4	3	2	1
D. Bättre konsultationstöd från specialistvården till primärvården	5	4	3	2	1
E. Remittering av patienterna till stödinsatser och behandling skulle vara lättillgängliga	5	4	3	2	1
F. Att särskild ekonomisk ersättning gavs för preventivt arbete på alkoholområdet	5	4	3	2	1
G. Färdigheten i lämplig intervjuteknik skulle vara bättre	5	4	3	2	1
H. Bättre samarbetsmögligheter med kommunens alkokoholvård	5	4	3	2	1

23 Vad anser du att den övre gränsen för alkoholkonsumtion är hos en frisk vuxen man innan du rekommenderar honom att minska sin konsumtion?

[ ] Angiv det i gram per vecka
[ ] eller antal "glas"* per vecka
[ ] Har ej uppfattning

24 Vad anser du att den övre gränsen för alkoholkonsumtion är hos en frisk vuxen kvinna, ej gravid, innan du rekommenderar henne att minska sin konsumtion?

[ ] Angiv det i gram per vecka
[ ] eller antal "glas"* per vecka
[ ] Har ej uppfattning

* Med ett "glas" menas t ex: 1 burk folköl II, en liten starköl, 1 glas rött eller vitt vin, (12-15 cl)
1 litet glas starkvin (ca 8cl), ett litet glas starksprit, t ex 4 cl snaps.
Ett "glas" innehåller 10-14 gram ren alkohol.

25

Nu följer några frågor om din egen alkoholkonsumtion. Full anonymitet garanteras.

Jag vill ej svara på frågor om min egen alkoholkonsumtion [ ].

A. Hur ofta dricker du alkohol?

[ ] Aldrig
[ ] 1 gång i månaden eller mer sällan
[ ] 2-4 gånger i månaden
[ ] 2-3 gånger i veckan
[ ] 4 gånger i veckan eller mer

B. Hur många "glas"* konsumerar du en typisk dag då du dricker alkohol?

[ ] 1-2
[ ] 3-4
[ ] 5-6
[ ] 7-9
[ ] 10 eller fler

C. Hur ofta dricker du som är a) man 5 "glas"* b) du som är kvinna 4 "glas"*, eller mer vid ett och samma tillfälle?

[ ] Aldrig
[ ] Mer sällan än en gång i månaden
[ ] Varje månad
[ ] Varje veckan
[ ] Dagligen eller nästan varje dag

* Med ett "glas" menas t ex: 1 burk folköl II, en liten starköl, 1 glas rött eller vitt vin, 1 litet glas starkvin, ett litet glas sprit, t ex 4 cl snaps.

D. Anser du att du vid någon period i livet druckit för mycket?

[ ] Ja
[ ] Nej

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ATTITUDES OF SWEDISH GENERAL PRACTITIONERS AND NURSES TO WORKING WITH LIFESTYLE CHANGE, WITH SPECIAL REFERENCE TO ALCOHOL CONSUMPTION

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Abstract — **Aims:** To explore the attitudes of Swedish general practitioners (GPs) and nurses to secondary alcohol prevention (early identification of, and intervention for, alcohol-related problems) and compare it to their attitudes to other important lifestyle behaviours such as smoking, stress, exercise, and overweight. **Methods:** An adjusted version of The WHO Collaborative Study Questionnaire for General Practitioners was posted to all GPs and nurses in the County of Skaraborg, Sweden; 68 GPs and 193 nurses responded. **Results:** The importance of drinking alcohol moderately, counselling skills on reducing alcohol consumption and perceived current effectiveness in helping patients change lifestyle behaviours ranked lower than working with all the other lifestyle behaviours. The nurses rated their potential effectiveness in helping patients change lifestyle higher than that of GPs for all the lifestyle behaviours. Nurses receiving more alcohol-related education had more positive attitudes than nurses with less education. For alcohol, the GPs assessed their role adequacy, role legitimacy and motivation higher than that of the nurses. The main obstacles for the GPs to carry out alcohol intervention were lack of training in counselling for reducing alcohol consumption, time constraints, and the fact that the doctors did not know how to identify problem drinkers who have no obvious symptoms of excess consumption. **Conclusion:** GPs and the nurses estimated their alcohol-related competence as lower than working with many other health-related lifestyles. These results can be explained by lack of practical skills, lack of training in suitable intervention techniques, and unsupportive working environments. All these elements must be considered when planning secondary alcohol prevention programs in primary health care.

INTRODUCTION

In primary health care, patients consult general practitioners (GPs) and nurses for a number of health-related problems, many of which can be alcohol-related (Thakker, 1998). Over a 2-year period, people to a large extent visit their primary health care, making screening for alcohol problems in primary health care practicable (Fiellin *et al*., 2000); treatment does not have to be extensive. Thus, various brief interventions (BIs) have been shown to be effective (Fleming *et al*., 1997; Poikolainen, 1999). Very brief (5–10 min) advice and counselling by GPs or nurses can reduce alcohol consumption in high-risk drinkers (Ockene *et al*., 1999), and has been shown to have middle to high ranking on the list of efficient means to reduce drinking hazards (Babor *et al*., 2003). Benefits have been shown for up to 48 months (Fleming *et al*., 2002) but one study following ~500 patients over 10 years, with assessment at the beginning and after 9 months, did not show reduction in drinking behaviour (Wutzke *et al*., 2002). The method has the potential to be a cost-effective means of intervention with a benefit–cost ratio of 5.6:1 (Fleming *et al*., 2000).

The attitudes of GPs to patients with alcohol-related problems have been described (Rush *et al*., 1994); the issue is very complex with positive attitudes for role legitimacy and role adequacy, but lack of training, practical skills, and self-efficacy are negative factors which make implementation difficult (Aalto *et al*., 2001, 2003). In a study in England, 83% of the GPs felt prepared to counsel excessive drinkers but only 21% felt effective in helping patients to reduce alcohol consumption (Kaner *et al*., 1999). The GPs who had received more alcohol-related education and had higher total score for role security and therapeutic commitment, were more likely to carry out work related to alcohol problems in their practice (Anderson, 1985; Anderson *et al*., 2003).

In many countries, nurses in the primary health care system play an important role in promoting health. By providing BI, the nurses can complement the GPs role and give the patients follow-up visits. The effectiveness of using primary care physician–nurse teams has been evaluated when patients with previous trauma were screened for hazardous drinking; a follow-up visit by the nurse was superior to simple advice after 12 months follow-up (Israel *et al*., 1996). BI offered by a nurse can give the same results as BI given by a GP (McIntosh *et al*., 1997).

However, in-depth interviews with 24 nurses in general practice in the north-east of England showed that they received little or no preparation for the task of alcohol intervention although they have many opportunities to engage in that work (Lock *et al*., 2002).

We have found only a few studies which compare alcohol-related attitudes between GPs and nurses (Bendtsen and Akerlind, 1999; Andreasson *et al*., 2000; Aalto *et al*., 2001, 2003; Kaariainen *et al*., 2001; Johansson *et al*., 2002). In none of these studies are attitudes to alcohol compared with attitudes to other lifestyle behaviours such as smoking, exercise, overweight or stress levels. The present study was planned to further explore alcohol-related attitudes among GPs and nurses, and compare them to attitudes to other lifestyle behaviours. The GPs' and nurses' own alcohol consumption was assessed to see if it had an influence on the alcohol-related attitudes.

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STUDY POPULATION AND METHODS

A postal survey was carried out from December 2001 to February 2002 on a sample of GPs and nurses in the County of Skaraborg in south-west Sweden. Skaraborg County has 15 municipalities with 254 000 inhabitants and has a mixture of rural and urban developments. Primary Health care sector has a long tradition and is comparatively strong in a Swedish comparison. In Skaraborg the proportion of acute visits to the GPs is 60%. An average visit has duration of 20–30 min. In general, preventive work is not contemplated among the centre's duties.

All physicians and nurses in the 25 public health care centres in the region were sent an anonymous questionnaire with a covering letter that explained the background to the survey. Two written reminders were given at monthly intervals.

The WHO Collaborative Study Questionnaire for GPs was translated into Swedish by the authors. Its original form is described elsewhere (Kaner *et al*., 1999). It was abbreviated and adjusted to local conditions. The response option 'as indicated' to the question 'to what extent do you obtain information on your patients' about different lifestyle behaviours was changed to 'often', as this better maintains the ordinal scale response categories. Further, the Shortened Alcohol and Alcohol Problems Perception Questionnaire (SAAPPQ) (Anderson and Clement, 1987) was assessed for 'problem drinking'. 'Problem drinking' refers to subjects with hazardous or harmful alcohol use, but excludes subjects dependent on alcohol. We asked about the respondents' current self-perceived effectiveness in helping patients change lifestyle behaviours separately for male and female patients. In addition to the WHO questionnaire, we added four items concerning treatment impact and treatment resources to the GPs, taken from a survey conducted in Philadelphia, USA, (Spandorfer *et al*., 1999), with the exception that we asked about treatment results separately for 'problem drinkers' and alcohol-dependent persons.

The first three AUDIT questions were included to estimate the participants' own drinking habits (Bush *et al*., 1998). Binge drinking was defined as ⩾5 drinks for males and ⩾4 drinks for females. In Sweden, one standard drink is usually 12 g of alcohol. The respondents were divided into two groups: abstainers or low consumers who scored 2 points or less and moderate to high consumers who scored 3 points or more.

The nurses received a shortened version of the questionnaire adjusted to their professional role in the Swedish primary health care system leaving out questions about diagnostic and management skills, incentives, and disincentives for brief alcohol intervention as well as questions about treatment impact and treatment resources. This was done because nurses do not refer patients for treatment in Sweden. Thus, the questionnaire consisted of 115 items for the GPs and 72 items for the nurses. The questionnaire was pre-tested on 12 GPs outside the study region. Pilot testing of the questionnaire used for nurses was not done.

The Ethical Committee of The Sahlgrenska Academy at Göteborg University approved the survey (reference number Ö 406–00).

Statistics

Data were entered into a Microsoft Access database. Stat View (version 5.0.1.0) was used for statistical analyses. Descriptive statistics and 95% confidence intervals (CIs) were calculated, and the Mann–Whitney *U*-test was used to test the significant difference between items.

RESULTS

Sample characteristics

Sixty-eight GPs and 193 nurses answered the questionnaire; the response rates were 52 and 67%, respectively. The GPs' mean age was 47 years (SD = 9.1), 68% were male, 72% were specialists in general practice, and their mean number of years in practice was 12.6 (SD = 7.5). The corresponding data for the nurses were 48 years (SD = 8.2), 5.2% male, and 14.3 (SD = 8.6) years in practice. The average time working in general practice was 35 h/week (SD = 8.6) for the GPs; 19% of them saw up to 29 patients per week, 54% saw between 30 and 59 patients, and 25% saw 60–90 patients. They devoted 7.8% (SD = 8.2) of their time to preventive work.

Post-graduate education in the alcohol field

Over half of the respondents had received no education (GPs 25%, nurses 41%) or <4 h of post-graduate education (GPs 29%, nurses 17%) on alcohol and alcohol-related problems. A further 28% of the GPs and 19% of the nurses had between 4 and 10 h education; 3% of the GPs and 9% of the nurses had between 11 and 40 h, and 3% >40 h for both groups. Ten percent of the participants did not remember whether they had received any post-graduate education.

The respondents' drinking habits

Forty-seven percent of GPs and 62% of the nurses were abstainers or low consumers; 52% of GPs and 37% of nurses were moderate or high consumers. One GP and two nurses did not answer questions about their drinking habits.

Obtaining information on health-related behaviours

Table 1 illustrates how often GPs and nurses obtain information from patients for some health-related behaviours. Obtaining information about alcohol consumption ranked lowest for both groups: the difference for all items compared with alcohol consumption was statistically significant for the nurses, but there was only a statistically significant difference between drinking and smoking and exercise, in the case of GPs. The responses for alcohol consumption did not differ by years in practice or by the respondents' own drinking habits. Nurses who had received 4 h or more of education on alcohol obtained information on alcohol more often than nurses who

Table 1. Mean rating[a] and 95% CI of respondents' efforts to obtain information about lifestyle

Lifestyle behaviour	GPs	Nurses
Smoking	3.07 (2.95–3.19)	2.94 (2.84–3.05)
Exercise	2.57 (2.42–2.73)	2.63 (2.53–2.74)
Alcohol consumption	2.29 (2.16–2.43)	2.20 (2.08–2.32)
Diet/nutrition	2.41 (2.28–2.55)	2.82 (2.72–2.93)
Stress level	2.47 (2.35–2.59)	2.64 (2.55–2.74)

[a]Four-graded scale with 4 = always; 1 = rarely/never.

