Carmen Voogt

Trimbos instituut

Netherlands Institute of Mental Health and Addiction

Knowledge Agenda Alcohol Prevention 2023

Alcohol Expertise Centre, Trimbos Institute

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Author
Carmen Voogt

Translator
Jill Naaijen

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Trimbos Institute
P.O. Box 725
3500 AS Utrecht
The Netherlands
T: 030-2971100

Content

Summary

The Alcohol Expertise Centre at the Trimbos Institute has developed the Alcohol Prevention Knowledge Agenda 2023 in collaboration with field representatives to identify knowledge gaps regarding alcohol (prevention). This report provides an overview of the identification and prioritization of knowledge gaps that are relevant to professionals in healthcare, policy, science and work. These gaps pertain to activities aimed at preventing and reducing harm from alcohol use among the general Dutch population through universal, selective, and indicated alcohol prevention (see Appendix 1).

The process of identifying and prioritizing knowledge gaps has led to the following top five Knowledge Questions (and themes):

1. *How can the protective factors at different stages of alcohol use be implemented in alcohol prevention for the general Dutch population, including at-risk and vulnerable groups? (Risk and protective factors of alcohol use).*
2. *Does the use of alcohol-free beverages supplement or replace the use of alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups? (Policy measures).*
3. *What are the barriers and facilitators for integrating effective alcohol interventions into the broader range of evidence-based lifestyle interventions? (Harm from alcohol use: individual and societal impact).*
4. *What is the severity and scope of alcohol's harm to others in the healthcare setting, e.g. other road users who are victims of drunk driving and end up in the Emergency Department? (Harm from alcohol use: individual and societal impact).*
5. *Which individual factors play a role in the development, recovery, and relapse of the different stages of alcohol use, and what is the role of comorbidity and functioning? (Alcohol use among the Dutch population).*

This Knowledge Agenda updates the Alcohol Prevention Knowledge Agenda 2020, which prioritized the current knowledge gaps (Voogt et al., 2020). The progress of implementing the Knowledge Agenda is monitored, supported, and stimulated by the Scientific Advisory Committee of the Alcohol Expertise Centre. Various health research funders may be approached for funding the desired research (e.g. KNAW [Royal Netherlands Academy of Arts and Sciences], NWO [Dutch Research Council], ZonMw [Netherlands Organisation for Health Research and Development]), funds and foundations (e.g. Alzheimer Nederland, Diabetes Fonds [Diabetes Fund], FAS Stichting [FAS Foundation], G4, KWF Kankerbestrijding [Dutch Cancer Society], MDL Fonds [Dutch Digestive Health Fund], Noaber Foundation, and ministries (VWS [Health, Welfare and Sport], I&W [Infrastructure and Water Management], JenV [Justice and Security]).

Introduction

Alcohol use increases the risk of harm to drinkers themselves and the society. Alcohol use is linked to approximately 200 different physical and mental diseases and conditions, including cardiovascular diseases, cancer and addiction. Additionally, alcohol use is related to risks such as (traffic) accidents, violence, poor performance at study and work, and Fetal Alcohol Spectrum Disorders. Here, the harm from alcohol use predominantly affects individuals other than the drinkers themselves.

The societal costs of alcohol use can be partially quantified in healthcare costs, productivity losses, education costs, and law enforcement costs (De Wit et al., 2018). When the societal costs of alcohol use are weighed against the societal benefits (e.g. tax revenues), the net annual burden to society in the Netherlands is estimated to range from 2.3 to 4.2 billion euros. These figures do not include the costs and benefits relating to the impact of alcohol use on the wellbeing of the drinker and their environment. If the costs to the drinkers themselves are included, the net annual burden to society in the Netherlands is estimated to range from 4.2 to 6.1 billion euros (De Wit et al., 2018). The harm from alcohol use, both to drinkers themselves and the society, can be prevented and reduced through alcohol prevention.

The Alcohol Prevention Knowledge Agenda 2023 was developed by the Alcohol Expertise Centre at the Trimbos Institute in collaboration with field representatives. The Alcohol Expertise Centre consolidates and disseminates knowledge on alcohol (prevention) with the goal of supporting professionals in healthcare, policy, science, and work in their efforts to prevent and reduce harm from alcohol use. The aim of this Knowledge Agenda is twofold:

1) To identify and prioritize knowledge gaps about alcohol (prevention) that professionals need in order to effectively contribute to prevent and reduce harm from alcohol use;
2) To contribute to the prioritization of research within national research programs.

The Alcohol Prevention Knowledge Agenda 2023 is not a standalone product. It is closely aligned with the Prevention Knowledge Agenda from 2021 and 2020 (Knowledge Platform Prevention, 2021, 2020). The treatment of alcohol use disorders is outside the scope of this Knowledge Agenda, but there may be overlap with the Addiction Research Agenda from Verslavingskunde Nederland [Dutch Addiction Association] (Wits et al., 2019).

Scope

The Alcohol Prevention Knowledge Agenda 2023 focuses on knowledge related to preventing and reducing harm from alcohol use among the general Dutch population through universal, selective, and indicated alcohol prevention (see Appendix 1). Care-related alcohol prevention is not covered in this Knowledge Agenda. For this, we refer to the Addiction Research Agenda from Verslavingskunde Nederland [Dutch Addiction Association] (Wits et al., 2019).

This Knowledge Agenda focuses on all types of prevention that contribute to delaying, reducing, or stopping alcohol use among the general healthy Dutch population, at-risk groups, and individuals without an alcohol use disorder. The following drinking patterns are distinguished (see

Box 1): abstinence, moderate drinking, heavy drinking, hazardous drinking (including binge drinking), harmful drinking, and alcohol dependence[1] (WHO, 2018).

Box 1. Definitions of Different Drinking Patterns.

Abstinence: voluntary abstinence from alcohol.

Moderate drinking: this drinking pattern is operationalized in various ways in (inter)national scientific literature. Moderate drinking involves drinking more than the advice from the Health Council (i.e. no drinking or no more than one standard glass of alcohol per day), but less than hazardous drinking: drinking 8-13 (women) / 8-20 (men) standard glasses of alcohol per week. Furthermore, the alcohol use is is dispersed over the course of the week, and the drinking pattern does not align with that of heavy drinking.

Heavy drinking: drinking more than 14 (women) or 21 (men) standard glasses of alcohol per week.

Hazardous drinking, including binge drinking: drinking 4 (women) or 6 (men) or more standard glasses of alcohol in one day at least once a week.

Binge drinking: in (inter)national scientific literature, this drinking pattern is operationalized in different ways. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) defines binge drinking as alcohol use where the blood alcohol concentration (BAC) rises to 0.08 g/dl within 2 hours (NIAAA, 2014). The amount of alcohol required varies by sex, age, and weight. In survey research, binge drinking is often operationalized as drinking 4 (women) / 6 (men) standard glasses of alcohol or more per occasion. For pragmatic reasons, binge drinking is often operationalized as drinking 5 standard glasses of alcohol or more per occasion, regardless of sex.

Harmful drinking: a drinking pattern that leads to physical complaints and/or mental or social problems, and that hinders the adequate management of pre-existing issues. The amount of alcohol used is not the determining factor for diagnosis (Boomsma et al., 2014).

Alcohol use disorder: a pattern of harmful drinking that leads to clinically significant limitations or suffering. The DSM-IV made a distinction between alcohol abuse and alcohol dependence or alcohol addiction. In the DSM-5, these separate disorders have been combined into one alcohol use disorder with a severity indicator (mild, moderate, or severe disorder) (Sigling, 2016).

Note: In the Netherlands, one standard glass of alcohol contains 10 grams of ethanol.

1 A form of harmful drinking characterized by dependence on alcohol. Criteria for diagnosing alcohol dependence or alcohol addiction are included in diagnostic classification systems such as the International Classification of Diseases (ICD) and older versions of the Diagnostic and Statistial Manual (DSM). Features of alcohol dependence or alcohol addiction include, among others, drinking more than intended in one day and tolerance to the effects of alcohol. In the current DSM-5, alcohol abuse and alcohol dependence or addiction have been combined into one alcohol use disorder with a severity indicator (mild, moderate, or severe disorder) (Sigling, 2016).

Method

Four steps were taken to develop the Alcohol Prevention Knowledge Agenda 2023:

- Step I: Problem Exploration
- Step II: Knowledge Synthesis – Quickscan of Scientific Literature
- Step III: Knowledge Synthesis – Prioritization of Knowledge Questions per Research Theme
- Step IV: Knowledge Synthesis – Finalization of Knowledge Questions per Research Theme

These steps are elaborated below.

Step I: Problem Exploration

In 2020, the Alcohol Expertise Centre published the first Alcohol Prevention Knowledge Agenda to identify gaps in knowledge about alcohol (prevention) (Voogt et al., 2020). The Alcohol Prevention Knowledge Agenda 2023 is an update of the first Knowledge Agenda. This updated agenda can be considered as a living document, intended to stimulate ongoing dialogue and continuous refinement of the knowledge development required in the field of alcohol prevention.

Step II: Knowledge Synthesis – Quickscan of Scientific Literature

For the Alcohol Prevention Knowledge Agenda 2023, literature within seven research themes on alcohol (prevention) was reviewed and described (see Box 2). A quickscan of the existing (inter) national literature was conducted, and electronic databases (e.g. Google Scholar, PsycINFO, PubMed) were used for publications from 2020-2022. Initially, the search focused on (systematic) reviews and meta-analyses, supplemented by recent articles and gray literature. Additional articles were found using the 'snowball method' (i.e. using references from systematic reviews and meta-analyses). This quickscan is not exhaustive but provides an overview of the current state of knowledge within the seven research themes regarding alcohol (prevention).

In addition to the quickscan of the literature, discussions were held with:

- Experts affiliated with the Alcohol Expertise Centre
- The Scientific Advisory Committee of the Alcohol Expertise Centre

Box 2. Seven Research Themes of the Alcohol Prevention Knowledge Agenda 2023.

1. Alcohol use among the Dutch population
2. Harm from alcohol use: individual and societal impact
3. Risk and protective factors of alcohol use
4. Policy measures
   a. Price
   b. Advertising
   c. Availability of alcohol
   d. Alcohol labelling
5. Alcohol and traffic
6. Early identification and interventions in settings
   a. School
   b. Workplace
   c. Community
   d. Healthcare
7. Alcohol and sport

Step III: Knowledge Synthesis – Prioritization of Knowledge Questions per Research Theme

In total, 110 knowledge questions were presented by the Alcohol Expertise Centre to 24 field representatives (i.e. education, research, government, work, and healthcare) during the Expert Meeting on Alcohol Prevention on December 12, 2022, organized by ZonMw in collaboration with the Alcohol Expertise Centre, on behalf of the Ministry of VWS. The aim of this expert meeting was to: 1) gather reflections and feedback on the Alcohol Prevention Knowledge Agenda 2023, in order to clarify which knowledge questions are considered relevant or missing in the field and 2) collect input necessary for designing the Alcohol Prevention Programme within ZonMw's 7th Prevention Programme (2023–2025).

The expert meeting began with a presentation of the Knowledge Agenda. Subsequently, participants engaged in two rounds of working group sessions (45 minutes each). Each group focused on one or two research themes and their corresponding knowledge questions from the agenda. Participants were invited to indicate their preferred working groups during event registration, and these preferences were taken into account as much as possible in the group formation process.

During the working group sessions, participants discussed which research themes they most frequently encounter in their professional practice and identified knowledge gaps within those themes as presented in the Knowledge Agenda. They also indicated which knowledge questions they believed had already been addressed and which remained unanswered. For questions considered to be already answered, participants were encouraged to provide references to the relevant research.

Following the working group sessions, a plenary feedback session was held to collectively discuss the outcomes. The insights and feedback gathered throughout the expert meeting were integrated into this revised Knowledge Agenda, which ultimately comprised 121 knowledge questions.

Two months after the expert meeting, both participants and members of the Scientific Advisory Committee of the Alcohol Expertise Centre were invited to complete an online survey. In this survey, they were asked to assess the knowledge questions within their area of expertise based on the following criteria:

a) Relevance to the development of the alcohol prevention field;
b) Urgency, considering the scale and severity of the prevalence/problems/costs;
c) Potential to generate applicable knowledge;
d) Feasibility of implementation through research.

