



Cultural tailoring for the promotion of Hepatitis B-screening in Turkish migrants

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Colofon

Cultural tailoring for the promotion of Hepatitis B-screening in Turkish migrants
Thesis Erasmus MC, University Medical Center Rotterdam

ISBN 9789461911254

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Lay-out and cover design: The Dutch Design Factory, Made
Printing: Ipskamp Drukkers, Enschede

In this dissertation the term Turkish migrants is exclusively used for persons born in Turkey who migrated to the Netherlands, so-called first generation migrants [CBS]. The term Turkish Dutch is used when considering those born in the Netherlands having at least one parent who was born in Turkey, so called second generation migrants, either in combination with first generation migrants (i.e. the total Turkish population in the Netherlands) or without.

The research project described in this thesis was conducted within the Huisman Research Centre for Infectious Diseases and Public Health, which is part of CEPHIR, the Centre for Effective Public Health in the larger Rotterdam area. Both centres are collaborations of Erasmus MC and GGD Rotterdam-Rijnmond. The research project was funded by ZonMW, the Netherlands organisation for health research and development.

Cultural tailoring for the promotion of Hepatitis B-screening in Turkish migrants

Cultureel advies-op-maat voor het bevorderen van hepatitis B-screening door Turkse migranten.

Proefschrift

ter verkrijging van de graad van doctor aan de Erasmus Universiteit Rotterdam
op gezag van de rector magnificus
Prof.dr. H.G. Schmidt
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op
woensdag 18 januari 2012 om 13.30 uur

door

Ytje Jacoba Jitske van der Veen

geboren te Elspeet



Promotiecommissie

Promotoren: Prof.dr. J.P. Mackenbach
Prof.dr. J.H. Richardus

Overige leden: Prof.dr. H.L.A. Janssen
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Chapter 1

General introduction

General introduction

1.1 Hepatitis B as a health problem in Turkish Dutch

1.1.1 Hepatitis B

Hepatitis B virus infection (HBV) is one of the major infectious diseases in the world. Worldwide, an estimated two billion people have been infected with HBV, and more than 350 million have chronic (long-term) liver infections [1]. In developed countries, the majority of infections are transmitted during young adulthood by sexual activity and injecting drug use [1, 2]. In areas where hepatitis B is most common, i.e. Asia and also southern parts of eastern and central Europe, the most common routes of transmission are perinatal (from mother to baby at birth) and early childhood infections (unapparent infection through close interpersonal contact with infected household contacts)[1, 3].

An infection with hepatitis B virus may result in a broad spectrum of disease outcomes. Acute hepatitis B virus infection may resolve and lead to protective immunity, but it may also result in a chronic infection (CHBV) or, rarely, cause acute liver failure with a high risk of death [4]. The risk of developing CHBV infection after acute exposure ranges from 90% in newborns of mothers who are HBeAg-positive, indicating active virus replication, to 25% to 30% in infants and children under 5 and to less than 5% in adults [5]. People with CHBV, so called carriers of HBV, are at increased risk of developing cirrhosis, hepatic decompensation, and hepatocellular carcinoma (HCC). Although most carriers will not develop hepatic complications from chronic hepatitis B, 15% to 40% will develop serious sequelae during their lifetime [6]. In the past decade, treatment possibilities of CHBV have improved. Anti-viral therapy is indicated for a small proportion of CHBV patients, i.e. those who have active HBV replication and ongoing inflammation of the liver [7].

1.1.2 Hepatitis B in the Netherlands and Turkey

Hepatitis B is a notifiable disease in the Netherlands, and each year around 1,800 HBV infections are reported nationally, of which 80-90% are chronic [3, 8]. Seroprevalence studies report a prevalence of CHBV infection of 0.2% in the general Dutch population, and of 1.1% [0.4-3.2%] in first generation Turkish migrants [8, 9]. A seroprevalence study in Amsterdam reported a CHBV prevalence of 4.8% in first generation Turkish migrants [10]. The prevalence of CHBV infection among pregnant Turkish Dutch women was 3.6% compared to 0.07% among the same population of native Dutch [12]. Based on reported cases in Rotterdam from 2006-2010, the mean incidence of CHBV in the Turkish Dutch community was 65/100.000, while it was 32/100.000 in the general Rotterdam population. The mean incidence in the total Dutch population in this period was 9.9/100.000 [2]. Based on the Dutch national reference databases for disease burden, an average of 26 persons per year died from HBV over the years 2000-2006 in

the Netherlands. These rates ignore mortality due to cirrhosis and HCC. The estimated mortality due to HCC caused by HBV is ~100 annual deaths, while there are about 175 annual deaths for cirrhosis caused by HBV. Of all CHBV infected persons in the Netherlands, 58-72% are first generation migrants infected in an HBV endemic area [11]. In Turkey, the prevalence of CHBV in the general population ranges from 2.5% to 9.1%, depending on the region and study [12]. Recent estimations of the CHBV prevalence reported an overall population prevalence of 4.6%, ranging from 3.5% in the western region of Turkey to 6.7% in the eastern region, where most Turkish migrants in the Netherlands originate [13]. Perinatal transmission is the major route of transmission, while intra-familial transmission from parents to child or from sibling to sibling is common [14]. In the last two decennia, 44.4% of HCC was due to HBV [14].

1.1.3 Hepatitis B control policy in the Netherlands and Turkey

Since 1989, all pregnant women in the Netherlands are tested for hepatitis B. If the mother shows to be carrier of the virus, the newborn receives antibodies to the virus immediately after birth and receives a vaccination against HBV within 48 hours after birth. Subsequently, the child is vaccinated according to the National Vaccination Program (RVP). Household members and sexual partners of detected carriers are invited by the MPHS to be screened and – if necessary – vaccinated, which is known as source and contact tracing.

Next, behavioral risk groups for HBV infection such as men having sex with men (MSM), drug users, sex workers and heterosexuals with various sexual contacts may receive free vaccination from 2002 onwards. The latter group was removed from the target population in 2007, as will be the case for drug users as per August 2011 [15]. Furthermore, since 2003, all children with at least one parent from a medium or low endemic country for HBV are vaccinated against HBV within the RVP. From 2008 onwards, children with Down syndrome receive free vaccination. Finally, in 2010, the Minister of Health decided to agree with a recent report of the Health Council, which advised to vaccinate all children against HBV in the RVP [16-18]. Occupational risk groups, travellers and family members of infected persons are eligible for vaccination, but this should be paid for by employers or health insurance [19].

In Turkey, an HBV immunization program was started in 1998, and consists of routine, free-of-charge vaccination of newborns and 0-11 month infants as well as defined risk groups. These include occupational risk groups (such as firemen, policemen, soldiers, medical staff/students, hairdressers), patients requiring frequent blood products, household contacts of infected persons, intravenous drug users, individuals with multiple sex partners, sex workers, MSM, prisoners, and travellers to HBV endemic regions [12]. The vaccination coverage in 0-11 months old infants increased from 72% in 2002 to 94% in 2009. An adolescent catch-up vaccination resulted in adolescents up to the age of 16 being vaccinated by the end of the 2007-2008 education year [14].



1.1.4 The rationale for screening programs

A recent study suggests that early detection and treatment of people with HBV infection can have a large impact on liver-related health outcomes [20]. It shows that treatment of CHB patients with active disease could reduce mortality related to liver disease in this group by 80%. This health gain would be caused by the reduction in complications of cirrhosis as a consequence of hepatitis B, and the prevention of cirrhosis. Furthermore, it has been shown that systematic screening for chronic HBV infection among migrants in the Netherlands is likely to be cost-effective, even using low estimates for HBV prevalence, participation, referral, and treatment compliance [21].

It may be concluded that the emphasis of current hepatitis B prevention programs in both Turkey and the Netherlands is on newborns, children of carriers and specific behavioral risk groups. At this moment, pregnancy screening is the only systematically conducted hepatitis B-screening program in the Netherlands. In 2009 and 2010, 28% of the notified female carriers of HBV were detected through pregnancy screening, which is about 10% of the total group of notified carriers [2]. Although this is not registered, source and contact tracing may account for the detection of an equal part of carriers found in contacts of the women (such as husbands, brothers and sisters).

While pregnancy screening in the Netherlands also contributes to the detection of hepatitis B carriers in Turkish Dutch, it leaves a substantial part of this population undetected and unprotected regarding HBV. Therefore, screening for HBV should be promoted in the Turkish migrant population [22]. An effective intervention will lead to a reduction of the morbidity and mortality due to HBV in this population. This may not only benefit patients, but also help reduce health inequalities in western countries.

1.2 Turks in the Netherlands

The Turkish immigration in the Netherlands dates back to the sixties, when Dutch industries started to recruit abroad in order to attract extra labor forces. They targeted various countries of the Mediterranean. As a result, between the end of World War II and the mid-seventies, guest workers came to the Netherlands, departing from several countries of the Mediterranean, including Spain, Italy, Morocco and Turkey. What was first meant to be a temporary migration turned into a permanent stay, as many immigrants settled in the Netherlands and later had their families come over for reunification [23]. The Turkish population is the largest group of non-Western immigrants in the Netherlands and includes 383,957 persons, of which 196,385 are born in Turkey themselves (First Generation Migrants (FGM)), and the remaining 187,572 have one parent (18%) or two parents (82%) who were born in Turkey (Second Generation Migrants (SGM))[24].

Culture may be defined as the collective programming of the mind which distinguishes the members of one group from another [25]. From a cultural psychological perspective, Triandis [26] defined culture as a set of human-made objective and subjective elements that have become shared among those with a common language and living in the same time and place. He distinguishes objective elements of culture, such as roads, buildings and tools, and subjective aspects of culture including norms, roles and values which form some of the basic elements effecting social behavior. The subjective elements of each culture are organized into unique patterns of beliefs, attitudes, norms and values.

Literature on culture emphasizes several drawbacks of characterizations of a specific culture [27], such as the Turkish or Turkish Dutch. Hofstede's theory of cultural variability, however, is often used in understanding national cultures. We apply this theory because it is applied in many national cultures, including the Turkish culture. Hofstede distinguishes five dimensions which may differ per culture on a continuum: power distance, individualism, masculinity, uncertainty avoidance, and time orientation (long term/short term, this dimension has not been studied in Turkish culture) [25, 28]. Hofstede's study shows that in Turkey less powerful members of organizations and institutions (like the family) are likely to accept and expect that power is distributed unequally. On the individualism continuum Turkey is shown to be rather collectivistic, this means that people from birth onwards tend to be integrated into strong, cohesive in-groups, often extended families which continually protect them in exchange for unquestioning loyalty. Although disputed [27], Hofstede links the dimension of collectivism and individualism to shame and guilt cultures, suggesting that people in individualistic societies who do not obey the rules, may feel guilty, while people in collectivistic societies rather feel ashamed when there trespasses become known to others. Turkey scores mid-scale on the continuum of masculinity and femininity. This indicates that men's values are in between very assertive and competitive on the one side, and modest and caring on the other side. Last, Turkey scores high on the uncertainty avoidance continuum, which may be interpreted as Turks trying to minimize the possibility of uncertain situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth; 'there can only be one Truth and we have it'. Turks in the Netherlands predominantly identify with the Islamic religion [29], and are organized in relatively close communities and organizations, of which the majority are religious (Islamic) organizations [30]. With regard to health, research has indicated that 45% of Turkish Dutch perceive their health situation as bad, which is more often than other subgroups in the population [31], and have the highest frequency of visits to the GP and hospital, including hospital admissions [32]. Turkish Dutch health behavior has been studied and targeted in several public health programs focusing on smoking behavior [33, 34], AIDS education [33], diabetes [35], and physical activity [36, 37].

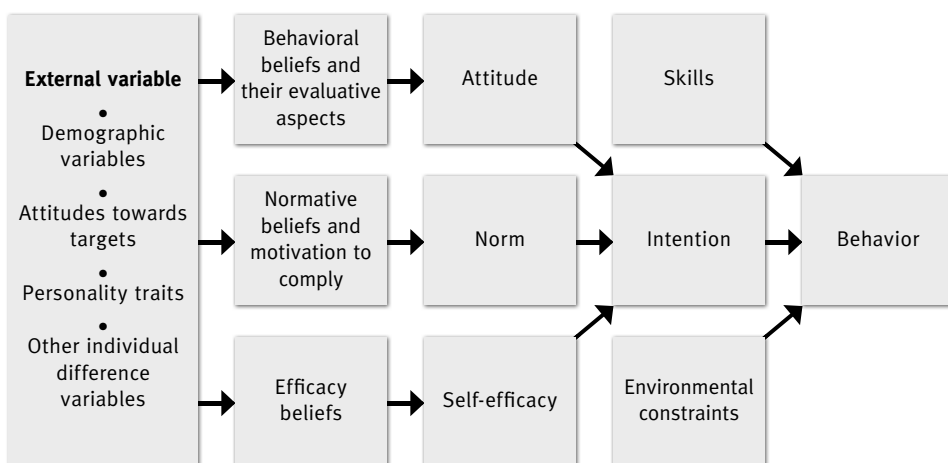


1.3 Promoting hepatitis B-screening in Turkish migrants

1.3.1 Understanding health behavior

It is generally accepted that health promotion programs should be based on theory and evidence in order to be effective [38]. Theoretical knowledge is used in analyzing factors that influence risk behavior, but also in changing health behavior. This knowledge is derived from social-cognitive theories, of which one of the most used theories is the Theory of Planned Behavior [39] which is part of an Integrated Model proposed by Fishbein [40] (see Figure 1).

Figure 1 An Integrative Model [40]

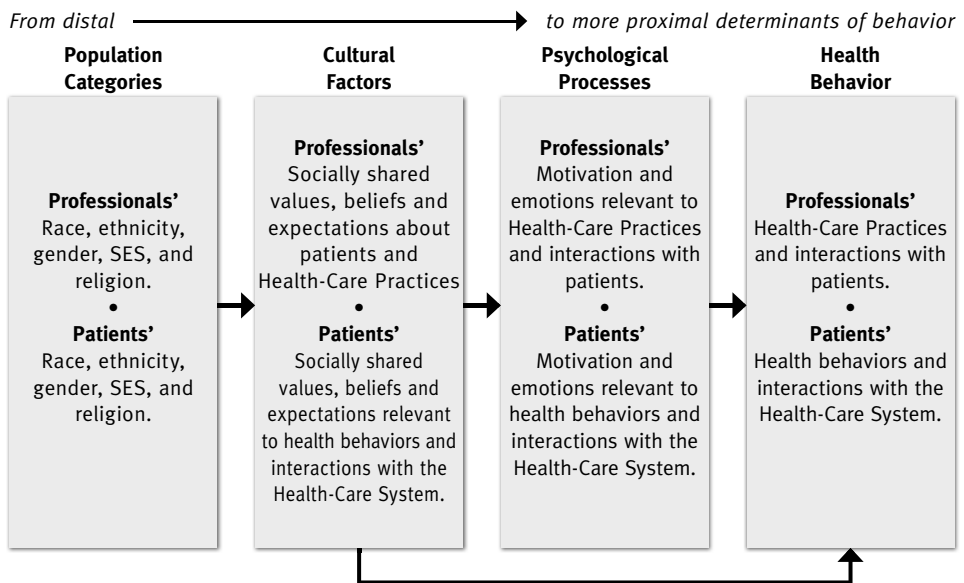


This theory suggests that intention is a reflection of a person's readiness to engage in a specific behavior, given that the person has the necessary skills and there are no environmental constraints which prevent the performance of the behavior. Intention is determined by attitude, subjective norm, and perceived behavioral control (PBC). Attitude is defined as the individual's positive or negative evaluation of performing the behavior of interest. Subjective norms are determined by a person's normative beliefs, whether important referent individuals approve or disapprove of performing the behavior, weighted by this person's motivation to comply with those referents. PBC refers to the probability that a person is capable of executing a certain course of action. Attitudes, perceived norms and self-efficacy are all, themselves, functions of underlying beliefs—about the outcomes of performing the behavior in question, about the normative proscriptions and/or behaviors of specific referents and about specific barriers to behavioral performance. Thus, for example, the more one believes that performing the behavior in question will lead to 'good' outcomes and prevent 'bad' outcomes, the more favorable one's attitude toward performing the behavior.

The supporters of this model argue that when properly applied such theories are culturally specific [40]. Furthermore, they state that cultural differences may be seen as external variables, which play primarily an indirect role in influencing behavior. They argue that there is no necessary relation between these external or background variables - such as cultural differences and differences in values - with behavior, as they are reflected in the attitudinal, normative or self-efficacy beliefs.

However, the Integrative Model, including the TPB, is suggested to be enriched by frameworks specifically addressing the role of culture, such as the PEN3 model by Airhihenbuwa [41] and Betancourt's Model of Culture and Behavior [42] (see Figure 2). These authors are critical about the TPB being one of the Western theories that do not apply to other cultures and focus on individuality rather than considering the context of behavior. To their opinion, culture is the foundation on which health behavior is expressed and through which health must be defined and understood. According to these critics, this contradicts the assumption inherent in Western based conventional theories and models, which postulate that health behavior is a-cultural.

Figure 2 Betancourt's Model of Culture and Behavior [42]



Although Betancourt's Model resembles the Integrative Model, it differs in its assumption that aspects of culture may not only be indirectly associated with behavior through mediating psychological processes, but also directly be associated with behavior. The model highlights that it is culture, not just race, ethnicity, or membership in any other category of people, which influences health behaviors and potentially mediating psychological processes.

Despite the apparent distinction between these approaches, it may be concluded that in planning for health behavior change, it is important to understand which cultural factors are relevant for the specific behavior and how social cognitions and cultural values are linked [43].

1.3.2 The role of culture in changing behavior

Cultural sensitivity may be conceptualized by two primary dimensions: surface structure and deep structure [44]. Surface structure involves the matching of intervention materials and messages to observable, 'superficial' characteristics of a target population. This may involve using people, places, language, music, food, product brands, locations, and clothing familiar to, and preferred by, the target audience. It also includes the identification of channels and settings that are most appropriate for the delivery of health messages. Surface structure is generally achieved through expert and community review, and involvement of the target population in the intervention development process. Deep structure involves the incorporation of the cultural, social, historical, environmental and psychological forces that influence the health behavior in the target population. Whereas surface structure increases the receptivity or acceptance of messages, deep structure conveys salience.

Strategies for enhancing cultural appropriateness have also been categorized as:

1. peripheral strategies; packaging health programs in ways likely to appeal to a given group by the use of colors, images, pictures of group members etc;
2. evidential strategies; by presenting evidence of the impact of health issues in a specific group;
3. linguistic strategies; by providing health education programs in the dominant language of the target group;
4. constituent-involving strategies; by drawing directly on the experience of members of the target group; and
5. socio-cultural strategies, in which health issues are discussed in the context of broader social and cultural values and characteristics of the audience [45].

The first four strategies address surface structure issues by aiming to increase receptivity to and acceptance of messages, the awareness about the relevance of the health problem, and the accessibility of the materials. The latter strategy relates to the deep structure of a health promotion message by aiming to focus on the inner workings of culture rather than just outward appearances.

1.3.3 Tailoring in health education and promotion

Traditionally, health education materials have been generic, and have aimed to provide information within a single health communication, without considering any specific characteristics of the consumers [46]. The next generation of health promotion was based on targeted health education materials, which intended to reach some specific subgroup of the general population, usually based on a set of demographic characteristics shared by its members. The underlying assumption was that among these members sufficient homogeneity existed to justify the use of one common approach. However, those materials could not address the naturally occurring variations between users on important cognitive and behavioral patterns that influence people's health related decisions and actions. These weaknesses and the by then available technology enabled the emergence of tailoring in the 1990's [46]. 'Tailoring' means creating communications in which information about a given individual is used to determine what specific content he or she will receive, the contexts or frames surrounding the content, by whom it will be presented and even through which channels it will be delivered [47]. Tailored health promotion materials may also be defined as 'any combination of information and behavior change strategies intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and derived from an individual assessment' [48].