Table 2. Proportion of GPs and nurses rating specific lifestyle behaviours as important or very important in promoting the health of the average person (%)

	General practitioners		Nurses	
Lifestyle behaviour	Very important	Important	Very important	Important
Not smoking	99	1	89	9
Exercise regularly	46	54	56	43
Drinking alcohol moderately	29	59	50	41
Not drinking alcohol at all	1	3	9	15
Avoiding excess calories	38	62	46	50
Reducing stress	32	63	58	41

Table 3. Mean ratings[a] and 95% CI of respondents' counselling skills and perceived current and potential effectiveness in helping patients change lifestyle

	General practitioners			Nurses		
Lifestyle behaviour	Counselling skills[b]	Current effectiveness[c]	Potential effectiveness[d]	Counselling skills	Current effectiveness	Potential effectiveness
Not smoking	3.00 (2.86–3.14)	2.89 (2.79–3.00)	3.12 (2.95–3.29)	2.94 (2.83–3.05)	2.67 (2.60–2.75)	3.54 (3.44–3.63)
Exercise regularly	2.94 (2.79–3.10)	2.78 (2.69–2.87)	2.92 (2.77–3.08)	3.05 (2.96–3.15)	2.88 (2.81–2.95)	3.55 (3.46–3.63)
Reducing alcohol consumption	2.38 (2.21–2.55)	2.38 (2.27–2.49)	2.97 (2.80–3.14)	2.47 (2.35–2.59)	2.28 (2.21–2.35)	3.37 (3.28–3.47)
Avoiding excess calories	2.74 (2.59–2.88)	2.58 (2.48–2.68)	2.82 (2.62–3.02)	2.96 (2.85–3.06)	2.82 (2.75–2.89)	3.55 (3.46–3.63)
Reducing stress	2.57 (2.42–2.71)	2.55 (2.46–2.65)	2.97 (2.80–3.14)	2.49 (2.38–2.60)	2.46 (2.39–2.54)	3.37 (3.27–3.47)

[a]Four graded scale with 4 = very prepared/effective; 1 = very unprepared/ineffective.
[b]How prepared do you feel when counselling patients in each of these areas?
[c]How effective do you feel you are in helping patients achieve change in each of the following areas?
[d]In general, given adequate information and training, how effective do you feel GPs/nurses could be in helping patients change behaviour in each of the following areas?

had received less education (mean 2.45; CI 2.24–2.66 vs 2.01; CI 1.85–2.16; $P = 0.002$); there was no difference for the GPs.

Attitudes to intervening for various health-related behaviours

The respondents rated the importance of lifestyle behaviours in promoting the health of the average person. The results are shown in Table 2. Drinking alcohol moderately ranked lower than the other behaviours, except for 'not drinking alcohol at all' for both GPs and nurses. The results were not related to respondents' drinking habits. Only 29% of the GPs believed that moderate drinking was very important for promoting health compared with 50% of the nurses.

The respondents also rated how effective they currently 'feel in helping patients achieve change' in lifestyle behaviours separately for male and female patients. The results were very similar for both GPs and nurses for all items and the results are thus shown together. Fourteen nurses did not answer the question for male patients. The results for self-estimated counselling skills, current effectiveness, and potential effectiveness in helping patients change their lifestyle behaviours after 'given adequate information and training' are shown in Table 3.

Both GPs and nurses rated their counselling skills and current effectiveness for reducing alcohol consumption significantly lower than for counselling on smoking, exercising regularly, and avoiding excess calories. The nurses rated their potential effectiveness higher than the GPs in all lifestyle behaviours studied. The results for reducing alcohol consumption were not related to the participants' own drinking habits, but the nurses who had received 4 h or more of post-graduate education on alcohol scored significantly higher for counselling skills (mean 2.68; CI 2.48–2.89 vs 2.35; CI 2.19–2.52; $P = 0.04$) and for current effectiveness for female patients (mean 2.54; CI 2.36–2.73 vs 2.21; CI 2.08–2.33; $P = 0.01$).

Table 4. Mean ratings[a] and 95% CI of GPs and nurses on the SAAPPQ for problem drinkers

Item of role acceptance	GPs	Nurses
Role adequacy	4.56 (4.26–4.86)	3.72 (3.54–3.90)
Role legitimacy	6.07 (5.85–6.28)	5.35 (5.18–5.52)
Motivation	4.41 (4.34–4.49)	3.87 (3.71–4.03)
Task-specific self-esteem	4.49 (4.12–4.87)	4.36 (4.17–4.55)
Work satisfaction	3.79 (3.51–4.08)	3.83 (3.67–3.99)

[a]Seven graded scale with 7 = strongly agree; 1 = strongly disagree.

Attitudes to working with problem drinkers

The results from the five variables of role acceptance according to the SAAPPQ are shown in Table 4. The GPs rated significantly higher on role adequacy, role legitimacy and motivation than the nurses. GPs with moderate to high alcohol consumption scored significantly higher on role adequacy than light consumers (mean 4.84; CI 4.46–5.22 vs

Table 5. GPs' responses to statements regarding resources for and success of alcohol treatment approaches

Statement	Strongly agree/agree (%)	Neutral (%)	Strongly disagree/disagree (%)
There are adequate resources for treatment of early problem drinking	6	9	84
There are adequate resources for treatment of alcohol-dependent persons	4	7	87
Intervention has a positive impact on patients with alcohol problems/dependency	74	24	1
Treatment is successful in at least 50% of the time on problem drinkers	28	40	31
Treatment is successful in at least 50% of the time on alcohol-dependent patients	19	49	31

4.22; CI 3.84–4.60; $P = 0.03$). The nurses who had received 4 h or more of post-graduate education on alcohol, scored higher on role adequacy (mean 4.03; CI 3.69–4.38 vs 3.55; CI 3.32–3.78; $P = 0.03$), role legitimacy (mean 5.78; CI 5.54–6.02 vs 5.12; CI 4.89–5.34; $P = 0.0003$), and task-specific self-esteem (mean 4.66; CI 4.28–5.02 vs 4.10; CI 3.86–4.34; $P = 0.02$) than nurses who had received less education.

Treatment resources and the success of alcohol treatment

The GPs opinion of treatment resources and the success of alcohol intervention are shown in Table 5. Concerning appreciation of present services, it could be said that it probably reflects the present reality both in the uptake area and in Sweden. Resources are very strained in the Primary Health Care sector in general, and in the uptake area the resources for specialized addiction treatment are very scarce as well. This is also the case in most of Sweden.

Incentives and disincentives for brief alcohol intervention in primary care

Incentives and disincentives are listed in Table 6. The most commonly endorsed disincentive was lack of training in counselling for reducing alcohol consumption and the most common incentive was readily available support services to refer patients to.

DISCUSSION

Strengths of this postal survey were: all the GPs and nurses in the County of Skaraborg were invited to participate; there was a high response rate from the nurses (67%) and an acceptable response rate from the GPs (52%) (Barclay *et al*., 2002); answers were received from all the health centres. Although, in the Skaraborg region, there is an officially adopted intention to work preventively, also in the health sector, there is no study that can prove that this is done to a greater extent than in other regions of Sweden. Concerning alcohol prevention, we believe this to be an equally undeveloped area in this region as in others. Thus we believe that our results on these respects can be generalized to Swedish primary health care in general.

The main results from our study are that the GPs and nurses obtain information about alcohol consumption relatively seldom (see Table 1); they rated their counselling skills and perceived current effectiveness in reducing alcohol consumption as lower than for all the other lifestyle behaviours investigated (see Table 3). The nurses scored their potential effectiveness considerably higher than that of GPs for all of the lifestyle behaviours, and their alcohol competence may therefore increase more than that of GPs if they acquire more post-graduate education on alcohol. This implies the high potential of the nurses in promoting preventive work in primary health care; this is in agreement with findings in England and Wales where the practice nurse is considered 'a major under-utilized resource within primary care for screening and BI with the non-problematic patient drinking above sensible limits' (Deehan *et al*., 1998).

The GPs results for perceived current effectiveness in helping patients change lifestyle can be compared with the results of a recent survey among 2082 GPs in 11 European

Table 6. GPs agreement with suggested disincentives and incentives for alcohol intervention

Statement	Agreement (%)
Disincentives[a]	
Doctors are not trained in counselling for reducing alcohol consumption	75
It is difficult to screen because of time constraints	67
Doctors do not know how to identify problem drinkers who have no obvious symptoms of excess consumption	65
Doctors do not have suitable counselling materials available	63
Doctors do not have suitable screening devices to identify problem drinkers who have no obvious symptoms of excess consumption	56
Doctors believe that the patient will be upset on being asked about his alcohol consumption	31
Doctors themselves have a liberal attitude to alcohol	21
Incentives[b]	
Support services are readily available to refer patients to	81
Quick and easy screening questionnaires are available	74
Training programs for early intervention for alcohol are available	72
Better support from specialized health services to primary health care	68
Quick and easy counselling materiel is available	65
Better co-operation with the local community alcohol service	62
Better practical skills in suitable interview technique	52
If special reimbursement were given for preventive work in the alcohol field	24

[a]Percent answering strongly agree/agree.
[b]Percent answering agree very much/quite a bit.

countries (Brotons *et al*., 2005). In the Brotons study, the effectiveness in helping patients reduce alcohol consumption ranked lowest compared to the effectiveness in helping patients reduce tobacco, achieve or maintain normal weight or practice regular physical exercise. This is in accordance with our results. However, the 296 Swedish GPs in the Brotons study ranked their effectiveness in helping patients reduce alcohol consumption in second place after effectiveness in reducing tobacco use. Nevertheless, for reducing alcohol consumption, the results were comparable. To the statement 'minimal effective or ineffective in helping patients reduce alcohol consumption', 54% of Swedish GPs endorsed 'yes'. In our study, 50% endorsed the option 'ineffective' and 6% 'very ineffective' to the statement 'how effective do you feel you are in helping patients reducing alcohol consumption'.

Fifty percent of the nurses believed that 'drinking alcohol moderately' was very important in promoting health compared to 29% of the GPs; however, this fact did not prompt them to ask about alcohol consumption more often than the GPs. A possible explanation is the low score for role adequacy compared to GPs, who also scored significant higher for role legitimacy and motivation. Both occupational groups, according to this study, have low counselling skills and low capability in helping patients to reduce alcohol consumption, compared to the other lifestyle changes, calling for more training in this field. These findings are in accordance with previous results from implementations studies in Sweden, in which it was suggested that nurses need more training and motivational efforts than doctors (Bendtsen and Akerlind, 1999; Andreasson *et al*., 2000). In the present study, the nurses who received 4 h or more of alcohol-related education, more often obtained information on alcohol, scored higher for counselling skills, and perceived current effectiveness in helping patients to reduce alcohol consumption. They also rated higher for role adequacy, role legitimacy, and task-specific self-esteem. According to these findings, it seems that the nurses' alcohol-related competence will increase more than for GPs if they acquire more post-graduate education on alcohol.

When the results from this study were compared with results from England (Kaner *et al*., 1999), 57% of the English GPs are prepared and 26% very prepared for counselling (Kaner *et al*., 1999) compared with 41 and 3% respectively in Sweden. In the tables, we have reported the data as means with CI. Here we report the proportions who responded in the various categories, in order to compare our results with those reported by Kaner and other authors. The proportion of English GPs agreeing with the statements relating to role adequacy for 'problem drinkers' was 71%, compared to only 49% of the Swedish GPs. On the other hand, the Swedish GPs scored higher on motivation (38 vs 23%) and task-specific self-esteem (38 vs 19%), whereas there was no difference for role legitimacy and role satisfaction. Only 20% of the English GPs felt effective at helping patients to reduce alcohol consumption compared to 40% of the Swedish GPs. This difference in attitudes implies that Swedish GPs estimate their own competence in the alcohol field as lower than the English GPs, but they estimate better their chances of promoting a change in their patients drinking habits. We have no explanations for these results, but speculate that the GPs in Sweden might have better opportunity to use paramedical staff to help problem drinkers and/or to refer them to community alcohol service.