Participants responded using a five-point Likert scale ranging from 'strongly disagree' (0) to 'strongly agree' (4). The prioritization of the knowledge questions within each research theme was determined by calculating the average score across the four assessment criteria. Higher average scores indicated a higher priority for future research. The survey consisted solely of multiple-choice items and required approximately 5 to 20 minutes to complete.

Results prioritizing knowledge questions per research theme

The survey results (N=20) indicated that participants were most frequently engaged with the theme 'Early detection and interventions in settings' (n=8), while the theme 'Risk and protective factors of alcohol use' was the least frequently encountered (n=1).

The five highest-priority knowledge questions for each research theme are listed in Table 1 (see Appendix 2).

A comprehensive overview of the prioritization of all knowledge questions across the research themes is provided in Table 2 (see Appendix 2). Please note that the themes ' Alcohol and traffic' and 'Alcohol and sport' are not included in this overview, as none of the participants identified these as areas they encounter in their professional practice.

Step IV: Knowledge Synthesis – Finalization of Knowledge Questions per Research Theme

A total of 121 knowledge questions were finalized in the Alcohol Prevention Knowledge Agenda 2023. These questions were developed based on input from experts and informed by recommendations from (inter)national literature. They reflect key areas where research should be directed over the coming decades (2023–2040) in the context of alcohol prevention. The knowledge questions are presented in detail in the following chapters.

Results of knowledge questions per research theme

First, the current state of scientific knowledge per research theme is briefly described, followed by knowledge gaps and questions.

1. Alcohol Use Among the Dutch Population[2]

Several national monitoring studies provide either continuous or periodic insights into alcohol use among the Dutch population (see Box 3). Based on these sources, alcohol use in the Netherlands can be examined for the following groups:

- **Young people:**
  - 12-16-year-olds in secondary education: 46.6% have ever drunk alcohol, 26.2% in the past month, and 18.5% have binged in the past month (Rombouts et al., 2020)
  - 16-18-year-olds in secondary vocational education and training and higher professional education: 79% have ever drunk alcohol, 67% in the past month, and of those who drank alcohol in the past month, 19% drank more than 10 beverages on a weekend day (Monshouwer et al., 2022)
- **Young adults:**
  - 85% of students in higher professional education and university[3] have drunk alcohol in the past year (Dopmeijer et al., 2021)
  - 10.6% of students in higher professional education and university drink heavily (Dopmeijer et al., 2021)
  - 16.2% of students in higher professional education and university drink hazardously (Dopmeijer et al., 2021)
  - 98% of partygoers (16-35 years) have drunk alcohol in the past year (Monshouwer et al., 2021)
  - 82% of partygoers (16-35 years) drink alcohol weekly (Monshouwer et al., 2021)
- **Adults:**
  - 78.0% have drunk alcohol in the past year (CBS, 2021)
  - 44.0% meet the recommendation of the Health Council (CBS, 2021)
  - 7.3% drink heavily (CBS, 2021)
  - 8.3% drink hazardously (CBS, 2021)
  - 12.8% have ever had a DSM-IV alcohol use disorder (Ten Have et al., 2022)
  - 5.4% have had an alcohol use disorder in the past 12 months (Ten Have et al., 2022)

2 For the most recent prevalence rates of alcohol use among various groups within the Dutch population, we refer to the latest national monitoring reports and epidemiological data sources published by the Alcohol Expertise Centre of the Trimbos Institute and the Dutch National Institute for Public Health and the Environment (abbreviated as RIVM in Dutch).

3 The majority of students in higher professional education and university are under 26 years old (85%).

- **Pregnant and breastfeeding women (Scheffers-van Schayck et al., 2022):**
  - 43% of women drank alcohol in the four weeks before pregnancy
  - 24.4% of women drank alcohol before they knew they were pregnant
  - 2.6% of women drank alcohol after they knew they were pregnant
  - 19% of breastfeeding women drank alcohol during that period
- **Older adults (CBS, 2021):**
  - 76.3% of people aged 50 and older drank alcohol in the past year
  - 48.5% of people aged 50 and older meet the recommendation of the Health Council
  - 7.5% of people aged 50 and older drink heavily
  - 6.2% of people aged 50 and older drink hazardously
  - 0.85% of people aged 55 and older had a diagnosis of harmful drinking as registered by their general practitioner in 2015 (Veerbeek et al., 2017)

The figures regarding demand for help, incidents, and alcohol-related deaths – derived from various sources compiled in the National Drug Monitor 2021 report by the Trimbos Institute (NDM, 2022) – show that in:

- 2015, a total of 29,374 individuals were registered in addiction care with alcohol use as their primary issue, while approximately 5,000 individuals were registered with alcohol-related problems as their secondary issue
- In 2021, an estimated 15,600 people were treated in the Emergency Department due to alcohol-related traffic accidents
- In 2021, an estimated 4,500 people were treated in the Emergency Department for alcohol intoxication
- In 2021, an estimated 2,800 people were treated in the Emergency Department for alcohol-related self-harm injuries
- In 2020, an estimated 2,500 (range: 1,900-3,900) alcohol-related deaths occurred

Box 3. Monitoring Research on Alcohol Use Among the Dutch Population.

National monitoring of alcohol use among the Dutch population is currently conducted on a structural basis through survey instruments in the following studies:

a) Young people (12-16 years) via the biennial study Peilstation Survey (i.e. *Peilstations-onderzoek Scholieren: Peil*) (Rombouts et al., 2020) or the Health Behavior in School-aged Children (HBSC) study (Boer et al., 2022);
b) Adults (18 years and older) via the annual Health Survey (i.e. *Gezondheidsenquête*) within the Lifestyle Monitor (CBS, 2022);

In addition, prevalence rates on alcohol use are collected regularly (c, d, and e) and occasionally (f) for at-risk groups (c and d) and vulnerable groups (e and f):

c) Young people (16-18 years) via the Monitor Substance Use Middelenmonitor Secondary Vocational Education and Training and Higher Professional Education (i.e. *Middelenmonitor mbo-hbo*) (Van Dorsselaer et al., 2020);
d) Young adults: students via the Monitor Mental Health and Substance Use in Higher Professional Education and University Students (i.e. *Monitor Mentale gezondheid en Middelengebruik Studenten hoger onderwijs*) (Dopmeijer et al., 2021) and partygoers via the Large Nightlife Study (i.e. *Grote Uitgaansonderzoek*) (Monshouwer et al., 2021);
e) Pregnant and breastfeeding women via the Monitor Pregnancy and Substance Use (i.e. *Monitor Zwangerschap en Middelengebruik*) (Scheffers-van Schayck et al., 2022);
f) Older Adults, including those aged 55 and older (Veerbeek et al., 2017).

Other specific at-risk and vulnerable groups for which alcohol use prevalence is occasionally measured include:

- Individuals with intergenerational issues (e.g. children of parents with mental illness (COPMI));
- Individuals with somatic (diabetes, cancer) or mental health conditions (e.g. anxiety, depression);
- Individuals with comorbidity (e.g. alcohol use and behavioural disorders; alcohol use and antisocial personality disorders);
- Individuals with mild intellectual disabilities (MID) and individuals in special education;
- Migrants, particularly young refugees and labour migrants from Central and Eastern Europe.

1a. Monitoring Research

Currently, there is no structural national monitoring of alcohol use among specific at-risk and vulnerable groups, with the exception of the EXPLORE study – a national survey on substance use among students in practical education and special secondary education, as well as those in residential youth care and juvenile justice institutions (Visser et al., 2020). Research on the severity and extent of alcohol use within these groups is often limited, as they are frequently excluded from broader studies due to not meeting standard inclusion criteria. Alcohol use is often combined with one or more substances (Zuckermann et al., 2020). However, with the exception of the Large Nightlife Study (Monshouwer et al., 2021), research on the severity and extent of poly-substance use (i.e. the use of two or more substances in a given time period or

at one moment, such as alcohol and smoking) among adolescents and (young) adults is limited. More insight is needed into the prevalence rates of alcohol use (combined with one or more other substances) among (newly identified specific) at-risk and vulnerable groups for targeted alcohol prevention. Furthermore, additional monitoring research is needed on unrecorded alcohol use – referring to informally produced (il)legal alcohol for personal use, smuggled alcohol, surrogate alcohol, and alcohol acquired through cross-border shopping – in the Netherlands. Globally, unrecorded alcohol use accounts for approximately one-quarter of total alcohol use (Rehm et al., 2021).

Knowledge Questions

1. *How does alcohol use (in combination with one or more other substances) develop among at-risk groups (e.g. adolescents: 16-18 years; students: 18-25 years) and vulnerable groups (e.g. pregnant and breastfeeding women; elderly) in 2023-2040?*
2. *How does alcohol use (in combination with one or more other substances) develop among potential specific vulnerable groups, such as individuals with mild intellectual disabilities (MID), people with intergenerational problems (COPMI); individuals with physical and/or mental conditions; and (labour) migrants from Central and Eastern Europe in 2023-2040?*
3. *What is the impact of changes in the composition of the Dutch population (e.g. the increase in the number of migrants) on alcohol use per capita in the Netherlands?*
4. *What is the severity and extent of the newly identified at-risk groups of alcohol use (in combination with one or more other substances) in 2023-2040 (e.g. sports fans)?*
5. *What is the severity and extent of unregistered alcohol use in the Netherlands?*
6. *How can new research methods and techniques (e.g. prognostic modelling, epigenetics) be used to identify and characterize at-risk groups for alcohol use?*

1b. Drinking Patterns

Drinking patterns (i.e. binge drinking, moderate drinking) are often defined in different ways in the (inter)national literature, making it difficult to compare studies (Dawson & Room, 2000). Moreover, the at-risk groups for different drinking patterns may vary. Finally, within at-risk groups (e.g. elderly), certain individual factors (e.g. age, which makes people more sensitive to the effects of alcohol, medication use (Kuerbis et al., 2014)) and social environmental factors (e.g. loss of a partner) may have different effects on the various drinking patterns. More genetic and biomedical knowledge is needed about alcohol and the human body, as well as knowledge of the social environmental factors of alcohol use.

Knowledge Questions

1. *How can uniform definitions of the different stages of alcohol use and uniform standard glasses of alcohol be established for research and communication?*
2. *How should the uniform definitions of the different stages of alcohol use and uniform standard glasses of alcohol look like?*
3. *What is the interaction between medication use and heavy drinking (in combination with one or more other substances) concerning negative physical and mental health outcomes in the general Dutch population, including at-risk and vulnerable groups?*
4. *Which individual factors play a role in the development, recovery, and relapse of the different stages of alcohol use, and what is the role of comorbidity and functioning in this?*
5. *What are reliable indicators (e.g. demographic characteristics, individual characteristics) for targeting universal/selective/indicated alcohol prevention for the different stages of alcohol use?*

2. Harm from Alcohol Use: Individual and Societal Impact

Alcohol use is harmful to both the individual and the society.

2a. Individual Harm

Alcohol use leads to physical and mental health damage for the drinker. Hazardous drinking can result in liver damage, such as fatty liver, inflammation, cirrhosis, and cancer (Pal & Ray, 2016). Moderate to harmful drinking increases the risk of seven types of cancer: mouth, throat, larynx, esophagus, colorectal, liver, and breast cancer (Tran et al., 2022; World Cancer Research Fund International, 2018). Furthermore, there is increasing understanding of the complex relationship between alcohol use and cardiovascular diseases, although some debate remains. While light to moderate drinking seems to have a protective effect on ischemic heart disease (Mostofsky et al., 2016; Roerecke & Rehm, 2012; 2014) and stroke (Larsson et al., 2016), there is convincing evidence that heavy and hazardous drinking increases the risk of other cardiovascular diseases (e.g. blood pressure (Liu et al., 2022; Piano et al., 2018; Roerecke et al., 2018), heart attack (Mostofsky et al., 2016), arrhythmia (Giannopoulos et al., 2022; Kodama et al., 2011), brain hemorrhage (Larsson et al., 2016)). Additionally, growing insight is being gained into the complex relationship between alcohol use and dementia, although some debate persists. Light to moderate drinking seems to have a protective effect on dementia (Wiegmann et al., 2020), while heavy drinking increases the risk of dementia (Lao et al., 2021; Rehm et al., 2019). Furthermore, increasing insight is emerging into the complex relationship between hazardous drinking and type 2 diabetes. Again, light to moderate drinking seems to have a protective effect on type 2 diabetes (Knott et al., 2015). While light to moderate drinking appears to reduce the risk of some diseases (i.e. ischemic heart diseases, stroke, dementia, and type 2 diabetes) in certain groups, the research results should be interpreted with caution due to the methodological limitations of the studies. The phenomenon whereby light to moderate drinkers exhibit a lower risk of certain diseases compared to total abstainers, while the risk increases among heavy to harmful drinkers, is known as the J-curve. However, this concept remains a subject of considerable debate among researchers (Costanzo et al., 2019).