Tailored health promotion materials have proven to be effective, not only in narrative studies [48-50], but also in a recent meta-analytic review [51]. This review showed several elements that contribute to the effectiveness of tailored print health behavior change interventions, such as: 1) the focus on preventive or screening behaviors; 2) multiple intervention contacts; 3) shorter periods between intervention and follow-up; 4) tailoring on theoretical concepts as well as behavior and demographics; 5) using behavioral theory that includes concepts such as attitudes, self-efficacy, stage of change, processes of change, and social influences [51].

Although tailored interventions can be effective, up to now nearly all tailored interventions have used the 'behavioral construct tailoring approach' [52], in which health messages are tailored to different individuals based on their responses to measures of key constructs from theories of health behavior change. However, this approach may fail to consider contextual variables, that may influence the way people understand and process health information, as well as their ability and motivation to act on tailored messages. It is suggested that tailored programs may be more effective when taking into account specific cultural aspects of health behavior of the target population [48].



1.3.4 Cultural tailoring

Cultural tailoring has been defined as ‘creating a health message which recognizes and reinforces a group’s cultural values, beliefs, and behaviors; and built upon these to provide context and meaning to the message about a given health problem or behavior’ [53]. It is expected to have even more impact on behavior than general tailoring, by paying attention to the embedding of human health behavior in the cultural context and social structure [54].

Cultural tailoring has also been defined as the process of creating culturally sensitive interventions, often involving the adaptation of existing materials and programs for racial or ethnic subpopulations [44]. Cultural sensitiveness in this context is defined as ‘the extent to which ethnic or cultural characteristics, experiences, norms, values, behavioral patterns and beliefs of a target population, as well as historical, environmental, and social forces are incorporated in the design, delivery, and evaluation of targeted health promotion programs’. In the literature, it is suggested that cultural sensitivity requires qualitative research preceding the development of an intervention, such as focus group discussions in the target population in which both surface and deep structure elements are explored [44]. This qualitative data should inform the development of the program, which should then be pre-tested in the target population, in order to assess whether the program indeed fits with the values in this group. Pretesting involves exposing materials and messages to members of the target audience to obtain feedback regarding format and content [44].

When developing a culturally tailored health promotion intervention, potentially important cultural characteristics of the target group should be identified. Suggested criteria for the selection of these characteristics are: 1) the characteristics should be prevalent in the target population; 2) they should be associated with health related beliefs or practices; 3) they should be measurable; 4) they should sufficiently vary within the population to justify tailoring messages based on individual differences on each; and 5) information about a person’s level of identification with these constructs is judged to be helpful in creating more meaningful and effective prevention messages [45]. Next to cultural characteristics, social-cognitive factors derived from behavioral theories, which are related to the desired health behavior (for instance hepatitis B-screening) should be taken into account, as research has shown that interventions addressing both social-cognitive as well as cultural factors are likely to be most effective [55].

1.3.5 Evaluation of culturally tailored health programs

Although it is widely accepted that disease prevention efforts should consider cultural factors when addressing the needs of diverse populations, yet there is little evidence that doing so enhances effectiveness [55]. The investigation of the efficacy of cultural tailored materials versus non-cultural sensitive materials has been recommended since

1995 [44]. However, the first randomized controlled trial that measured the added value of the inclusion of cultural values in individual (behaviorally) tailoring was presented in 2005 [52]. Since then, cultural tailoring has been used to improve a variety of behaviors, such as nutrition communication in a Latino population [56, 57], smoking cessation in African Americans [58], smoking cessation in Chinese American communities [59], fruit and vegetable intake in African Americans [60], and kidney disease prevention in Hispanics [61]. However, few of these interventions have been evaluated as to date. Moreover, neither the evaluation of culturally tailored interventions with regard to the prevention of infectious diseases, nor the application of cultural tailoring in a predominantly Islamic population has been reported as yet.

1.4 Objectives and research questions:

The overall aim of this thesis is to study the effect of cultural tailoring in promoting hepatitis B-screening in Turkish migrants in Rotterdam.

The main research questions this thesis will answer are:

1. Which are the socio-cognitive and cultural determinants of hepatitis B-screening behavior in the Turkish population in Rotterdam?
2. Is cultural tailoring more effective in promoting hepatitis B-screening in Turkish Dutch, than generic health education or behavioral tailoring?

Overview of this thesis

The first chapters of this thesis describe the analysis of the behavioral (social-cognitive) and cultural determinants of hepatitis B-screening behavior or intention. **Chapter 2** describes the findings of seven Focus Group Discussions in the target population. It focuses on the socio-cultural characteristics related to hepatitis B-screening behavior or the intention to be screened. **Chapter 3** describes the levels of awareness, knowledge and self-reported test rates regarding Hepatitis B in the target population, based on a survey amongst 355 Turkish inhabitants of Rotterdam. In **Chapter 4**, we describe the analysis of the social-cognitive and cultural determinants related to screening intention, based on a theoretical framework of Betancourt. Based on the extensive needs analysis, in **Chapter 5** we describe how the behaviorally plus culturally (BCT) tailored intervention was developed, using the Intervention Mapping protocol. In **Chapter 6** the design of the cluster randomized controlled trial evaluating the effect of the intervention is presented. Finally in **Chapter 7**, we report on the effect of online BCT on hepatitis B-screening behavior, as compared to online generic information or behavioral tailoring. **Chapter 8** contains a general discussion of all results, and the thesis is concluded by an English and Dutch summary.



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Chapter 2

Hepatitis B screening in the Turkish-Dutch population in Rotterdam, the Netherlands; qualitative assessment of socio-cultural determinants.

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BMC Public Health. 2009 Sep 9;9:328.

Abstract

Background

Hepatitis B is an important health problem in the Turkish community in the Netherlands. Increased voluntary screening is necessary in this community, to detect individuals eligible for treatment and to prevent further transmission of the disease.

Methods

We investigated socio-cultural determinants associated with hepatitis B screening in male and female, first and second generation Turkish migrants, by means of Focus Group Discussions.

Results

Socio-cultural themes related to hepatitis B screening were identified; these were social norm, social support, sensitivity regarding sexuality, reputation, responsiveness to authority, religious responsibility, cleanliness and religious doctrine regarding health and disease, and the perceived efficacy of Dutch health care services. Motivating factors were the (religious) responsibility for one's health, the perceived obligation when being invited for screening, and social support to get tested for hepatitis B. Perceived barriers were the association of hepatitis B screening with STDs or sexual activity, the perception of low control over one's health, and the perceived low efficacy of the Dutch health care services. Reputation could act as either a motivator or barrier.

Conclusion

This study identified relevant socio-cultural themes related to hepatitis B screening, which may serve to customize interventions aimed at the promotion of voluntary hepatitis B screening in the Turkish-Dutch population in the Netherlands.

Background

Hepatitis B is one of the major infectious diseases in the world [1]. It is a notifiable disease in the Netherlands, and each year around 1,800 hepatitis B virus (HBV) infections are reported nationally, of which 79% are chronic [2]. Chronic HBV infections cause 23% of all liver cancers in the Netherlands and are an important problem in ethnic minority groups, such as the Turkish community, which is the largest group of immigrants from newly or non-industrialized countries in the Netherlands [3, 4]. The Turkish immigration in the Netherlands dates back to the sixties, when Dutch industries started to recruit abroad in order to attract extra labour forces. They targeted various countries of the Mediterranean. It was a joint effort of several Western European nations. As a result, between the end of World War II and the mid-seventies, guest workers came to the Netherlands and other North European countries, departing from several countries of the Mediterranean, including Spain, Italy, Morocco and Turkey. What was first meant to be a temporary migration turned into a permanent stay, as many immigrants settled in the Netherlands and later had their families come over for reunification [5, 6]. While the Turkish community represents 7.7% (45,415 persons) of the total city population in Rotterdam, it accounts for 30% of reported chronic HBV infections [7-9]. Seventy percent of all infections (i.e. acute and chronic infections) in the Turkish-Dutch population involve people aged between 16 and 40. In this group, the mean incidence of reported HBV infections is 122 per 100,000 Turkish-Dutch individuals, much higher than the 35 infections per 100,000 persons reported in the total population of Rotterdam, and the 9 infections per 100,000 persons reported in the general Dutch population [2]. However, these figures underestimate the population-prevalence, because many chronic hepatitis B patients do not have symptoms of disease and are therefore not reported. Population-based studies indicate a prevalence of chronic HBV infections of 0.2% in the general Dutch population, and a much higher prevalence of 2.6 – 4.8% in the Turkish-Dutch population [4, 8, 10, 11].

Transmission in migrant populations (such as Turkish migrants) in low-endemic countries (such as the Netherlands) likely reflects the transmission pattern of the country of origin; most individuals in the Turkish community have acquired HBV through vertical transmission (from mother to child during birth) [2]. However, in (young) adults the most important route of transmission is through horizontal transmission (i.e. sexual contact) [12]. A study in the Netherlands demonstrated that in 60% of the heterosexual cases of hepatitis B, the source of infection was a partner originating from an HBV-endemic region [13]. As 75-80% of the married Turks in the Netherlands are married to someone from Turkey (marriage migration) [14], the risk of horizontal transmission in the Turkish community is still high. It is estimated that immunization of persons with partners of non-Dutch nationality could prevent 36% of hepatitis B cases in heterosexuals [15].



Control of HBV infection presently focuses on screening pregnant women and vaccinating specific risk groups, such as newborns, children with a parent from an HBV endemic area (such as Turkey), and people with high-risk sexual behaviour [12]. Although these programmes are well-attended, there is no specific strategy for the detection and prevention of HBV in the adult Turkish-Dutch population. Screening for HBV should therefore be promoted in this group through public health interventions, in order to detect individuals eligible for treatment and to prevent horizontal transmission in sexually active and pre-active individuals. To develop these interventions, determinants of screening behaviour need to be identified. Studies of migrant groups in the USA have identified several behavioural factors that influence participation in HBV screening. These include the level of knowledge, attitude towards screening, perceived severity, perceived susceptibility, self-efficacy, cultural beliefs (e.g. traditional medicine), accessibility of health care, and demographic factors such as age, education, language proficiency, length of stay in the new country, having health insurance, and socio-economic status [16-25]. Studies into preventive behaviour (e.g. breast cancer screening) of Turks in either Turkey or the Netherlands report relevant determinants such as educational level, knowledge/former education about the disease, confidence, perceived susceptibility, seriousness, barriers and benefits [26-33]. Literature on the access of migrants to the Dutch health care system suggests that the most important barrier is communication between health care providers and clients [34]. Barriers in access and stigma have been reported by migrant black Africans with regard to HIV testing [35], but not with regard to HBV testing. Health insurance is obligatory in the Netherlands, and most health care costs will be re-imbursed by this insurance. However, this is often not the case for self-initiated hepatitis B testing and vaccination of adult migrants, as they are not formally defined as a risk group by the Ministry of Health. Therefore, the costs incurred might be a barrier for testing and vaccination in Turkish Dutch.

When health education places a strong emphasis on individual cognitive processes, and pays limited attention to the embeddedness of human health behaviour in cultural contexts and social structures, this may lead to low effectiveness of interventions. Therefore, basing interventions not just on behavioural constructs but also on socio-cultural factors, is expected to enhance the reception and appreciation by the public [36, 37]. Anthropological and migrant studies revealed some plausible relevant socio-cultural determinants related to HBV screening [38-43]. These are social influences such as social norms and social support, and cultural aspects such as the sensitivity regarding sexuality, the importance of reputation, and responsiveness to authority. Also, as the majority of the Turkish-Dutch population is Muslim, religion may be an important determinant of screening through its doctrine regarding health and disease, religious responsibility, the concept of cleanliness, and of what is considered (un)lawful ('haram/halal'). To our knowledge, socio-cultural factors influencing the HBV-screening behaviour in the Turkish-Dutch population have not been investigated.

The aim of this study was to investigate behavioural and socio-cultural determinants associated with hepatitis B screening in the Turkish population in the Netherlands, in order to develop culturally appropriate interventions. The study applied a combination of qualitative and quantitative research methods, by means of focus group discussions and a survey. This paper reports the findings from the qualitative study, which aimed to obtain insight into socio-cultural determinants and underlying mechanisms that influence the enrolment in HBV-screening by the Turkish-Dutch population. Furthermore, we explored the relevance of these determinants in four subgroups distinguished by gender and migrant generation.

Methods

Participant selection

Our study included first and second generation migrants. First generation migrants (G₁) were defined as persons born in Turkey, and having at least one parent who is born in Turkey as well. Second generation migrants (G₂) were defined as persons born in the Netherlands, having at least one parent born in Turkey [7]. Third generation Turkish-Dutch, who are born in the Netherlands and who have at least one second-generation migrant parent, are a very small proportion of the total Turkish-Dutch population and are mainly children or adolescents [44]; therefore, they were excluded from our study. Discussions were organised separately for men and women, in order to secure a safe environment for sharing opinions. We expected that growing up in the Netherlands versus Turkey might influence the level of acculturation [45]. Therefore, we organised separate discussions for first generation migrants who emigrated before the age of 21 (G_{1A}) and for those who emigrated at or after the age of 21 (G_{1B}). Recruiting for G_{1A} and G_{1B} discussion groups was done with assistance of a local umbrella-organisation for Islamic organisations (SPIOR). This organisation contacted two different Turkish men and women associations. These associations are social groups that provide activities such as language courses, homework tutoring, and consultation in child raising. The leaders of these associations announced the planning of a group discussion about health issues, and asked the members of the associations to participate. Additionally, two G₂ (i.e. second generation) discussion groups were held with students of a Regional Vocational Training Centre, as this was the most convenient location to speak with groups of younger people; recruiting was done by a study-coordinator who asked Turkish-Dutch students to participate. All participants voluntarily signed up to join the discussion group, and received a coupon as token of appreciation at the end of the discussion.

We originally planned to conduct six focus group discussions: G_{1A}, G_{1B} and G₂ with men; and G_{1A}, G_{1B} and G₂ with women. Five of those six planned discussion meetings succeeded, but we were unable to get enough participants for a male G_{1B} group. Since



we also realized that the focus group discussions had all been conducted in rather well-off suburbs, we then decided to organise two more focus group discussions with men and women in suburbs that were recently defined as 'disadvantaged' by the Ministry of Housing, Suburbs and Integration. Thus, in total seven group discussions were held.

Data collection

The focus group discussions were led by male and female Turkish discussion leaders, and a Dutch female researcher. The latter person led the discussion with G2 women in the Dutch language. The other focus group discussions were conducted by a Turkish group leader in the Turkish language, except for the G2 male groups, which was led in Dutch by a Turkish discussion leader. The Turkish discussion leaders were less experienced in leading discussions than the Dutch researcher. They therefore attended a 2-hour training session, in which an information leaflet about Hepatitis B was discussed, and in which they were trained in moderating skills. During the discussions all leaders used a FGD guide. They also had a leaflet in which the information on Hepatitis B to be provided during the discussion was written out fully (*see Appendix I*). All male group discussions were led by a male discussion leader, and all women groups by a female leader. Demographic data of the participants were gathered by a short questionnaire at the start of the discussion. Each discussion was recorded except for one, because the tape recorder broke down at the start. During this meeting minutes were taken by a Turkish-Dutch observer, who was present in all meetings. As these observers would write verbatim transcripts of the recording afterwards, it was helpful for them to be present during the discussions. The focus group discussions were held over a period of two months (April-June 2007). The Medical Ethical Review Board of Erasmus MC, University Medical Centre Rotterdam, approved of this study.

Procedures

Discussions started with broad questions about knowledge of hepatitis B, its prevention and the perceived risk of this disease. Next, we provided concise verbal information about HBV, transmission, testing and vaccination, whereby all routes of infection (from mother to child, through blood contact/wounds, and through sexual contact) were explained (*see Appendix I*). As transmission of HBV in injecting drug users in the Turkish community is very rare [46], we decided not to mention this in the focus group discussions, but focussed on the main routes of transmission in this population. The group was then led into a brainstorm session, in which reasons for screening (or non-screening) and vaccination (or non-vaccination) were identified. In this way, lists of barriers and motivators related to screening and vaccination were composed on a large flip-over easle pad. After this brainstorm session, a short coffee break was held for the participants. During this break, the discussion leader summarized the socio-cultural topics following the themes that had been previously derived from literature: social norm, social support, sensitivity regarding sexuality, reputation, responsiveness to

authority, religious responsibility, cleanliness, and religious doctrine regarding health and disease. The topic of the perceived efficacy of Dutch health care services was added to this theme list, as this was a new issue. After the coffee-break, the discussion leader elaborated with the participants on the items that were mentioned during the brain storm session in a systematic way, i.e. following these themes. On average, a focus group discussion lasted 90 minutes.

Analysis

The group discussions were analysed using the approach as described by Krueger [47]. This approach includes the following steps: producing verbatim transcriptions, clarifying the transcripts by discussion, giving thematic labels to relevant sections, and summarizing the information. Verbatim transcriptions were noted down by the Turkish-Dutch observers, thereby directly translating the Turkish discussions into Dutch transcripts. The researcher and either the discussion leader or the observer then discussed the transcripts for clarification. Subsequently, the principal researcher analysed the transcripts by giving thematic labels, which were used in the summary during the discussion, to parts of the discussions. Next to the pre-defined themes, newly emerging themes could be defined. A second researcher labelled two of the transcripts independently. The two researchers then discussed the labelled transcripts, reaching a consensus on the emergence of themes. The other five transcripts were labelled according to this consensus by the principal researcher only. As during the discussion and analysis no clear differences were noticed between opinions from G1A and G1B groups, we combined these two groups into one overall first generation group for further analysis. After labelling, the key determinants in each theme were summarized by gender and generation. Finally, summaries of the discussions per theme, in which gender and generation were distinguished, could be composed. In this paper, we structure the themes into three realms that influence screening and vaccination for HBV, namely social, cultural and religious factors.

Results

Demographics

In total, seven focus group discussions were held. Age and generation of the participants are presented in *Table 1*. All parents of the 54 participants were born in Turkey. The majority of G2 participants were not married (82%) and did not have children (91%). G1 participants in most cases were married (78%) or widowed/divorced (6%) with children. Of the participants with children, 45% had children aged 16 and above (sometimes in combination with younger children). The majority of men (74%) reported to have a medium level education, two had university level education and four attended primary school only. Two women had not received any education and 32% attended only primary school, while the majority had a medium (45%) or higher



Table 1 Composition of the Focus Group Discussions regarding age and migrant generation.

Women	N	Age			Generation		
		Min	Max	Mean	1A ¹	1B ²	2 ³
group G1A	7	19	43	33.3	5	1	1
group G1B	8	26	69	44.8	0	7	1
group G2	8	17	22	20.0	2	0	6
low SES group ⁴	8	25	47	32.9	5	2	1
Total	31				12	10	9
Men							
group G1A	9	36	76	46.2	4	4	1
group G1B	-	-	-	-	-	-	-
group G2	5	17	19	18.2	0	0	5
low SES group ⁴	9	18	24	19.8	2	0	7
Total	23				6	4	13

¹ persons who emigrated from Turkey to the Netherlands before the age of 21

² persons who emigrated from Turkey to the Netherlands at or after the age of 21

³ persons who were born in the Netherlands, having at least one parent born in Turkey

⁴ persons living in disadvantaged suburbs

(16%) level of education. The participants were asked to score their Dutch language proficiency (level 1-3/poor-excellent); the mean score for men was 2.14 while this was 2.06 for women. The groups from the disadvantaged suburb did not differ from the other groups regarding level of education and Dutch language proficiency. Most of the G1 participants were older compared to those in the G2 groups. To increase readability, we will sometimes use the terms ‘older women’ or ‘older men’ when reporting on G1 participants. For G2 participants we will sometimes use the terms ‘young(er) men’, ‘young(er) women’, ‘boys’ or ‘girls’.

Social factors

Determinants in the social realm that influence the screening and/or vaccination behaviour may be (1) the social perception of hepatitis B, (2) the social norm regarding screening, (3) the social norm regarding vaccination, and (4) the social support regarding HBV screening.

Regarding the social perception of hepatitis B, initially none of the groups expressed a negative feeling. G1 women mentioned:

“Hepatitis B is a subject that everyone has to deal with. It has to do with health, and how to control one’s health. It’s not something that affects one’s honour”.