It is noteworthy that there was a significant association between drinking more and scoring higher in role adequacy for the GPs. This was somewhat surprising and we have no definite answer as to why. Perhaps, a higher familiarity with alcohol consumption makes GPs more open towards discussing alcohol issues with a patient. We have found only two studies that relate respondents' drinking habits to alcohol-related attitudes (Anderson, 1985; Kaariainen *et al*., 2001), and they found no correlations between the respondents' drinking habits and their attitudes.

The majority of the GPs (74%) think that intervention has a positive impact on alcohol consumption. This should stimulate them to undertake alcohol-related work in their practice. At the same time, only 28% of them endorse that treatment is successful in at least 50% of problem drinkers. This ambivalence can be explained by the fact that they are working in an environment where there is lack of treatment resources in the alcohol field; only 6% endorse strongly agree/agree that there are adequate resources for treatment of early problem drinkers and 4% for alcohol-dependent patients. Furthermore, 67% endorse that there are time constraints and 65% that there are lack of knowledge in identifying problem drinkers who have no obvious symptoms of excess alcohol consumption. This, in combination with insufficient counselling skills for reducing alcohol consumption, can explain why they do not identify more patients with alcohol problems and do not even ask about it (Aalto *et al*., 2002; Andreasson and Graffman, 2002).

In summary, this study shows that GPs have more positive attitudes than nurses towards working with problem drinkers from the viewpoint of role legitimacy and role adequacy; both occupational groups are lacking motivation, role satisfaction and task-specific self-esteem. The GPs and nurses estimate their counselling skills and effectiveness in helping patients achieve change in lifestyles behaviours as lower for reducing alcohol consumption than for many other health-related lifestyles. The nurse's alcohol competence is likely to increase more than that of GPs if they acquire more post-graduate education on alcohol and can, therefore, be a major resource in promoting secondary alcohol prevention in primary care. Lack of practical skills, lack of training in suitable intervention techniques and an unsupportive working environment are the major obstacles for primary health care to better take care of patients with problem drinking. All these elements must be considered when planning secondary alcohol prevention programs in primary health care.

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PSYCHO-SOCIAL ASPECTS SUPPLEMENT

Does Gender Matter? A Vignette Study of General Practitioners' Management Skills in Handling Patients with Alcohol-Related Problems

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Abstract — Aims: The aims of this study were to analyse the perceptions of female and male primary care physicians (PCPs) of alcohol problems in male and female patients, their recommendations to reduce or abstain from alcohol, their referrals to treatment and their views of safe levels of drinking for male and female patients. These factors were related to the physicians' own alcohol consumption. **Methods:** A slightly adjusted version of the WHO Collaborative Study Questionnaire for General Practitioners was posted to all PCPs ($n = 132$) in the district of Skaraborg, Sweden, of whom 68 PCPs responded. In the questionnaire, the PCPs' perceptions of two patient vignettes were analysed. **Results:** Both the gender of the patients in the vignettes and of the PCPs influenced the advice and the referrals that the patients received: 83% of male excessive drinkers and 47% of female excessive drinkers were recommended to cut down on drinking. In 50% of cases, the male excessive drinker was not referred, compared with 25% for the female excessive drinker. This was statistically significant only for excessive drinkers. The odds ratio for referral to any treatment was 0.33 (CI = 0.12–0.93) for the male excessive drinker compared with the female excessive drinker. The male PCP referred the excessive drinker less often to any treatment than did the female PCP, odds ratio 0.26 (CI = 0.08–0.90). The upper limit of alcohol consumption before the PCPs would advise the patient to cut down was significantly higher for PCPs with the AUDIT-C score ≥ 3. The limit was 146 g/week for male patients and 103 g/week for female patients. Corresponding figures for PCP with the AUDIT-C score ≤ 2 were 89 and 68 g/week. **Conclusion:** Male patients were less likely to be advised to stop drinking altogether than female patients and were less likely to be referred, according to this vignette study. Taking into account that male patients have a higher prevalence of alcohol problems, this may be of considerable importance for men's health outcomes. Implications of these findings are the need to increase awareness of male excessive drinking and that gendered perceptions might bias alcohol management recommendations.

INTRODUCTION

The effectiveness of behavioural counselling intervention in primary healthcare (PHC) for risky alcohol consumption (exceeding daily, weekly or per-occasion thresholds) or harmful drinking (drinkers experience physical, social or psychological harm from their above-threshold alcohol use without meeting criteria for dependence) has been analysed in a meta-analysis of 12 studies (Whitlock *et al.*, 2004). The participants, who received up to 15 min of initial contact and at least one follow-up, reduced their average number of drinks per week by 13–34% more than controls did and the proportion of participants drinking at moderate or safe levels was 10–19% greater compared with controls. In all these trials additional staff or systems support were required to provide screening and assessment services and, in some cases, intervention support. Another systematic review and meta-analysis (Bertholet *et al.*, 2005), assessing long-term alcohol use reduction in individuals attending primary care facilities but not seeking for alcohol-related problems, showed a mean pooled difference of 38 g of ethanol in favour of the brief alcohol intervention group. The conclusion was that brief intervention is effective in reducing alcohol consumption at 6- and 12-month follow-up; evidence of other outcome measures was inconclusive. Treatment outcome with brief intervention methods in PHC for hazardous drinkers (drinkers beyond the safe limit) appears to be similar for the sexes (Ballesteros *et al.*, 2004).

Clinical guidelines for screening for alcohol problems, treatment and management of abuse and dependence in PHC have been carried out and the complexity of work has been described (Fiellin *et al.*, 2000). It was concluded that primary care physicians 'are uniquely suited to provide comprehensive ongoing care for patients with alcohol problems because they offer a wide variety of preventive and other medical services to keep patients engaged'.

Gender and alcohol use

In the field of alcohol research, gender differences have not been considered sufficiently (Greenfield, 2002). A male-as-norm bias affects research, assessment and treatment (Wilke, 1994). In general, research does not take into account the difference between male and female drinking habits and biological differences (Bush *et al.*, 1998). Gender differences were explored in a recent review (Brienza and Stein, 2002), which found that PCPs were encouraged to be 'aware of lower recommended alcohol consumption levels for women compared to men as well as increased sensitivity to alcohol at lower levels', and this factor accounts for several sex-specific differences in the clinical presentation of women's alcohol use disorder (AUD) compared with men's, of which the PCP should be aware.

Regarding estimation of possible alcohol-related harm, it is important to take into account similar blood alcohol concentration (BAC) for the sexes. There are two main reasons why women reach a higher BAC given a specific amount of alcohol; those reasons are differences in average weight and in body-water content (Ely *et al.*, 1999). These factors alone mean that recommended levels for alcohol intake should be about 30% lower for women. Other differences, such as possible higher sensitivity to certain alcohol damages and, though only affirmed in some studies, lower first passage metabolism of alcohol in the ventricular mucosa, can add little to explain the

sex differences in BAC, if they contribute at all (Lucey *et al.*, 1999).

In another review (Nolen-Hoeksema, 2004), further gender differences were described. Women appeared to report fewer risk factors for alcohol use than men, for example, greater social sanction for drinking, they were less likely to have characteristics associated with excessive drinking including aggressiveness, drinking to reduce stress and sensation-seeking. Women also reported more protective factors against excessive drinking, such as desirable feminine traits (e.g. nurturance and warmth). However, results concerning nurturance are not consistent. In a previous work from our research group (Hensing *et al.*, 2003), we did not find that nurturance (in our study called caring) was statistically associated with alcohol consumption, albeit the trend went in the same direction as in the Nolen–Hoeksema study.

Concerning gender differences in the clinical course of alcohol-related problems in alcohol-dependent and non-alcoholic dependent drinkers, there is little evidence that the natural history of alcohol dependence in women is substantially different from that in men. There is evidence of a 'telescoping', i.e. faster progression to alcoholism in women than men given the same duration and intensity of drinking careers (Schuckit *et al.*, 1998). Gender differences concerning the age of onset of alcohol-related problems were relatively small (Schuckit *et al.*, 1998). In Project MATCH, a multi-sided matching study of alcohol treatment, the women began getting drunk regularly at a later age than men, on average, and exhibited shorter progression, in terms of average duration, between first getting drunk regularly and first seeking treatment (Randall *et al.*, 1999).

Gender and practitioners' counselling styles

In general, female and male physicians' counselling styles are relatively similar and do not significantly differ in their general influence on the patient–doctor relationship (Roter *et al.*, 2002). The professional level concerning knowledge is similar (Arnold *et al.*, 1988). However, there are also differences. Female physicians have been reported to engage in more active partnership behaviours, positive talk, psychosocial counselling and emotionally focused talk (Hall *et al.*, 1994; Roter *et al.*, 2002). They also devote more time to the patient (Roter *et al.*, 1991). These differences between female and male PCP counselling styles point in the direction that the female PCPs are likely to enhance the practice of motivational interviewing (MI), an increasingly popular method that requires patient-centred communication and encouragement of dialogue as well as being non-directive (Miller, 1996).

How PCPs handle male and female patients with AUD in clinical settings has been sparingly described. If there are such gender differences they could be handled by treatment in separate specialized treatment facilities for women with AUD problems, but there is little scientific support for higher efficiency of sex-specific treatment (Greenfield *et al.*, 2007). Even less is known about whether men's treatment for AUD would be improved in sex-specific care. Given the usual setting, which is that both male and female physicians treat both female and male patients, it is important to understand if the gender of the patient or the gender of the PCP influences which advice or treatment is given by the PCP to the patient with AUD. If there is a gender difference, which components in the consultation are of importance? We have only found one study dealing with gender differences in primary healthcare concerning alcohol counselling. Roeloffs *et al.* (2001) analysed patients with depression and hazardous drinking or problematic drug use and found that only 15.6% of the male patients and 4.5% of the female patients received counselling about alcohol use during their most recent primary care visit (Roeloffs *et al.*, 2001).

General practitioners' own alcohol consumption and care-giving

How a PCP's own alcohol consumption influences their care of patients with risky drinking is sparingly described. The PCP's own AUDIT score does not influence their activity in offering brief intervention (Aalto *et al.*, 2006). In a qualitative interview study among 29 general practitioners, Kaner *et al.* (2006) found that some general practitioners recognize risk only in those patients whose drinking habits are least like their own (Kaner *et al.*, 2006). In our previous work (Geirsson *et al.*, 2005), we showed that the PCPs' own perceptions of their role adequacy in handling patients' alcohol problems were higher among those PCPs who consumed more alcohol compared with those who drank less.

The aims of this study were to analyse female and male physicians' perceptions of the alcohol problems of male and female patients and their perception of safe levels of drinking for male and female patients, respectively. Secondary aims were to examine gender differences in practitioners' recommendations to reduce or abstain from drinking, as well as in practitioners' referral of patients. Specific questions were whether physicians' drinking levels were associated with recommendations to cut down or abstain from drinking, with referral patterns and with recommended levels of safe drinking.

STUDY POPULATION AND METHODS

A postal survey was carried out from December 2001 to February 2002, sent to all PCPs in the district of Skaraborg in south-west Sweden. Skaraborg County has 15 municipalities with 254,000 inhabitants and has a mixture of rural and urban settlements. The primary healthcare sector has a long tradition and is comparatively strong compared to Sweden as a whole. The municipalities have the responsibility to take care of the inhabitants with alcohol-related problems and have special units for this purpose. The primary healthcare centres work with secondary prevention and give support and specialized treatment mainly to those patients who have risky drinking or whose alcohol addiction is in an early phase. The specialized psychiatry sector has the responsibility for treatment of more severely addicted patients as well as those with psychiatric co-morbidity.

All physicians ($n = 132$) in the 25 public healthcare centres were sent an anonymous questionnaire with a covering letter that explained the background to the survey. Two written reminders were given at monthly intervals.

The vignettes in the WHO Collaborative study (Kaner *et al.*, 1999) were translated into Swedish. We constructed an additional vignette where the patient was a woman with the same clinical problems as the man but with the alcohol consumption being reduced to two-thirds of that of the man, in order to compensate for biological differences affecting BAC. One vignette describes a patient with excessive consumption and clinical

problems (sleep disturbance, dyspepsia, blood pressure 144/94, moderate obesity) that can be alcohol related without the patient showing signs of dependence. The other vignette describes a patient with clinical problems indicating alcohol dependence (pneumonia, hepatomegaly, tremor, blood pressure 180/110). The participating PCPs, regardless of their gender, randomly received either a vignette with a female patient drinking 340 g of alcohol per week as an excessive drinker and 460 g per week as a dependent drinker or a male patient with alcohol consumption 520 g or 690 g per week, respectively.