Light to moderate drinking affects fertility in women (i.e. a decrease in the chance of becoming pregnant the following month (Fan et al., 2017)) and men (i.e. a decrease in sperm volume and well-formed sperm cells (Ricci et al., 2017)). Hazardous to harmful drinking also increases the risk of lung diseases, such as acute lung injury (Acute Respiratory Distress Syndrome, ARDS) (Simou et al., 2018a) and tuberculosis (Simou et al., 2018b). Moreover, heavy drinking increases the risk of sleep apnea (Simou et al., 2018c; 2018d). Heavy drinking can also lead to neurological damage, both acute (e.g. impaired motor skills) and chronic (e.g. changes in brain activity, structure (volume), and cognitive function (Health Council, 2018)). It is not yet known to what extent changes in brain structure (gray matter volume) in adolescents are permanent (Health Council, 2018). Furthermore, there is insufficient knowledge about the relationship between alcohol use (in combination with one or more other substances) and poor academic performance, school absenteeism, and school dropout (Gubbels et al., 2019; Ter Bogt et al., 2009). Moreover, little is known about the relationship between drinking pace and heavy and/or hazardous drinking among adolescents and (young) adults (Groefsema et al., 2019).

Finally, heavy drinking can cause, worsen, or maintain mental health issues for the drinker or prevent the adequate handling of problems. It is known that harmful drinking is associated with anxiety and/or depressive disorders (Li et al., 2022; Puddephatt et al., 2022; Ummels et al., 2022), but no direct causal link has been established, nor has an underlying factor been identified that could explain these co-morbid relationships (Conner et al., 2009). Alcohol use, particularly alcohol addiction, is also associated with an increased risk of suicide (Amiri et al., 2020).

Knowledge Questions

1. *To what extent are changes in brain structure (volume of gray matter) caused by heavy drinking among adolescents and young adults (12-25 years) permanent?*
2. *What is the relationship between heavy drinking (in combination with one or more other substances) and poor academic performance, school absenteeism, and school dropout among adolescents and young adults (12-25 years), and what are the differences by sex and educational level?*
3. *What is the relationship between drinking pace and heavy and/or hazardous drinking among adolescents and (young) adults?*
4. *What is the life expectancy of adult drinkers compared to smokers and individuals with (severe) obesity?*
5. *What is the three-way interaction between hazardous drinking, smoking, and (severe) obesity regarding negative physical and mental health outcomes in the general Dutch population, including at-risk and vulnerable groups?*
6. *What are effective interventions to reduce alcohol use (in combination with one or more other substances) among adolescents and (young) adults?*
7. *What is the relationship between heavy drinking and physical (e.g. cancer) and/or mental disorders (e.g. depression), and what are the differences by sex, age, and educational level?*
8. *What is the relationship between the different stages of alcohol use and rare types of cancer?*

2b. Societal Harm

In addition to health damage for the drinker, alcohol use increases the risk of traffic accidents. In the Netherlands, it was estimated that alcohol was a contributing factor in approximately 12 to 23 percent of traffic fatalities in 2015 (Institute for Road Safety Research, 2016; Houwing et al., 2014). Young men and hazardous alcohol offenders are relatively often responsible for severe alcohol-related traffic accidents (Scholten & Lemmens, 2020; Institute for Road Safety Research, 2022). Heavy drinking also increases the risk of various types of violence: domestic violence, sexual violence, and violence related to nightlife (O'Connor et al., 2021; Laslett et al., 2020). In the Netherlands, 26 to 43 percent of violence is alcohol-related, especially nightlife violence (Van Amsterdam et al., 2019). In 2021, an estimated 15,600 people were treated at Emergency Departments due to accidents where alcohol was involved (if known) (VeiligheidNL, 2022).

Heavy drinking also leads to absenteeism from work, losses in labour productivity, and work-related accidents (Hashemi et al., 2022; Hooftman et al., 2022). Additionally, hazardous drinking contributes to school absenteeism, memory and learning problems, reduced academic performance, delayed educational progress, and school dropouts (De Wit et al., 2018). Furthermore, alcohol use during pregnancy can lead to preterm birth, low birth weight, and Fetal Alcohol Spectrum Disorder (FASD), a collective term for various abnormalities and complications that a

child may experience due to prenatal alcohol exposure. Globally, the prevalence of FASD is estimated at 7.7 per 1,000 births, with Fetal Alcohol Syndrome (FAS), the most severe manifestation, occurring at a rate of 14.6 per 10,000 births (Ricci et al., 2017). Prevalence data specific to the Netherlands are not available.

Lastly, children living with parents with addiction problems are at heightened risk for a range of negative outcomes. In the Netherlands, approximately 24,000 children under the age of 18 year reside with a parent with addiction problems each year, with alcohol dependence being the most prevalent. These children have an increased risk of developing substance use disorders and mood disorders in later life (Van Doessem et al., 2019).

The societal costs of alcohol use can be partially quantified in healthcare costs, productivity losses, education costs and law enforcement costs (De Wit et al., 2018). When the societal costs of alcohol use are weighed against the societal benefits (e.g. tax revenues), the net annual burden to society in the Netherlands is estimated to range from 2.3 to 4.2 billion euros. These figures do not include the costs and benefits relating to the impact of alcohol use on the wellbeing of the drinker and their environment. If the costs to the drinkers themselves are included, the net annual burden to society in the Netherlands is estimated to range from 4.2 to 6.1 billion euros (De Wit et al., 2018).

While the adverse effects of alcohol use on individual health and well-being are well-documented, there is a growing recognition of the need for further empirical investigation into the externalities of alcohol use – commonly referred to as alcohol's harm to others (AHTO). This harm encompasses a wide range of social, economic, and psychological consequences experienced by individuals other than the drinker, including family members, peers, and the broader community (Laslett et al., 2019; Stanesby et al., 2018).

Knowledge Questions

1. *What is the severity and extent of alcohol's harm to others in the family setting, e.g. damage to the fetus from alcohol use during pregnancy or children and partners of drinkers who are victims of domestic violence?*
2. *What is the severity and extent of alcohol's harm to others in the workplace setting, e.g. employers/employees affected by employees/employers who drink heavily?*
3. *What is the severity and extent of alcohol's harm to others in the neighbourhood setting, e.g. individuals in nightlife who are victims of alcohol-related violence on the streets or passive sports participants who are victims of violence and vandalism by drinking supporters?*
4. *What is the severity and extent of alcohol's harm to others in the healthcare setting, e.g. road users who are victims of driving under the influence of alcohol and/or drugs and end up in the Emergency Department?*
5. *What is the severity and extent of alcohol- and drug-induced violence in the Netherlands?*
6. *What is the prevalence of FASD and FAS in the Netherlands?*
7. *How can individuals with FASD/FAS be better identified in different settings (school, community, workplace, healthcare)?*
8. *What is the damage of alcohol use before, during, and after pregnancy for the (un)born child, and is this dependent on the duration and stages of alcohol use?*
9. *How can women who are pregnant, but unaware of it, be effectively reached through education and awareness?*

3. Risk and Protective Factors of Alcohol Use

Risk and protective factors for alcohol use can be divided into individual factors and environmental factors. Individual factors include demographic characteristics, personality traits, genetic factors, age of alcohol initiation, alcohol-related cognitions, and stress, all of which influence alcohol use. Environmental factors refer to the physical and social environment related to alcohol use. Although much research has been conducted on the risk factors for alcohol use, relatively little research has been done on the protective factors.

3a. Individual Factors

Demographic characteristics are related to the different stages of alcohol use. For example, men are more likely to drink heavily (8.6% and 9.1%) and hazardously (6.0% and 7.4%) than women. This also applies to individuals of Dutch origin compared to those with a non-Western background. Additionally, higher-educated individuals are more likely to be hazardous drinkers (9.2%) than lower-educated individuals (5.9%). Among those with a middle-level education, 8.9 percent are hazardous drinkers (CBS, 2022).

Personality traits are related to the different stages of alcohol use, especially heavy drinking (Skóra et al., 2020; Adan et al., 2017). There are four groups of personality traits: sensation seekers, individuals with low impulse control, those sensitive to anxiety, and those with negative thinking patterns. The first two groups are more extroverted and experience fewer risks, making them more likely to start drinking earlier, more frequently, and in greater amounts. The latter two groups are more introverted and drink to feel better or to solve problems (Cooper et al., 2016).

Genetic factors may contribute to whether an individual is allergic to alcohol, has a lower tolerance to its effects, or is more vulnerable to develop alcohol addiction. Alcohol addiction is estimated to have a heritability of approximately fifty percent (Friedel et al., 2021). Genetic factors may also explain variation in the age of alcohol initiation, but not the frequency of alcohol use (Poelen et al., 2008). Genes alone do not affect the different stages of alcohol use; environmental factors (e.g. parental monitoring) also play a role (Pasman et al., 2019). More research is needed on the complex relationship between genetic factors and alcohol use, with specific attention to gene-environment interactions.

The age of alcohol initiation during adolescence is a strong predictor of the different stages of alcohol use in (young) adulthood (Yuen et al., 2020; Aiken et al., 2018). More research is needed on how to delay the age of alcohol initiation from early adolescence to late adolescence.

Explicit and implicit alcohol-related cognitions are linked to the different stages of alcohol use (Neighbors et al., 2019). The influence of alcohol-related knowledge, alcohol-related norms, and alcohol expectations on young children's alcohol initiation is unknown (Cook, 2022; Voogt et al., 2017). Social norms and alcohol expectations (i.e. expected effects of alcohol use) among youth are strong predictors of alcohol initiation and harmful drinking in youth (Smit et al., 2018) and (young) adults (Brumback et al., 2021; Morris et al., 2020; Cooke et al., 2016). Drinking motives (i.e. reasons (for starting) to drink) are the cognitions closest to alcohol use and are strong predictors of hazardous and harmful drinking (Windle & Windle, 2018). More research is needed on how explicit and implicit alcohol-related cognitions can be integrated into alcohol interventions and the effectiveness of these interventions.

Stress is related to the different stages of alcohol use: it influences the effects of alcohol, while alcohol use, in turn, affects the body's physiological response to stress. The impact of stress on alcohol use depends on the nature, duration, and severity of the stress experienced, as well as the life stage in which the stress is experienced (Keyes et al., 2012). Temporary stress from retirement is a risk factor for harmful drinking (Xue et al., 2020; Bamberger & Bacharach, 2014), while work-related stress, job loss, divorce, or loss of a partner are risk factors for alcohol use disorders (Pachito et al., 2021; Black, 2016). Acute stress from traumatic events is related to an increase in alcohol use (Hawn et al., 2020). Acute and chronic stress from child abuse are linked to alcohol initiation in early adolescence and alcohol use disorders in adulthood (Sinha, 2022). Finally, stress from discrimination in individuals who belong to an ethnic or sexual minority group is related to hazardous and harmful drinking (Desalu et al., 2019; Gilbert & Zemore, 2016). More research is needed on the complex relationship between different forms of stress and the different stages of alcohol use.

Knowledge Questions

1. *What is the relationship between genetic factors and alcohol use (in combination with one or more other substances), and in interaction with environmental factors?*
2. *How can the age of alcohol initiation be delayed from early adolescence to late adolescence?*
3. *How can explicit and implicit alcohol-related cognitions be applied as techniques and methods in alcohol interventions, and what is their effectiveness?*
4. *What is the relationship between different forms of stress and the different stages of alcohol use?*

3b. Environmental Factors

In the social environment, family, friends, peers, and social norms in society play an important role in alcohol use (Van Hasselt, 2010). Factors in the physical environment that influence alcohol use will be addressed in research theme four.