Only when during the discussion it became clearer that HBV infection might be caused by sexual contact, the subject became more sensitive. The older women discussed the possibility of people talking negatively about them. In addition, the girls started thinking about sexual contact as a mode of transmission and became less confident about the acceptability of the disease. In most groups, it was expressed that there is little knowledge about the sexual mode of HBV transmission, and that this ignorance does prevent that people with hepatitis B are stigmatised. Illustratively, a participant in the G1 men expressed:

“People just do not know much about this disease. They simply come for a sick-call at home, and do not bother about it”.

If the level of knowledge would increase, and it would become commonly known that HBV is a sexually transmitted disease, this might lead to social stigma. In contrast, the women from the disadvantaged area mentioned that everyone should be educated so there would be less social stigma surrounding HBV. G1 men and women compared the stigma surrounding AIDS and HBV, and expressed that HBV is perceived totally differently. They felt it was impossible to discuss AIDS with the wider social environment, while HBV was well discussable. The young men in the disadvantaged area, however, did initially associate HBV with AIDS, as *“you get it in the same way as AIDS”*.

As for the social norm regarding screening, there were generally no objections to having a blood test. In fact, having a medical check-up (including broad-spectrum blood tests) when visiting Turkey seemed to be common practice, especially in the aging population. G2 men (and less strongly, G2 women) noted that it might be inefficient to have too many blood tests. The G2 men expressed:

“Well, you might not want to go for a test, because you just intend to live a healthy life. I am not doing a test, just like that. I will first have a look at myself: where did I go wrong, and primarily I will correct myself in that (risk) behaviour”.

It was also noted that the G1 women resisted social norms whether or not people should have a HBV-test, illustrated by the following quote:

“As long as I am confident about myself, the others are not important. If we constantly have to think about what others will say about us, we could not do anything with our lives! People will always talk. The more openly you discuss things, the less gossip there will be”. (G1 women)

Thus, while the existence and influence of social norms was acknowledged, it was also seen as something that should be fought. Men seemed to perceive little social influence, which became clear from expressions such as: *“What other people think, does not affect me”*.



When the social norm regarding vaccination was discussed, all groups had difficulties finding reasons to object to vaccination.

*“If there is a good vaccination for this disease, that is the best action to take!”
(G1 women)*

Vaccination was perceived as a positive action, and many even expressed the intention to get vaccinated and stimulate others to do the same.

Social support regarding HBV screening was extensively discussed by G1 women who spoke of themselves as supportive mothers, and to a lesser extent, supportive wives. The bond with their children was important; they gave the impression that they would support their children even though they might have contracted HBV by sexual contact (which is disapproved of).

“I will ask them (the children) why they want to go for screening. I will just ask, not because I do not trust what they have done. Whatever has happened, if there is a risk for having contracted a disease, of course they should go for a test.” (G1 female participant)

In a less obvious way, this seemed also to be true for supporting their husband; if he planned to be screened this would be encouraged, but not without asking an explanation of the reason why he wanted to be tested. For themselves, the G1 women did not speak about support from their husbands or children. They seemed to be making independent choices about health screening, with a husband who was either indifferent or (distantly) supportive. The G2 women expressed that in general health issues, there was a lot of social support in Turkish families: in going for treatment, in being compliant with treatment, and by giving psychological support when ill. However, regarding the social support for HBV-screening we could distinguish three different opinions in the G2 women groups. First, some girls seemed to have an open relationship with their parents.

*“I can discuss anything with my parents, because they will always support me.”
(G2 women)*

Second, some girls considered a test for a sexually transmitted disease (STD) as a private matter, which they would not like to discuss with their parents. Should they really be ill, then they would expect the family to be supportive. Third, there were girls who perceived HBV infection mainly as an STD and strongly felt their parents' rejection of (extra- or pre-marital) sexual contacts. Although they might be supported in the end, the barrier for sharing this with their parents was very high and they were not sure about the reaction of the parents. The young men seemed to be less worried than the young women about rejection by their family.

“Within Turkish families, there is a very strong bond. It is very difficult to break this bond. If you are in trouble like this (having HBV), they will not ostracise you. Even if you have done bad things... they will really regret it, it will break their heart, but they will not ostracize you because that is just not done.” (G2 male participant)

The quote makes clear that young men feel strongly supported by their family. However, in some cases they perceived social interference of the family as a stressor, as there might be so much concern that they feel overwhelmed by it. Social support in G1 men was shortly discussed, but neither receiving nor giving support regarding HBV-testing provoked discussion.

Cultural factors

Issues related to the cultural realm that influence HBV-screening behaviour may be (1) the sensitivity regarding sexuality, (2) the issue of reputation and (3) the responsiveness to authority.

As for the sensitivity regarding sexuality, a shift was noted in the perception of HBV (testing) during the discussions: in most groups HBV infection was initially not seen as an STD and there was a positive attitude towards testing. Once aware of the routes of transmission (i.e. blood and sexual contact), the aspect of sexual transmission became the dominating issue, and social-cultural influences became apparent. However, when the discussions were summarized, participants seemed to return to their initial beliefs regarding HBV infection and testing. In all groups, sexuality was said to be a sensitive subject. G1 men mentioned as reason for not going for screening a sense of being ashamed for the suspicion of others (of having had extramarital sex). Even though they themselves would have a clear conscience, they still could be affected by this suspicion. The younger men seemed to be more confident about dealing with others' opinions about their sexual behaviour. The men from the disadvantaged area even mentioned that "*we (the men) don't have the problem of virginity*". When the groups talked about extramarital sex, it almost always considered men, not women (except young women who were sometimes thought to have sexual engagements too). G1 women did not seem to perceive infection through sexual contact as a personal risk, although they mentioned they could be indirectly affected by the sexual behaviour of their husbands. As discussed in the section 'social support', the sensitivity regarding sexual behaviour and HBV-testing was an important issue for G2 women.

Regarding the issue of reputation, the G1 men expressed that an established good reputation could protect them from social suspicion. If a man with a good reputation would have an HBV test, peers would look up to him in admiration because of his responsible action. That person might act as an example for others in that sense. The girls mentioned that if they would be blamed for bad behaviour by others, that would be terrible and a big shock for their parents. In G1 women groups, the issue of elderly people being ashamed for having HBV was mentioned. This was even apparent during the discussions; it was noticed that the older women were less open in sharing ideas about health and disease. Congruent with their remarks about social norms about HBV, women expressed that one's reputation should be less important than one's health, and that it should not be a hindrance to get tested.



In the group of the young women, the confrontation with a male physician was discussed, which seemed to be a barrier for some of the girls. A Dutch male doctor was preferred above a Turkish male doctor by some, while others saw doctors as professionals no matter ethnic background and gender. The young men in the disadvantaged suburb had strong opinions about the impact of having HBV (screening) on their reputation. When a young man would like to marry a girl, her parents might check his history. Either having the disease or having been screened, might be a blemish and a reason for not accepting him as future son-in-law. Not everyone in the group agreed with this opinion.

In order to explore further possible cultural influences, it was asked whether responsiveness to authority could be related to hepatitis B screening. Strikingly, in all groups the authority of the Municipal Public Health Services (MPHS) became the subject of discussion rather than the authority of community leaders or parents, as we had expected. Everyone agreed that when screening and/or vaccination would be obligatory, this would be a motivating factor for the Turkish community to comply. In some groups, it was expressed that an invitation would make it easier for individuals to participate in screening. Should they worry about their behaviour, then the invitation would release them from suspicion of the social environment.

“Well it has a bit to do with taboo, but now we have discussed it, I can go for screening without getting into trouble.” (G2 male participant, disadvantaged area)

However, during the discussions on responsiveness to authority, almost all groups questioned the efficacy of the Dutch health care services. This new emerging theme was thoroughly discussed and the results are to be found under the heading ‘Efficacy of Dutch health care services’.

Religious factors

Issues related to HBV-screening that were mentioned by the participants were also in the realm of religion. These may be (1) responsibility for one’s health, (2) the concept of cleanliness and (3) the Islamic doctrine regarding health and disease.

Regarding religious feelings of responsibility for one’s health, all groups except the G1 women expressed the importance of their religion for the choices they will make regarding their health. Without probing, the responsibility for one’s personal health and for the health of one’s (future) partner, family and other persons in the social environment were mentioned as reasons for testing.

For the G1 men, a group in which a religious leader participated, the concept of cleanliness was seen as a condition for living ‘halal’ (lawful), and was presented as the solution for the prevention of HBV infection.

“Our prophet says: cleanliness is half of the faith. If someone is not clean, he might not go to heaven. A person who lives according to the rules of our religion will be almost 100% sure of not getting this disease (HBV).” (G1 men)

This concept of cleanliness, living 'halal', includes hygienic cleanliness (washing hands, using own toiletries), but also not having extramarital sex, and seemed to be most poignant for both G1 and G2 men. In none of the women's groups were the words 'halal' or 'haram' (unlawful) mentioned.

Aspects of the Islamic doctrine regarding health and disease were discussed in the groups:
"It is written: you have to do all you can in order to cure a disease". (G1 men)

Furthermore, it was noted that Muslims are obliged to care for the body, in order to be able to return it to Allah in an unblemished state. The young men mentioned religion also in the context of fate. They felt that there was a limit to what one could do to prevent disease, and that getting ill, in a sense, is also fate. However, their peers remarked that this might never be a reason for not trying your best to stay healthy. One group of young men also mentioned that in religion, there is always forgiveness and a solution for bad behaviour. This was also deemed valid in the case of extramarital sex, and for this group, this conviction would help them to speak with their parents about their (perceived immoral) behaviour. The G1 women did not connect their religion to their behaviour. When asked for the connection between their religion and having or preventing hepatitis B, the main focus in both groups was that extramarital sex is forbidden. The women did not mention that religion can prescribe to act positively for one's health, while all other groups did so.

Efficacy of Dutch health care services

In almost all groups, the difference in quality of health care in Turkey and the Netherlands was discussed spontaneously. The participants felt that in Turkey there was more quality of care; doctors are willing to prescribe medication and to order tests for patients readily, while in the Netherlands doctors seem to be resistant to do so. G1 women and G2 men most strongly expressed their dissatisfaction:

"For 1 or 2 years, I am not seeing the GP anymore. If I have some complain, I think... well leave it, the only thing I will get is a painkiller. (...) I ask you: is that a way to be treated?!" (G2 male participant)

"It might be off-topic, but I really want you to write this down: in the Netherlands the health-sector is really badly organised. A human life is not truly valued." (G1 female participant)

In the groups in the disadvantaged area, besides doubts about the quality of care, there was also distrust towards the Dutch health care system. This seems to be related to a general unhappiness about the Dutch government. It was expressed that one would rather spend his money on health in Turkey than in the Netherlands, as *"they (the Dutch government) just try to get money from me"* (G2 male participant). Also there were strong opinions about the role of the government in the case of hepatitis B prevention. A few times it was said:

"If this is such an important disease why do we only hear about it now?" (G1 women)



None of the groups saw practical barriers in the accessibility of the testing facilities at the Municipal Public Health Services, although high costs were mentioned as a possible obstacle.

Discussion

Focus group discussions with members of the Turkish-Dutch migrant community in the Netherlands indicated that socio-cultural factors influence their HBV-screening behaviour. The importance of the various determinants of screening varied by gender and generation. Relevant motivating factors for all participants were feelings of (religious) responsibility for one's health, and the perceived obligation to go for screening when receiving an invitation from the Municipal Public Health Services. Second generation participants perceived social support as a motivating factor to get tested for HBV; however young women strongly wanted to avoid that their social environment would associate their HBV screening with STDs or sexual activity. A barrier for the second generation males was that they experienced their health as 'fate' rather than being in their own control. This lack of control over their health was also a relevant negative factor for the married women in both G1 and G2 groups, because infection was perceived to be dependent on their husbands' sexual behaviour. A factor that would motivate these women to be screened for HBV was their independence in making health decisions. Especially in first generation women and second generation men, the efficacy of the Dutch health care services was questioned and was deemed likely to discourage screening behaviour. An important factor for both first and second generation men was the importance of their reputation. Reputations could work in a negative way especially when reputation still needs to be established by the individual, and in a positive way when reputation already has been established.

Strengths and limitations of the study

The strength of this study is its focus on central socio-cultural themes, which provides a deeper understanding of the community as a whole. But this study also had several limitations. A general limitation of focus group discussions is that they may present a picture of what is socially acceptable in a community, rather than what is actually believed or is actually happening in a community. Second, as recruiting was done by volunteers in an informal setting, in almost all groups a few members of other subgroups took part. However, we tried to ensure that the majority of the participants met the criteria for inclusion in the particular discussion group. Third, another possible limitation of this study is that recruitment of participants was done by an Islamic organisation and by a Regional Vocational Training Centre. This way of recruitment may have caused selection bias, for instance the first recruits being more actively involved in religion than the latter. In reality however, more than 90% of Turkish Dutch identify with Islam [48], and a large proportion of this group is involved in both

social-religious and secular activities (such as school and work). Therefore, recruitment by these different organisations may not have caused much differentiation between the groups. Fourth, in our study most G1 participants were older and married with children, while G2 participants were younger and often had a child-role in their family. As in the Turkish-Dutch population there are also G2 men and women who are married and have children, this should be taken into account in interpreting the results for G2 participants. Fifth, in the general Turkish-Dutch population, 30% only attended primary school, 54% has a medium level education, while 16% has a high education level [7]. Thus, the proportion of men with a medium level of education was larger in our study (74%), possibly due to greater interest of higher educated individuals in participating in discussion groups. Therefore, care should be taken in extrapolating the findings of this study to the whole of the Turkish community. Sixth, the focus group discussions with the G2 women were led by the Dutch principal researcher, whereas all other groups were led by Turkish discussion leaders. This might have influenced the level of openness and social desirability. Most of the discussions were led in the Turkish language. Indeed, the majority of the first generation participants would not have been able to participate in a Dutch-language discussion. A disadvantage of this was that there was not enough elaboration on certain concepts (e.g. 'halal'), because there was a quick common understanding between the Turkish participants and Turkish discussion leaders. For a thorough understanding of these concepts in relation to the willingness to go for screening, deeper exploration is necessary. Discussion leaders should be more specifically trained to overcome this problem. Seventh, as there was little knowledge about HBV, we provided *each group with the same information* about HBV and its prevention. During the discussion however, participants may not have fully absorbed the information and thought through all the implications of testing. In addition, the participants were discussing a hypothetical situation: if they would go for screening, what would be motivating or barriers? They were asked to think about a situation they did not know, which may have led to incomplete results. Last, because of a lack of capacity, Dutch transcripts of the Turkish discussions were not back-translated. This may have caused translation-related bias, such as an incorrect understanding of the observers of what was actually said. The observers however, were also of Turkish Dutch origin. We expect that the level of translation-bias was limited, because of their ability to understand both languages and their understanding of the discussed topics due to their actual presence during the discussion.

Social factors

Social norms have the largest impact on G2 women, who seriously doubt their ability to speak to their parents about HBV (in the sense of it being an STD). This is understandable, because of Islamic doctrine regarding honour related to the sexual behaviour of women in the family [43]. Studies into barriers to HIV testing have also found that fear of adverse consequences, such as rejection or blame from the family, may cause women to reject a test [49]. Social support for the G1 women seemed not



to be present. This is confirmed by findings from group discussions with Islamic Arabic migrant women in Sweden, who said: “it is we ourselves that must retain our health” and “I am the one helping all others” [50]. These opinions are also found in African migrant women in the US, with regard to their apprehensiveness to include their male partners in treatment decisions, or to bring them to the clinic for HIV testing [51]. In contrast with G1 women, G2 men and women do experience social support in health issues, especially from their parents. This family involvement on the one hand is appreciated as social support, but too much involvement and care may be experienced as social control and over-concern. This ambiguity is also reported by Islamic migrant women in the USA, who expressed that next to support, their families’ involvement in doctor visits caused apprehensiveness about disclosing information that they would rather keep private [52]. Generally, all participants in our study said that their health prevailed over social, cultural and financial barriers. Two studies into Turkish women’s ideas about health and sexuality have indicated that Turkish women do not only want to control the risk of shame for themselves, but also for the wider circle of social relationships. For many women, reducing the risk of STDs to protect their physical health introduces risks to their social relationships and to the well-being of their family and community. Thus, women place priority on the protection of their social health over their physical health [40, 41]. These findings suggest that in our group discussions, especially women may have given socially desirable answers or were not aware of those subconscious influences on their decisions.

First generation women, and some second generation women, did not see themselves as being at direct risk for contracting HBV through sexual contact. The unmarried girls considered themselves as being not at risk, because of their virginity, and the married women believed their only risk factor was the sexual behaviour of their husband. In this way, prevention of HBV infection seemed to be either unnecessary or out of their control. The young women discussed their preference in visiting a doctor of either Dutch or Turkish nationality. Opinions differed, as some preferred a Dutch doctor, while others preferred a Turkish doctor, and some did not have a preference for either one. The young women in the aforementioned study in the USA strongly expressed a need for a Muslim doctor, having the perspective of an Islamic source that understands religious necessities [52].

Cultural factors

Islamic countries have been described as being bureaucratic with a large power distance and a strong avoidance of uncertainty, which means an increased need for rules or regulations, in contrast to less discerning non-bureaucratic countries such as the Netherlands [53]. Turkish families are described as being authoritative households, with patriarchal family relationships. Especially between fathers and children, rules of conduct warrant a certain respect [39]. For this reason, the issue of responsiveness to authority was raised in the group discussions. Contrary to our expectations, the

relationship between government and citizens was mentioned instead of the hierarchical relationships in families. Participants indicated that a personal invitation by the MPHS would motivate people to go for screening. This seems to contradict the perceived low efficacy of the Dutch health care services by this population, and other migrant groups [34]. It is not clear how this will impact participation in screening.

Religious factors

Religion has been shown to be associated with health behaviours [54]. It is shown that religious salience, attending religious services and participating in religious activities, is significantly related to the use of health screening [55]. Religious norms may also hinder participation in HIV testing [56]. However, most of the research into the influence of religion has been done in the USA and Canada, considering the impact of the western Judeo-Christian religious discourse. Studies into the influence of the Islamic religion on health or preventive services are rare [57]. The Islamic faith urges an active search for knowledge and health-promoting activities, and recommends those who are ill to strive to do everything to regain their health [38]. These issues were most valid for the male and G2 female participants of the group discussions in this study. They linked their religion to positive health action (such as screening), while G1 women tended to link religion merely to forbidden things (such as extramarital sex). Furthermore, the impact of religion on feelings of responsibility for the health of oneself and that of others was clearly expressed in this study. All men related prevention of disease to the need for cleanliness (living 'halal'). Literature on this topic points out that cleanliness has a hygienic and a symbolic aspect (restoring an inner balance) [43]. The young men also noted limitations in human actions with regard to health, as eventually health is a matter of fate. This is in line with the expressions of Arabs, who see doctors as instruments in the hands of Allah, who ultimately is the Curer [57]. This passive attitude towards health is also described elsewhere [43].

Conclusion

This study explored socio-cultural determinants related to hepatitis B screening, and their relevance for male and female first and second generation Turkish migrants in the Netherlands. Motivating factors were the (religious) responsibility for one's health, the perceived obligation when being invited for screening, and social support in being tested for HBV. Perceived barriers were the association of HBV screening with STDs or sexual activity, the perception of low control over one's health, and the perceived low efficacy of the Dutch health care services. Reputation could act as either a motivator or barrier.

The findings suggest that participation in HBV-screening will increase if people receive a personal invitation from the MPHS. When developing an intervention aimed at the promotion of HBV-screening, it seems worthwhile to appeal to feelings of responsi-



bility for one's own health and that of others, which were expressed by all groups. To overcome stigmatization of hepatitis B as being a sexually transmittable disease, emphasis should be placed on the most common route of transmission in the Turkish population, i.e. by blood contact during birth. Especially for young, unmarried women this will take away a major barrier in coming forward for screening. The intervention should also address the perceived lack of control over one's own health, by empowering people in showing how they can positively contribute to their own health, that of their family and wider community. Particularly for men, HBV screening should be advertised as a positive health act, which could even improve their reputation. Last, the perceived low efficacy of the Dutch health care services should be tackled by clearly explaining the screening procedures.