The PCPs estimated, on a visual analogue scale (VAS) from 1 to 10, the severity of the patient's alcohol consumption, the importance for the patient to stop drinking altogether and the PCP's confidence in helping the patient to alleviate their drinking problems even if not stopping altogether. The participating PCPs answered statements with 'yes' or 'no' as to whether they would ask further questions about underlying alcohol problems, in case the health problems possibly were alcohol related, or if they would take liver enzymes or CDT (carbohydrate-deficient transferring test). They also answered with 'yes' or 'no' to three questions about advice whether they only would: record the patient's weekly alcohol consumption in the chart but otherwise take no action concerning the alcohol consumption, give advice to cut down or advise the patient to abstain completely from alcohol. According to the responses, some of the patients were both advised to cut down and abstain completely from alcohol; these responses are grouped in the 'abstainer' category. Further they were asked three questions about referring the patient: whether they would refer for brief intervention (BI) to a nurse or welfare officer in their own PHC, refer to the community alcohol service (CAS) or refer to a specialized alcohol clinic (SAC). These are the three usual treatment options in Sweden to which the PCP can refer a patient with risky or harmful drinking or alcohol dependence. According to the responses, some of the patients were referred both to treatment with BI inside the PHC and also outside the PHC (CAS and/or SAC); these are grouped in one mixed category (see Table 3).

For a healthy adult man or woman, who was not pregnant, the PCPs were asked what they considered to be the upper limit for alcohol consumption before they would advise the patient to cut down, calculated as grams of alcohol per week or as number of standard drinks (12 g of alcohol in Sweden) per week, or if they had no opinion on the matter.

The first three AUDIT questions—AUDIT-C (frequency of drinking, quantity of drinking and frequency of binge drinking in a single occasion)—were used to estimate the participants' own drinking (Bush *et al.*, 1998). Binge drinking was defined as $\geq$5 drinks for males and $\geq$4 drinks for females. The respondents were divided into two groups: those who scored 2 points or less and those who scored 3 points or more (Bradley *et al.*, 2007).

The Ethical Committee of the Sahlgrenska Academy at the University of Gothenburg approved the survey (reference number Ö 406-00).

Statistics

Data were entered into a Microsoft Access database. Stat View (version 5.0.1.0) was used for statistical analyses. Descriptive statistics and 95% confidence intervals (CI) were calculated. The Mann–Whitney *U*-test was used to test the significant difference between continuous items and the chi-square test for nominal items. Fisher's exact test was used to test significance between nominal data. Logistic regression was done separately for excessive drinkers and dependent drinkers to test odds ratios for gender of the patients and gender of the physicians related to the recommendation to cut down on drinking or abstain completely, as well as to the referral to treatment. In these analyses we also tested for possible interaction effects between sex of patients and physicians. *P*-values ≤ 0.05 were considered significant.

Table 1. Primary care physicians' rating of the patients drinking habits on a VAS-scale (grading 1–10)

	Severity of drinking	Importance to stop drinking	Confidence in helping to alleviate drinking problems
Excessive drinker	7.8 (7.5–8.0)	8.3 (7.7–8.6)	6.4 (6.1–6.8)
Dependent drinker	9.5 (9.3–9.6)	9.5 (9.1–9.8)	5.9 (5.4–6.5)

Mean score and confidence interval (CI). A vignette study.

RESULTS

Sixty-eight PCPs answered the questionnaire; 46 were male and 22 female. The response rate was 52%. The GPs' mean age was 47 years (SD = 9.1) and their mean number of years in practice was 12.6 (SD = 7.5). The average time working in general practice was 35 h/week (SD = 8.6), 19% of them saw up to 29 patients per week, 54% saw between 30 and 59 patients and 25% saw 60–90 patients (Geirsson *et al.*, 2005).

The PCPs rated the severity of the patient vignettes' drinking and the importance for the patient to stop drinking altogether significantly higher for the dependent drinker than the excessive drinker. There was no difference in their confidence in helping the patient to alleviate drinking problems between the two cases. The results are shown in Table 1. For these items there were no significant differences of the results related either to the gender of the patients or gender of the PCPs or to the PCPs' drinking.

For the excessive drinker, all PCPs, except one, would ask further questions about drinking to probe for the possibility of an underlying alcohol problem. Further, all indicated that alcohol was possibly related to some underlying health problem, as did all the PCPs, except one, for the dependent drinker. For the dependent drinker, all would take liver enzymes or CDT, as would 91% in the case of the excessive drinker.

Drinking advice

Table 2 shows the results for the PCPs' advice in response to the patient vignettes. Both excessive and dependent male drinkers were more often recommended to cut back on drinking than their female counterparts, who more often received the advice to abstain completely; 83% (n = 25) of the male excessive drinkers received this recommendation compared with 47% (n = 16) of the females, odds ratio 0.18 (CI = 0.06–0.57). For the dependent drinkers, the results were 17% (n = 5) and 8% (n = 3) respectively, but only the finding for excessive drinkers was statistically significant (P = 0.003). The PCPs were more inclined to give advice both to cut down and abstain completely from alcohol for female patients. This mixed advice

Table 2. Primary care physicians' advice to patients with alcohol-related problems related to gender of the patient

	N^b	Cut down on drinking %	Abstain completely from alcohol %
The excessive drinker[a]	64	64	36
Male patient	30	83	17
Female patient	34	47	53
The dependent drinker	66	12	88
Male patient	30	17	83
Female patient	36	8	92

[a]Chi-square P-value = 0.0025.
[b]For the excessive drinkers, there was no advice for two male and two female patients as was also the case for two male dependent drinkers.
Number (N) and percent. A vignette study.

Table 3. Primary care physicians' referral of patients with alcohol-related problems, related to gender of the patient.

	N	Referral to brief intervention in the primary healthcare %	Referral to treatment outside the primary healthcare[b] %	No referral %
The excessive drinker[a]	68	34	29	37
Male patient	32	19	31	50
Female patient	36	47	28	25
The dependent drinker	68	18	72	10
Male patient	32	16	66	19
Female patient	36	19	78	3

[a]Chi-square P-value 0.03.
[b]Community alcohol service and/or specialized alcohol clinic.
Number (N) and percent. A vignette study.

was given to 6% ($n = 2$) of the male and 33% ($n = 12$) of the female excessive drinkers and the corresponding figures for the dependent drinkers were 25% ($n = 8$) and 42% ($n = 15$), respectively.

In the case of the female excessive drinkers, 61% ($n = 14$) of the male PCPs advised complete abstention from alcohol compared with 36% ($n = 4$) of the female PCPs, odds ratio 4.9 (CI = 0.80–29.93). For male excessive drinkers, the results were 14% ($n = 3$) and 22% ($n = 2$), respectively, odds ratio 0.62 (CI = 0.08–4.55). The sample was too small to analyse if there was a statistically significant difference due to the interaction of patient gender and PCP gender.

There was no association between the kind of advice that was given and the PCP's own drinking.

Referral patterns

Table 3 presents the results concerning the PCPs' referral in response to the patient vignettes. The PCPs endorsed that they would more often refer female than male excessive drinkers to brief intervention in their own PHC: 47% ($n = 17$) versus 19% ($n = 6$) of the cases. In 50% of instances, male excessive drinkers were not referred, compared with 25% for female excessive drinkers. These findings were statistically significant ($P = 0.03$). The odds ratio for referral to any treatment (BI and/or CAS and/or SAC) was 0.33 (CI = 0.12–0.93) for the male excessive drinker compared with the female excessive drinker. The male PCPs less often referred the excessive drinker to any treatment (BI and/or CAS and/or SAC) than did the female PCP, odds ratio 0.26 (CI = 0.08–0.90). Male PCPs referred male excessive drinkers to BI in 9% ($n = 2$) of the cases and 64% ($n = 14$) were not referred. Corresponding results for female excessive drinkers were 42% ($n = 10$) and 29% ($n = 7$), respectively. The sample was too small to test whether there was a statistically significant interaction between patient gender and PCP gender. There was no association between the type of referral and PCP's own drinking.

No significant differences were found for PCPs' referrals based on the dependent drinker vignettes, either for the gender of the PCP or the gender of the patient.

Table 4. The upper limit for alcohol consumption before the PCP advice male and female patient to cut down.

	Male		Female	
	Mean (n)	CI	Mean (n)	CI
Mean score[a]	112 (54)	100–139	86 (57)	72–99
Participants AUDIT-C score ≤ 2	89[b] (24)	65–112	68[c] (27)	52–83
Participants AUDIT-C score ≥ 3	146[b] (29)	118–173	103[c] (29)	82–123
Male PCPs	122 (37)	99–146	91 (40)	74–108
Female PCPs	115 (17)	76–154	75 (17)	52–98

[a]Nine of the PCPs had no opinion about the upper limit for the male and ten for female case, respectively; five PCPs did not provide a response for the male and one for the female case. One GP did not answer the questions about the drinking habits.
Mann–Whitney: [b]$P = 0.0026$, [c]$P = 0.0091$.
Mean in gram alcohol per week, number (n) and confidence interval (CI).

Sensible drinking limits

Table 4 shows the results for the upper limit of alcohol consumption before the PCPs would advise the patients to cut down. PCPs with AUDIT-C score ≥3 endorsed a significantly higher limit for both male (146 g) and female patients (103 g) than did PCPs with AUDIT-C score ≤ 2 (89 g for male patients versus 68 g for female). There was no difference between male and female PCPs. About three-quarters of the PCPs (81% of the male PCPs, 76% of the female PCPs) endorsed limits that were lower than the levels for risky drinking recommended by the Swedish National Institute of Public Health (≤168 g for males, ≤108 g for females) (Andréasson, 2006).

DISCUSSION

In our study, we found no gender differences for physicians or the patients when estimating the severity of a patient's drinking, confidence in helping the patient to alleviate drinking problems or concerning the opinion of importance to stop drinking altogether, as estimated in this analysis of the vignettes. However, the male excessive drinker case was more often advised to cut down on drinking than the female drinker case (83% compared with 47%), whereas the female drinker case was more frequently advised to abstain (17% for male, 53% for female). Also the women were referred to complementary treatment more often than male patients, possibly reflecting a more restrictive attitude towards women's drinking (Nolen-Hoeksema,

2004). This may also indicate that male alcohol problems are not treated adequately as men are less often advised to abstain and less often referred. Finally, female PCPs referred patients to further treatment to a greater extent, especially to BI in the PHC. This is in accordance with the findings of Roter *et al.* that showed that female PCPs were more engaged in psychosocial counselling and active partnership behaviours that may contribute to more referrals to supportive treatment (Roter *et al.*, 2002).

How does gender affect treatment seeking and handling of alcohol issues? This topic can be highlighted by the results from Courtenay (2000) who has written about health and gender from social constructivist, relational and feminist perspectives. He proposes that gender is continuously constructed in relations, e.g., between men and women, and that women generally are subordinate to men. One way for a male to dominate is by being 'strong' and this concept includes not being affected by illness and pain. In this relationship women are more emotional, relate more to other people and pay more attention to their bodies and health issues. With a bearing on our results in this study, his observations have two possible implications. First, men may be more likely to volunteer information on their alcohol consumption and second, treatment staff (both men and women) may be more inclined to underestimate men's treatment needs than women's. However, Courtenay points out that there is also a power relationship between various groups of men. Men at the lower end of this power scale tend to take particularly detrimental stands on health issues thereby 'making' a clearer masculine identity, including heavy substance use. If this observation is correct, men's inappropriate health conceptions should be made a vital issue in alcohol treatment.

To our knowledge, this is the first study that analyses whether PCPs' own alcohol consumption is related to how they estimate the patient's alcohol consumption before they give advice to cut down on their drinking. In an earlier work (Geirsson *et al.*, 2005), we showed that PCPs who were moderate or high consumers scored higher on role adequacy (a concept that, in this study, is defined by the two statements: 'I feel I know enough about the causes of drinking problems to carry out my role when working with problem drinkers', and 'I feel I can appropriately advise my patients about drinking and its effects'). In both cases one can speculate that higher familiarity with alcohol consumption makes PCPs more open towards discussing alcohol issues with a patient. This interpretation is supported by the results from Kaner *et al.* (2006) who found that some GPs recognize risk only in those patients whose drinking habits are least like their own. There is evidence that, for other life-style choices, the physician's own habits appear to influence their advice to patients. Brotonsc *et al.* (2005) found that PCPs who perform regular physical exercise and PCPs who do not smoke regarded themselves as more efficient in helping their patients to change these lifestyles. On the other hand, no differences were found between obese and non-obese PCPs in advising overweight patients to reduce weight, or in their effectiveness in helping patients to achieve or maintain normal weight.