Family

Parents influence their children's development throughout adolescence (Spijkerman et al., 2007), including their alcohol use (Koning et al., 2009). Parental alcohol use and exposure to it (i.e. observing others alcohol use increases the likelihood of alcohol use) play a key role in alcohol-related cognitions (i.e. alcohol-related knowledge, alcohol-related norms, and alcohol expectations) of young children (Voogt et al., 2017). For young people, parental alcohol use and observing their use influence their alcohol-related cognitions and alcohol use (Smit, 2020). More research is needed on the impact of exposure to parental alcohol use on the development of alcohol-related cognitions and its influence on alcohol initiation in adolescents.

Parenting style also influences adolescent alcohol use. An authoritative parenting style is a protective factor for alcohol use in adolescents, while authoritarian, permissive, or neglectful styles are risk factors (Van Hasselt, 2010). A disapproving attitude toward alcohol use by parents is also a protective factor for alcohol use in adolescents, particularly when it is expressed through rule-setting, active monitoring, and appropriate role modelling. A supportive attitude, on the other hand, is a risk factor (National Institute on Alcohol Abuse and Alcoholism, 2021). Finally, parental addiction problems are a risk factor for alcohol use in adolescents (Van Doessem et al., 2019).

Friends and Peers

In adolescence, the autonomy of young people and the influence of friends and peers increasingly grow. The increasing influence of friends and peers occurs through the selection of friends and peers by the young person themselves, as well as social processes within the group, such as peer pressure, modelling, and the effects of descriptive and injunctive social norms (Hagler, 2018). Friends and peers are both a risk factor and a protective factor for the development of alcohol use in young people.

Hazardous drinking in older adults (55+) is also influenced by the role of friends and peers through peer pressure, a high level of participation in social activities, and approval of alcohol use by the surrounding environment (Veerbeek et al., 2017; Sannen et al., 2018).

Knowledge Questions

1. *Are alcohol-related cognitions (knowledge, social norms, expectations) in young children predictors of alcohol initiation in adolescence?*
2. *What is the impact of exposure to parental alcohol use on the development of alcohol-related cognitions (knowledge, social norms, expectations) in young children and its influence on alcohol initiation in adolescence?*
3. *What are the protective and risk factors at the different stages of alcohol use (i.e. alcohol initiation; moderate drinking; heavy drinking; hazardous drinking, including binge drinking; harmful drinking, alcohol use disorder), and are these factors different for at-risk and vulnerable groups?*
4. *What are the predictive factors for transitions between the different stages of alcohol use (e.g. from alcohol initiation to alcohol use disorder or from hazardous drinking to moderate drinking), and are these factors different for at-risk and vulnerable groups?*
5. *How can the protective factors at different stages of alcohol use be implemented in alcohol prevention for the general Dutch population, including at-risk and vulnerable groups?*
6. *How can parents be reached and encouraged to engage in conversations with each other about the role of parenting in their children's alcohol use?*

4. Policy Measures

Increasing the price of alcoholic beverages, banning or severely limiting alcohol advertising, and limiting the physical availability of alcoholic beverages are policy measures (best buys) that are the most cost-effective, affordable, and feasible for reducing harmful drinking (WHO, 2018; Babor et al., 2010). Russia and Lithuania are two countries in the European Region of the WHO that have recently implemented policy measures in the areas of price, advertising, and availability, resulting in a decrease in alcohol use and mortality risk in general (Berdzuli et al., 2020).

Knowledge Questions

1. *How do representatives of the alcohol industry influence alcohol policy in the Netherlands?*
2. *What are the lobbying activities of representatives of the alcohol industry, and how are these expected to develop in 2023-2040?*
3. *What frames and arguments for and against are used by health parties and alcohol industry representatives in implementing alcohol policy?*

4. *How is national, regional, and local alcohol policy determined and influenced at the political-administrative level?*
5. *What are the barriers and facilitators for interdepartmental national, regional, and local alcohol policy?*
6. *How can national alcohol policy be translated into regional and local alcohol policy, and what are the best practices for municipalities?*
7. *What are the (legal) barriers and facilitators for municipalities in implementing regional and local alcohol policy?*

4a. Price

There is compelling evidence that increasing the price of alcoholic beverages through excise duties reduces alcohol use (WHO, 2018; Babor et al., 2010). Since 2017, the excise tax on alcoholic beverages has not been increased in the Netherlands (STAP, 2023). The price of alcoholic beverages can also be increased by introducing a minimum unit price for alcohol (Minimum Unit Pricing: MUP) or a complete ban on price promotions.

MUP sets a minimum price for one standard glass or unit of alcohol. Sellers, including supermarkets and retailers, are not allowed to offer alcohol below this price. The more alcohol a drink contains, the higher the price becomes as a result of MUP. The minimum price focuses on relatively cheap and/or strong alcoholic beverages, which are predominantly purchased by heavy, hazardous, and/or harmful drinkers (De Wit et al., 2021). MUP is expected to be more effective in reducing alcohol use among heavy, hazardous, and harmful drinkers than raising excise duties and has the largest economic benefits for society (De Wit et al., 2021). The following twelve countries have introduced MUP: Australia, Canada, Ireland, Kyrgyzstan, Moldova, Ukraine, Uzbekistan, Russia, Scotland, United States, Wales, and Belarus. MUP is expected to be introduced in the near future in the Australian Western Territory, Northern Ireland, and New Zealand. Currently, MUP has not been introduced in the Netherlands (De Wit et al., 2021). In the Netherlands, there is a partial ban on price promotions exceeding a 25 percent discount on alcoholic beverages in retail.

A considerable amount of research has been conducted on the effects of price increases on alcohol use through excise duties. More empirical research is needed on the effects of MUP and a partial ban on price promotions.

Knowledge Questions

1. *How does the price of alcoholic beverages develop over time in the Netherlands (2000-2040)?*
2. *To what extent is cheap alcohol available in the Netherlands, and what prices are charged for it?*
3. *Which at-risk groups are sensitive to low prices and price promotions of alcoholic beverages, and what does this mean for their alcohol use and societal costs related to alcohol use?*
4. *To what extent can MUP reduce socio-economic health disparities between groups in society?*
5. *What are the effects of price promotions of up to a 25 percent discount on alcoholic beverages in retail for: a) alcohol beverage sales in the Netherlands and b) alcohol use among the general Dutch population, including at-risk and vulnerable groups?*
6. *What are the (legal) barriers and facilitators for alcohol regulation to reduce alcohol use and related harm in the Netherlands, considering knowledge about international, European, and national law?*

4b. Alcohol Advertising

There is compelling evidence that introducing and enforcing a ban or severe restrictions on alcohol advertising reduces alcohol use (WHO, 2018; Babor et al., 2010). In the Netherlands, there is support for introducing a ban on alcohol advertising among adults (Voogt et al., 2022). Banning or restricting online alcohol advertising is challenging, particularly on social media, due to the transnational nature of digital advertising. Additionally, the transition from traditional commercial messaging to innovative advertising techniques complicates the identification of commercial intent and the source of such messages (Carlin et al., 2021).

Exposure to Alcohol Advertising

There is a causal relationship between exposure to (online) alcohol advertising and alcohol use: young people who see alcohol ads and images of alcohol use in the media are more likely to start drinking, and young people who already drink tend to increase their alcohol use (Alhabash et al., 2022; Noel et al., 2020; Sargant & Babor, 2020; Sargant et al., 2020; Van Hoof et al., 2020). While much research has been done on the effects of exposure to alcohol advertising on the alcohol use of young people and young adults, little research has been conducted on the effects of exposure to alcohol-free beverage advertising on alcohol use among young people and (young) adults (De Wit et al., 2021). Advertising for alcohol-free beverages may contribute to a reduction in alcohol use when these products serve as substitutes for alcoholic beverages. However, such advertising can also potentially increase alcohol use if it facilitates a transition from alcohol-free to alcoholic beverages among young individuals or enhances brand recognition of companies primarily associated with alcoholic products.

The market for alcohol-free beverages has grown significantly in the Netherlands: between 2017-2020, 83 percent more alcohol-free beverages were sold in supermarkets and liquor stores. Alcohol-free beer is by far the most sold product. Producers spend about 10 million euros annually on alcohol-free beverage advertising: approximately 9 percent of all advertising spending. Advertisements through social media and sponsorship contracts are not included here. The content of advertising for alcohol-free beverages differs from that of alcoholic beverages. Advertising for alcohol-free beverages often emphasize their novelty, their health benefits compared to alcoholic beverages, the ability to participate in traffic safely, and the potential to maintain physical fitness. While traditional themes commonly found in alcoholic beverage advertisements – such as 'partying,' 'quality,' and 'masculinity' – are occasionally present in alcohol-free beverage ads, they appear less frequently. In addition, advertising for alcohol-free beverages targets women more than alcohol ads do (De Wit et al., 2021).

Knowledge Questions

1. *How can a ban or severe restrictions on online alcohol advertising, especially on social media, be enforced, and what are the best practices from abroad?*
2. *How many alcohol-free beverages are used in the HoReCa (hotel, restaurant and catering) in the Netherlands?*
3. *What is the extent and reach of alcohol-free beverage advertising via social media and sports sponsorship in the Netherlands?*
4. *Do non-drinkers switch to alcoholic beverages more quickly due to the existence of (advertising for) alcohol-free beverages, or do alcohol consumers use alcohol-free beverages more often instead of alcoholic beverages?*

5. *Does the use of alcohol-free beverages supplement or replace the use of alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups?*
6. *Are alcohol-free beverages a good alternative for people with (former) addiction issues, or does this increase the chance of relapse into alcohol use?*

Rules on Alcohol Advertising

In the Netherlands, alcohol advertising is largely regulated through self-regulation by the alcohol industry. Self-regulation is ineffective in reducing alcohol use (Babor et al., 2010). Currently, the Netherlands has provisions on alcohol advertising in two laws (i.e. the Media Act 2008 and the Advertising Decree Alcohol Act[4]). Changes may take place in these provisions in the coming years. Research on the effectiveness of (adjustments in) alcohol advertising measures on alcohol use is rarely conducted. Therefore, research should primarily focus on monitoring and documenting changes in rules on alcohol advertising. Subsequently, the effectiveness of these changes on alcohol use can be examined.

Knowledge Questions

1. *Is there support for changes in policy measures on advertising for alcoholic and alcohol-free beverages, and what are the barriers and facilitators?*
2. *What changes in policy measures on advertising for alcoholic and alcohol-free beverages have been made in 2023-2040?*

4c. Availability of Alcohol

There is compelling evidence that introducing and enforcing restrictions on the availability of alcohol reduces alcohol use. This can be achieved by reducing the number of sales points and opening hours (Sanchez-Ramirez & Voaklander, 2018; WHO, 2018; Babor et al., 2010). In the Netherlands, alcoholic beverages are widely and easily accessible: in 2019, there were approximately 43,200 official sales points for alcoholic beverages, of which 39,200 were physical (30,300 HoReCa and 8,900 retail shops) and 4,000 were online sales points (CBS, 2019). In 2020, there were nearly 12,000 para-commercial sales points for alcoholic beverages in the Netherlands.

In rural areas, shacks play a role in youth alcohol use: nearly a quarter of 12-16-year-old drinkers name a 'shack, 'shed, or hut' as the location where they drank alcohol at least once in the past month (Rombouts et al., 2020). Additionally, smaller portions, glasses, and bottles of wine have led to a decrease in wine consumption among adults (Mantzari & Marteau, 2022). More research is needed to determine whether the size of portions and packaging affects alcohol use among young people and adults.

Blurring with Alcohol

Blurring with alcohol increases the availability of alcohol. Blurring refers to combining different business models, such as catering with retail. Blurring with alcohol includes offering and/or serving alcohol in a clothing store, bookstore, or at the hairdresser's. Currently, blurring with alcohol is prohibited in the Netherlands, however, the intention to allow blurring in shopping areas was included in the Rutte IV coalition agreement in December 2021 (Rijksoverheid, 2022). The majority of adults in the Netherlands support the current ban on blurring with alcohol (Voogt et al., 2022).