While this qualitative study provides useful insight in the socio-cultural determinants related to HBV-screening and their underlying mechanisms, quantitative confirmation of these findings is necessary. We therefore plan to conduct a survey which, together with the qualitative data from this study, will provide the basis for the development of a culturally-appropriate intervention aimed at the promotion of HBV-screening in the Turkish-Dutch population in Rotterdam, the Netherlands.

Competing interests

This manuscript has not been published elsewhere and is not under submission elsewhere. There is no conflict of interest.

Authors' contributions

OZ, JHR and JM made substantial contributions to the conception and design of this study and revised the manuscript critically. YV organised the Focus Group Discussions, analysed the data, and drafted the manuscript. YV and HV were involved in data-interpretation and in revising the manuscript. All authors read and approved the final manuscript.

Acknowledgements

The authors would like to thank the members of the discussion groups for their contribution, Lydia Pars for her assistance in labelling of the transcripts, and Carlijn Kamphuis for her feedback on the manuscript.

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Appendix I Information provided during the Focus Group Discussions

First block of information about hepatitis B

(provided after having explored what the participants already know about hepatitis B)

Hepatitis B is caused by the hepatitis B virus.

Many people in the world are infected with hepatitis B. It is a disease that is easily transferred from one person to the other. Hepatitis B occurs more often in Turkey and the Turkish community in the Netherlands, compared to the autochthonous population.

If a mother carries the virus, her child may be infected with the virus during or after birth. Infection may also occur from person to person by blood (razorblades, needles, wounds). The virus can also be spread by sexual contact between men and women (or men).

When the virus enters the body, the body can deal with it in several ways, depending on the age of the person and the immunity (i.e. the strength to fight diseases) of the body.

1. In children, the immune system is not yet fully developed. This implies that the body of a child cannot kill the virus and get rid of it. Therefore, in children the virus will often remain in their body for the rest of their lives. The virus in those children may be spread to other people by blood- or sexual contact, during the rest of their lives.
2. The majority of adults that get infected with the virus will not notice to have been infected. They will not experience any signs of the disease. They are able to kill the virus and also produce antibodies. The next time the virus will come into the body; those antibodies will immediately kill the virus. However, 5% of the adults that are infected will not be able to kill the virus and become a life-long carrier of the virus.
3. One in three people who are infected will indeed become sick. This is called 'acute hepatitis B infection'. Signs of disease are: fatigue, 'flu-like' symptoms, loss of appetite, nausea, vomiting, sometimes fever and sore joints. Sometimes these signs are followed by getting a yellow skin, dark coloured urine, and light coloured faeces. Often, these signs remain longer present in adults than in children. The total time of sickness may be from a few weeks up to 6 months. 1 in 1000 people with this disease may die. 5-10% of these people will remain carrier of the disease.
4. In 5 to 25 year, 15-25% of the people who carry the virus life-long will develop liver cancer or other serious liver disease.



Second block of information about prevention

(provided after exploring the existing knowledge regarding prevention of hepatitis B)

In order to prevent hepatitis B there are two possibilities:

1. Things one should NOT DO
2. Things one should DO

Regarding things one should not do, it is important to avoid blood contact and unprotected sexual contact, because the virus may spread in these two ways.

Regarding things one should do, these are the following:

1. Screening. At the Municipal Public Health Services (MPHS), blood may be taken and tested for hepatitis B. In this way, the lab may find out whether someone has had the virus or maybe still has the virus in his (or her) body. In the first case, one is immune for the disease, in the latter case one is carrier of the disease. Another option is that someone has never been in contact with the virus. This person is then still susceptible to getting the disease, meaning that if the virus comes into the body, the person does not have specific immunity for hepatitis B and might get sick. The general cost incurred in the blood test is 26 euro.
2. Vaccination. Those people who have never been in contact with the disease may still get it. In order to prevent this, one may be vaccinated against the disease. This means that 3 protective injections are given in the upper-arm, in a time-period of 6 or 7 months. The cost incurred in vaccinations at the MPHS is 146 euro. After the three vaccinations, a last blood test is done in order to check whether the vaccinations have indeed caused protection in the body.

Chapter 3

Awareness, knowledge and self-reported test rates regarding Hepatitis B in Turkish-Dutch: a survey.

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BMC Public Health. 2010 Aug 24;10:512.

Abstract

Background

Hepatitis B virus infection is an important health problem in the Turkish community in the Netherlands. To prevent transmission and progression of the disease in this community, increased screening is necessary. This study aimed to determine 1) the levels of awareness and knowledge regarding hepatitis B, comparing these in tested and non-tested Turkish-Dutch in Rotterdam; 2) the self-reported hepatitis B test status in this population, and how this is related to demographic characteristics, knowledge and awareness.

Methods

We conducted a postal survey amongst first and second generation migrants, aged 16 – 40 years.

Results

The response rate was 30.2% (n=355 respondents). Levels of awareness and knowledge regarding hepatitis B were low, as the majority of respondents (73%) never thought about the disease and 58% of the respondents scored 5 or less out of ten knowledge items. Weighted analysis of self-reports showed a test rate of 15%, and a vaccination rate of 3%. Regression analysis showed that having been tested for hepatitis B was related to being married and higher levels of awareness and knowledge.

Conclusions

This study shows low levels of hepatitis B awareness and knowledge in the Turkish community in Rotterdam. Self-reported test rates are lower in people who are not currently married, and in those who have low levels of awareness and knowledge. Especially, knowledge about the consequences of hepatitis B, such as liver cancer, was lacking. Therefore, a health promotion intervention should foremost raise awareness, and increase knowledge on the seriousness of this disease.

Background

Hepatitis B virus (HBV) infection is one of the major infectious diseases in the world [1]. The endemic status of the Netherlands is classed as low, but population migration from high or medium endemic countries affects the HBV prevalence [2, 3]. Each year, around 1,800 HBV infections, 79% of which are chronic, are reported in the Netherlands [4]. Chronic HBV infections cause 23% of all liver cancers in the Netherlands, and are an important problem in ethnic minority groups, such as the Turkish community [5, 6]. While this community represents 8% of the total city population in Rotterdam, it accounts for 30% of reported chronic HBV infections [7]. Seventy percent of reported infections among Turks involve people aged between 16 and 40. In this age-category, the mean incidence of reported HBV infections is 122 per 100,000 Turkish-Dutch individuals, much higher than the 35 infections per 100,000 persons reported in the total population of Rotterdam (Municipal Public Health Services Rotterdam-Rijnmond (MPHS), unpublished data, Rotterdam, 2007). However, these figures underestimate the population-prevalence: many chronic HBV-patients do not have disease symptoms, and are not reported. Population-based studies indicate a prevalence of chronic HBV of 0.2% in the general Dutch population, and a prevalence of 2.6 – 4.8% in the Turkish-Dutch population [6, 8-10].

Most reported patients with chronic HBV have acquired HBV from their mother at birth [4]. Later in life, however, transmission is mainly through sexual contact [11].

HBV control now focuses both on pregnancy screening and on vaccinating risk groups, such as newborns from HBV-infected mothers, children with parent(s) from an HBV-endemic area, and people with high-risk behaviour [11]. These programmes however, have not contributed to the health of the general adult Turkish-Dutch population, leaving a substantial part of this population both undetected and unprotected regarding HBV.

In the past decade, treatment possibilities of chronic HBV have improved [12]. In order to detect individuals eligible for treatment and to prevent horizontal transmission in sexually (pre-)active individuals, screening for HBV should be promoted specifically in the Turkish-Dutch population. Public health interventions should target those who are least likely to participate in screening. Studies in Asian-American migrant groups, have shown that a lower screening rate is related to demographic factors - such as younger age, lower level of education, poor language proficiency, lower socio-economic status, and not having a health insurance - and lower levels of knowledge and awareness regarding HBV [13-22].

This study is a first step in developing an intervention aimed at the promotion of HBV-screening in the Turkish-Dutch population in Rotterdam. In order to target this intervention adequately, the current study aimed to determine 1) the levels of awareness



and knowledge regarding HBV, comparing these in tested and non-tested members of the Turkish-Dutch population in Rotterdam; 2) the self-reported HBV test status in this population, and how this is related to demographic characteristics. In the next phase, we will determine causal relationships between behavioural and cultural determinants and HBV-screening behaviour.

Methods

A sample of 1176 inhabitants of Rotterdam was drawn from the municipal administration. Included were people born in Turkey (first-generation migrants (FGM)); and people born in the Netherlands, with FGM parents (second-generation migrants (SGM)). Stratification was done on the basis of gender, migrant generation, and 5-year age group to ensure a minimum number of participants in each stratum. In order to over-sample strata in which a lower response was anticipated, we used response percentages reported for a health survey in the same population [23].

The questionnaires were translated and back-translated by two Turkish-Dutch translators. Inconsistencies in the translation and different understandings of concepts were discussed until consensus was reached between the translators. One week after an announcement from the MPHS, asking for participation in the survey, FGM received a letter and questionnaire in both Turkish and Dutch language. SGM received the letter and questionnaire in Dutch only. Turkish-spoken support in filling out the questionnaire was available through telephone contact. Reminder packages consisting of a letter and questionnaire were sent to those who had not responded within three weeks. One week thereafter, all non-responders registered in the public telephone register were called and asked to respond. Furthermore, we stimulated participation by giving interviews on local radio stations, and by organising a lottery of gift vouchers among respondents.

Data-collection took place from March to May 2008. The Medical Ethical Review Board of Erasmus MC, University Medical Center Rotterdam, approved this study.

Development of the questionnaire was guided by focus group discussions in the Turkish community in Rotterdam [24]. The questionnaire contained the following sections: Socio-demographic factors were sex, age, first- or second-generation migrant status, marital status, country of birth of partner, level of education (low-medium-high), socio-economic status (SES) of the residential area (categorized in low-mid/high SES), income situation, type of health insurance and Dutch language proficiency and use. Questions on the history of Hepatitis B testing and vaccination included test results and the persons' experience with HBV in family and friends. Awareness was measured through four separate items about the frequency of having thought about HBV in the past year.

Answers could be given on a three-point scale 'never (1) – sometimes (2) – often (3)'. Knowledge was measured by ten statements, on which respondents could answer true, not true, or I don't know. Six statements on transmission and consequences were derived from a questionnaire by Taylor et al. [15]. We also formulated two statements on prevention. As focus group discussions in this population had indicated confusion in knowledge about hepatitis A and B, the last two statements assessed this issue. The total individual knowledge score could range from 0-10.

We also measured social-cognitive and socio-cultural determinants of hepatitis B screening but these will be described in a separate paper.

Because we used stratification in our sampling, we weighted all demographic characteristics, test rates, and awareness and knowledge scores by sex, age group and migrant generation, to be representative for the 16 to 40 year old Turkish-Dutch population in Rotterdam as per 1 January 2008. We compared tested and non-tested individuals regarding awareness and knowledge by using the chi-squared statistic. For this analysis, we dichotomized the awareness scores into low level (never thought about [the item] in the past year) versus high level (sometimes or often thought about [the item] in the past year), and we dichotomized the knowledge scores into 1 (correct answer) versus 0 (incorrect answer/'don't know'). We then used logistic regression analysis, adjusted for the stratification variables sex, age and migrant generation, to summarize the independent associations of demographic characteristics with having been tested for HBV. In the multivariate logistic regression analysis, we used stepwise backward selection of the variables which univariately showed a $p\text{-value} \leq 0.15$. Finally, a second regression model was built which included the levels of awareness and knowledge, next to the demographic variables. In this multivariate analysis, we summarized the overall awareness into low (never thought about any of the awareness items in the past 12 months) versus high (at least thought about one of the four awareness-items in the past 12 months). We summarized the overall knowledge into low (0-5 correct answers) versus high (>5 correct answers).



Results

The response rate was 30.2% (n=355). In the past 12 months, 27% of the respondents (n=97) had thought at least once about one or more of the four awareness items (Table 1). This overall level of awareness differed between tested and non-tested individuals: 42% of tested people had some awareness, in contrast with 24% in the non-tested group ($p<.01$). Proportionately more tested than non-tested people had thought about the various awareness questions, except for the question about the risk of a family member contracting HBV. Both groups had hardly thought about this risk (10% and 9%, $p=.8$).

The first three knowledge items focussed on HBV transmission. The average proportion of respondents who answered these items correctly was 54% (Table 2). For the three items, which tested knowledge about the consequences of HBV, the average proportion was 35%; for the two items about the prevention of HBV it was 68%. On average, 33% of respondents gave correct answers to the two statements about the difference between hepatitis A and B. Overall, the level of knowledge was higher in people who had been tested. The exceptions were the knowledge about the transmission of HBV during childbirth, which was about equally known by tested and non-tested (62% vs. 53%, $p=.22$), and the prevention of HBV by screening, which was known by 84% in both groups ($p=.8$). The level of knowledge about hepatitis A and B vaccination was equal in both groups (64% vs. 52%, $p=.14$). Fifty eight percent of the respondents answered less than six items correctly. There were no significant differences between men and women regarding awareness and knowledge, although men tended to be less aware of HBV ($p=.08$). Awareness in FGM and SGM was equally low; the awareness of SGM men younger than 30 being the poorest. FGM appeared to have less knowledge than SGM ($p=.06$), with SGM women (21-30 year) having the highest level of knowledge. There were no significant differences in awareness and knowledge between the age groups,

Table 1 Level of awareness regarding Hepatitis B in the Turkish-Dutch population in Rotterdam (weighted analysis).

Persons who in the past 12 months have at least sometimes thought about	total n=355 %	tested n=52 %	non-tested n=303 %	p-value
the disease Hepatitis B	20	32	18	0.01
the personal risk in contracting Hepatitis B	17	29	15	<0.01
the risk of a family member contracting Hepatitis B	9	10	9	0.8
having a test for Hepatitis B	13	24	11	0.02
Overall (% of respondents who have thought about at least one of the four items)	27	42	24	<0.01

Table 2 Proportion of people with correct knowledge about Hepatitis B among the tested and non-tested Turkish-Dutch population in Rotterdam (weighted analysis).

	total n=355 %	tested n=52 %	non-tested n=303 %	p-value
Transmission				
Hepatitis B cannot be spread by someone that looks and feels healthy.	54	68	51	0.03
Hepatitis B can be spread during childbirth.	54	62	53	0.22
Hepatitis B can be spread during sexual intercourse.	53	67	50	0.02
<i>Average proportion for transmission</i>	54	66	51	0.02
Consequences of HBV				
People with Hepatitis B can be infected for life.	44	69	39	<0.001
Hepatitis B can cause liver cancer.	25	43	22	<0.001
People can die from Hepatitis B.	36	53	34	<0.01
<i>Average proportion for consequences</i>	35	55	32	<0.001
Prevention				
Infection with Hepatitis B can not be prevented.	52	75	48	<0.001
By being tested for Hepatitis B, one can find out whether one is infected.	84	84	84	0.8
<i>Average proportion for prevention</i>	68	79	66	0.001
Difference Hepatitis A (HAV) and HBV				
Hepatitis A and B are transferred from one person to the other in the same way.	13	20	12	0.15
Vaccination for both Hepatitis A and B are available	54	64	52	0.14
<i>Average proportion for difference HAV and HBV</i>	33	41	32	0.16
Percentage of respondents with a high score (i.e. 6 or more correct answers)	42	71	37	<0.001

although the age group 26-30 years had slightly more knowledge with 55% scoring 6 or more of the items correctly, compared to 42% in the total of all age groups.

Univariate logistic regression analysis of the level of awareness and knowledge with regard to having been tested for HBV, showed that relatively more people with some awareness (i.e. those who had at least thought about one of the four awareness-items in the past year) had been tested (OR 2.7 (1.5-4.8, p<.001) than people who had no awareness at all. It also showed that relatively more people with a knowledge-score of at least 6 out of 10, had been tested (OR 3.6 (2.0-6.6), p<.001) than people with a lower knowledge-score.

Table 3 Hepatitis B test-rates related to demographic factors in the Turkish-Dutch population in Rotterdam, the Netherlands (n=355).

	total n=355	Tested ^c n=52	crude OR (univariate)	p-value	adjusted OR (multivariate) ^e	p-value
Total	100%	14.7%				
Sex						
female	54%	15%	1.1 (0.6-1.8)	0.8	1.1 (0.6-2.0)	0.7
male	46%	14%	ref			
Age group				0.13		0.1
16-20	19%	11%	ref			
21-25	16%	12%	1.2 (0.4-3.7)	0.7	1.5 (0.5-5.0)	0.5
26-30	20%	21%	1.9 (0.7-5.1)	0.2	2.3 (0.8-6.7)	0.1
31-35	21%	11%	1.6 (0.6-4.4)	0.3	1.7 (0.6-4.8)	0.36
36-40	25%	21%	2.9 (1.2-7.3)	0.02	3.4 (1.3-7.4)	0.02
Migrant generation^a						
1st generation	49%	16%	ref			
2nd generation	51%	13%	1.2 (0.7-2.1)	0.5	1.4 (0.8-2.5)	0.3
Marital status						
married/living with partner	59%	19%	1.8 (0.9-3.8) ^d	0.10		
previously/never married	41%	9%	ref			
Country of birth of partner^b						
not/low endemic	29%	19%	1.3 (0.6-2.7) ^d	0.6		
high endemic	71%	17%	ref			
HBV in family or friends						
yes	15%	36%	3.4 (1.7-6.7) ^d	<0.001	3.4 (1.6-6.7)	<0.001
no	85%	11%	ref			
Educational level				0.23		
low	32%	14%	1.1 (0.5-2.4) ^d	0.8		
medium	42%	13%	ref			
high	26%	16%	1.9 (0.9-3.8) ^d	0.08		
SES suburb						
low SES	63%	15%	1.3 (0.7-2.3) ^d	0.4		
medium/high SES	37%	15%	ref			
Income situation				0.3		
paid job	66%	13%	ref			
social security	8%	19%	1.0 (0.4-3.1) ^d	0.9		
fulltime housework	13%	26%	2.4 (1.0-6.0) ^d	0.05		
student	14%	10%	0.9 (0.2-3.2) ^d	0.9		

	total n=355	Tested ^c n=52	crude OR (univariate)	p-value	adjusted OR (multivariate) ^e	p-value
Health insurance						
basic health insurance	40%	13%	ref			
basic + supplementary	60%	16%	1.4 (0.7-2.7) ^d	0.3		
Dutch language orientation (proficiency and use)						
low level	47%	17%	ref			
high level	53%	13%	1.3 (0.7-2.5) ^d	0.5		

^a 1st generation migrant i.e. person born in Turkey. 2nd generation migrant i.e. person born in the Netherlands, with at least one parent born abroad.

^b n=233

^c weighted analysis to correct for the stratification variables sex, age group and migrant generation

^d adjusted for the stratification variables sex, age group and migrant generation

^e the stratification variables sex, age group and migrant generation were retained in the final model

Although in the weighted analysis 52 people (14.7%) reported having been tested for HBV, only 42 of them reported the test results. In 86% (36/42) no antibodies against HBV had been detected in the blood. Four people reported that the screening had shown the presence of anti-HBc (antibodies to HBV core antigen), indicating infection with the virus in the past resulting in immunity. Four out of the 42 people (9.5%) reported to be carriers of HBV. Regarding vaccination, eleven respondents (11/355, 3%) were sure to have received full vaccination against HBV (i.e. 3 shots), while another 41 (12%) had not received the full series or were not sure about the completeness of the vaccination series. The majority of respondents had not been vaccinated (37%) or did not know whether they had been vaccinated (48%).

Univariate analysis showed that proportionately more respondents who knew family members or friends with HBV had been tested than those who did not (OR 3.4 (1.7 – 6.7), $p < .001$) (Table 3). In the multivariate model which included the factors gender, age, migrant generation, marital status and knowing someone with HBV, this latter factor remained significantly related to having been tested (OR 3.4 (1.7 – 6.7), $p < .001$). When including the levels of awareness and knowledge in the multivariate analysis, being married (OR 2.4 (1.1 – 5.2), $p < .05$), and higher levels of awareness (OR 2.3 (1.3 – 4.3), $p < .01$) and knowledge (OR 3.8 (2.0-7.1), $p < .001$) remained significantly related to having been tested. In this second model, knowing someone with HBV was borderline significantly related to having been tested for HBV ($p = .06$).