When analysing the upper limit for alcohol consumption before the PCPs would advise the patient to cut down, we found that the mean recommended levels appear to take biological factors affecting mean sex difference in BAC into account accurately. The female limit for risky drinking was 28% lower than the limit for male patients. We also point out that a quarter of the PCPs recommended a level for risky drinking higher than that recommended by the Swedish National Institute of Public Health (Andréasson, 2006).

In this study we have found that male patient vignettes were less likely to be advised to stop drinking altogether than female patient vignettes, especially when the PCP was a male. Taking into account that male patients have a higher prevalence of alcohol problems (risky drinking and alcohol dependence) and that males in general are less likely to seek help from general practitioners, this finding probably has an impact on how primary healthcare takes care of this group of patients and how health authorities organize alcohol prevention in the healthcare system and in the community. If a patient's gender influences how he or she is advised or referred, this can have considerable implications for his or her future. To judge from this vignette study it seems that male patients will be offered too little treatment. This could also be the result of lack of concern about men's drinking habits, as such habits are considered to be the norm.

Methodological considerations and generalizability

A strength of our study is that the participants came from a homogenous area (Skaraborg) that has a common administration and the treatment culture across various treatment centres is very similar. The response rate (52%) in a postal survey like this is also acceptable in a study of GPs (Barclay *et al.*, 2002). Because of anonymity we have not been able analyse characteristics of the non-responders. One weakness is that the number of responses, especially for female PHC (22), was low. One consequence may have been that we did not achieve statistical significance when analyses were done between male and female physicians (Type II error).

Vignettes studies are useful when measuring the competence and practices of a group of physicians (Veloski *et al.*, 2005) and produce better measures of quality of care than medical record reviews when used to measure differential diagnosis, selection of tests and treatment decisions (Veloski *et al.*, 2005). Therefore, the results of this study provide valuable information on how PCPs handle male and female with AUD in their practice, even if handling of 'real cases' may naturally be adjusted to individual differences. The district of Skaraborg does not differ from Sweden as a whole in the age and sex distribution of the PCPs, they have similar education, and in this respect the results can be assumed to be representative of Swedish PCPs in general.

In summary, this study indicates that both gender of the patient and gender of the PCP are of importance when identifying and handling alcohol-related problems in primary healthcare. If the patient is male, the likelihood of being advised to stop drinking altogether and the possibility of being referred is lower than if the patient is female, especially if the PCP is male. The PCP's own alcohol consumption may also influence whether a patient is advised to cut down on drinking. When planning alcohol-related education in PHC, these factors must be taken into account to increase the quality of the health service.

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When Does Alcohol Consumption Become Risky?
A Swedish National Survey of General Practitioners' Recommendations to Patients

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Abstract

Aim: To investigate what Swedish GPs consider to be weekly limits for safe alcohol consumption before they advice patients to reduce their consumption and to relate the proposed limits to their post-graduate alcohol education and self-perceived alcohol-related competence. ***Method:*** The study is based on a national-based survey among all GPs in the Swedish primary health care. ***Results:*** The mean recommended limit for a safe drinking was 7.8 standard drinks per week for male and 5.3 drinks for female patients. Respondents lacking post-graduate education stated significantly lower limits; 6.9 drinks for males and 4.7 for females, than did those with half a day or shorter education; 8.0 drinks for male and 5.5 for female patients. The GPs with higher self-perceived alcohol-related competence suggested significantly higher limits than those who stated lower competence. ***Conclusion:*** We found that 9 out of 10 GPs stated limits that were lower than the widely applied recommendation in Sweden of 14 standard drinks for men and 9 for women. Assuming that the GPs would take action at the limits they proposed in this study, it would mean that they would intervene with a very large proportion of their patients, many of whom consume rather modest amounts of alcohol and who do not feel that they have any problems with their alcohol intake.

Key words: Attitude of Health Personnel, Education, Medical/standards, Clinical Competence, Diffusion of Innovation, *Health Knowledge, Attitudes, Practice Alcohol Drinking/*prevention & control

Introduction

It has been estimated that for the period 1992–1996, alcohol accounted for about 3.5% of the deaths in Sweden in all age groups and for 25% of those aged below 50 years (Sjogren et al., 2000). In the year 2002 the net economic cost of alcohol consumption was estimated 0.9% of the gross domestic product and led to a loss of 27,962 potential life-years, as well as 121,800 Quality-Adjusted Life Years (Jarl et al., 2008).

Alcohol is by definition causally related to more than 30 diseases where alcohol is included in the name and more than 200 diseases in which alcohol is part of a component cause (Rehm et al., 2009). Furthermore, social consequences are factors which indicate the magnitude of the problems related to the alcohol consumption, with increased psychiatric co-morbidity and disability (Hasin et al., 2007) and involved in or associated with accidents, neglect of work and school responsibilities, violent behaviour and serious conflict (Dawson et al., 2008). There is also a very high indirect cost for the society (Mohapatra et al., 2010).

Many countries have introduced drinking guidelines to reduce the contribution of alcohol to the burden of disease. National recommendations vary up to threefold between countries (Harding and Stockley, 2007). The highest recommended weekly limits are 252 g/week for men and 168 g/week for women in South Africa and the lowest limits are 100 g/week for men and 50 g/week for women in Poland (International Centre For Alcohol Policies, Report 14, 2003). There is no officially endorsed recommendation in Sweden, but the most commonly cited limits for safe drinking are 14 standard drinks (168 g/week) for men and 9 standard drinks (108 g/week) for women; higher volumes are considered hazardous or harmful drinking (usually referred to as risk drinking in Sweden) (Andréasson and Allebeck, 2005).

National recommendations for alcohol consumption do not necessarily coincide with the limits that health care providers convey to their patients. Through our literature search, we only found two studies describing physicians' perceptions of what constitutes low risk or safe drinking. In a Canadian study (Herbert and Bass, 1997), the median limit for "early at-risk drinking" was nine drinks (122.4 g/week) per week for a man and eight drinks (108.8 g/w) for a woman. In a study from the United States, physicians were asked to "indicate the number of drinks that reflect your definition of light, moderate and heavy drinking". The mean results were 4.3 drinks (60.2 gram)

per week, 10 drinks (140 gram) per week and 18.9 drinks (264.6 gram) per week respectively (Abel et al., 1998).

Alcohol-related education for health care providers could facilitate improved detection and prevention of risk drinking. However, many educational programs for physicians have been poorly conceived and evaluated (Walsh, 1995). In recent years, awareness of these shortcomings has increased and various training programs have been organized that use lectures combined with computer technology, various web-based training, information networking and teambuilding, group discussions etc. (Polydorou et al., 2008; Seale et al., 2010). The existence of these possibilities should increase opportunities to enhance alcohol-related education and improve the internal medicine residency training programs and the continuing medical education for physicians in the alcohol field (Jackson et al., 2010). We have not found any studies concerning how or the extent to which participation in postgraduate medical education in alcohol-related matters for general practitioners (GPs) influences drinking recommendations to patients.

Aim

To investigate what Swedish GPs consider the weekly limits for safe alcohol consumption, before they would advice a patient to cut down on his or her drinking. The proposed limits were related to the GPs' amount of postgraduate education in handling risk drinking, their perceived competence in counselling patients with risk drinking, and their perceived knowledge about the effects of alcohol on health.

Study population and methods

This study is based on a national-based survey among all GPs in the Swedish primary health care, which is described in detail elsewhere (Holmqvist et al., 2008). An anonymous questionnaire was mailed to 3,845 GPs between November 2005 and February 2006. Two written reminders were given. The addresses were obtained from a private company, Cegedim, which specialises in supplying addresses in the health services field in Sweden and claims to have a 95% accuracy. The sources of the addresses are the Board of Social Security and Welfare and the professionals themselves.

In this part of the study, we analysed the results from the following question: "There are several options concerning the limit at which alcohol consumption

is considered risk-free. When you advice a patient that he/she should reduce his/her alcohol consumption, what consumption levels would you recommend that the patient should not exceed, provided that he/she is otherwise healthy?" The response options were provided as number of standard drinks (12 gram) per week, with different response options for men and (non-pregnant) women. There was also a "do not know" option. The levels for men and (non-pregnant) women proposed by the respondents are referred to simply as "safe drinking limits" in the paper.

The results were correlated with demographic data such as gender, age, number of partners in the working place and number of patients seen in an average week. Furthermore, the results were correlated to the respondents' amount of post-graduate education in handling risk drinking and their self-perceived knowledge in counselling patients with risk drinking (estimated on a 4-point Likert scale). We also related the limits to the GPs' answers concerning whether they believed more factual knowledge about how alcohol influences health could facilitate their increased identification and counselling of patients with risk drinking of alcohol (estimated on a 4-point Likert scale, with an additional "do not know" option provided).

Stat View (version 5.0.1.0) was used for descriptive statistics, standard deviation (SD) and 95% confidence intervals (CI) were calculated. We used linear regression models for analysing the relationship between the limit and the age of the participants and education using SAS for Windows version 9.2 and SPSS for Windows version 18, alpha 0.05.

Results

The questionnaire was returned by 1,821 GPs. Fourteen were excluded from the analysis due to missing values on questions about gender and age. The response rate was 47%. The average age of the respondents was 52.9 years (SD = 7.2) and 47% were female. Seventy-two percent had more than 11 years in practice and 65% stated they had 40 or more patient encounters per week. Forty-two percent had no post-graduated education and 12% had 3 days or more.

The mean value of all the GPs' suggestions of a safe drinking limit was 7.8 standard drinks (SD = 4.2; CI 7.6–8.1) per week for male patients (93.6 grams) and 5.3 standard drinks (SD = 2.9; CI 5.2–5.5) for female patients (63.6 grams). For male patients, 57% of the GPs stated safe limit as 7 drinks or less,

and for female patients 45% stated safe limit as 4 drinks or less (which is half of the Swedish recommended limit for risk drinking). Ninety-two percent of the participants suggested safe drinking limits lower than the semi-official limits in Sweden.

Of the GPs, 383 (21%) did not provide a safe limit for male patients and 375 (21%) with regard to female patients (i.e. they answered "do not know"). Non-replies were 73 (4%) for male patients and 90 for female patients. Table 1 shows the association between the respondents' post-graduate education in handling risk drinking and their proposed limits for safe drinking. Respondents lacking post-graduate education stated lower limits than those with some education, with the association being significant (different confidence intervals) already for those with half a day or shorter education.

Table 1: The respondents' post-graduate education in handling risk drinking in relation to suggested mean value of safe drinking limits

Post-graduate education in handling risk drinking. (Confidence intervals and number)	Suggested limit for male patient	Suggested limit for female patient
None	6.9 (6.6–7.3) (503)	4.7 (4.4–4.9) (500)
Half a day or shorter	8.0 (7.6–8.5) (379)	5.5 (5.2–5.8) (378)
1-2 days	8.8 (8.2–9.3) (262)	5.8 (5.5–6.2) (258)
3 days or more	8.6 (7.9–9.3) (186)	5.9 (5.4–6.3) (185)

Missing value for education was 46 (2.5 %).

The respondents' age was associated with the level of suggested safe limit in a similar manner for male and female patients, which is why only the results for the male patients are presented below: the GPs who were 45 years or younger stated significantly lower limits (7.3, CI 6.8–7.9) than the GPs who were 46–60 years (8.1, CI 7.8–8.3) as well as those 61 years and older (6.9, CI 6.3–7.4).

Linear regression analyses with drinks per week as dependent variable and age and education categories as independent variables showed that for female GPs education but not age influenced the limit. For male GPs, education and age

were associated with the limit independently of each other (p-value for contrast <0.001 for all these associations).

The GPs who stated that they were competent or very competent in counselling patients with risk drinking suggested higher limits for both male and female patients than those who stated lower competence; 8.2 (CI 7.9–8.5) versus 7.1 (CI 6.8–7.5) drinks for male patients and 5.5 (CI 5.3–5.7) versus 4.9 (CI 4.6–5.1) drinks for female patients, respectively.