4 The Alcohol Act includes an article that gives the minister of Health, Welfare and Sport the competence to regulate alcohol advertising through an order in council. However, to date, no such regulation has been enacted.

Knowledge Questions

1. *How will the number of sales points and opening hours for alcoholic beverages develop in the Netherlands in 2023-2040, and what effect will this have on alcohol use among young people and (young) adults in the Netherlands?*
2. *What is the effect of limiting opening and serving hours in the HoReCa and supermarkets on alcohol use among young people and (young) adults in the Netherlands?*
3. *Is there support for limiting the number of sales points (e.g. sports canteens, airports) and opening hours for alcoholic beverages in the Netherlands, and what are the barriers and facilitators to this?*
4. *How many legal, illegal, and non-official sales points for alcoholic beverages will there be in the Netherlands in 2023-2040?*
5. *How many shacks will there be in the Netherlands, and how frequently will they be used by young people and young adults in 2023-2040?*
6. *(If no age verification system for online alcohol sales can be developed (de Jong, 2021)). Is there support for a ban on the online sale of alcoholic beverages, and what are the barriers and facilitators to this?*
7. *What is the effect of the size of portions and packaging of alcoholic beverages on alcohol use among young people and (young) adults?*
8. *What are the effects of blurring with alcohol on public health and safety among the general Dutch population, including at-risk and vulnerable groups such as young people, pregnant women, and people with (ex)addiction problems?*

Age Limit for Alcohol Sales

Since the legal minimum age for the sale of alcoholic beverages was raised from 16 to 18 years in 2014, there has been increased emphasis on the enforcement of and compliance with this regulation. Currently, substantial variation exists in compliance rates across different types of alcohol vendors: home delivery services (10.0%), sports canteens (28.8%), HoReCa (23.7%), supermarkets (62.6%), and liquor stores (71.0%) (Hessels et al., 2021). Improved compliance with the legal age restriction among alcohol vendors contributes to a reduction in alcohol availability. However, as adolescents frequently acquire alcohol through social sources, such as peers and parents, efforts to limit youth access should also target these informal channels.

Compliance with the legal age restriction among alcohol vendors can be strengthened through municipal enforcement, provided that municipalities apply sanctions in alignment with their local enforcement frameworks. The mechanisms available to promote compliance vary across vendor types. HoReCa, liquor stores, and supermarkets can exert direct control through trained personnel and internal company policies. In contrast, enhancing compliance in sports canteens poses greater challenges, partly due to the reliance on volunteer bartenders and the involvement of industry organizations whose memberships largely consist of small and medium-sized enterprises (e.g. Royal HoReCa Netherlands, Royal Liquor Retailers Union). Similar difficulties arise with home delivery services, catering companies, and organizers of public events and festivals, where the use of temporary staff, secondary distribution practices, and relatively low penalties compared to the perceived benefits of non-compliance hinder effective regulation.

Knowledge Questions

1. *To what extent do different vendors of alcoholic beverages comply with the legal age restriction for the sale of alcoholic beverages in 2023-2040?*
2. *What policy measures and interventions can be implemented to reduce secondary distribution?*
3. *Is there support for an alcohol-free home environment among parents, and what are the barriers and facilitators to this?*
4. *What are effective steering options for improving compliance with the legal age restriction for the sale of alcoholic beverages for the different vendors of alcoholic beverages?*

Alcohol Distribution

More research is needed to assess compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication in the HoReCa and liquor stores. Existing studies in the Netherlands indicate that adherence to this legislation is extremely low, with a compliance rate of only four percent (Gosselt et al., 2013). To monitor compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication effectively within the HoReCa, a standardized, nationwide mystery shopping study should be conducted biennially. Additionally, there is a need for more research to assess compliance with this legislation at public events and festivals.

Knowledge Questions

1. *What are the barriers and facilitators to compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals?*
2. *To what extent is alcohol served to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals in 2023-2040?*
3. *What are the effects of increased compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals on alcohol use among young people and (young) adults in 2023-2040?*

4d. Alcohol Labelling

Alcohol labelling refers to the mandatory inclusion of product information (i.e. ingredients and nutritional value) and health information and warnings about the risks of alcohol use on labels of alcoholic beverages with an alcohol content of more than 1.2 percent (Smit & Voogt, 2021). It constitutes a policy measure endorsed by both the WHO and the EU as part of their strategies to reduce alcohol-related harm (Jané-Llopis et al., 2020; WHO, 2020). For example, the European Cancer Plan (Europe's Beating Cancer Plan) focuses on the introduction of alcohol labelling in 2022-2023 in its fight against cancer (European Commission, 2021). Alcohol labelling can serve as one component within a comprehensive policy framework aimed at increasing public awareness of alcohol-related harm and, consequently, reducing alcohol use (Smit & Voogt, 2021).

The following EU countries have introduced one or more components of alcohol labelling:

- Nine countries have legislation requiring the listing of ingredients on alcoholic beverage labels: Bulgaria, Greece, Ireland, Croatia, Lithuania, Austria, Portugal, Romania, and the Czech Republic.
- One country has legislation requiring the listing of nutritional value on alcoholic beverage labels: Ireland.
- Four countries have legislation requiring the inclusion of health information and warnings on alcoholic beverage labels: Germany, France, Ireland, and Lithuania.

Currently, alcohol labelling has not been introduced in the Netherlands, although there is support for including product information (Grunert et al., 2018) and health warnings about the risks of alcohol use (Voogt et al., 2022) on labels of alcoholic beverages among Dutch adults. Various parties within the alcohol industry have made several self-regulatory agreements, primarily regarding the inclusion of product information on alcoholic beverage labels. Fewer self-regulatory agreements have been made regarding health information and warnings. If agreements exist, they are mostly related to alcohol use during pregnancy (Smit & Voogt, 2021).

More research is needed on the effects of including product information on alcoholic beverage labels on alcohol use. Although the effects of health information and warnings on alcoholic beverage labels on alcohol use are inconsistent, they do have an effect on awareness of alcohol-related harm and on the intention to drink less alcohol (Smit & Voogt, 2021).

Knowledge Questions

1. *What are the effects of product information and health information and warnings on alcoholic beverage labels on: awareness of alcohol-related harm, intention to reduce alcohol use, and actual alcohol use among the general Dutch population, including at-risk and vulnerable groups?*
2. *Is there support for the mandatory inclusion of product information on alcoholic beverage labels among the general Dutch population, including at-risk and vulnerable groups?*
3. *Is there support for the mandatory inclusion of health warnings on alcoholic beverage labels among the general Dutch population (including at-risk and vulnerable groups), and on which topics (e.g. alcohol and cancer: 'alcohol use causes cancer')?*
4. *(If alcohol labelling is not introduced in the Netherlands). What percentage of alcoholic beverages will have labels with product information and health information and warnings in 2023-2024?*
5. *What are the effects of neutral packaging for alcoholic beverages on: awareness of alcohol-related harm, intention to reduce alcohol use, and actual alcohol use among the general Dutch population, including at-risk and vulnerable groups?*
6. *Is there support for the mandatory introduction of neutral packaging for alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups?*

5. Alcohol and Traffic

Driving under the influence of alcohol is a risk factor for traffic accidents, as alcohol use leads to more impulsive and reckless behaviour. According to the Institute for Road Safety Research (2022), drivers under the influence of alcohol exhibit impaired judgment in traffic situations, delayed hazard recognition, and slower reaction times. In 2022, approximately 2.6 percent of drivers on weekend nights were found to be under the influence of alcohol, almost twice the lowest recorded violation rate of 1.4 percent observed in 2017 (I&O Research, 2021). The most recent estimate of alcohol-related traffic fatalities, dating from 2015, suggests that alcohol was a contributing factor in approximately 12 to to 23 percent of fatal road traffic incidents in the Netherlands (Institute for Road Safety Research, 2016; Houwing et al., 2014). In 2021, an estimated 5,900 individuals received Emergency Department treatment in the Netherlands as a result of alcohol-related traffic accidents. These cases represented approximately 6 percent of all

Emergency Department visits attributed to traffic accidents (Valkenberg & Nijman, 2022). Alcohol-related traffic accidents are associated with a relatively high severity of injury, with more than half of the cases involving head injuries (VeiligheidNL, 2022). Young men and heavy alcohol offenders are the primary at-risk groups (Scholten & Lemmens, 2020; Institute for Road Safety Research, 2022).

Prevention of driving under the influence of alcohol consists of a combination of regulations, enforcement, and education (Scholten & Lemmens, 2020). Regular alcohol checks are effective in reducing the number of alcohol-related traffic accidents (Institute for Road Safety Research, 2022). The effectiveness of various traffic safety interventions, such as the implementation of a lower legal blood alcohol concentration (BAC) limit, is often highly contingent upon enforcement intensity. While reducing the BAC limit from 0.5 or 0.6 permille to 0.2 or 0.3 permille has the potential to enhance road safety, behavioural change among road users is largely dependent on the perceived likelihood of enforcement. The impact of such a measure, if not accompanied by substantial investment in enforcement activities, remains uncertain. Due to this lack of empirical evidence, the effect of lowering the alcohol limit without increased enforcement could not be incorporated into the analysis of potential measures to reduce traffic fatalities (De Craen et al., 2022). The alcohol interlock has demonstrated effectiveness in the Netherlands as a measure to prevent drink-driving (Blom & Blokdijk, 2021). However, in 2015, the Council of State determined that the Central Office for Motor Vehicle Driver Testing (CBR) could no longer impose the measure, citing the lack of provision for individualized assessment within the administrative procedure. Further research is required to explore alternative approaches for implementing alcohol interlocks, such as mandating their use for professional drivers. The European Transport Safety Council (ETSC) has also advocated for further investigation into such applications (ETSC, 2022).

Efforts to prevent driving under the influence of alcohol should primarily target high at-risk groups, including heavy and repeat offenders as well as young and novice offenders. Evidence suggests that certain administrative interventions, such as the Light Educational Measure for Alcohol and Traffic (LEMA), may be more effective for experienced drivers with a history of prior offenses than for first-time or younger offenders (Blom et al., 2022). Improved profiling of alcohol-impaired drivers could contribute to the development of more tailored preventive strategies and enhance the coordination between criminal and administrative responses. Preventive efforts should not only address current offenders, including those under the influence of both alcohol and drugs, but also individuals at risk of future offenses. Moreover, fostering long-term behavioural change remains a critical component of effective prevention (Goldenbeld et al., 2016).

Knowledge Questions

1. *What is the severity and extent of alcohol-related deaths and injuries among the total number of traffic victims in 2023-2040?*
2. *What is the nature and drinking pattern of alcohol offenders in traffic within addiction rehabilitation, and what (criminal, administrative, and other preventive) interventions align with these?*
3. *What are effective measures from criminal law for drivers who do not participate in educational measures within administrative law?*
4. *What criteria can be established regarding the visibility, announcement, and follow-up communication of alcohol checks?*
5. *How can a strategy be co-created and implemented for young people and adults who drive under the influence of alcohol, such as a protocol for addressing friends and HoReCa workers, at festivals, and in sports canteens?*

6. Early Detection and Interventions in Settings

Policy measures are the most cost-effective, affordable, and feasible for reducing harmful drinking (WHO, 2018; Babor et al., 2010), but they are also the most controversial. To prevent and reduce alcohol use and related harm in the short term, early detection and universal, selective, and indicated interventions (i.e. environmental and individual interventions) can be implemented in different settings (i.e. school, community, workplace, healthcare). Education and awareness can also be used.

6a. Early Detection

Screening and Brief Interventions (SBIs) can be used for the early detection of alcohol problems. Screening involves identifying alcohol use among individuals who are not actively seeking help for it. Screening can take place in different settings:

- School setting for youth, such as by youth doctors and nurses, school psychologists, mentors, care coordinators, social workers, staff of the School Support Team, and prevention workers from addiction care institutions.
- Community setting for youth and young adults, for example, by sports coaches and police officers.
- Workplace setting for youth and young adults, for example, by employers, supervisors, and health promotion consultants.
- Healthcare setting for youth and young adults, including primary care (e.g. general practitioners, practice assistants, psychologists at health centres, midwives, home caregivers, social workers) and secondary care (e.g. Emergency Departments, clinical psychologists, psychotherapists, gynaecologists).