Discussion

This study shows that the level of awareness regarding HBV in the Turkish-Dutch population is low. While HBV is a serious health problem in this community, over 70% of respondents has never thought about it in the past year. Knowledge about transmission and prevention of HBV is moderate, while there is especially little knowledge about the serious consequences of HBV. In this study, low HBV test- and vaccination rates are reported (15% and 3%, respectively). Test rates are even lower in people who are not married, or have lower levels of awareness and knowledge.

This study is the first research into awareness and knowledge regarding HBV and HBV-test rates in the Turkish community in the Netherlands, but it also has some limitations. Firstly, although we tried to stimulate response in various ways, the response rate was rather low (30.2%). This may be an indication of a lack of interest for the subject of hepatitis B which may jeopardize future participation in the intervention. The low response rate may also cause selection bias. Non-response analysis shows that non-respondents differed from respondents only with regard to gender (proportion female was 44% among non-respondents versus 54% among respondents), and not to age, migration generation and socio-economic status. Furthermore, the reported percentage of HBV carriers in our study is 9.5%, while we expected this to be between 2.6 – 4.8% [6, 8-10]. This indicates that persons affected by HBV might have been more willing to respond, and that actual levels of awareness and knowledge in the population might be even lower than presented in this study. Secondly, information bias might have occurred, as in our questionnaire we gave away some information about testing and vaccination. This may have resulted in higher knowledge-scores on the prevention items. Thirdly, self-reports of screening and vaccination may be affected by inaccurate recall or desirability bias. Fourthly, we cannot assume causality between the factors on the one hand and having been tested on the other, because of the cross-sectional research design. Last, it is not likely that multiple testing has biased the conclusions as we found a considerable number of significant differences between the groups, with p-values below 0.001.

We found low levels of knowledge regarding the consequences of HBV. Studies in Asian migrants in the USA found higher levels of HBV knowledge [25]. One possible explanation is that HBV is an even more prevalent health problem in Asian populations, than in the Turkish population. Another is that knowledge may have been improved by health education activities in the country of origin or in the host country [19]. As far as we know, this has not been the case for Turkish migrants coming to the Netherlands. These health education activities may also have influenced the test rates amongst Asian migrants in the USA (range 8 – 68%) [15, 16, 18, 19, 25-27], which were considerably higher than the test rate we found amongst Turkish Dutch (14.7%).

Since 1989, national policy has prescribed HBV-screening for pregnant women. In our study, about 25% of the married females reported to have been tested. This proportion appears to be low in view of the fact that, based on demographic trend information in migrant women in the Netherlands, we estimate that in reality about 50% of all married females may have been tested during pregnancy [28, 29]. This would result in a total test rate of 22%, instead of the reported 15%. The women who underreported screening, are likely women who tested negative for HBV and are susceptible to the virus. As the aim of our intervention is both detecting HBV and protecting against HBV, we also target our intervention to these women in order to provide them with adequate preventive measures. Last, it is likely that screened women who appeared to be carriers are aware of having been tested, and therefore the underreporting does not affect the carrier rate. Current screening guidelines also include source and contact tracing, which means that invitations for HBV-screening are extended to plausible source(s) and contacts of a notified HBV-carrier. This may explain the results of the regression analyses, which showed that the factors 'being married' and 'knowing a family member or friend with HBV' were (borderline) related to having been screened. The first time most of the Turkish-Dutch women will be tested for HBV is during pregnancy; which seldom occurs before marriage [30]. The fact that knowing someone with HBV is related to previous HBV-testing has been shown in other studies [16] as well as in our own. This may be due to HBV-affected family members or friends who are prompted to be tested themselves, or to the source and contact tracing.

Several studies found an association between higher age and having been tested [19, 31]. Although in our study we found a tendency that older people were more often tested, this relation was not significant. While other studies also found that the level of education, language proficiency, and level of health insurance were associated with previous testing, our findings did not confirm this. Almost everyone in our study had a health insurance, and this factor was not associated with having been screened. It is suggested that in areas with high levels of health-care coverage, the influence of being insured has less effect on actually being screened [26]. This might also be valid for the level of education, which was high in our study.

This study shows that the Turkish population in Rotterdam has low levels of awareness and knowledge regarding HBV, and low rates of HBV-testing and –vaccination. While the national HBV-screening policy in the Netherlands covers mainly pregnant women and their contacts, the risk of HBV is present in the whole Turkish-Dutch population. In order to prevent HBV-transmission in adults, it would be useful to test people before they become sexually active. The findings in the present study show that the development of a health promotion intervention regarding HBV should raise awareness about the risk of HBV in this population, and particularly address the serious consequences of HBV.



Conflicts of interest

The authors declare that they do not have any conflict of interest.

Authors' contributions

OZ and JHR made substantial contributions to the conception and design of this study and revised the manuscript critically. YV organised the survey, analysed the data, and drafted the manuscript. YV and HV were involved in data-interpretation and in revising the manuscript. All authors read and approved the final manuscript.

Acknowledgments

This study was funded by ZonMW, the Netherlands organisation for health research and development and was conducted within the Huisman Research Centre for Infectious Diseases and Public Health and CEPHIR, Centre for Effective Public Health in the larger Rotterdam area.

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Chapter 4

Social-cognitive and socio-cultural predictors of hepatitis B-screening intention in Turkish migrants, the Netherlands.

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Submitted to the Journal of Immigrant and Minority Health.

Abstract

Background

Hepatitis B (HBV) is an important health problem in the Turkish Dutch. Screening is necessary for detection and prevention of HBV. We aimed to identify social-cognitive and socio-cultural determinants of HBV-screening intention among Turkish Dutch.

Methods

A cross-sectional survey was carried out amongst 335 Turkish Dutch, aged 16–40 years.

Results

Univariate analysis showed that people with a positive intention towards screening were older, Dutch speaking, reported higher levels of perceived behavior control (PBC), a positive attitude, social support and a positive subjective norm, and were more satisfied with Dutch health care services. Screening intention was strongest associated with higher PBC and a positive subjective norm. HBV related shame and stigma, and the association of screening with sexual behavior were negatively associated with PBC, while strong family values were positively associated with subjective norm.

Discussion

This study shows how cultural values and social-cognitive factors are related to HBV-screening intention.

Background

Hepatitis B virus (HBV) infection is one of the major infectious diseases in the world [1], with potential serious consequences such as cirrhosis and liver cancer. Chronic HBV infections are an important problem in the Turkish community in the Netherlands [2, 3]. Population-based studies indicate a prevalence of chronic HBV of 0.2% in the general Dutch population, and a much higher prevalence of 2.6 – 4.8% among the Turkish-Dutch population [3-6]. Most Turkish-Dutch patients with chronic infection have acquired HBV through infection from mother to child at birth, or through infection at a young age by blood contact with household members [7, 8]. Later in life, however, the most important route of transmission is through sexual contact [9]. Current national HBV control policy focuses on prevention of infection in newborns and certain risk groups. These measures do not affect the adult Turkish-Dutch population which may be at-risk of acquiring HBV or - when already infected - transmitting HBV. In order to reach this important risk group, HBV screening and vaccination should be offered. To increase potential success of screening, it is essential to examine how screening can be promoted effectively in the adult Turkish-Dutch community. Hence, the present study aims to examine determinants that may explain HBV screening uptake in this population.

Theoretical framework

We applied Betancourt's Model of Culture and Behavior [10]. This model explains how culture influences health behaviors, directly and through psychological processes. Determinants of health behavior are structured from distal to more proximal, with proximity to behavior determining a greater impact. According to the model, health behavior is a function of psychological processes, which are the most proximal determinants. These psychological processes may be explained by social cognitive theories. Health behavior is also associated with such aspects of culture as value orientation, beliefs and expectations. These cultural aspects may be directly or indirectly associated with health behavior through mediating psychological processes. The model highlights that it is culture, not just race, ethnicity - or membership in any other category of people - that influences health behaviors, and potentially mediates psychological processes.

In Focus Group Discussions (FGD) in the priority population [11] we tried to identify cultural factors relevant in screening behavior. An important cultural factor may be the religious rules regarding health. The majority of Turkish-Dutch people identify with Islam [12]. In Islam, important rules regarding health and disease exist whereby the responsibility for one's own health and that of others is an important rule of life for Muslims [13]. This religion is furthermore characterized by the importance of family values; the belief that the basic unit of society is the group or family, not the individual [14]. As collective



survival is highly valued, this is reflected by concern and responsibility for others, including others' health. Collectivity may influence health behavior, as was shown in a study of Latino immigrants in which perceived family approval and support more than autonomous decision making influenced an individual's decision to participate in a health-promotion program [15, 16]. A potential barrier for HBV screening related to religion is that HBV is a sexual transmitted disease and therefore associated with sexual behavior. The existence of a taboo regarding sexuality was expressed in focus group discussions with Turkish-Dutch [11]. Specifically, extramarital sex and homosexual contacts are strongly disapproved of in the Turkish community, and people might not want to be associated with this behavior [13, 17]. Furthermore, previous work on HIV has shown that conservative views on sexuality may be related with issues of stigma and shame, and result in a lower uptake of screening [18]. This suggests that stigma and shame may play an important role in the context of HBV as well, given its association with sexuality.

Besides religious and cultural beliefs, ethnic identity has shown to be related with positive health behavior [19, 20]. Ethnic identity refers to self-identification, involvement in ethnic behaviors and practices, and feelings of affirmation and belonging to the ethnic group [21]. It has been shown that being connected to a cultural community – either to the receiving country, the heritage culture, or both – has been shown to be associated with positive health behavior [22].

Finally, distrust regarding western medicine and a perceived lower quality of care has been reported by migrant populations in Western countries [23, 24]. In focus group discussions with the Turkish-Dutch population, the efficacy of the Dutch health services was found to discourage screening behavior [11]. Following from this, we hypothesized the following cultural factors to be relevant for HBV screening: family values, religious identity, the association of screening with sexual behavior, views on sexuality, stigma, shame, ethnic identity and satisfaction with the Dutch health care.

For the psychological processes we relied on concepts derived from two social-cognitive models commonly applied in explaining health behavior [25], the Health Belief Model (HBM) and the Theory of Planned Behavior (TPB).

The HBM [26] suggests that precautionary action is the result of the perceived threat of contracting an illness, and the benefits and barriers of actually engaging in the precautionary activities. In turn, according to the HBM, perceived threat is the result of the perceived severity of acquiring an illness, and the perceived susceptibility of getting ill. In addition, the TPB [27] suggests that intention is a reflection of a person's readiness to engage in a specific behavior. Intention is determined by attitude, subjective norm, and perceived behavioral control (PBC). Attitude is defined as the individual's positive or negative evaluation of performing the behavior of interest. Subjective norms are determined by a person's normative beliefs, whether important referent individuals



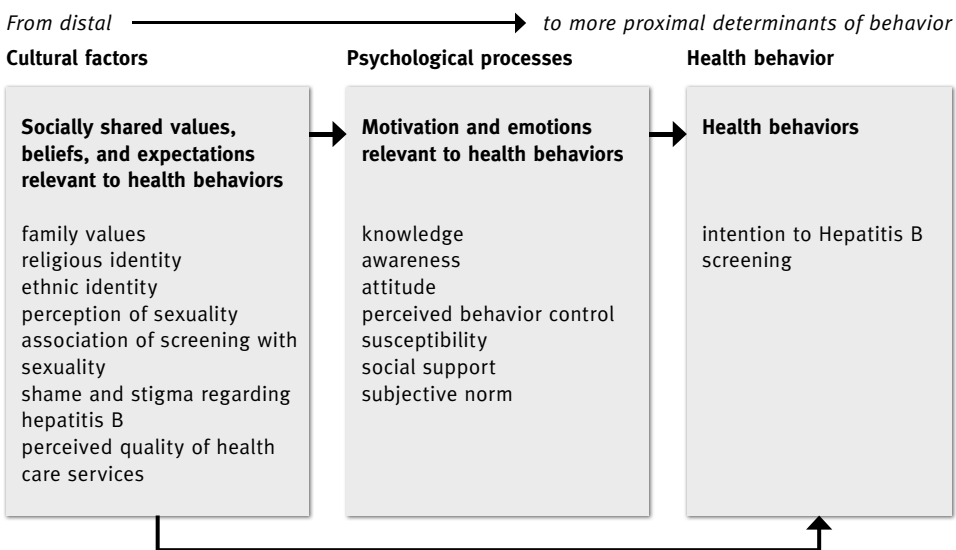
approve or disapprove of performing the behavior, weighted by this person's motivation to comply with those referents. As the operationalization of social influences in the TPB by means of subjective norms has been criticized [28], social support may be seen as an additional social variable. PBC refers to the probability that a person is capable of executing a certain course of action. Levels of awareness and knowledge are considered to be distal determinants that do not directly affect intention, but influence the three TPB variables [29].

Both of these social cognitive models have gained support from meta-analytic reviews, have been useful in explaining screening behavior [30-32], and have also been applied among non-western cultures [33, 34]. From the HBM we derived the concept of susceptibility and from the TPB we derived attitude, subjective norms, social support, perceived behavior control, and knowledge and awareness.

Conceptual model

Based on Betancourt's model, the HBM and TPB we suggest that screening intention is the most proximal predictor of screening behavior, which can be explained by psychological processes described in the TPB and HBM, and – more distal – by cultural factors (see Figure 1).

Figure 1 Conceptual model of the relationship between social-cognitive, socio-cultural determinants and hepatitis B-screening intention in Turkish migrants in the Netherlands.



Methods

Participants

A cross-sectional survey study was carried out among Turkish-Dutch inhabitants of Rotterdam. A sample of 1176 inhabitants was drawn from the municipal administration. Included in the sample were people born in Turkey themselves (first-generation migrants (FGM)); and people born in the Netherlands with FGM parents (second-generation migrants (SGM)). Stratification was done on the basis of gender, of being FGM or SGM, and of 5-year age group to ensure a minimum number of participants in each stratum. In order to over-sample strata in which a lower response rate was anticipated, we used previously reported response percentages [35].

Data collection

FGM received a letter and a questionnaire, which were both bilingual. SGM received the documents in Dutch only. The Turkish translation of the questionnaire was available on request. Reminder packages, consisting of a letter and questionnaire, were sent to those who had not responded within three weeks. Data-collection took place from 5 March to 5 May 2008. The Medical Ethical Review Board of Erasmus MC, University Medical Center Rotterdam, approved this study.

The response rate was 30.2% ($n=355$). Demographic information is presented in *Table 1*. Twenty out of the 355 respondents were excluded from further analysis because they were not eligible for testing (i.e. already having been tested and knowing the result or having been fully vaccinated for HBV).

Measures

The questionnaire consisted of three sections: demographic information; history of self-reported testing and vaccination; and social-cognitive and socio-cultural determinants of HBV screening. Questions, answering options and Cronbach's alpha for the reliability of all item-scales are presented in *Tables 2 and 3*. Mean scores for all determinants were computed if the $\alpha > 0.70$ and if at least half of the number of items per scale-category were filled out. For social support and social influence, mean scores were computed if at least one of the three items was filled out.

Prior to finalizing the questionnaire, cognitive interviewing [36] was used to improve the comprehensibility and clarity of the questionnaire. Following test-retest procedures we calculated Pearson's correlation for consistency of answering between test and re-test. Items with non-significant correlations were revised or deleted. Cronbach's alpha was calculated to test the items in the scales for consistency. In the pre-test, scales were revised if Cronbach's alpha was < 0.50 . The final questionnaire and accompanying letters were translated from Dutch language to Turkish language by a native speaker. Independently, another native speaker translated this Turkish version in Dutch language. Differences in interpretation and choice of words were discussed by the translators and the researcher until consensus was reached.

Table 1 Demographic characteristics of the study-population.

		n=355	%
Sex	female	190	54
	male	165	46
Age group	16-20 year	66	19
	21-25 year	55	15
	26-30 year	71	20
	31-35 year	74	21
	36-40 year	89	25
Migrant generation¹	1st generation	174	49
	2nd generation	181	51
Marital status	married/living with partner	209	59
	previously/never married	146	41
HBV in family or friends	yes	51	15
	no	300	86
Educational level	low	108	32
	medium	142	42
	high	87	26
SES suburb	low SES suburb	224	63
	medium/high SES suburb	131	37
Primary occupation	paid job	232	66
	social security	37	8
	fulltime housework	45	13
	student	48	14
Health insurance	no health insurance	7	2
	basic health insurance	136	39
	basic + supplementary	207	59
Religion²	Islam	314	93
	other religion	7	2
	no religion	16	5
Dutch language orientation (proficiency and use)	low level	163	47
	high level	184	53

¹ 1st generation migrant i.e. person born in Turkey. 2nd generation migrant i.e. person born in the Netherlands, with at least one parent born abroad.

² nr of respondents for this question n=337

Table 2 Questions and answering options regarding socio-cognitive determinants of hepatitis B screening, including Chronbach's alpha for scale reliability.

Question	answer option	Chronbach's alpha
Knowledge	(true, not true, don't know)	n.a.
Each correct answer scored 1 point.		
Hepatitis B cannot be spread by someone that looks and feels healthy.		
Hepatitis B can be spread during childbirth.		
Hepatitis B can be spread during sexual intercourse.		
People with Hepatitis B can be infected for life.		
Hepatitis B can cause liver cancer.		
People can die from Hepatitis B.		
Infection with Hepatitis B can not be prevented.		
By being tested for Hepatitis B, one can find out whether one is infected.		
Hepatitis A and B are transferred from one person to the other in the same way.		
Vaccination for both Hepatitis A and B are available.		
Awareness	never (1) sometimes (2) often (3)	0.84
In the past 12 months how often did you think about:		
the disease Hepatitis B		
the personal risk in contracting Hepatitis B		
the risk of a family member contracting Hepatitis B		
having a test for Hepatitis B		
Attitude¹	totally disagree (-2) – totally agree (2)	0.74
Having a HBV test is good for my health.		
Having a HBV test gives me certainty whether I have HBV or not.		
By having a HBV test, I can prevent transmission of HBV to others.		
Having a HBV test is expensive.		
Having a HBV test costs too much time.		
Having a HBV test is not the most important thing to do for my health right now.		
An HBV test is unnecessary if I don't have any physical complaints.		
Perceived behavior control	very difficult (-2) – very easy (2) - n.a.	0.87
How would it be for you to:		
tell your parents you want to be tested		
tell your partner you want to be tested		
make an appointment with MPHS to be tested		

Question	answer option	Chronbach's alpha
be tested if your parents would not agree with you being tested		
be tested if your partner would not agree with you being tested		
to discuss a test result indicating you are infected with HBV with your parents		
to discuss a test result indicating you are infected with HBV with your partner		
to discuss your personal issues with a Dutch doctor		
to discuss your personal issues with a Turkish doctor		
Susceptibility	not very likely (-2)	0.87
How likely is it you:	- very likely (2)	
contracted HBV in the past		
will contract HBV in the next 5 year		
will infect someone with HBV in the next 5 year		
Social support	totally disagree (-2) –	0.90
	totally agree (2) - n.a.	
If I were to be screened for HBV, my partner would think this is important.		
If I were to be screened for HBV, my parents would think this is important.		
If I were to be screened for HBV, my friends would think this is important.		
Subjective norm	totally disagree (-2) –	0.84
	totally agree (2) - n.a.	
If I were to be screened for HBV, my partner would think this is important.		
If I were to be screened for HBV, my parents would think this is important.		
If I were to be screened for HBV, my friends would think this is important.		
How important is the opinion of your partner to you?	not important at all (-2)	n.a.
	- very important (2)	
How important is the opinion of your parents to you?		
How important is the opinion of your friends to you?		
Intention	certainly not (-2)	
	- certainly (2)	
If tomorrow, you would receive an invitation letter for HBV screening at the Municipal Public Health Service (MPHS) within 3 months, would you intend to be screened?		

¹ Scores were recoded so that a higher score reflects a more positive attitude.

Table 3 Questions and answering options regarding socio-cultural determinants of hepatitis B screening, including Chronbach's alpha for scale reliability.