The GPs who agreed very much or quite a bit with the statement that more knowledge about alcohol's influence on health could facilitate their increased alcohol intervention activity in PHC set lower limits than those who agreed little or not at all with the statement; 7.3 (CI 7.0–7.7) versus 8.2 (CI 7.9–8.5) for male patients and 4.9 (CI 4.7–5.1) versus 5.6 (CI 5.4–5.9) for female patients

The proposed safe drinking limits were not associated with the respondents' gender, number of partners in the working place, number of patients seen in an average week and living in urban or rural area or the three big cities (Stockholm, Gothenburg, Malmö).

Concerning the respondents who answered that they did not know the limit for safe drinking, we found some different associations compared to those who proposed a limit. Twenty-seven percent of the women did not propose a limit compared to 16% of the men. More with no post-graduate education stated that they did not know the limit for safe drinking (61% versus 37%), they considered themselves to a lesser extent as competent or very competent (36% versus 67%) and more often agreed very much or quite a bit with the statement that more knowledge could facilitate an increased of their alcohol interventions in PHC (53% versus 43%).

Discussion

This study was conducted in order to investigate Swedish GPs' perception of when alcohol intake becomes risk. The proposed thresholds were related to the GPs' perceived knowledge in counselling patients with risk drinking and their knowledge about the effects of alcohol on health. Nine out of 10 GPs stated limits that were lower than the widely applied recommendation in Sweden of 14 standard drinks for men and 9 for women (Andréasson and Allebeck, 2005).

GPs who had participated in alcohol-related education proposed higher limits than those who lacked such education.

It was somewhat surprising that GPs who had participated in alcohol-related education and training suggested limits well below the recommended levels for men and women. These GPs can be expected to be familiar with the recommendations promoted by the Swedish National Institute of Public Health. Why did they propose lower limits? One explanation may be that they wished to be on "the safe side", something which also could explain why the GPs who were less familiar with alcohol issues suggested even lower limits. However, it is also possible that many GPs consider the national recommendations as being relatively high. Also, it is possible that GPs consider the concept of risk drinking as ambiguous and poorly-defined and this further reinforces the difficulties in using this concept in consultation with the individual patient.

The limits proposed by the GPs in our study (mean 94 g/week for men, 64 g/week for women) can be compared with higher limits that has been found in comparable studies in both Finland (178 g/week for men and 127 g/week for women) (Aalto and Seppa, 2007) and Britain (230 g/week for men and 160 g/week for women) (Kaner et al., 1999). This may in part be explained by how the questions were phrased. In the British study the question was: "For a healthy adult man/women (not pregnant), what would you consider the upper limit for alcohol consumption before you would advise him/her to cut down?" Our research group previously used that question in one study (Geirsson et al., 2009) and then the limit was found to be higher (112 g/week for men and 86 g/week for women). The following statement preceded the question in the present study for suggestion of safe drinking limit: "There are several options concerning the limit at which alcohol consumption is considered risk-free". The term "risk-free" may in this case be indicative of how the GPs perceive the question and explain the rather low limits they proposed. Our results match better with the quantities used as limit for low-risk drinking (60 g/week) among physicians in the United States (Abel et al., 1998). The different results between various surveys can also be attributed to cultural differences between countries and different drinking patterns by the inhabitants who in turn affect the physicians' perception of risk-free drinking.

Assuming that the GPs would take action at the limits they proposed in this study, it would mean that they would intervene with a very large proportion of their patients, many of which who consume relatively modest amounts of alcohol and who do not feel that they have any problems with their alcohol intake. Interventions with patients who do not feel they have any alcohol or health problems may violate the trustful relationship GPs have with many of their patients (Nygaard and Aasland, 2010). Another issue is whether the limited health care resources should be utilized to influence these patients when there are other, less healthy patients, who need care or treatment. Aalto and Seppä (2007) have cautioned that low limits could impede efforts to achieve more widespread implementation of brief intervention in the health care system since interventions with a large number of patients will increase the workload for GPs.

Early research on screening and brief intervention assumed that all patients attending primary health care facilities should be screened and a GP (or someone from another professional category) should offer interventions to all patients screening positive for hazardous or harmful drinking (Saunders et al., 1993). However, health care providers and researchers have increasingly questioned this blanket screening approach, which many consider unrealistic on workload grounds and even potentially harmful for the provider–patient relationship (McCormick et al., 2010). In order to be adopted, an innovation should provide a relative advantage for those who shall adopt it (Rogers, 2003; Gravel et al., 2006), in this case the GPs and the nurses in the PHC. Further should the perceived needs of the patient be taken into consideration (Facey et al., 2010; Boivin et al., 2011), and one example of such a need is if they at all comply with screening. More attention has to be devoted to these issues before broad scale implementation is feasible.

Alcohol-related education has been shown to increase cognitive and behavioural skills, but it is harder to change complex attitudinal shifts and the studies have not extended to the evaluation of change in patients behaviour (el-Guebaly et al., 2000). In general, the various continuing medical education courses will probably improve physician knowledge (Bordage et al., 2009), knowledge application and procedures or physical examination techniques (O'Neil and Addrizzo-Harris, 2009) and even their performance in the practice setting (Davis and Galbraith, 2009), but it is more difficult to achieve meaningful clinical benefits or health outcomes (Mazmanian et al., 2009). Many of the traditional education activities such as conferences,

workshops or rounds have been shown to be insufficient to change a physician's performance (Bloom, 2005).

This study has some methodological shortcomings which should be considered when interpreting the results. A weakness of this study was the relatively low response rate (47%). It was not possible to analyze the non-responders. It has been shown that non-responders in survey research sometimes are quite different from those who participate. It is well known that more motivated and opinionated people are more likely to respond to surveys (Brodie et al., 1997). Hence, it is likely that those who responded to the survey have more favourable attitudes towards discussing alcohol. On the other hand, it is a considerable strength of the study that it is a national survey where all currently active GPs in Swedish primary health care had the possibility to answer the questionnaire.

In conclusion, we found that GPs in Sweden in general set low limits for safe drinking and 9 out of 10 GPs stated limits that were lower than the semi-official recommendations in Sweden. How alcohol-related education and training affects the limits that doctors conceive as safe drinking has not been described previously. Future studies need to investigate the impact of the training courses on the limits doctors consider to be appropriate for their patient's health.

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The impact of the Swedish Risk Drinking Project on clinical practice in primary care

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Abstract

Background: To encourage the Swedish health professionals to raise the issue of alcohol amongst their patients and provide better advice aimed to reduce hazardous drinking habits, the Swedish health authorities conducted the Risk Drinking Project (RDP) 2004–2009. The main activities were educational and training seminars focusing on teaching motivational interviewing and risk drinking. ***Methods:*** To evaluate the impact of RDP, a baseline and a follow-up questionnaire survey were performed, in 2006 and 2009 respectively; participants were general practitioners (GPs) and district nurses (DN). They were asked how often they discussed alcohol with the patients, and how they estimated their knowledge regarding giving advice and their effectiveness in helping patients change risk drinking. We triangulated the results with two population surveys where the participants reported if they had been asked about alcohol when visiting primary health care (PHC). We also studied changes in the number of alcohol-related diagnoses in PHC in western Sweden between 2005 and 2009. ***Results:*** Fifty-five percent of the participants in the survey 2009 had participated in some kind of alcohol-related education over the past three years. For all tree parameters analyzed there were significant increases during these three years, particularly among DNs. However, the population surveys showed no changes concerning the inhabitants being asked about their alcohol consumption. Further, there was only a small increase of alcohol-related diagnoses over this time period; 9%. ***Conclusion:*** The national RDP is a likely cause of enhanced self-perceived competence in the alcohol field among nurses and GPs. Using a combination of possible data sources to evaluate the impact of RDP it is more uncertain as to whether this mainly educational effort has been a sufficient means of increasing screening and brief intervention in primary health care.

Key words: Attitude of Health Personnel, Education, Medical/standards, Clinical Competence, Diffusion of Innovation, *Health Knowledge, Attitudes, Practice, Alcohol Drinking/*prevention & control, Organizational Innovation

Background

Work on implementing evidence based methods in primary health care (PHC) to detect and treat risk drinking and/or alcohol abuse have been going on for a long time (Garner, 2009). Brief screening and counselling for alcohol misuse is one of the most cost-effective preventive measures that can be implemented in PHC (Solberg et al., 2008). Brief intervention (BI) for hazardous and harmful drinking has been shown to decrease the average weekly consumption of 38 grams per week in a meta-analysis of 22 randomised controlled trials (Kaner et al., 2009). Another meta-analysis showed reduced weekly consumption by 13–34% and those who achieved moderate or risk-free alcohol consumption it decreased by 10–19% more than in the control groups (Whitlock et al., 2004). However, additional staff or systems support was often required to provide screening and assessment and, in some cases, intervention support. How brief intervention affect a patient's health has been difficult to demonstrate. One of the studies (Fleming et al., 2000) showed a decreased number of hospitalizations and fewer acts of violence and accidents, but another study showed no difference between groups (Bray et al., 2007). When screening and BI has been implemented in routine medical care, the results have not been as successful (Roche and Freeman, 2004; Beich et al., 2007) and the method's effectiveness has been questioned (Beich et al., 2003; Roche and Freeman; 2004).

Several studies highlight the difficulty that GPs have in identifying when alcohol contributes to the clinical picture in the patient (Deehan et al., 1998; Kaner et al., 1999). Many complicating factors have been identified; e.g. constraints and fear of disturbing patient relationship (Arborelius and Damstrom Thakker, 1995; Holmqvist et al., 2008), lack of confidence in the own ability in the alcohol field, diagnostic difficulties and overload (Durand, 1994; Geirsson et al., 2005), and lack of resources and support from management (Johnson et al., 2010). Changing clinical practice is not an easy task (Oxman et al., 1995; Dopson et al., 2002). Implementation strategies have an effect but it is often small. Results from 235 different studies showed; 14.1% improvement for reminders, 8.1% for dissemination of educational materials, 7% for audit and feedback and 6% for multifaceted intervention (Grimshaw et al., 2006). Evaluation of implementation efforts for screening and brief intervention (SBI) of patients with risk drinking has scarcely been done in primary health care (Nilsen et al., 2006; Garner, 2009). Recently a program called ”Helping patient who drink too much” has been launched in the United States. (Willenbring et al., 2009) describing how a physician in a systematic way can meet and help a patient with various advanced alcohol-related problems, ranging from screening of risk patients to treatment of alcohol-dependent patients. The practical use and effectiveness of this method has not been evaluated.

The process of moving from educating physicians to show what they are doing in clinical practice is a complicated process and not easy to measure or evaluate (Donabedian, 1988). The theoretical framework is described by Miller (1990) who describes the process from knowledge to action. This learning process has been developed further by Moore et al. (2009) when planning framework and evaluation of continuing medical education (CME). First, the physician must achieve "declarative knowledge" (knows), the next step is "procedural knowledge" (knows how), then "competence" as a physician is capable of doing in an educational setting and lastly "performance" (does/action) as to what a physician actually does in regular practice. The "doing" process is divided into performance, patient health and community health. All of these steps described above are possible to assess both subjectively and objectively with different methods (Moore et al., 2009). Various educating and training activities are shown to be effective within a physician declarative knowledge and procedural knowledge (Oxman et al., 1995; Davis et al., 1999; Bordage et al., 2009; O'Neil and Addrizzo-Harris, 2009), but more difficult to improve practice performance and clinical outcomes (Davis and Galbraith, 2009; Mazmanian et al., 2009). To be able to manage that requires an interactive technique, use of multiple media and multiple educational techniques (Bloom, 2005; Moores et al., 2009).

To encourage the Swedish health professional's to raise the issue of alcohol amongst their patients and provide better advice aimed to reduce hazardous drinking habits, the Swedish Government gave a mandate to the National Institute of Public Health to start what have been called the Risk Drinking Project (RDP) which started in 2004 and finished in 2009. The overall objective of the project was to give questions about drinking habits an obvious place in everyday healthcare. Details of the project have been published in the rapport "Alcohol issues in daily healthcare. The Risk Drinking Project – background, strategy and results" (Swedish National Institute of Public Health, Östersund 2010, R 2010:09).The objective of the RDP was formulated as "Questions about drinking habits have an obvious place in daily healthcare in a way that corresponds to the significance of alcohol to the origins of various harms and diseases". This in turn calls for healthcare personnel who: 1) have a good knowledge of alcohol and its hazardous use, 2) are confident in their own ability to discuss alcohol with patients and are able to influence patients' drinking habits and 3) have a positive attitude to bringing up the issue of alcohol and discussing the patients' drinking habits with them. To achieve these ambitions, an extensive training and information endeavour was launched. The main activities were training, seminars and information efforts concerning alcohol use and hazardous drinking, training in motivational interviewing and conferences for the healthcare personnel.