Various screening tools can be used to detect alcohol use, such as the ASSIST (Group, 2002), the AUDIT (Saunders et al., 1993), and the CRAFFT (Stewart & Connors, 2004). When detecting alcohol use, it is important to consider the extent and number of symptoms to identify the small group with a severe course of alcohol use (Tuithof, 2015). A 'stepped care' approach – where individuals receive the least intensive yet appropriate level of alcohol treatment – holds promise as a potentially efficient intervention strategy. However, its effectiveness has not yet been empirically established. Further research is warranted to evaluate the outcomes and applicability of this approach.

Brief Interventions are short-term interventions designed to motivate people toward behaviour change. SBIs often use motivational interviewing (Miller and Rollnick, 2002). Components of SBIs include giving personalized feedback and advice based on answers to a screening test on topics such as a personal drinking profile, risk factors of alcohol use, and normative comparisons. SBIs can be offered during a conversation (face-to-face), via a brochure, online on a laptop (e-health), or via a mobile phone (m-health).

Much research has been conducted on the effectiveness of alcohol interventions in school and healthcare settings, but relatively little in community and workplace settings. More research is needed into the effective elements and implementation strategies of SBIs.

Knowledge Questions

1. *What are the characteristics of professionals who successfully work on early detection of alcohol problems?*
2. *How can effective SBIs for youth and young adults be implemented in real-life across different settings (i.e. school, community, workplace, healthcare)?*
3. *What are the effects of SBIs on non-self-reported outcomes, such as accidents, liver damage, and Emergency Department visits?*
4. *For which (at-risk) groups can screening alone (e.g. weekly completion of a survey on alcohol use) be implemented as an effective alcohol intervention to reduce alcohol use?*
5. *How can the traffic setting contribute to the early detection of alcohol problems?*
6. *What are the barriers and facilitators for integrating effective alcohol interventions into the broader range of evidence-based lifestyle interventions?*
7. *What are barriers and facilitators for early detection and alcohol prevention in lifestyle-related education programs?*

6b. Interventions in Settings

School setting

Alcohol interventions in the school setting have little to moderate effects in preventing or reducing alcohol use, mainly in the short term (Champion et al., 2019; Newton et al., 2022; Tinner et al., 2022; Tremblay et al., 2020). The effectiveness of the effective components of alcohol interventions in the school setting varies by age group. Universal alcohol interventions are not suitable for elementary school students but appear most effective in early adolescence (11-13 years). Selective alcohol interventions seem most effective in late adolescence (16-17 years) (Onrust et al., 2016). In addition to universal alcohol interventions, targeted interventions for at-risk populations are recommended. Selective alcohol interventions focused on high-risk youth, as well as indicated interventions for youth exhibiting early signs of problematic alcohol use, have been shown to be more effective than universal approaches targeting the general youth population (Lammers, 2019).

Alcohol prevention efforts within school settings have predominantly targeted early to middle adolescence (approximately 14–15 years of age). However, there is a need for further research into the effectiveness of school-based alcohol prevention aimed at late adolescence and young adulthood (18–25 years) (Lammers, 2019). Additionally, more evidence is required regarding the effectiveness of such interventions among vulnerable youth populations in the school setting (e.g. secondary education, practical education, and secondary vocational education and training levels 1 and 2). Furthermore, research is needed to evaluate both the effectiveness and feasibility of implementing school-based alcohol policies, such as establishing clear rules and agreements concerning alcohol use during school hours and school-related activities.

Knowledge Questions

1. *What are the effective components of effective selective and indicated alcohol interventions, and how can they be implemented for youth and young adults (18-25 years, including students)?*
2. *What are the effective components of effective selective and indicated alcohol interventions for vulnerable groups: individuals with an intellectual disability, individuals with intergenerational problems (COPMI), and individuals in special education (e.g. secondary education, practical education, and secondary vocational education and training levels 1 and 2)?*

3. *To what extent have effective selective and indicated alcohol interventions for young adults (18-25 years, including students) been implemented, and what are the barriers and facilitators to this?*
4. *How can we maintain the effectiveness of selective and indicated alcohol interventions, and what are the barriers and facilitators to this?*
5. *How can we reach (methods and techniques) and involve (channels) parents of vulnerable youth and young adults (12-25 years) in developing alcohol interventions?*
6. *How can youth doctors and nurses, school/student psychologists, mentors, care coordinators, social workers, staff of the School Support Team, prevention workers from addiction care institutions, and peer experts be used to detect alcohol use in youth and young adults?*
7. *What are the effective components of effective alcohol policies for primary/secondary vocational education and training/higher professional education/universities, and how should these policies be implemented?*

Community setting

Community-based interventions can be effective in preventing or reducing alcohol use in the short and long term (Fagan & Lowe, 2021; Jansen et al., 2016). These interventions consist of a combined 'package' of interventions implemented in a specific region or city aimed at individuals, organizations, and the community as a whole. Examples of effective community-based interventions include the Family Check Up and Life Skills Training for youth (Stormshak & Dishion, 2009), the Icelandic Prevention Model for youth (Sigfúsdóttir et al., 2008), and the STAD (Stockholm Prevents Alcohol and Drug Problems) approach for young adults in the nightlife setting (Norström et al., 2003).

There are currently no effective community-based interventions available in the Netherlands to prevent or reduce alcohol use in youth and young adults. RISE (Resilient Individuals in Supportive Environments), known in Dutch as *Opgroeien in een Kansrijke Omgeving (OKO)*, is a community-based intervention in the Netherlands, adapted from the Icelandic Prevention Model (Smeets et al., 2021). A comprehensive process and effect evaluation of the RISE intervention will be conducted in 2023-2026.

Exploratory research into the STAD approach has yielded valuable insights into the cultural and societal differences between Sweden and the Netherlands, as well as the key effective components of the intervention, including community mobilization, Responsible Beverage Service (RBS) training, effective enforcement, and the application of sanctions (Lemmers et al., 2016). However, rigorous effectiveness research is required before the STAD approach can be considered for implementation in the Dutch context.

Knowledge Questions

1. *What is the effectiveness of the STAD approach in reducing alcohol use among young adults in the nightlife setting?*
2. *What are the effective components of the STAD approach in reducing alcohol use among young adults in the nightlife setting, and how can this approach be implemented in the Netherlands?*
3. *Which international effective community-based interventions can be translated to the Dutch context to prevent and/or reduce alcohol use among youth and young adults?*

Workplace setting

Although employees are personally responsible for their alcohol use before and during work, employers bear responsibility for maintaining a healthy work environment and ensuring the quality of professional performance. This includes the duty to identify, address, and refer employees exhibiting harmful drinking behaviours, as well as to support their reintegration into the workplace (Oomens et al., 2010). Employers contribute substantially to the societal costs associated with alcohol use (De Wit et al., 2018); however, they also have the potential to mitigate these costs by implementing comprehensive workplace alcohol policies.

SBIs implemented in workplace settings have shown limited or no significant effects in reducing alcohol use among employees (Howarth et al., 2018; Watterson et al., 2021; Yuvaraj et al., 2019). Some evidence suggests that SBIs may be more effective among older employees; however, research in this area remains scarce (Armstrong-Moore et al., 2018). Given that retirement represents a critical life transition during which alcohol-related problems may emerge, it is important that preventive efforts occur prior to this phase. The workplace may serve as a valuable setting for such early intervention (Anderson & Baumberg, 2006).

Knowledge Questions

1. *What are the effective components of effective employer policies to reduce the loss of productivity due to alcohol use among employees, and how can they be implemented by employers?*
2. *How can SBIs for older employees be implemented in real-life across different settings (i.e. community, workplace, healthcare)?*

Vulnerable Occupational Groups

Certain occupational groups, such as military personnel (Osborne et al., 2022; Williamson et al., 2018) and physicians (Geuijen, 2022), exhibit a high prevalence of hazardous to harmful alcohol use. Given the potential risk of harm to others inherent in these professions, there is a clear need for structural, national monitoring studies focused on such high-risk occupational groups. These data are also essential for informing the (re)development of effective SBIs. In the Netherlands, no effective SBIs currently exist for military personnel or physicians, in part due to significant disclosure barriers and challenges that are similarly observed in other occupational sectors (Schulte et al., 2014). Additional monitoring and effectiveness research is warranted for other potentially vulnerable occupational groups, such as journalists, HoReCa workers, and construction workers.

Knowledge Questions

1. *How does alcohol use among specific occupational groups, such as military personnel, compare to alcohol use in the general Dutch population?*
2. *Which occupational groups can be identified as high-risk for hazardous to harmful drinking?*
3. *What effective SBIs exist for specific occupational groups, such as military personnel and doctors, and how can they be implemented in real-life settings?*
4. *What are the effective components of SBIs for specific occupational groups, such as military personnel and doctors, and how can these components be utilized within primary and secondary care?*

Healthcare setting

Face-to-face SBIs have small effects in reducing hazardous to harmful drinking among youth (Diestelkamp et al., 2016; O'Donnell et al., 2013), adults (Kaner et al., 2018), and the elderly (Armstrong-Moore et al., 2018) in primary care, especially in the short term. SBIs are difficult to implement (Rosário et al., 2021). Online SBIs have advantages over face-to-face SBIs (e.g. broader reach, safeguarding user anonymity) and show small effects in reducing hazardous to harmful drinking among youth (Lemmers et al., 2016) and adults (Riper et al., 2018), often in the short term.

The small effects observed for both face-to-face and online SBIs should be interpreted with caution (McCambridge & Saitz, 2017). Several methodological limitations undermine the reliability of these findings, including the predominance of studies conducted in artificial rather than real-life settings, the presence of various biases, and reliance on self-reported alcohol use rather than objective outcome measures. Furthermore, the generalizability of SBI effects remains insufficiently understood. The effectiveness of SBIs may differ across population subgroups depending on individual characteristics such as sex, ethnicity, and socio-economic status, as well as environmental factors including the healthcare system. Importantly, SBIs are most effective when implemented as components of a comprehensive, integrated approach, wherein multiple societal stakeholders, including individuals, governmental bodies, healthcare providers, research institutions, educational entities, media, and private sector organizations, collaborate to address alcohol-related harm (McCambridge, 2021).

Knowledge Questions

1. *How often are screening tools (e.g. ASSIST, AUDIT, CRAFFT) used to identify hazardous to harmful drinking in primary care, and what are the reasons for their use?*
2. *Is there support among professionals in primary care (e.g. general practitioners, practice assistants, psychologists at a child health clinic, midwives, home nurses, social workers) and secondary care (e.g. Emergency Department, clinical psychologists, psychotherapists, gynaecologists) for identifying and reducing hazardous to harmful drinking among youth and (young) adults through SBIs?*

6c. Information and Education

Information dissemination can enhance awareness regarding the harm associated with alcohol use. Education, being a more intensive process, facilitates the teaching, practice, and assessment of relevant skills across diverse target populations. While information and education alone are insufficient to effectuate behavioural change in alcohol use, they play a critical role in shaping public discourse and fostering support for the implementation of more stringent alcohol policies (Anderson & Baumberg, 2006).

Mass Media Campaigns

Mass media campaigns (e.g. NIX18; IkPas; 40 Days Without a Drop, Dranquilo) serve as preventive interventions capable of reaching a large portion of the general population. While these campaigns have demonstrated limited effectiveness in directly reducing alcohol use, they have been shown to positively influence knowledge regarding alcohol-related harm, attitudes toward alcohol use, and alcohol-related beliefs (Yadav & Kobayashi, 2015; Young et al., 2018). Further-

more, mass media campaigns play a critical role in agenda-setting and raising public awareness about alcohol-related harm and are commonly integrated within comprehensive alcohol policy frameworks (Anderson & Baumberg, 2006).