Question	answer option	Chronbach's alpha
Family values¹	totally disagree (-2) – totally agree (2)	0.82
Children should care for their parents if they are ill.		
When in trouble, your family should always stand beside you		
I discuss my problems rather with family than with friends.		
One should always count on family.		
Members of a family should always be willing to help each other out, even if they do not like each other.		
I trust my friends more than I trust my family.		
In my family, our ties are very close ¹ .		
In my family, we keep each other informed about important events.		
Religious identity	totally disagree (-2) – totally agree (2)⁴	0.89
Being a believer is an important part of me. ²		
Being a believer is something I think about a lot. ²		
I see myself as a real believer. ²		
When I am ill, I pray for healing. ³		
I rely on God to keep me in good health. ³		
Ethnic identity⁵	strongly disagree (-2) – strongly agree (2)	0.84
I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.		
I am active in organizations or social groups that include mostly members of my own ethnic group.		
I have a clear sense of my ethnic background and what it means for me.		
I think a lot about how my life will be affected by my ethnic group membership.		
I am happy that I am a member of the group I belong to.		
I have a strong sense of belonging to my own ethnic group.		
I understand pretty well what my ethnic group membership means to me.		
In order to learn more about my ethnic background, I have often talked to other people about my ethnic group.		
I have a lot of pride in my ethnic group.		
I participate in cultural practices of my own group, such as special food, music and customs.		
I feel a strong attachment towards my own ethnic group.		
I feel good about my cultural or ethnic background.		

Question	answer option	Chronbach's alpha
Perception of sexuality⁶	strongly disagree (-2) – strongly agree (2)	0.69
In the Netherlands, men and women get along to liberal		
In the Netherlands, sexuality is discussed too openly.		
Association of HBV screening with sexuality		0.79
Hepatitis B testing for me has to do something with sexuality		
If I go for HBV testing, others will think I had unsafe sex		
If I go for HBV testing, others will think I had sex with other partners than my own.		
Stigma⁷	not at all (-2)	0.84
If you had hepatitis B, would other people:	– very (2)	
avoid you?		
think you were dirty?		
still be friends be you?		
have less respect for you?		
feel uncomfortable being around you?		
Shame⁷	not at all (-2)	0.72
If you were infected with hepatitis B, and others would know, would you feel:	– very (2)	
ashamed		
embarrassed		
guilty		
scared		
disappointed in yourself		
Satisfaction with Dutch health care	strongly disagree (-2)	n.a.
Are you satisfied with the Dutch health care?	– strongly agree (2)	

¹ Items were recoded so that a higher score indicates stronger family values.

² Phalet K, ter Wal J, Güngör D. *Religieuze dimensies, etnische relaties en burgerschap: Turken en Marokkanen in Rotterdam*. Den Haag: Sociaal en Cultureel Planbureau, 2004.

³ Lukwago SN, Kreuter MW, Bucholtz DC et al. Development and validation of brief scales to measure collectivism, religiosity, racial pride, and time orientation in urban African American women. *Fam Community Health* 2001;24:63-71.

⁴ This 5-point scale ranged from -2 to 2, 0 being the neutral value and given to people who identified themselves as non-believers (n=16, 4.5%).

⁵ Phinney JS. *The Multigroup Ethnic Identity Measure; A New Scale for Use with Diverse Groups* *Journal of Adolescent Research* 1992;7:156-176.

⁶ Dagevos J, Schellingerhout R. *Sociaal-culturele integratie: contacten, cultuur en oriëntatie op de eigen groep*. In: J. Dagevos MG, C. van Praag (ed). *Rapportage Minderheden* 2003. Den Haag: Sociaal en Cultureel Planbureau, 2003, 317-362.

⁷ based on: Cunningham SD, Tschann J, Gurvey JE et al. *Attitudes about sexual disclosure and perceptions of stigma and shame* *Sex Transm Infect* 2002;78:334-338.



Analysis

We computed the means, standard deviations and Pearson's *r* for the social-cognitive, socio-cultural determinants and screening intention. Ordinal regression was carried out, regressing intention (scale -2, -1, 0, 1, 2) on the predictor variables of our conceptualized model. We corrected all regression analyses for gender, age and migrant generation (as we stratified for these factors in our sampling). We first regressed the intention on the demographic factors in order to assess possible confounders. Correcting for these, we examined the direct effect of both social cognitive and cultural factors on intended screening behavior by univariate and multivariate regression. In the multivariate

Table 4 Unadjusted means, standard deviations and bivariate correlations for social-cognitive and socio-cultural determinants scores regarding hepatitis B-screening intention.

social-cognitive variables ^a	range	mean	SD	1	2	3	4	5
1 Knowledge	0-10	4,8	2,6	1				
2 Awareness	1-3	1,2	0,3	0,14 **	1			
3 Attitude	-2-2	0,9	0,7	0,14 **	0,12 *	1		
4 Perc. behaviour control	-2-2	0,5	0,7	0,14 *	-0,04	0,16 **	1	
5 Susceptibility	-2-2	-0,7	0,9	-0,19 **	0,10	-0,04	-0,02	1
6 Social support	-2-2	0,9	1,0	0,10	0,01	0,24 **	0,19 **	-0,02
7 Subjective norm	-4-4	0,9	1,6	-0,01	-0,02	0,31 **	0,10	0,02
Socio-cultural variables								
8 Family values	-2-2	0,9	0,7	-0,05	-0,05	0,06	0,06	-0,07
9 Ethnic Identity	-2-2	0,7	0,7	0,06	-0,01	0,11	-0,10	-0,03
10 Satisfaction Dutch health care	-2-2	0,3	1,1	-0,07	-0,05	0,07	0,08	0,01
11 Religious Identity	-2-2	1,1	0,8	-0,04	0,07	0,09	-0,09	-0,01
12 Shame	-2-2	-0,2	1,0	0,03	-0,05	-0,03	-0,35 **	-0,05
13 Stigma	-2-2	-0,5	1,1	-0,04	-0,03	-0,11 *	-0,34 **	0,01
14 Conservative re sexuality	-2-2	0,6	0,9	-0,04	-0,01	0,02	-0,04	-0,01
15 Association screening and sexuality	-2-2	-0,4	0,9	-0,04	-0,05	-0,12 *	-0,34 **	0,02
16 Intention	-2-2	0,9	1,2	0,13 *	0,03	0,13 *	0,17 **	0,02

^a numbers 1-16 on header row relate to the corresponding number and determinant presented vertically

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

analysis we included the variables that had shown significant univariate relationships with intention, and conducted stepwise backward selection. Last, we assessed whether cultural factors predicted the associated social-cognitive determinants, by using the social-cognitive determinants as the outcome of the regression equation.

Results

Descriptives and correlations

Table 4 provides the means and standard deviations for the social-cognitive and cultural study variables. Scores for knowledge, awareness and susceptibility were around or below mid-scale, while the remaining social-cognitive scores were above mid-scale.

	6	7	8	9	10	11	12	13	14	15	16
1	0,53 **	1									
2	0,01	0,15 **	1								
3	0,02	0,03	0,22 **	1							
4	0,07	0,05	0,14 *	-0,08	1						
5	-0,06	0,07	0,23 **	0,29 **	-0,03	1					
6	-0,02	0,03	0,03	0,03	-0,06	-0,01	1				
7	-0,07	-0,01	-0,03	0,07	-0,06	0,06	0,57 **	1			
8	-0,07	0,04	0,36 **	0,30 **	-0,03	0,25 **	0,11 *	0,13 *	1		
9	-0,05	0,01	0,08	0,05	0,00	0,03	0,44 **	0,33 **	0,17 **	1	
10	0,12 *	0,13 *	0,03	0,09	0,13 *	-0,06	-0,07	-0,10	0,01	-0,07	1



Most of the cultural variables also scored above mid-scale, except for the shame and stigma scores and the score for the association between HBV screening and sexuality, suggesting that although people are unfamiliar with HBV screening, in general they show favorable scores for the potential determinants of HBV screening. *Table 4* also provides the unadjusted bivariate correlations between the study variables.

Ordinal regression analyses

Univariate ordinal regression of the demographic variables with the intention to being screened showed that a positive intention towards screening was associated with higher age (OR 1.03; CI 1.01-1.06) and Dutch language orientation (OR 1.44; CI 1.05-1.99) (*Table 5*). We therefore also controlled our further analyses for language orientation. Next, we examined the relationship of the cultural factors with intention. It was shown that only satisfaction with the Dutch health care system was related to screening

Table 5 Odds ratio's (OR) and 95% confidence intervals (CI) for demographic variables regarding hepatitis B-screening intention (univariate analysis; n=335).

Demographic variables	OR	95% CI	
male	0,91	0,61	1,35
age	1,03	1,01	1,06
1st migrant generation	0,85	0,57	1,25
after correction for gender, age and migrant generation*			
currently married/living together	0,83	0,52	1,33
HBV in family or friends (yes)	1,41	0,76	2,61
educational level			
low	0,61	0,35	1,06
medium	0,77	0,46	1,28
high	ref		
SES (low)	0,81	0,54	1,22
income situation			
paid job	1,17	0,60	2,30
social security	1,56	0,57	4,32
fulltime housework	0,68	0,29	1,64
student	ref		
health insurance			
basic	1,06	0,68	1,65
basic + supplementary	ref		
Dutch language proficiency and use	1,44	1,05	1,99
Ever been tested (yes)	1,66	0,90	3,07

* gender, age and migrant generation were the stratification variables



intention (OR 1.2; CI 1.01-1.43) (see table 5). Univariate ordinal regression for the social-cognitive variables with the intention to being screened showed significant associations between intention and a positive attitude towards screening (OR 1.5; CI 1.1-2.1), higher levels of PBC (OR 1.6; CI 1.2-2.2), positive social support (OR 1.3; CI 1.1-1.6), and a positive subjective norm regarding HBV screening (OR 1.2; CI 1.1-1.4) (Table 6).

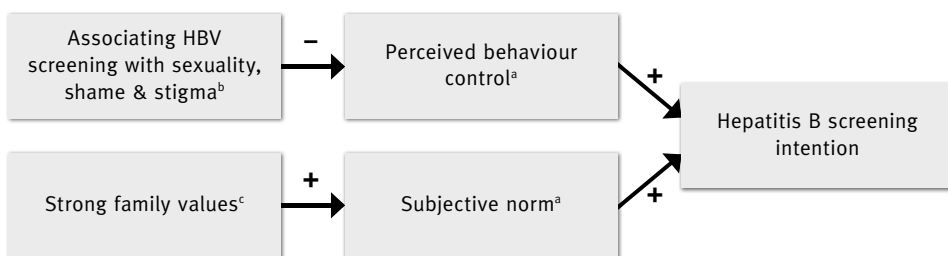
In the multivariate regression analysis we used a stepwise approach, starting with the five variables that had shown significant univariate relationships with intention (attitude, PBC, social support, subjective norm, and satisfaction with the Dutch health care). The analysis showed that only PBC (OR 1.6; CI 1.2-2.1; $p < .01$) and subjective norm (OR 1.2; CI 1.1-1.4; $p < .01$) remained in the model. Satisfaction with Dutch health care was no longer significantly related to intention. To test whether the result of the stepwise backward selection could have been a random result, we entered each of the rejected determinants to the final model, but none of them removed the significance of the selected predictors. This shows that there were no interchangeable couples of predictors.

Table 6 Odds ratio's (OR) and 95% confidence intervals (CI) for social-cognitive and socio-cultural determinants regarding hepatitis B-screening intention in first generation Turkish migrants (univariate analysis; n=335).

Socio-cultural determinants	OR	95% CI	
after correction for gender, age, migrant generation, Dutch language (proficiency and use):			
Family values	1,07	0,78	1,46
Ethnic identity	1,32	0,97	1,81
Satisfaction Dutch health care	1,20	1,01	1,43
Religious Identity	0,89	0,69	1,14
Shame	0,83	0,67	1,02
Stigma	0,84	0,69	1,02
Conservatism regarding sexuality	1,08	0,86	1,36
Association screening and sexuality	0,85	0,68	1,05
Social-cognitive determinants	OR	95% CI	
after correction for gender, age, migrant generation, Dutch language (proficiency and use):			
Knowledge	1,08	1,00	1,16
Awareness	1,26	0,67	2,37
Attitude	1,54	1,12	2,10
Perceived behavior control	1,64	1,23	2,18
Susceptibility	1,15	0,92	1,43
Social support	1,31	1,05	1,64
Subjective norm	1,24	1,08	1,42

We then assessed whether the cultural factors were associated with the two social-cognitive factors, PBC and subjective norm, that were related to intention. Regression analysis with PBC as the dependent variable and the cultural variables as the independent variables, showed that shame (OR 0.7; CI 0.6-0.9; $p=.01$) and stigma (OR 0.8; CI 0.6-0.98; $p=.03$) regarding HBV and associating HBV-screening with sexuality (OR 0.6; CI 0.5-0.8; $p<.01$) were predictors of PBC. Regression analysis with subjective norm as the dependent variable and the cultural factors as independent variables showed that the score for family values (OR 1.7; CI 1.2-2.3; $p<.001$) was associated with subjective norm (see Figure 2).

Figure 2 Social-cognitive and socio-cultural determinants of hepatitis B-screening intention in Turkish migrants in the Netherlands.



^a corrected for gender, age, migrant generation (MG) and Dutch language proficiency and use (DL)

^b corrected for gender, age, MG, DL, socio-economic status (SES), HBV in family/friends, ever been tested

^c corrected for gender, age, migrant generation

Discussion

To our knowledge, this is the first study regarding cultural and social-cognitive determinants related to hepatitis B screening in the Turkish-Dutch community. While only the social-cognitive factors proved to be directly associated with the intention, specific cultural factors were associated with these social-cognitive determinants. Betancourt's model proved to be useful in conceptualizing the plausible relationships between culture, psychological processes and behavior. Contrary to the expectations however, we did not find any direct relationships between the cultural factors and screening intention. This has been argued before by authors stating that cultural factors do not have an unique direct effect on behavior, but that culture is reflected in the social-cognitive determinants [29, 33, 37]. The present study suggests that concepts of the TPB can be used to explain the psychological processes related to HBV-screening intention in this population, as PBC and subjective norm explained the intended screening uptake.

Our finding that subjective norms and PBC are related to HBV screening intention, may point out that the social context functions as an important facilitator and barrier towards screening uptake. Of notice, PBC was operationalized as the perceived ability to overcome social barriers, and was positively associated with perceived social support. Although the cultural factors did not explain additional variance in intended HBV screening, they proved informative in understanding reported PBC and subjective norm, providing key points for interventions aimed at the promotion of HBV screening. Importantly, family values were positively associated with the norm to screen for HBV, suggesting that such high family values can be seen as a safe climate, and highlighting the importance of the family for the targeted community. Using family values in health messages aimed at the promotion of screening has been used successfully in a HIV prevention project, which emphasized collectivism to encourage women to involve others in their behavioral health decisions [38]. Another study showed that using family values (collectivism) in combination with other cultural values (such as religiosity) in a health intervention, may be effective in promoting health [39].

The negative relationship between shame, stigma, the association of screening with sexual behavior and PBC shows that cultural norms may hamper the uptake of screening, people feeling unable to overcome potential barriers that may be related to the HBV test and test result. Our findings seem in agreement with findings that in the Turkish community homosexual and extramarital sexuality is perceived as immoral. Even the suspicion of promiscuous behavior, is strongly feared and disapproved in the Turkish-Dutch population [11, 13, 40]. As in the Netherlands, HBV is mainly classified as a sexual transmittable disease [41], occurring in homosexuals, it is indeed plausible that Turkish Dutch experience feelings of stigma and shame when identified with this disease, and hence, negatively affect screening-uptake [42]. Therefore, in a health promotion program the main route of transmission in this particular population (i.e. from mother to child at birth) should be stressed. Furthermore, advice may be provided as to how to discuss the issue of testing with the family thereby untying testing from sexual behavior.

Although satisfaction with health care services for screening intention was not included in the final model, its univariate relationship suggests that distrust in the Dutch health care was negatively associated with intended screening. This finding is in line with the findings from other studies, and may root in distrust regarding Western medicine, the feeling that Western physicians are insensitive to religious and cultural values, and a lack of understanding between doctor and patient [23] [24] [43] [44] [45] [46].

We acknowledge some methodological limitations. First, the response rate was rather low (30.2%), which may have caused selection bias. Non-response analysis shows that non-respondents differed from respondents only with regard to gender (proportion female was 44% among non-respondents versus 54% among respondents), and not



to age, migration generation and socio-economic status. Second, the Turkish-Dutch population is unequally divided between age-groups. As we oversampled groups based on age, sex and migrant generation, this study is not representative for the Turkish-Dutch population, but does provide more insight in the variety of factors that is present in the Turkish community. Third, we can only assume causality between the determinants and the screening-intention based on underlying theory, not on the findings of this study because of its cross-sectional research design.

New contribution to the literature

By using the framework of Betancourt in studying determinants of HBV-screening in Turkish Dutch, we have gained insight in important cultural values and social-cognitive factors related to hepatitis B-screening. Perceived behavior control and subjective norms showed the strongest association with the screening intention. By understanding the cultural values underlying these factors, we have defined important targets that may inform campaigns aimed to promote HBV screening among the Dutch-Turkish community.

Acknowledgements

This study was supported by ZonMW, the Netherlands organization for health research and development (grant number 71100005) and was conducted within the Huisman Research Centre for Infectious Diseases and Public Health and CEPHIR, Centre for Effective Public Health in the larger Rotterdam area.

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Chapter 5

Cultural tailoring for the promotion of Hepatitis B screening in Turkish Dutch: a protocol for a randomized controlled trial.

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BMC Public Health. 2010, 10:674

Abstract

Background

Chronic hepatitis B virus infection (HBV) is an important health problem in the Turkish community in the Netherlands, and promotion of screening for HBV in this risk group is necessary. An individually tailored intervention and a culturally tailored intervention have been developed to promote screening in first generation 16-40 year old Turkish immigrants. This paper describes the design of the randomized controlled trial, which will be used to evaluate the effectiveness of the two tailored internet interventions as compared to generic online information on HBV, and to assess the added value of tailoring on socio-cultural factors.

Design

A cluster randomized controlled trial design, in which we invite all Rotterdam registered inhabitants born in Turkey, aged 16-40 (n=10,000), to visit the intervention website is used. A cluster includes all persons living at one house address. The clusters are randomly assigned to either group A, B or C. On the website, persons eligible for testing will be selected through a series of exclusion questions and will then continue in the randomly assigned intervention group. Group A will receive generic information on HBV. Group B will receive individually tailored information related to social-cognitive determinants of screening. Group C will receive culturally tailored information which, next to social-cognitive factors, addresses cultural factors related to screening. Subsequently, participants may obtain a laboratory form, with which they can be tested free of charge at local health centres. The main outcome of the study is the percentage of eligible persons tested for HBV through to participation in one of the three groups. Measurements of the outcome behaviour and its determinants will be at baseline and five weeks post-intervention.

Conclusion

This trial will provide information on the effectiveness of a culturally tailored internet intervention promoting HBV-screening in first generation Turkish immigrants in the Netherlands, aged 16-40. The results will contribute to the evidence base for culturally tailored (internet) interventions in ethnic minority populations. An effective intervention will lead to a reduction of the morbidity and mortality due to HBV in this population. This may not only benefit patients, but also help reduce health inequalities in western countries.

Trial Registration: The Netherlands National Trial Register NTR 2394.

Background

Hepatitis B virus infection (HBV) is one of the major infectious diseases in the world [1]. Each year, around 1,800 HBV infections, 79% of which are chronic, are reported in the Netherlands [2]. Chronic HBV infections cause 23% of all liver cancers in the Netherlands, and are an important problem in the Turkish community, which is the Netherlands' largest group of immigrants from non-industrialized countries [3, 4]. While this community represents 8% of the total city population in Rotterdam (with 45,415 people), it accounts for 30% of reported chronic HBV infections [5]. Seventy percent of reported infections among Turks involve people aged between 16 and 40 years. In this age-category, the mean incidence of reported HBV infections is 122 per 100,000 individuals of Turkish origin, much higher than the 35 infections per 100,000 persons reported in the total population of Rotterdam [6]. However, these figures underestimate the population prevalence: many chronic HBV patients do not have the signs and symptoms of disease, and are therefore not reported. Population-based studies indicate a prevalence of chronic HBV of 0.2% in the general Dutch population, and a much higher prevalence of 2.6 – 4.8% in first generation Turkish immigrants (i.e. those born in Turkey) [4, 7-9]. These studies furthermore show that the prevalence of chronic HBV in second generation Turks is similar to the general Dutch population.