The project's training and informational activities were built up of certain clear cornerstones: a) a focus on hazardous use of alcohol, b) defusing the alcohol issue, c) a patient-centred approach with motivational interviewing as benchmark, d) cooperation with county councils and working life, e) cooperation with the professions, f) broad arena strategy.

In this paper we will try to evaluate the available data as a pre-test/post-test study. Our theoretic method is using triangulation which refers to the use of more than one approach or different data sources to the investigation of the research question in order to enhance reliability of the results (Patton, 1999; Reif et al. 2011). The data sources are questionnaires sent to the PHCs' staff at the beginning of the project and in the final stage, population studies where the patients/inhabitants were asked if they had been asked about lifestyle/alcohol consumption and data sources from medical records about change in alcohol-related diagnosis in the medical record in one part of Sweden. All of these parameters have been suggested to be useful for quality assessment in general practice (Rethans et al., 1996).

Aim

To describe the possible influence that the National Risk Drinking Project in Sweden has had on PHC's staff self-perceived competence in the field of alcohol and to evaluate if there has occurred change in clinical practice that can be related to this project.

Study population and method

The baseline survey questionnaire was constructed by a Swedish team of researches and clinicians and is described in detail elsewhere (Holmqvist et al., 2008). The questionnaire consisted of questions covering knowledge, attitudes and management of alcohol issues in PHC. The follow-up questionnaire was revised, some questions were removed and supplemented with some questions with the aim of better capturing changes that had occurred since the beginning of the project. In this study we describe the results for the general practitioners (GPs), registrars (RGs, doctors training to become specialist in general practice) and district nurses (DNs) with the help of the results from a baseline questionnaire between November 2005 and February 2006 and a follow-up questionnaire between November 2008 to April 2009 after the efforts of the project. In all cases, the questionnaire was sent to the participants anonymously and two reminders were sent with roughly two weeks in between. The GPs were an exception in which a third reminder was sent in April 2009 due to a low response rate.

Addresses to GPs, RGs and DNs were collected from the Health Care Address Register which is managed by a company, Cegedim Sweden AB.

The main parameters we compare between these two periods are the following three questions: 1) “How often do you discuss alcohol with your patients?”, estimated on a 5-point Likert scale ranging from “always” to “never”. 2) “How do you estimate your current knowledge regarding advice to patients with risk drinking?”, estimated on a 4-point Likert scale ranging from “very” knowledgeable to “not specially” knowledgeable. 3) “How effective do you feel you are in helping patients achieve change in risk drinking?” estimated in the same way ranging from “very” competent/effective to “not specially” competent/effective. To simplify we refer the results from these questions as “discussion”, “knowledge” and “effectiveness” in the rest of the paper. These three parameters are then related to the following question in the survey in 2009: “How much overall education (local, regional or national) have you received in the handling of risk drinking of alcohol throughout your career (with exception of undergraduate)?” The question was phrased differently in 2006: “How much education have you received in the handling of risk drinking of alcohol (with exception of undergraduate)?” The response alternatives were: none, half a day or less, 1–2 days, 3 days and more than 3 days, from which 4 categories were assembled; none, half a day or less, 1–2 days and 3 days or more. In the 2009 survey, the participants also answered the following question: “Have you during the past 3 years participated in some form of education (lectures, courses, information, etc.) on alcohol issues, risk drinking or similar?”; response options were “yes” or “no”. We have also made an effort to triangulate the results in this study with other available data. That data has not been presented in scientific publications but we will attempt to present it here in such a way that meaningful comparisons are possible. For this purpose, we used two population surveys. The Swedish Association of Local Authorities and Regions (SALAR) each year perform a Care study (Vårdbarometern) where at least 1,000 randomly selected in-habitants are telephone interviewed in each county in Sweden with exception of one small county (Gotland). The results from this survey has been presented at the following Internet side; http://www.vardbarometern.nu/. The inhabitants were asked: “Did the doctor/district nurse raise lifestyle issues last year” when visiting the PHC. In the other population survey, The Centre for Social Research on Alcohol and Drugs (SoRAD) in the Monitor project in 2006–2009, asked 1,500 inhabitants randomly each month if the doctor had asked about their alcohol habits at their last visit. The results from this survey have been presented in following article (Engdahl and Nilsen, 2011). The response rate was 45% and 72,079 patients were asked over this period. Also, we relate to the SALARs National Patient Survey in 2009 where 94,662 patients were asked if they, at their visits the physicians, had discussed their lifestyles and that includes also alcohol habits. The results from this survey has been presented at the following Internet site; www.indikator.org/publik. This

survey was also done in a county in western Sweden, Västra Götalandsregionen (VGR) 2009 and 2010. Finally we found from the patient record system if the number of alcohol-related diagnoses (alcohol problems and alcohol dependence) has changed in PHC in western Sweden between 2006 and 2008, and the first nine months (Jan–Sept) year 2005 and 2009. The reason way we can not use the whole year 2009 is that from Oct 2009 the Health Authority launched what is called Vårdvalet (Care Choice) which does not allow comparisons after Oct 2009 (15–20% of the population changed its medical centre from public to privatized health care centre and disappeared from the database). The inhabitants in this county constitute 16.8% of the population in Sweden year 2009. We received the information from the patient record from the Primary Care Office in Skövde, Sweden.

In the Swedish PHC co-workers work with different educational background, both among GPs and DNs. To analyze as homogeneous groups as possible, we decided to analyze only GPs who are specialists in general medicine and DNs who participate in active patient work in PHC with own clinic practice and have the authority to issue certain prescriptions. For RGs, we analyzed only those who indicated that they were employed as physicians in training to become specialists in general medicine. Our mailing lists proved to contain many more employees that did not meet these requirements. This was particularly the case among the DNs where many receivers of the questioner did not work at all as DNs in the PHC (366 year 2009), were employed in municipal health care (628 year 2009), did not have own patient-related surgery in the PHC (282 in year 2009) or did not answer how many patients they had per week (134 in year 2009). In the year 2009, 131 of the RGs answered that they did not have employment as RGs and for the GPs, 131 were not specialists in general medicine. For all of the participants, we excluded them with missing value to questions about sex, age and the three main analyzed questions in the survey.

Results

Descriptive data are shown in Table 1. In 2009 the RGs had the lowest response rate (47%) and GPs highest (62%). For the GPs, 54% were male as was 37% among the RGs; 98% of the DNs were female. In 2009, 78% of the GPs had worked 11 years or more in PHC, as had 58% of the DNs. For the GPs, 68% had an average of 40 patients visit/week or more, compared to 62% of the RGs and 36% of the DNs. The proportion of the participants that had received one day or more post-graduated education increased between 2006 and 2009 for GPs from 31% to 62%, for DNs from 13% to 45% and for RGs from 21% to 50%.

Table 1: Response rate and description of the respondents

N= Number	GPs* 2006 N (%)	GPs 2009 N (%)	DNs** 2006 N (%)	DNs 2009 N (%)	RGs*** 2006 N (%)	RGs 2009 N (%)
Questionnaires received (Response rate)	1881 (47)	2722 (62)	3224 (57)	4196 (54)	418 (46)	550 (47)
Participants (% of Non-replies or not belonging to the target group)	1637 (10)	2440 (10)	2263 (30)	2452 (42)	360 (14)	399 (27)
Men Women	876 (54) 761 (46)	1317 (54) 1123 (46)	34 (2) 2229 (98)	47 (2) 2405 (98)	137 (38) 223 (62)	148 (37) 251 (63)
Age (Standarddeviation)	52 (7.0)	55 (7.8)	52 (8.0)	53 (8.0)	38 (6.4)	39 (7.0)
Years in practice within primary care	1559	2390	2260	2414	350	392
≤ 5 years 6–10 years 11–20 years ≥ 20 years	106 (7) 291 (19) 624 (40) 538 (35)	88 (4) 443 (19) 843 (35) 1016 (43)	435 (19) 511 (23) 750 (33) 564 (25)	308 (13) 620 (26) 568 (24) 918 (38)	306 (87) 36 (10) 6 (1.7) 2 (0.5)	335 (85) 49 (13) 6 (1.5) 2 (0.5)
Average number of patients visit/week	1623	2420	2264	2452	356	398
0–19 20–39 40–59 ≥ 60	70 (4) 494 (30) 818 (50) 241 (15)	111 (5) 666 (28) 1137 (47) 505 (21)	410 (18) 1039 (46) 614 (27) 201 (9)	461 (19) 1092 (45) 693 (28) 206 (8)	9 (3) 149 (42) 175 (49) 23 (6)	14 (4) 139 (35) 209 (53) 36 (9)
Education in handling risk drinking****	1611	2418	2204	2422	360	398
None Half day or shorter 1–2 days 3 days or more	666 (41) 450 (28) 292 (18) 203 (13)	229 (9) 694 (29) 772 (32) 723 (30)	1403 (64) 507 (23) 197 (9) 97 (4)	447 (18) 900 (37) 644 (27) 431 (18)	199 (55) 86 (24) 50 (14) 25 (7)	67 (17) 130 (33) 133 (33) 68 (17)

*General practitioner. ** District nurse. *** Registrars.

****The question in 2006 survey: "How much education have you received in the handling of risk drinking of alcohol (with exception of undergraduate)?" The question in 2009 survey: "How much overall education (local, regional or national) have you received in the handling of risk drinking of alcohol throughout your career (with exception of undergraduate)?"

Fifty-five percent of the GPs and the DNs in the survey 2009 had participated in any alcohol related education the past three years as had 66% of the RGs.

The results for discussion, knowledge and effectiveness of the caregivers for 2006 and 2009 are presented in Table 2. There was a significant increase in all three parameters with a larger change among DNs than among the other caregivers. For discussion there was already increased activities for the category any education 2.83 (2.73–2.92) versus 2.53 (2.47–2.59) for half a day or more education and this increased even more with increased education; 2.18 (2.10–2.25) for 3 days or more education. For knowledge and effectiveness the difference was similar and already significant for any education.

For the GPs, discussion was higher for 3 days or more education, 2.51 (2.39–2.62) versus 2.25 (2.21–2.30) and for effectiveness and knowledge after one day or more education. Education influenced knowledge after 1 day or more education for the RGs and after 3 days or more for effectiveness but no influence on discussion.

The GPs and DNs which had participated in any alcohol related education in the last 3 years scored higher in the survey 2009 in all of the three parameters, but this was not the case for the RGs.

Table 2. Respondents self-perceived rating (mean and confidence intervals) on discussing alcohol, knowledge about advice to patients with risky drinking and effectiveness about helping patients achieve change in risky drinking

	GPs 2006	GPs 2009	DNs 2006	DNs 2009	RGs 2006	RGs 2009
Discussing *	2.52 2.48–2.55	2.39 2.36–2.42	2.99 2.95–3.03	2.49 2.45–2.52	2.61 2.53–2.69	2.39 2.32–2.47
Knowledge **	2.30 2.26–2.34	1.98 1.95–2.00	2.95 2.92–2.99	2.31 2.28–2.35	2.61 2.53–2.69	2.22 2.15–2.29
Effectiveness ***	2.91 2.88–2.95	2.54 2.51–2.57	3.27 3.24–3.30	2.72 2.69–2.76	2.99 2.92–3.07	2.64 2.57–2.70

* How often do you discuss alcohol with your patients, estimated on a 5-point Likert scale ranging from 1 (always) to 5 (never).
** How do you estimate your current knowledge regarding advice to patients with risky drinking, estimated on a 4-point Likert scale ranging from 1 (very knowledgeable) to 4 (not specially knowledgeable).
*** How effective do you feel you are in helping patients achieve change in risky drinking, estimated on a 4-point Likert scale ranging from 1 (very competent/effective) to 4 (not specially competent/effective).

There were only a few significant differences for the three parameters in terms of background data (sex, age, years in practice, patients per week, practice location, number of partners in the practice, public or private practice). These results are not presented.