Knowledge Questions

1. *How should a mass media campaign be designed to increase knowledge and awareness of alcohol-related harm, particularly binge drinking, among the general Dutch population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?*
2. *How should a mass media campaign be designed to develop and/or strengthen an unfavourable attitude toward alcohol use, particularly binge drinking, among the general Dutch population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?*
3. *What is the effectiveness of the IkPas/40 Days Without a Drop campaign in increasing knowledge and awareness of alcohol-related harm among the elderly?*
4. *Which mass media campaigns in the EU/USA target reducing alcohol use among the general population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?*

Media Reporting

Media coverage of scientific research findings can occasionally result in public confusion or debate, as exemplified by varying interpretations of the Health Council guidelines (i.e. no drinking or no more than one standard glass of alcohol per day). Enhanced understanding is needed regarding how to effectively translate scientific evidence into clear and actionable health advice for the general population.

Knowledge Question

1. *What is the effect of health advice on alcohol use, and what role does the (perceived) feasibility of these recommendations play in creating support?*

7. Alcohol and Sport

Research on the relationship between alcohol and sport is important for several reasons. Firstly, sport serves as a significant marketing platform, with exposure to alcoholic beverage advertising through (online) sports sponsorship contributing to the normalization of alcohol use within the sporting context (Brown, 2016; Rossen et al., 2017). This exposure has been linked to increased alcohol use among adolescents and young adults (Burton et al., 2017). While sporting events rely on sponsorship revenue, the degree of financial dependence varies; elite-level events are more reliant on sponsor funding compared to grassroots sports, which primarily depend on registration fees (Van Kalmthout, 2021). Moreover, alcohol is commonly sold in nearly all sports canteens (Van Kalmthout & Slot-Heijs, 2018), where compliance with the legal age restriction for the sale of alcoholic beverages and compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication is often low (Hessels et al., 2021). Sports clubs operating their own canteens are heavily dependent on this revenue stream, with alcohol sales accounting for approximately 40 percent of income (Van Kalmthout, 2021). Additionally,

participation in individual and team sports is associated with the different stages of alcohol use among adolescents and young adults (Kwan et al., 2014; Sønderlund et al., 2014; Van den Dool & Van den Breul, 2018; Zuckerman et al., 2021). Notably, research on the interplay between alcohol and sport within the Dutch context remains limited.

Knowledge Questions

1. *Does (online) exposure to advertising for alcoholic and alcohol-free beverages via sports sponsorship lead to alcohol use among adolescents and young adults in the Netherlands?*
2. *Is there support for the sale of low-alcohol beer and/or alcohol-free beverages instead of high strength beer (>3.5%) during national, regional, and local sports matches of sports federations and clubs, and what are the barriers and facilitators in this?*
3. *How can compliance with the legal age restriction for the sale of alcoholic beverages and compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication be improved in sports canteens?*
4. *What interventions are effective in reducing alcohol use in sports canteens among adolescents and young adults?*
5. *Is there support for alcohol-free sports federations and clubs, and what are the barriers and facilitators in this?*
6. *Which international effective interventions can be adapted to the Dutch context to prevent and/or reduce alcohol use among adolescents and young adults in the sport setting?*

Conclusion

The Knowledge Agenda Alcohol Prevention 2023 was developed by the Alcohol Expertise Centre of the Trimbos Institute in collaboration with field representatives. The aim of this Knowledge Agenda is twofold:

1) To identify and prioritize knowledge gaps about alcohol (prevention) that professionals need in order to effectively contribute to prevent and reduce harm from alcohol use;
2) To contribute to the prioritization of research within national research programs.

Based on input from experts, obtained during the Alcohol Prevention Expert Meeting and via an online survey, and (international) literature, seven research themes were established with 121 related knowledge questions. The themes are:

1. Alcohol use among the Dutch population
2. Harm from alcohol use: individual and societal impact
3. Risk and protective factors of alcohol use
4. Policy measures (price, advertising, availability, labelling)
5. Alcohol and traffic
6. Early detection and interventions in settings (school, community, workplace, healthcare)
7. Alcohol and sport

The 121 knowledge questions provide direction for where alcohol (prevention) research should focus in the coming decades (2023-2040).

The Scientific Advisory Committee of the Centre of Expertise Alcohol will monitor, support, and stimulate the progress of the execution of the Knowledge Agenda update.

For funding of the desired research, various health research financiers (e.g. KNAW, NWO, ZonMw), funds, and foundations (e.g. Alzheimer Nederland, Diabetes Fonds, FAS Foundation, G4, KWF Cancer Control, Noaber Foundation) and ministries (I&W, JenV, VWS) can be approached.

Appendix 1: Types of Alcohol Prevention

The Knowledge Agenda Alcohol Prevention 2023 focuses on the first three of the four types of alcohol prevention, namely:

1. **Universal alcohol prevention:** Preventing health damage due to alcohol use among (segments of) the general population that has not been identified based on an individual risk factor (e.g. mass-media campaigns targeting the general public or school-based alcohol interventions, where all students, regardless of their risk status, are approached);
2. **Selective alcohol prevention:** Preventing health damage due to alcohol use among individuals or a subgroup of the population at increased risk of (a) harmful drinking and/or (b) severe health damage due to alcohol use by themselves or others (e.g. harm to the fetus from the alcohol use of a pregnant woman; older adults who become more sensitive to alcohol-related damage due to their age);
3. **Indicated alcohol prevention:** Preventing further health damage from hazardous drinking and preventing a transition to a severe form of hazardous or harmful drinking among individuals who do not meet the diagnostic criteria for a disorder but already show limited symptoms that precede the disorder.
4. **Care-related alcohol prevention:** Reducing disease burden and preventing further issues from an alcohol use disorder.

Appendix 2: Tables

Table 1: The Five Key Knowledge Questions per Research Theme.

The five most important knowledge questions per research theme, as identified by field representatives (N=20), based on the highest average score of the four criteria (i.e. development of the alcohol prevention knowledge area; urgency; applicability of the acquired knowledge; feasibility of conducting the research).		
Prioritization	**Research Theme**	**Knowledge Questions**
1	Risk- and protective factors of alcohol use (*n*=1)	How can the protective factors at different stages of alcohol use be implemented in alcohol prevention for the general Dutch population, including at-risk and vulnerable groups?
2	Policy measures (*n*=3)	Does the use of alcohol-free beverages supplement or replace the use of alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups?
3	Early detection and intervention in settings (*n*=8)	What are the barriers and facilitators for integrating effective alcohol interventions into the broader range of evidence-based lifestyle interventions?
4	Harm from alcohol use: individual and societal impact (*n*=5)	What is the severity and scope of alcohol's harm to others in the healthcare setting, e.g. other road users who are victims of drunk driving and end up in the Emergency Department?
5	Alcohol use among the Dutch population (*n*=3)	Which individual factors play a role in the development, recovery, and relapse of the different stages of alcohol use, and what is the role of comorbidity and functioning?

Table 2: Prioritization of Knowledge Questions per Research Theme.

Prioritization of the knowledge questions – ranked from high to low – per research theme (n=110) by field representatives (N=20), based on an average score across four criteria (i.e. relevance to the development of the alcohol prevention field; urgency, considering the scale and severity of the prevalence/problems/costs; potential to generate applicable knowledge; feasibility of implementation through research) from the survey study.	T[5]	*M*	*SD*
Which individual factors play a role in the development, recovery, and relapse of the different stages of alcohol use, and what is the role of comorbidity and functioning?	1	3.08	0.38
What are reliable indicators (e.g. demographic characteristics, individual characteristics) for targeting universal/selective/indicated alcohol prevention for the different stages of alcohol use?	1	3.08	0.38
What is the impact of changes in the composition of the Dutch population (e.g. the increase in the number of migrants) on alcohol use per capita in the Netherlands?	1	2.92	1.28
How does alcohol use (in combination with one or more other substances) develop among at-risk groups (e.g. adolescents: 16-18 years; students: 18-25 years) and vulnerable groups (e.g. pregnant and breastfeeding women; elderly) in 2023-2040?	1	2.67	0.52
How can uniform definitions of the different stages of alcohol use and uniform standard glasses of alcohol be established for research and communication?	1	2.67	1.38
How should the uniform definitions of the different stages of alcohol use and uniform standard glasses of alcohol look like?	1	2.58	1.26
What is the severity and extent of the newly identified at-risk groups of alcohol use (in combination with one or more other substances) in 2023-2040 (e.g. sports fans)?	1	2.50	1.00
How does alcohol use (in combination with one or more other substances) develop among potential specific vulnerable groups, such as individuals with mild intellectual disabilities (MID), people with intergenerational problems (COPMI); individuals with physical and/or mental conditions; and (labour) migrants from Central and Eastern Europe in 2023-2040?	1	2.33	0.14
What is the severity and extent of unregistered alcohol use in the Netherlands?	1	2.25	0.66
What is the interaction between medication use and heavy drinking (in combination with one or more other substances) concerning negative physical and mental health outcomes in the general Dutch population, including at-risk and vulnerable groups?	1	1.92	0.88
How can new research methods and techniques (e.g. prognostic modelling, epigenetics) be used to identify and characterize at-risk groups for alcohol use?	1	1.75	0.25
What is the severity and scope of alcohol's harm to others in the healthcare setting, e.g. other road users who are victims of drunk driving and end up in the Emergency Department?	2	3.15	0.22
What is the severity and extent of alcohol- and drug-induced violence in the Netherlands?	2	3.10	0.76
What is the severity and extent of alcohol's harm to others in the family setting, e.g. damage to the fetus from alcohol use during pregnancy or children and partners of drinkers who are victims of domestic violence?	2	2.90	0.68

5 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[6]	*M*	*SD*
To what extent are changes in brain structure (volume of gray matter) caused by heavy drinking among adolescents and young adults (12-25 years) permanent?	2	2.85	0.45
What is the severity and extent of alcohol's harm to others in the workplace setting, e.g. employers/employees affected by employees/employers who drink heavily?	2	2.85	0.74
What is the prevalence of FASD and FAS in the Netherlands?	2	2.85	0.84
What is the relationship between heavy drinking (in combination with one or more other substances) and poor academic performance, school absenteeism, and school dropout among adolescents and young adults (12-25 years), and what are the differences by sex and educational level?	2	2.80	0.41
What are effective interventions to reduce alcohol use (in combination with one or more other substances) among adolescents and (young) adults?	2	2.75	1.05
How can women who are pregnant, but unaware of it, be effectively reached through education and awareness?	2	2.75	0.77
What is the damage of alcohol use before, during, and after pregnancy for the (un)born child, and is this dependent on the duration and stages of alcohol use?	2	2.60	0.55
How can individuals with FASD/FAS be better identified in different settings (school, community, workplace, healthcare)?	2	2.50	0.18
What is the severity and extent of alcohol's harm to others in the neighbourhood setting, e.g. individuals in nightlife who are victims of alcohol-related violence on the streets or passive sports participants who are victims of violence and vandalism by drinking supporters?	2	2.45	0.78
What is the three-way interaction between hazardous drinking, smoking, and (severe) obesity regarding negative physical and mental health outcomes in the general Dutch population, including at-risk and vulnerable groups?	2	2.35	0.82
What is the relationship between heavy drinking and physical (e.g. cancer) and/or mental disorders (e.g. depression), and what are the differences by sex, age, and educational level?	2	2.25	0.59
What is the relationship between the different stages of alcohol use and rare types of cancer?	2	2.25	0.25
What is the life expectancy of adult drinkers compared to smokers and individuals with (severe) obesity?	2	2.00	0.97
What is the relationship between drinking pace and heavy and/or hazardous drinking among adolescents and (young) adults?	2	1.80	0.78
How can the protective factors at different stages of alcohol use be implemented in alcohol prevention for the general Dutch population, including at-risk and vulnerable groups?	3	4.00	-
How can parents be reached and encouraged to engage in conversations with each other about the role of parenting in their children's alcohol use?	3	4.00	-
Are alcohol-related cognitions (knowledge, social norms, expectations) in young children predictors of alcohol initiation in adolescence?	3	3.75	-