The majority of Turkish patients with chronic infection have acquired HBV through infection from mother to child at birth, or through infection at a young age by blood contact with household members [10, 11]. Carriers of the virus may infect others by blood contact or, later in life, through sexual contact [12].

In Turkey, every newborn is vaccinated in the first 24 hours since 1998 [13]. Furthermore, adolescent catch-up vaccinations ensured that adolescents up to the age of 16 years had been vaccinated by 2008[14]. Current national HBV-control policies in the Netherlands focus on screening pregnant women and on vaccinating specific risk groups, such as newborns from HBV-infected mothers (since 1989), children with at least one parent from an HBV-endemic area (since 2003), and people with high-risk behaviour (since 2002) [12]. These programmes leave a substantial part of the adult Turkish population in the Netherlands undetected and unprotected regarding HBV. Furthermore, in the past decade, treatment options of chronic HBV have improved [15]. In order to detect individuals eligible for treatment and to prevent transmission, screening for HBV should be promoted through public health interventions targeted specifically in first generation Turkish immigrants.

Tailoring interventions to determinants of health behaviour has proven to be effective in health promotion [16], also related to infectious diseases [17, 18], and in promotion of screening participation [19, 20]. Relevant social-cognitive determinants for this specific target population, derived from common health behaviour theories, focus group



discussions, and a survey questionnaire in the Turkish population in the Netherlands [21, 22] (YJ van der Veen et al.: Social-cognitive and socio-cultural predictors of hepatitis B screening behaviour in Turkish Dutch, submitted), were the low awareness and knowledge regarding hepatitis B and its prevention, and the attitude, self-efficacy, social support and subjective norm regarding hepatitis B-screening in the target population. Up to now, tailored interventions are most often based on such individual factors, also called the proximal determinants of health behaviour. However, these proximal determinants may be dependent on more distal social-cultural factors [23]. These factors ask for ‘cultural tailoring’ of interventions including cultural traditions, values, and norms in tailored strategies [24, 25]. In our previous work regarding the determinants of HBV-screening behaviour, we also identified socio-cultural factors related to HBV-screening. These were shame and stigma regarding HBV, the association of HBV-screening with sexuality, the importance of family values, religious values and rules regarding health, and the level of satisfaction with the Dutch health care.

A relatively easy way of tailoring health information for specific groups is using information and communication technology (ICT) and the Internet. Advantages for health promotion include the interactivity, use of active learning methods, multimedia presentation, temporal flexibility, and low costs relative to its potential population reach [26]. An important condition for success of tailored internet interventions is basic access to the internet. Research in the Netherlands has shown an increase in access to computers and the Internet in the population in general, and in the Turkish community as well [27]. In our survey, we found that 87% of the Turks had a computer at home, and that an equal part of the population used the internet. The majority (90%) of men and the younger women (16-28 years) who used the internet did this daily or at least a few times per week. Seventy-five percent of the women above the age of 28 years said to use the internet frequently. Of the 20% of women in this age group who said not to use internet themselves, about 70% reported to live with someone in the house who did make use of the internet.

The effect of tailoring in behaviour-focussed infectious disease control and the added value of including cultural tailored approaches has not been studied to date. We therefore recently developed two internet interventions aiming to promote screening in first generation Turkish immigrants aged 16 to 40 years, using the Intervention Mapping approach [28]. Intervention Mapping (IM) describes the stepwise process for the development of theory- and evidence based and practice-based interventions [29].

Tailoring is defined as any combination of information or change strategies intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and have been derived from an individual assessment [30]. The individually tailored intervention focuses on social-cognitive determinants of screening behaviour, such as awareness, knowledge, attitude, self-efficacy, perceived

subjective norm and support, susceptibility to HBV, and personal norms related to health. Cultural tailoring may be defined as tailoring a health message ‘which recognizes and reinforces a group’s cultural values, beliefs, and behaviours and built upon those to provide context and meaning to the message about a given health problem or behaviour’ [25]. Cultural tailoring is expected to have even more impact on behaviour than tailoring, by paying attention to the embeddedness of human health behaviour in the cultural context and social structure [31]. Cultural sensitivity in tailoring can be conceptualized in terms of two primary dimensions: surface structure and deep structure [25]. We used surface structure elements in order to increase the comprehension and acceptance of messages, by matching intervention materials and messages to characteristics of the target population, such as the language and role models preferred by the target audience. We used deep structure elements to convey salience, by understanding how members of the priority population perceive the cause, course, and treatment of hepatitis B, as well as how they perceive the determinants of the desired screening behaviour. We addressed factors such as religion and family values that influence screening behaviour. A detailed description of the intervention is described elsewhere [28].

This study aims to evaluate the effectiveness of the two tailored internet interventions as compared to generic online information on HBV, and to assess the added value of additional tailoring on socio-cultural factors.

Design

Study design:

We apply a cluster randomised controlled trial to study the effect of the individually tailored internet intervention (group B) and the culturally tailored internet intervention (group C) on screening behaviour, compared to generic online information (group A). Measurements of screening behaviour (i.e. being screened for HBV (yes/no)) and of the determinants of this behaviour will be at baseline and one month post-intervention.

Study population

The study population consists of 16-40 year-old citizens of Rotterdam, born in Turkey. Excluded from the study are those:

- not registered in the municipal population registers (MPR)
- aware of having been tested, and knowing to be a carrier of HBV
- aware of having been tested, and being immune
- aware of having been fully vaccinated

Recruitment of the study population

From the municipal public registration (MPR) we will retrieve names and address details of all persons aged 16-40 years (as per 1 September 2010) who are first generation Turkish immigrants. All subjects will be provided with a unique client ID, which we have randomly assigned to one of the three intervention groups. Respondents will be



recruited to visit the website by means of a personal invitation by postal mail. The invitations will be sent out from 13 September to 17 December, 2010. This period was chosen because of the end of the Ramadan on 9 September, 2010. The planning will ensure that all persons living at the same house address will receive the invitation on the same day. Simultaneously, an information campaign in the Turkish community in Rotterdam will be conducted, using newspapers, local radio, community-based organisations and key figures in the Turkish community. Additionally, respondents will be recruited through links on websites with general health information and websites directed specifically at the Turkish community.

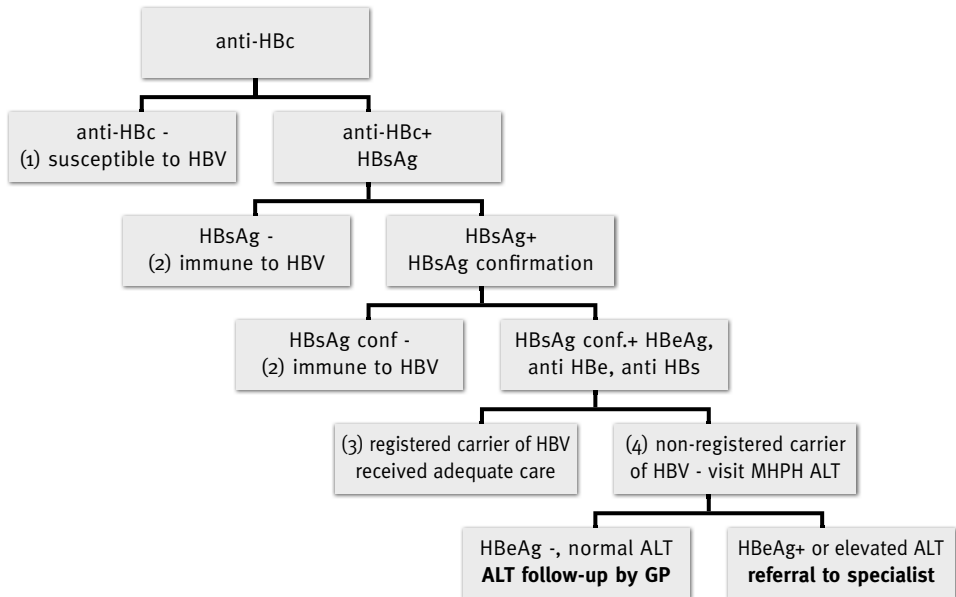
In the personal invitation, the addressees will be referred to the internet. On the homepage of the project a short explanation of the health problem of HBV is given, together with information about the facilities provided at the website. Visitors of the website are only able to log in on the website by using their client ID provided in the personal invitation. The website will be offered bilingually, i.e. the visitor may choose between the Dutch or Turkish language. Visitors will then be guided through some exclusion questions in order to select persons eligible for testing (see exclusion criteria).

Randomisation and exposure to the intervention

All persons living at the same address (i.e. family members or house-mates), will be assigned randomly to one of the three research groups: standard information (group A), individually tailored information (group B) and culturally tailored information (group C). Participants in the control (group A) and intervention groups (groups B and C) are thus enrolled in the same way. Those who enter the internet page and show to be eligible for testing will be questioned for demographic information and asked for a current email address for participation in a follow-up questionnaire. When participants stop during the internet session, and log in using their client ID later on, they will continue in the same group.

During the intervention, participants provide information on both social-cognitive and socio-cultural determinants by answering questions on their beliefs and expectations regarding hepatitis B screening. This information and the provided demographic data will be linked to the client ID and saved in a database. At the end of the information session or tailored intervention, participants may choose to receive a laboratory form either by email or post. Prior to receiving the form, they will receive client information, in which the procedure of testing, possible results of the test and follow-up is explained. Participants will then be asked to sign a checkbox for informed consent. Participants are also asked to co-operate in a follow-up questionnaire about the website one month after the date of first website visit. The laboratory form will be either sent by email or mail, and the client information is once more included. When the participant is younger than 18 years at the date of printing the form, a signed consent from the parents is needed on the form. In that case, information for the parents will be included in the client information. For

Figure 1 Standard test algorithm for Hepatitis B screening in Turkish Dutch



individuals unable to use the internet, we will provide the laboratory form with generic information on HBV on request by postal mail. However, these individuals are excluded from the research population, as they are not exposed to one of the three interventions.

Test site (location for blood sampling)

Test sites (n=85) are community health centres conveniently located in the neighbourhoods where participants live. The blood samples will be analysed according to a predefined standard test algorithm (see Figure 1). The laboratory will inform the Municipal Public Health Service (MPHS) about the test result by providing client ID, date of birth, postal code and test results.

Follow-up actions

All HBC-negative results (indicating that persons have not been in contact with the virus) can be sifted out by non-medical staff of the MPHS. All HBC-positive results will be assessed by a medical doctor. Accordingly, all test results will be entered into the client registration system of the MPHS based on name of the person (which may be retrieved using the client ID). This client registration system will automatically distribute a standard letter with the results to the participant. The four possible outcomes of the test are: (1) being susceptible to HBV; (2) being immune for HBV due to previous infection; (3) being a HBV carrier, already registered with the MPHS; (4) being a carrier, not registered with the MPHS yet (see Figure 1). Susceptible persons will be informed



about their test result, and will be advised to be vaccinated (at a reduced rate) at the MPHS. Immune persons are informed about their test result and the fact that no further action is required. MPHS registered carriers will be informed about their result, and that no further action is required as they have received adequate care in the past. Non-registered carriers will be informed about their status, and will be requested to visit the MPHS for a counselling session and a second blood sample for determination of the liver function through an ALT test. Elevated ALT levels indicate liver inflammation, and these participants will be referred to a medical specialist. In case of normal ALT levels, the participants are referred to their GP for a yearly check-up. In all letters, a telephone number for additional questions is provided. *Figure 2* represents the project's flow-chart, indicating the flow from the moment the participant logs in on the project website, through a visit to the community health centre for blood sampling, and the remaining procedure at the MPHS once the test result is known. (*see Figure 2*)

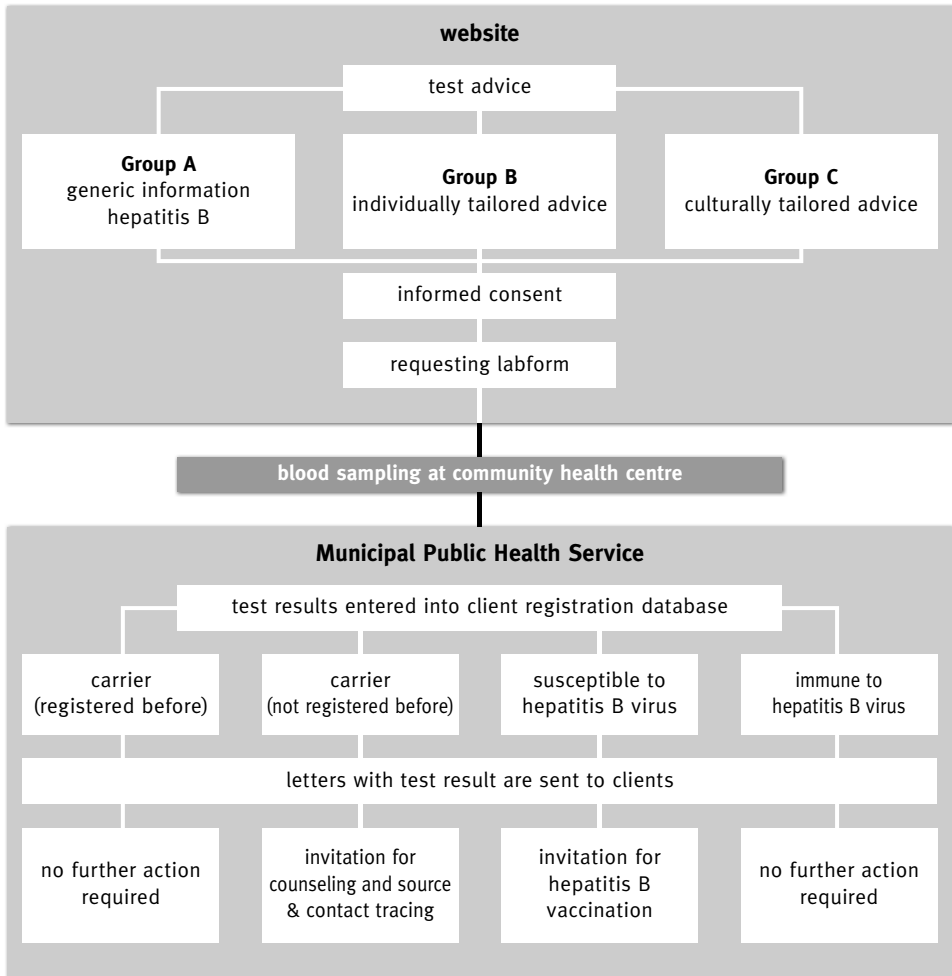
Follow-up measurements

If test results have not been received by the MPHS four weeks after the laboratory form request, participants who have indicated to wish to be reminded of the testing, are sent a reminder email. Five weeks after the first log-in, participants who provided an email-address and have given consent for being approached for further research, will receive an email with a link to the website where a short questionnaire on social-cognitive and socio-cultural determinants, and the perceived quality of the intervention is presented. After completion of the questionnaire, participants may indicate whether they want to join in a raffle (based on email-addresses) of gift vouchers, as a token of appreciation for their participation.

Sample size

The size of the total first generation Turkish population in Rotterdam aged 16-40 years is approximately 10,000. We expect that after having received the letter, approximately 60% of this population will go to the website ($n=6000$, i.e. 2000 visitors in each group), and that half of that group will receive a test-advice and laboratory form ($n=3000$, 1000 in each arm of the study). We hypothesize that in the three groups (standard information, individually tailored information and cultural tailored information) 20%, 35% and 45%, respectively, will go to the test location and be tested for HBV ($n=200$, $n=350$, $n=450$, respectively). Accordingly, power calculations for the difference in compliance with the advice between the tailored and cultural tailored group, show a power of more than 0.90. Because of clustering in families (we randomize by house address), we take into account the effect of the cluster 'family', which may affect the power. Therefore we take a power of 0.90 as acceptable instead of the standard 0.80. Our hypothesis would lead to a total of 1000 tested persons, approximately 10% of the total target population. Based on responses in other studies, we expect that this predicts the actual response reasonably well [32-35].

Figure 2 Flowchart Hepatitis B screening in Turkish Dutch



Measures

During the intervention, we will gather the following information:

Demographic factors: gender, age, socio-economic status (SES) of the residential area (categorized in low-mid/high SES by postal code), marital status, level of education (low-medium-high), income situation, type of health insurance, religion, and whether the person knows someone with HBV.

Social-cognitive factors: awareness, knowledge, attitude, self-efficacy, perceived subjective norm and support, susceptibility to HBV, personal norms related to health and the screening intention.



Socio-cultural factors: satisfaction with the Dutch health care and perceived rules regarding health and disease.

Primary outcome measure

The primary outcome variable is having been tested due to the intervention (yes/no). The data will be available from the client registration system from the MPHS.

Secondary outcome measures

The follow-up questionnaire will provide information on secondary outcomes by measuring the change in the following determinants one month after logging in on the website:

Awareness: In the past three months, did you think about a hepatitis B test? Answering options: never heard of a HBV-test, never thought of a HBV-test, heard of a HBV-test but not decided, heard of a HBV-test and decided (not) to take it, have had a HBV-test. The measure was based on the Precaution Adoption Process Model (PAPM) [36] and adapted from Costanza [37]. The awareness score may range from 0 to 5.

Knowledge is measured by five statements in order to provide tailored information about the most important issues of HBV for this population. The items were on the contagiousness of HBV, the main route of transmission in Turks, the occurrence in Turks, the serious consequences of HBV and the prevention of HBV. The knowledge score may range from 0-5.

Attitude is measured by six items about three pro's (each may score 1 point) and three con's (each may score -1) of HBV testing. The attitude score may range from -3 to 3. Self-efficacy is measured by 4 items (on a scale from 1-10) about the ability to discuss testing with parents and/or partner, the ability to communicate with a doctor about the test, and to arrange testing.

Subjective norm is measured by asking whether the participant thinks parents and/or partner feels testing is important (scale 1-10).

Social support is measured by asking whether the participant thinks parents and/or partner will support the participant in testing, and whether this is important for the participant. The score may range from -2 to 2 (no support, support is important to participant (-2), no support, support is not important for participant (-1), support, but this is not important to the participant (1), support, and this is important to the participant (2).

Susceptibility to HBV is measured by asking the participant to indicate how susceptible he/she feels regarding HBV, and to ask how he rates his susceptibility related to other inhabitants of the Netherlands. Both items are measured on a 10 point scale (very low chance, very high chance).

Personal norm is measured by two items 'I should care well for my own health' and 'I am responsible for the health of others' on a five point scale (agree (1) – disagree (5)). Perceived rules is measured by asking persons who indicated to be religious whether they perceive rules in their religious community about: how to deal with health, how to prevent disease, being responsible for one's own health / the health of others. Answers may be yes (1) or no (0), which may result in a rules-score of 0-4.

Satisfaction with Dutch health care is measured on a five-point scale by three statements on the cost of health care, the experience of doctors, and satisfaction with the Dutch health care in general.

Screening intention is measured on a five-point scale by asking whether the participant intends to be tested within three months (for sure (5) – surely not (1)).

Analysis

Because the primary outcome variable is the percentage of eligible persons having been tested due to the intervention (yes/no), we will perform univariate and multivariate logistic regression analysis. Independent variables that will be included in the regression analysis are the demographic, social-cognitive and socio-cultural factors.

Process evaluation

The follow-up questionnaire addresses issues of quality by questioning: the comprehensibility, the reliability, the relevance, and the applicability of the content [38]. We will be able to assess the perceived reach by the number of returned invitations; and the perceived dose by the number of visitors and the number of components viewed (obtained from the website statistics).

Ethical approval

The Medical Ethical Review Board of Erasmus MC, University Medical Center Rotterdam, approved this study.

Discussion

This trial will determine the effectiveness of a cultural tailored internet intervention promoting HBV-screening in first generation Turkish immigrants, aged 16-40 years, living in Rotterdam.