The results of the care survey (Vårdbarometern) shows that there was no change in the proportion of inhabitants who stated that they have been asked about their lifestyle habits by the physicians or districts nurse between 2006 and 2009; 30% in year 2006, 29% in year 2007, 30% in year 2008 and 31% in year 2009 for physicians and nurses respectively. Nor did the Monitor survey show a change in the proportion of the inhabitants who stated that they have been asked by the physicians about their drinking habits or about 14% each year from 2006–2009. In the SALAR national survey in 2009, 94,662 inhabitants were asked if their physician discussed their lifestyles (response rate 57.8). Of those 16% stated that they have been counselled about eating habits, 23% about exercise, 15% about tobacco habits and 9% about alcohol habits. The same year, approximately 15,384 inhabitants in Western Sweden (response rate 54.6%) were asked the same questions with similar results; 15% about eating habits, 22% about exercise habits, 14% about tobacco habits and 8% were asked about alcohol habits. In year 2010, the survey was repeated in VGR and 21,950 inhabitants responded (54.3% response rate) with a small increase in asking about the different lifestyles; 17% about eating habits, 23% about exercise habits, 15% about tobacco habits and 9% were counselled about alcohol habits. Of those in 2010 who answered no about discussing alcohol with their physician, 86% answered: "No, it was not needed" and 3% answered: "No, but I would have liked to do it".

In 2006, 1,453 patients in the PHC in VGR were diagnosed with alcohol dependence or an alcohol problem, which was 0.22 % of the number of patients and 0.122 % of all diagnoses set in the VGR. This number increased to 1,723 patients 2008 or 0.24% of all patients (9% increase of the number of patients from 2006) or 0.124% of all diagnoses set in the VGR. For the first nine months in 2005, 1,053 patients were given alcohol diagnoses and this constituted 0.121% of all diagnosis that period. For the same time period in 2009, 1,937 patients were given alcohol diagnoses and these increased to 0.149% of all diagnosis; which also was a 20% increase from 2008. The latter observation shows that most of the increase of alcohol related diagnoses occurred between these two years.

Discussion

This study was conducted to explore the potential impact of the Swedish Nationell Risk Drinking Project, during 2004–2009, on the PHCs' staff self-

perceived competence in the field of alcohol and to evaluate possible measurable change in clinical practice. For all tree parameters analyzed; discussion, knowledge and effectiveness, there was a significant increase among the staff during these three years. This increase was particularly high for DNs, who increased their skills more for all of the analyzed parameters compared with the GPs and RGs, but they also had lower skills in the beginning of the study. In 2006, as many as 64% of the DNs had no alcohol related education but this number decreased considerably to 18% in 2009. Self-perceived skills for the DNs increased more than among GPs and RGs, with significant increase in all of the three studied parameters already after half a day or shorter education and their skills increased the more education they received. This is consistent with findings from Skaraborg, a county in Sweden (Geirsson et al 2005), where nurses felt able to be significantly better in their perceived effectiveness in helping patients with risk drinking after adequate education and training implying their high potential in promoting preventive work in primary health care. For knowledge and effectiveness, education had more impact for the GPs and RGs, compared to discussion which showed no significant difference for RGs, and increased first after 3 day or more education for GPs.

In our analysis, we have presented what we have regarded as the best available information on any alcohol-related changes in clinical practice in the PHC in Sweden (diagnosis in the medical record and if more patients were asked about their lifestyle in various national surveys). In this study we used methods described by Moore et al. (2009) in assessing continuing medical education (CME) in different levels of the "knowing-doing pyramid". Moore et al. recommend use of pre- and post test and self-report of knowledge gain for estimating "declarative knowledge" and "procedural knowledge" and patient medical record and patient self-report for evaluating performance and patient health. This is also in line with Donabedian's (1988) theories of assessing the quality of care, when he used the concepts "structure", "process" and "outcome". These three factors influence each other as "good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome".

When thousands of patients in various national surveys where asked if they had received questions about their lifestyle or alcohol habits, it seems that little or no changes have occurred. One can also assume that if more patients are asked about their alcohol habits the caregiver should also, to a larger extent, have detected alcohol dependence or alcohol problems. Between the years 2006 to 2008, the proportion of patients with alcohol diagnoses, increased by 9% from very low numbers (1,723 persons year 2008 of approximately 1.5 million inhabitants in VGR) and in year 2009 there was an

increase in alcohol-related diagnoses by 20% measured as proportion of all diagnoses, compared to 2008. In the interpretation of this finding it should be emphasized that in 2009, many of the employees in VGR became aware of the fact that their PHCs economic conditions would change from 1 Oct 2009. From this date on, different diagnoses gave different economic reimbursement to the PHC and therefore may contribute to this increase. This is to our knowledge the first time that research teams in Sweden have used information about alcohol related diagnosis from the PHCs' medical records as a mean to evaluate possible changes in clinical praxis over time. Available official statistics about patients with alcohol dependence or alcohol problems was collected from inpatient care, specialized psychiatric care or addiction health care, where general practitioners are not involved. The reasons for the low numbers of patients with alcohol-related diagnoses can partly be explained by the fact that diagnoses of alcohol dependence or alcohol problems are delicate diagnoses and therefore the GPs may refrain from making an entry in the medical records due to perceived respect to the patient. However, one of the objectives of the RDP was to make it more natural, or less sensitive, to talk about alcohol with the patient and which also means that more patients with these problems would be identified and also recorded in the medical record. Another explanation is that the main purpose of the RDP was to stimulate the caregiver to identify risk drinking and not the detection of patients with more severe problems. The medical conditions such as risk drinking or hazardous drinking are, unlike the diagnoses dependence and harmful use, not registered in the medical record. If many doctors and nurses attended to the alcohol issue properly, that should have shown in the studies where patients are asked about their lifestyles and alcohol consumption patterns, but our data shows that this does not appear to be the case. We should also remember that there was much greater increase among district nurses than among the physicians in asking about alcohol. A tradition in the Swedish healthcare is that the physician, and not the nurse, sets the diagnoses. However, a nurse should report to a physician if they discover that a patient has a serious health problem and therefore in each case a doctor should be consulted and a diagnose recorded in the medical record, if appropriate.

The way of measuring the knowledge and effectiveness as we do in this study with a questionnaire, in which the participants themselves evaluate their skills, has been questioned (Jansen et al., 1996). A systematic review of the accuracy of physicians self-assessment compared with observed measures of competence, showed a weak or no associations to their performance (Davis et al., 2006). The most inaccurate self-assessment was found among those who were least skilled and also those who were the most confident. This discrepancy is also in many other disciplines (Dunning et al., 2004) and it

also concerns the alcohol field (Miller et al., 2006). The strength of our study is still that we asked the same question at these two occasions, and we should thus capture some changes between these two surveys which may reflect increased performance of the PHCs staff in the alcohol field.

If this study is analyzed according to Donabedian's theories (Donabedian, 1988) in which he divides the quality of the staff performance in two parts, one technical and the other interpersonal, we can say that it is likely that the technical performance has not changed over this period (the staff does not ask more often about alcohol). The interpersonal performance of the staff includes that they provide information about the nature of the health problem and its management and motivates the patient to active cooperation in the treatment or changing of the lifestyle. This in turn would enable the patient to take up health improving actions and thereby promote better health for themselves. However, we do not know if and how the physician/districts nurse communication skills have changed over this time period, and if it has been improved, whether it has improved interpersonal performance. The principles of the project was however a patient-centered approach and learning of motivational interviewing was the core of the conversation technology, with an emphasis given to empathy and respect for the patient's perception of his own medical conditions as well as to encourage their self-efficiency. The question is whether training and education of the differential elements in this project have achieved alteration enough to improve patient's health or to promote lifestyle changes for the patients. To learn and perform motivational interview is not a simple task and in practice it has been difficult to show how it is done in the best way or showing the clinical effectiveness of the method (Daeppen et al., 2007; Madson et al., 2009; Guydish et al. 2010).

If we assume that the PHCs' staff has not transferred more knowledge and self-perceived increased competence into increased action or performance, then we can argue why this gap has emerged according to the theory of diffusion of innovation (Rogers, 2002). According to Rogers there are five elements needed in adopting new or substituting clinical behaviour; relative advantage, compatibility, complexity, trialability and observability. Regarding the relative advantage, when an innovation is perceived as better than the idea or way to work it supersedes, then one can say that learning new methods and performing screening of risk drinking more frequently is straining in itself and thereby increases the workload of the staff and hinders the implementation of the work (Beich et al., 2002). With compatibility, as a measure of the degree to which an innovation is perceived as being compatible with existing values, past experiences, and the needs of potential adopters; we do not know if the PHC staff asked about the educational

activities which RDP offered. Was the RDS approach too complex, both learning out the term risk drinking and using motivational interview if the patient has risk drinking. Different methods are appropriate in different clinical situations and perhaps motivational interview is not always the best way to help the patient (Witkiewitz et al., 2010). Regarding triability which means that the innovation may be tested and modified, we do not know if the PHC staff is willing to screen or if the patient wants or request it. In SALARs national survey in 2009, 86% of the patients felt that they did not need any questions about their alcohol habits. Concerning observability, which means that the results of the innovation are visible to others, then one can say that it often takes a long time to see whether patients develop the diseases which alcohol may contribute to. The same applies also to the public health benefit of reducing alcohol drinking of the inhabitants. Further it is often difficult for clinicians to know how much the patients actually consume of alcohol (Høger et al., 1996) or if the patient actually changes the drinking habits over a period of time.

Projects have previously been carried out to promote the effectiveness of alcohol preventive work in PHC. A summary of three projects from England, New Zealand and Catalonia has been reported (McCormick et al., 2010). It appears that different approaches contributed to the staff becoming more positive towards working with alcohol screening and brief intervention and increased the staff's perceived skills in the field of alcohol, but it describes nothing about what happened in the clinical practice in terms of increased activity in alcohol-related intervention in patients with risk drinking, nor with more severe alcohol-related condition. A systematic review of the effectiveness of strategies to implement brief alcohol intervention in primary health care (Nilsen et al., 2006) revealed that there had been success as measured by increased activities on screening and brief intervention and material utilization, but the overall effectiveness was rather modest. Methods reported in this systemic review to assess a possible effect where mainly questionnaires or self-monitoring report, neither of which necessarily reflect what happens in clinical praxis (Davis et al., 2006). Another meta-analysis (el-Guebaly et al., 2000) revealed that the training increased cognitive and behavioural skills but it was harder to change complex attitudinal shifts. The studies had not extended to the evaluation of change in patient behaviour. Two studies in Sweden have tried to encourage practical activities in primary care, they revealed high willingness to carry out the work, but very little happened in practice (Arborelius et al., 1997; Andreasson et al., 2000).

Limitation

This study has some limitations. The response rate varied between 46% and 62% which can be considered decent and expected in this type of research in

primary health care (Barclay et al., 2002). Also we do not know if the same people answered in the survey 2006 and 2009 and therefore it is more difficult to know if the educational efforts of the RDP may have influenced them. However, it is likely that a significant proportion of the participants are the same between these two surveys, both because those who are more interested in the topic is usually more often replying to a survey such as this (Brodie et al., 1997) and because such a large proportion of PHCs' staff participated.

Another limitation is that the question of education was restructured in the survey in 2009 compared to 2006. The 2006 the question was as follows: "How much education have you received in the handling of risk drinking of alcohol (with exception of undergraduate education)?" In 2009 the question was: "How much overall education (local, regional or national) have you received in the handling of risk drinking of alcohol throughout your career (with exception of undergraduate education)?" As can be seen in Table 1 there has been a major increase in the number of employees who have received post-graduate education in PHC and this was the case in all occupational groups, especially so among DNs. However, one should be cautious in interpreting these results because of the reformulation of the question 2009; for the latter formulation may have caused the participants to think extra thoroughly about their education in the alcohol field, this also emphasized by underlining, and therefore this may to some extent explain the increase between 2006 and 2009.

In conclusion, this study shows a profound increase in health care staff's self-perceptive knowledge in the field of alcohol and in self-perceived effectiveness in helping patients with risk drinking as well as a perception that they ask the patients more often about alcohol. These changes were particularly profound among the district nurses. A reasonable conclusion, albeit it is only based on self reported staff changes between two cross-sectional studies, is that the main reason for these changes has been the extensive education delivered by RDP. A more crucial observation would be to show that these changes also have resulted in more secondary prevention, regardless of how such activity is measured. When we look into other available data-sources, such as if patients have been more frequently asked about alcohol, or if more alcohol-related diagnoses are registered in the medical records, it is doubtful that such activity actually has increased. In PHC in Sweden, if our observations are correct, it seems reasonable to conclude that these findings confirm other studies in finding that education as a sole implementaion strategy are an insufficient means of implementing a new strategy.

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