6 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[7]	*M*	*SD*
What is the impact of exposure to parental alcohol use on the development of alcohol-related cognitions (knowledge, social norms, expectations) in young children and its influence on alcohol initiation in adolescence?	3	3.75	-
What are the protective and risk factors at the different stages of alcohol use (i.e. alcohol initiation; moderate drinking; heavy drinking; hazardous drinking, including binge drinking; harmful drinking, alcohol use disorder), and are these factors different for at-risk and vulnerable groups?	3	3.75	-
How can the age of alcohol initiation be delayed from early adolescence to late adolescence?	3	3.50	-
What is the relationship between genetic factors and alcohol use (in combination with one or more other substances), and in interaction with environmental factors?	3	3.25	-
How can explicit and implicit alcohol-related cognitions be applied as techniques and methods in alcohol interventions, and what is their effectiveness?	3	3.25	-
What are the predictive factors for transitions between the different stages of alcohol use (e.g. from alcohol initiation to alcohol use disorder or from hazardous drinking to moderate drinking), and are these factors different for at-risk and vulnerable groups?	3	3.25	-
What is the relationship between different forms of stress and the different stages of alcohol use?	3	2.25	-
Does the use of alcohol-free beverages supplement or replace the use of alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups?	4	3.75	0.43
What is the extent and reach of alcohol-free beverage advertising via social media and sports sponsorship in the Netherlands?	4	3.58	0.72
How can a ban or severe restrictions on online alcohol advertising, especially on social media, be enforced, and what are the best practices from abroad?	4	3.50	0.87
How do representatives of the alcohol industry influence alcohol policy in the Netherlands?	4	3.42	0.14
What are the lobbying activities of representatives of the alcohol industry, and how are these expected to develop in 2023-2040?	4	3.42	0.52
Do non-drinkers switch to alcoholic beverages more quickly due to the existence of (advertising for) alcohol-free beverages, or do alcohol consumers use alcohol-free beverages more often instead of alcoholic beverages?	4	3.42	0.52
What are the effects of blurring with alcohol on public health and safety among the general Dutch population, including at-risk and vulnerable groups such as young people, pregnant women, and people with (ex)addiction problems?	4	3.33	0.58
How is national, regional, and local alcohol policy determined and influenced at the political-administrative level?	4	3.25	0.50
How many legal, illegal, and non-official sales points for alcoholic beverages will there be in the Netherlands in 2023-2040?	4	3.25	0.66
Is there support for changes in policy measures on advertising for alcoholic and alcohol-free beverages, and what are the barriers and facilitators?	4	3.08	0.38
How will the number of sales points and opening hours for alcoholic beverages develop in the Netherlands in 2023-2040, and what effect will this have on alcohol use among young people and (young) adults in the Netherlands?	4	3.08	0.88

7 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[8]	*M*	*SD*
What frames and arguments for and against are used by health parties and alcohol industry representatives in implementing alcohol policy?	4	3.00	0.43
Are alcohol-free beverages a good alternative for people with (former) addiction issues, or does this increase the chance of relapse into alcohol use?	4	3.00	0.00
(If no age verification system for online alcohol sales can be developed (de Jong, 2021)). Is there support for a ban on the online sale of alcoholic beverages, and what are the barriers and facilitators to this?	4	3.00	1.00
To what extent do different vendors of alcoholic beverages comply with the legal age restriction for the sale of alcoholic beverages in 2023-2040?	4	3.00	0.00
Which at-risk groups are sensitive to low prices and price promotions of alcoholic beverages, and what does this mean for their alcohol use and societal costs related to alcohol use?	4	2.92	0.14
What are the barriers and facilitators for interdepartmental national, regional, and local alcohol policy?	4	2.83	1.04
What are the effects of price promotions of up to a 25 percent discount on alcoholic beverages in retail for: a) alcohol beverage sales in the Netherlands and b) alcohol use among the general Dutch population, including at-risk and vulnerable groups?	4	2.83	0.29
What changes in policy measures on advertising for alcoholic and alcohol-free beverages have been made in 2023-2040?	4	2.83	1.04
How does the price of alcoholic beverages develop over time in the Netherlands (2000-2040)?	4	2.67	1.15
To what extent can MUP reduce socio-economic health disparities between groups in society?	4	2.67	0.58
Is there support for limiting the number of sales points (e.g. sports canteens, airports) and opening hours for alcoholic beverages in the Netherlands, and what are the barriers and facilitators to this?	4	2.67	0.63
What are the effects of increased compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals on alcohol use among young people and (young) adults in 2023-2040?	4	2.67	0.58
Is there support for the mandatory inclusion of health warnings on alcoholic beverage labels among the general Dutch population (including at-risk and vulnerable groups), and on which topics (e.g. alcohol and cancer: 'alcohol use causes cancer')?	4	2.67	0.80
To what extent is cheap alcohol available in the Netherlands, and what prices are charged for it?	4	2.50	0.50
What is the effect of limiting opening and serving hours in the HoReCa and supermarkets on alcohol use among young people and (young) adults in the Netherlands?	4	2.50	0.50
Is there support for an alcohol-free home environment among parents, and what are the barriers and facilitators to this?	4	2.50	0.87
What are the effects of product information and health information and warnings on alcoholic beverage labels on: awareness of alcohol-related harm, intention to reduce alcohol use, and actual alcohol use among the general Dutch population, including at-risk and vulnerable groups?	4	2.50	1.32

8 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[9]	*M*	*SD*
How can national alcohol policy be translated into regional and local alcohol policy, and what are the best practices for municipalities?	4	2.44	0.52
What are effective steering options for improving compliance with the legal age restriction for the sale of alcoholic beverages for the different vendors of alcoholic beverages?	4	2.42	0.52
(If alcohol labelling is not introduced in the Netherlands). What percentage of alcoholic beverages will have labels with product information and health information and warnings in 2023-2024?	4	2.42	0.52
What are the (legal) barriers and facilitators for municipalities in implementing regional and local alcohol policy?	4	2.33	0.58
What are the (legal) barriers and facilitators for alcohol regulation to reduce alcohol use and related harm in the Netherlands, considering knowledge about international, European, and national law?	4	2.33	0.58
How many shacks will there be in the Netherlands, and how frequently will they be used by young people and young adults in 2023-2040?	4	2.25	0.66
What are the barriers and facilitators to compliance with legislation prohibiting the sale or service of alcohol to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals?	4	2.25	0.66
Is there support for the mandatory inclusion of product information on alcoholic beverage labels among the general Dutch population, including at-risk and vulnerable groups?	4	2.17	1.01
What are the effects of neutral packaging for alcoholic beverages on: awareness of alcohol-related harm, intention to reduce alcohol use, and actual alcohol use among the general Dutch population, including at-risk and vulnerable groups?	4	2.17	0.76
What is the effect of the size of portions and packaging of alcoholic beverages on alcohol use among young people and (young) adults?	4	2.08	0.14
To what extent is alcohol served to individuals who exhibit signs of intoxication in sports canteens, HoReCa, public events and festivals in 2023-2040?	4	2.08	0.88
Is there support for the mandatory introduction of neutral packaging for alcoholic beverages among the general Dutch population, including at-risk and vulnerable groups?	4	2.00	1.00
How many alcohol-free beverages are used in the HoReCa (hotel, restaurant and catering) in the Netherlands?	4	1.92	0.14
What policy measures and interventions can be implemented to reduce secondary distribution?	4	1.75	0.43
What are the barriers and facilitators for integrating effective alcohol interventions into the broader range of evidence-based lifestyle interventions?	6	3.44	0.82
What are barriers and facilitators for early detection and alcohol prevention in lifestyle-related education programs?	6	3.34	0.61
How can SBIs for older employees be implemented in real-life across different settings (i.e. community, workplace, healthcare)?	6	3.25	0.78

9 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[10]	*M*	*SD*
What are the effective components of effective selective and indicated alcohol interventions, and how can they be implemented for youth and young adults (18-25 years, including students)?	6	3.22	0.75
What are the characteristics of professionals who successfully work on early detection of alcohol problems?	6	3.16	0.84
How can effective SBIs for youth and young adults be implemented in real-life across different settings (i.e. school, community, workplace, healthcare)?	6	3.16	0.77
To what extent have effective selective and indicated alcohol interventions for young adults (18-25 years, including students) been implemented, and what are the barriers and facilitators to this?	6	3.16	0.81
How can we maintain the effectiveness of selective and indicated alcohol interventions, and what are the barriers and facilitators to this?	6	3.16	0.78
What is the effect of health advice on alcohol use, and what role does the (perceived) feasibility of these recommendations play in creating support?	6	3.14	0.64
What are the effective components of effective alcohol policies for primary/secondary vocational education and training/higher professional education/universities, and how should these policies be implemented?	6	3.13	0.64
What are the effective components of effective employer policies to reduce the loss of productivity due to alcohol use among employees, and how can they be implemented by employers?	6	3.04	0.77
How should a mass media campaign be designed to develop and/or strengthen an unfavourable attitude toward alcohol use, particularly binge drinking, among the general Dutch population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?	6	3.00	0.85
What are the effective components of effective selective and indicated alcohol interventions for vulnerable groups: individuals with an intellectual disability, individuals with intergenerational problems (COPMI), and individuals in special education (e.g. secondary education, practical education, and secondary vocational education and training levels 1 and 2)?	6	2.97	0.57
How can youth doctors and nurses, school/student psychologists, mentors, care coordinators, social workers, staff of the School Support Team, prevention workers from addiction care institutions, and peer experts be used to detect alcohol use in youth and young adults?	6	2.97	0.82
What are the effective components of the STAD approach in reducing alcohol use among young adults in the nightlife setting, and how can this approach be implemented in the Netherlands?	6	2.97	0.54
What effective SBIs exist for specific occupational groups, such as military personnel and doctors, and how can they be implemented in real-life settings?	6	2.96	1.05
How can the traffic setting contribute to the early detection of alcohol problems?	6	2.91	0.73
How should a mass media campaign be designed to increase knowledge and awareness of alcohol-related harm, particularly binge drinking, among the general Dutch population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?	6	2.89	1.06

10 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

Prioritization of the knowledge questions	T[11]	*M*	*SD*
Is there support among professionals in primary care (e.g. general practitioners, practice assistants, psychologists at a child health clinic, midwives, home nurses, social workers) and secondary care (e.g. Emergency Department, clinical psychologists, psychotherapists, gynaecologists) for identifying and reducing hazardous to harmful drinking among youth and (young) adults through SBIs?	6	2.86	0.90
What is the effectiveness of the IkPas/40 Days Without a Drop campaign in increasing knowledge and awareness of alcohol-related harm among the elderly?	6	2.86	1.07
How does alcohol use among specific occupational groups, such as military personnel, compare to alcohol use in the general Dutch population?	6	2.82	1.18
For which (at-risk) groups can screening alone (e.g. weekly completion of a survey on alcohol use) be implemented as an effective alcohol intervention to reduce alcohol use?	6	2.81	1.19
Which occupational groups can be identified as high-risk for hazardous to harmful drinking?	6	2.78	1.29
How can we reach (methods and techniques) and involve (channels) parents of vulnerable youth and young adults (12-25 years) in developing alcohol interventions?	6	2.75	0.65
How often are screening tools (e.g. ASSIST, AUDIT, CRAFFT) used to identify hazardous to harmful drinking in primary care, and what are the reasons for their use?	6	2.71	1.38
Which international effective community-based interventions can be translated to the Dutch context to prevent and/or reduce alcohol use among youth and young adults?	6	2.71	1.21
What are the effective components of SBIs for specific occupational groups, such as military personnel and doctors, and how can these components be utilized within primary and secondary care?	6	2.68	0.55
What is the effectiveness of the STAD approach in reducing alcohol use among young adults in the nightlife setting?	6	2.63	0.92
What are the effects of SBIs on non-self-reported outcomes, such as accidents, liver damage, and Emergency Department visits?	6	2.59	0.64
Which mass media campaigns in the EU/USA target reducing alcohol use among the general population, specifically targeting youth, parents, pregnant and breastfeeding women, men with a desire to have children, (young) adults, and (car) drivers?	6	2.46	0.85

11 Research themes: 1=alcohol use among Dutch population (*n*=3); 2=harm from alcohol use: individual and societal impact (*n*=5); 3=risk and protective factors of alcohol use (*n*=1); 4=policy measures (*n*=3); 6=early detection and intervention in settings (*n*=8). The themes 'alcohol and traffic' and 'alcohol and sport' are not included in this table, as none of the participants identified these as areas they encounter in their professional practice.

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