It is difficult to estimate the expected response rate because this study is the first in this population using a culturally tailored internet approach. In order to generate sufficient power to show the value of the individually tailored and the culturally tailored intervention, we will need at least 1000 participants, 10% of the total target population.



Regular public health interventions such as PAP smear testing for cervical cancer, show response rates in the range of 49.8% to 67.7% in Turkish immigrants in the Netherlands, with invitations from general practitioners having a higher response compared to invitations from the MPHS [39]. In a community project in which individuals were invited to be tested for hepatitis B (by mail for a personal consultation at the community centre), the response among the Turkish population was 26% [32]. A recently introduced Chlamydia screening programme in 16-29 year-old inhabitants of three areas in the Netherlands also used a combination of a personal invitation by post and the option to request a test package through the internet. This resulted in a response of 16% in the general population [34]. An important factor in motivating the invited people to participate might be the endorsement of our project by community leaders. We therefore have asked for the advice of community leaders in the development phase of the project. We also plan to specifically address community leaders and community-based organisations during the information campaign in the Turkish community in Rotterdam, using community-based organisations and key figures in the Turkish community. However, it remains to be seen whether the members of the target community that are involved, sufficiently represent their community in order to facilitate implementation of the intervention. Furthermore, next to the primary outcome (having been tested or not) it is important to learn from possible changes in social-cognitive and socio-cultural determinants related to HBV-screening. It has recently been shown that follow-up questionnaires have high drop-out rates [40]. The raffle of gift vouchers may help motivate people to fill out the questionnaire.

In the past decade, health promotion interventions have increasingly used the internet for the delivery of health messages tailored to the needs of the individual, and these have proven to be effective in changing behaviour [41, 42], but the need for addressing cultural factors in tailored programmes has been emphasized [16]. Although it is widely accepted that disease prevention efforts should consider cultural factors when addressing the needs of diverse populations, there is little evidence that doing so enhances effectiveness [43]. To our knowledge, randomised controlled trials have only been used to measure the effect of cultural tailored messages on cancer prevention behaviour [24]. The results of this study will contribute to the general evidence base for culturally tailored (internet) interventions in ethnic minority populations. This study also responds to a recent call for migrant screening on viral hepatitis [44]. Currently, chronic HBV infections in migrants are less likely to be detected than those in other high-risk populations, such as men who have sex with men or injecting drug users, who in the Netherlands are targeted for screening and vaccination. Therefore, migrant screening may not only benefit patients and reduce the burden of illness and costs for the health care system of long-term complications due to chronic HBV infection, but also help to reduce health inequalities in western countries.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

OZ, JM and JHR conceived of the study, and helped in the coordination and supervision. YV developed the intervention and conducted the randomised controlled trial. All authors read and approved the final manuscript.

Acknowledgments

This study was funded by ZonMW (project 71100005), the Netherlands organisation for health research and development and was conducted within the Huisman Research Centre for Infectious Diseases and Public Health and CEPHIR, Centre for Effective Public Health in the larger Rotterdam area.



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Chapter 6

Development of a culturally tailored Internet intervention promoting hepatitis B screening in the Turkish community in the Netherlands.

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Health Promotion International (2011). Doi: 10.093/heapro/daro44.

First publication online: July 27, 2011.

Summary

Hepatitis B virus infections are an important health problem in the Turkish community in the Netherlands. Screening for hepatitis B should be promoted through public health interventions, which take into account the socio-cultural and behavioural determinants that influence screening. The Intervention Mapping protocol was used to develop a culturally tailored Internet intervention for first generation Turkish immigrants in Rotterdam, aged 16 to 40 year. Behavioural factors and cultural motivators and barriers, identified in the first steps of the protocol, were incorporated in the intervention. To ensure participation, members of the target population were involved in all steps of programme development. A theory- and evidence based culturally tailored intervention was developed. Both surface structure and deep structure elements were used; surface structure tailoring resulting in different Internet skins and peer-stories for subgroups, such as young women. Deep structure elements comprised cultural motivators such as the religiously inspired feelings of responsibility and strong family values, and perceived community rules regarding health and disease. Cultural barriers that were addressed were the satisfaction and trust in Dutch health care, and the association of hepatitis B screening with sexual behaviour. Intervention Mapping provided a useful framework for the systematic development of our theory- and evidence based intervention to promote hepatitis B screening in the Turkish community in the Netherlands.

Introduction

Hepatitis B virus infection (HBV) is one of the major infectious diseases in the world, with potential serious consequences such as cirrhosis and liver cancer. An infection with HBV may result in a broad spectrum of disease outcomes. Acute HBV infection may resolve and lead to protective immunity, but it may also result in a chronic infection or, rarely, cause acute liver failure with a high risk of death. HBV is transmitted between people by contact with the blood or other body fluids (i.e. semen and vaginal fluid) of an infected person [1].

Chronic HBV infections are an important problem in Turkish immigrants in the Netherlands [2]. The Turkish ethnic group is the largest non-western ethnic minority in the Netherlands. The majority of those with chronic HBV have acquired HBV in the country of origin through infection from mother-to-child at birth, or through infection at a young age by blood contact with household members [3, 4]. Later in life, however, the most important route of transmission is through sexual contact [5].

Current national HBV control policy focuses on prevention of infection in newborns, children from parents originating from an HBV-endemic area, and people with high-risk sexual behaviour, since the largest health benefits with regard to HBV were expected to occur in these populations [5]. However, this policy excludes adults from high HBV endemic areas, who may be at-risk of acquiring or transmitting HBV and are now the most important high risk group [2]. Moreover, with improved treatment of chronic HBV, it is important that adults from Turkish descent become aware of their HBV status. In order to detect individuals eligible for treatment and to prevent transmission, it is essential that screening for HBV is promoted in the Turkish population.

In the present paper we describe the systematic development of a computer-tailored Internet programme aimed at the promotion of HBV screening among Turkish adults. The systematic and detailed description of the intervention development does address calls for evidence-based intervention development. First, transparency of intervention development, specific goals, and use of behavior change techniques facilitate the clarification and potential replication of the intervention. Abraham and Michie [6] showed that descriptions of intervention evaluations generally fail to provide enough detail to understand what an intervention entails, and furthermore lacks a sound theoretical base. Craig et al. [7] proposed a framework for the evaluation of complex interventions, proposing four key elements in the cycle of the development and evaluation process: development, feasibility and piloting, evaluation and implementation. It is recommended that reports of studies should include a detailed description of the intervention to enable replication, evidence synthesis, and wider implementation. In addition, an accreditation and certification system for health promotion interventions was developed in the Netherlands, aiming to assist professionals and policy-makers in selecting



evidence-based health promotion programmes [8]. The procedure describes four levels, cost-effectiveness being the ultimate goal, but theoretical soundness being the critical first step. In sum, various authors and organizations have pointed out the need for systematic and evidence-based planning of interventions, and to ensure a theoretically sound programme, as this increases the likelihood of effectiveness.

The present paper aims to contribute to the transparency of the theory guided planning process of the HBV screening programme aimed at Turkish immigrants. Intervention Mapping (IM), a tool for the systematic development of theory-, evidence- and practice-based interventions [9] was used to guide the planning approach, and to ensure the theoretical and empirical underpinning of the intervention. IM specifies intermediate outcomes, such as the relevant determinants of the desired health behaviour and the level of environmental conditions that need to be in place, that are likely to contribute to the effectiveness of the programme. In short, we will describe each of the six steps that IM specifies; (i) needs assessment, aimed at the identification of the health problem, (ii) programme objectives, which specify what needs to be changed by means of an intervention in order to reduce the health problem, (iii) theoretical methods and practical strategies that could facilitate the achievement of the programme objectives, (iv) programme planning and development, (v) anticipation of implementation, (vi) anticipation of evaluation.

Methods

Step I: needs assessment

Analysis of the health problem

National reports on integration issues describe the position of Turks in the Netherlands as rather isolated from the native Dutch and inwardly focussed, having traditional opinions. Turks, more than Moroccans, have problems with Dutch language proficiency. Turkish schoolchildren have a Dutch language deficiency in primary schools, and lower graduation rates in secondary education. Up to now the labour position of Turks is somewhat better than that of other migrant groups, but this expected to worsen [10]. It is furthermore shown that Rotterdam migrants in general qualify their health as being lower than that of the native populations, with lower self reported scores for both physical and psychological health, and a less active life style [11]. Turkish migrants report more visits to the GP, but less to specialists when compared with native Dutch. With specific regard to HBV, population-based studies indicate a prevalence of chronic HBV of 0.2% in the general Dutch population, and a much higher prevalence of 2.6 – 4.8% in Turkish immigrants. The majority of all notified infections occur in first generation migrants, those who are born in Turkey themselves [12-14].



Analysis of behaviour leading to HBV infection

HBV is an infectious disease, transmitted by blood contact and sexual contact. Although in the general Dutch population the most important risk factor for HBV infection is sexual contact, with men having sex with men and heterosexuals with various sexual contacts being the important risk groups, most people with HBV in the Turkish community have acquired the virus during birth (from mother to child) [3] or at a young age by (blood) contact with infected household members [4]. For this reason, since 1989 all pregnant women in the Netherlands are tested for HBV. The newborns of carriers of the virus are protected immediately after birth by immunoglobulin (antibodies that work directly) and vaccination (which provokes the production of antibodies in the newborns). Furthermore, children of parents from an HBV-endemic country are vaccinated from the age of 2 months onwards, and therefore protected against household infections [15]. In Turkish adults however, the most important route of transmission is through sexual contact [5]. A study in the Netherlands demonstrated that in 60% of the notified heterosexual cases of HBV, the source of infection was a partner originating from an HBV-endemic region [16]. As the majority of the married Turks in the Netherlands are married to someone from Turkey or the Turkish-Dutch community, the risk of transmission in the Turkish community is still high. It is estimated that immunization of persons with partners of non-Dutch nationality could prevent 36% of HBV cases in heterosexuals [17]. Following from this, screening and vaccination of Turks in the Netherlands seems an essential approach to prevent further transmission of HBV.

Analysis of behavioural and cultural determinants

In our literature review we found several determinants of screening, vaccination and general preventive behaviour in Turkish or migrant communities. These include social-cognitive determinants such as the level of knowledge, attitude, perceived severity, perceived susceptibility, self-efficacy, accessibility of health care, barriers and benefits, but also demographic factors such as age, educational level, language proficiency, having health insurance, and socio-economic status [18-26]. Although barriers towards vaccination uptake have been reported for the general Dutch population, other studies show that vaccination is very well accepted in the Turkish community [27]. This was confirmed in our focus group discussions with members of the target population. We therefore focussed the group discussions on factors related to HBV-screening behaviour only [28]. Motivational factors related to screening were the (religious) responsibility for one's health, the perceived obligation to respond to invitations for screening, and social support to get tested for HBV. Perceived barriers were the association of HBV screening with STDs or sexual activity, the perception of low control over one's health, and the perceived low efficacy of the Dutch health care services.

We further investigated these findings in a survey among 355 respondents in the priority population [29]. The questionnaire used was based on Betancourt's Model of Culture and Behavior [30], which explains how culture influences health behaviors. According to the model, health behavior is a function of psychological processes, explained by social

cognitive theories, such as the Theory of Planned Behavior [31]. Health behavior is also associated with such aspects of culture as value orientation, beliefs and expectations. These cultural aspects may be directly or indirectly associated with health behavior through mediating psychological processes. As such, within the survey various cultural factors (family values, religious identity, the association of screening with sexual behavior, views on sexuality, stigma, shame, and ethnic identity) were examined, in addition to the social-cognitive factors. The study findings showed that demographic factors related to the intention to be screened for HBV were higher age and Dutch language orientation. Although these demographic factors are not changeable, it is important to segment the priority population according to these factors when developing the health promotion materials. We also found that the levels of awareness and knowledge regarding HBV were low. Furthermore, we found that a positive intention towards screening was associated with a positive attitude towards screening, high levels of perceived behaviour control (PBC), positive social support and a positive subjective norm regarding HBV-screening. With regard to the cultural factors, only the level of satisfaction with the Dutch health care services was directly associated with screening intention. Multivariate analysis showed that screening intention was associated with higher PBC and a positive subjective norm. Cultural stigma and shame regarding HBV, and the association of HBV-screening with sexual behaviour were negatively related to PBC. Strong family values had a positive association with the perceived subjective norm regarding screening.

Step II: Matrices of change objectives

Based on the needs assessment, the overall behavioural outcome was defined as ‘Citizens of Rotterdam, who are born in Turkey and aged 16 to 40 year, if necessary take a HBV test, and start vaccination for HBV, within 6 months after the start of the programme implementation.’ Next, specific performance objectives were formulated (see Figure 1).

Figure 1 Performance objectives

As a member of the Turkish population in the Netherlands:

1. *identify oneself as being at risk for having contracted hepatitis B;*
2. *decide to be tested for hepatitis B;*
3. *take action to be referred for a HBV test;*
4. *go to the test location to be tested for HBV;*
5. *acquire and elaborate test result;*
6. *make an appointment with MPHS, if test result indicates the need for follow-up.*

We then developed several matrices of change objectives, by combining the performance objectives with personal and environmental determinants. In the personal realm, we distinguished the influence of both social-cognitive and socio-cultural factors. Social-cognitive factors were: awareness, knowledge, attitude, self-efficacy, social norm, and social support (see Figure 2). These determinants were chosen based on their association with screening intention in the survey. Cultural factors that showed to be related to the screening intention or the relevant social-cognitive determinants were: the association of screening with sexual behaviour, the importance of family values, religious identity, perceived rules regarding health and disease, and satisfaction with the Dutch health care (see Figure 3). In the environmental realm, we distinguished the following determinants: community awareness, social norms in the community and the practical and financial feasibility of testing (see Figure 4).

Step III: Selecting suitable theoretical methods and practical strategies

Basic method

The main method chosen was that of tailoring. Tailoring is defined as any combination of information or change strategies intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and have been derived from an individual assessment [32]. Using tailoring in health promotion programmes is supported by a theoretical, a public health, and a behavioural rationale and empirical evidence [33]. We chose as our basic method to use *cultural tailoring*, which may be defined as tailoring a health message which recognizes and reinforces a group's cultural values, beliefs, and behaviours and built upon those to provide context and meaning to the message about a given health problem or behaviour [34]. Cultural tailoring is expected to have even more impact on behaviour than general behaviourally tailoring, by paying attention to the embeddedness of human health behaviour in the cultural context and social structure [35]. Cultural sensitivity in tailoring can be conceptualized in terms of two primary dimensions: surface structure and deep structure [34]. Surface structure increases the comprehension and acceptance of messages, by matching intervention materials and messages to characteristics of the target population. Deep structure conveys salience, by understanding how members of the priority population perceive the cause, course, and treatment of HBV, as well as how they perceive the determinants of the desired screening behaviour. It addresses factors such as religion, family and society that influence the target behaviour. Other methods that we aimed to integrate in our programme were evidential, linguistic and constituent-involving strategies [36]. Evidential strategies seek to enhance the perceived relevance of a health issue for the priority group, by presenting evidence of its impact on that group. Next, linguistic strategies mean providing the materials in the native language of the target group. This may include translating programme information, but also retaining the meaning and context. Last, constituent-involving strategies draw on the experience of members of the priority group, by involving them in the development process.

Figure 2 Learning and change objectives related to social-cognitive determinants of hepatitis B-screening.

Performance Objectives	Awareness	Knowledge	Attitude
1 As a member of the Turkish population in the Netherlands, (TPM), identify oneself as being at risk for having contracted HBV.	TPM is aware of the risk of HBV in their community.	Know how HBV is transmitted, and the common route of transmission in TPM i.e. at birth.	
2 Decide to be tested for hepatitis B	TPM is aware of the actions that can be taken in order to deal with HBV most appropriately.	TPM knows that testing and vaccination may either prevent HBV or make treatment options possible. TPM knows what testing and vaccination comprises.	Express a positive attitude towards HBV testing and vaccination among TPM.
3 Take action to be referred for a HBV test	TPM is aware that testing can be done anonymously, free with the lab-form that can be printed from website.	TPM knows that he may obtain an invitation/lab form in order to be tested	TPM are positive about taking action to be referred for a HBV test, and see that benefits outweigh drawbacks.
4 Go to the test-location to be tested for HBV		TPM knows which lab is the nearby-est. TPM knows at what times the lab is open.	TPM has a positive attitude about going to the test-location.
5 Acquire and elaborate test result		TPM knows when and what the test result can be (immune, carrier, susceptible).	
6 Make an appointment with MPHS, if test result indicates the need for follow-up	TPM is aware of the need of FUP of the test result.	TPM knows if he needs to be vaccinated or visit the MPHS for consultation.	TPM has a positive attitude towards the FUP visit.



Self-efficacy	Subjective norm	Social support	Intention
<p>TPM can express what can be done against HBV, and feels confident about the content of these measures.</p>	<p>TPM can explain to others why testing and vaccination is important.</p> <p>TPM can explain to others what testing and vaccination comprises.</p>	<p>If preferred, TPM talk with parents or partner about being tested and/or vaccinated for HBV.</p>	<p>TPM expresses the intention to be tested and/or vaccinated.</p>
	<p>TPM are able to explain to the social environment why they want to be referred for HBV-test.</p>	<p>If preferred, TPM talk with parents or partner about taking action to be referred for a test.</p>	<p>TPM expresses the intention to be referred for a HBV-test.</p>
<p>TPM expresses to be confident about going to the test-location, including time-management.</p>			<p>TPM expresses the intention to get tested.</p>
<p>TPM expresses to be confident about getting to know his HBV-status.</p>	<p>TPM can explain to others what the test-result means.</p>	<p>If preferred, TPM talk with parents or partner about the test result.</p>	<p>TPM expresses the intention to FUP on the results by performing the required action.</p>
<p>TPM is confident to go for FUP, including time-management.</p>	<p>TPM can explain to others why it is necessary to go for FUP.</p>	<p>If preferred, TPM talk with parent or partner about the FUP visit.</p>	<p>TPM expresses the intention to be compliant to advice given at FUP visit.</p>

Figure 3 Learning and change objectives related to socio-cultural determinants of hepatitis B-screening,

Performance Objectives	Sexual association	Family values
1 As a member of the Turkish population in the Netherlands, (TPM), identify oneself as being at risk for having contracted HBV.	TPM is aware that HBV transmission in their community mainly occurs at a young age by blood contact, and not by sexual behaviour.	TPM identifies him/herself and her family as being at risk for having contracted HBV.
2 Decide to be tested for hepatitis B	TPM does not associate testing and vaccination with previous or future sexual behaviour	TPM feels responsible in getting tested and vaccinated in order to prevent HBV or make treatment options possible for him/herself and family members.
3 Take action to be referred for a HBV test		TPM feels responsible in taking action to be tested because this is of value for the wellbeing of the family.
4 Go to the test-location to be tested for HBV		
5 Acquire and elaborate test result		TPM reads the test result and knows when and what the test result can be (immune, carrier, susceptible) , and what this means for the family.
6 Make an appointment with MPHS, if test result indicates the need for follow-up	TPM does not associate vaccination with sexual behaviour in future.	TPM feels responsible for being vaccinated or followed up for treatment.



Religious identity	Perceived rules	Satisfaction Dutch health care
As a Muslim, being willing/ feeling obliged to be informed about relevant health risks.	As a Muslim, being aware of existing rules regarding health, disease and prevention.	TPM is satisfied with being informed about the risk for having contracted with HBV.
As a Muslim, being willing/ feeling obliged to take action for their health.	As a Muslim, accepting that vaccination and testing are good measures to deal with HBV.	TPM is satisfied with being informed about the possibility of being tested and vaccination for HBV.
		TPM is satisfied with the way he is referred for testing.
	As a Muslim, applying the religious rules regarding prevention by being tested.	TPM is satisfied with the nearby location and the opening times of the test location and the free testing.
As a Muslim, being willing/ feeling obliged to deal with the consequences of the test.		TPM is satisfied by receiving the result of the test by post, within 3 weeks after the test.
As a Muslim, being willing/ feeling obliged to take action for their health, by making an appointment for vaccination or FUP.	As a Muslim, applying the religious rules regarding prevention by making an appointment for vaccination or FUP.	TPM is satisfied by the opportunity to be vaccinated against reduced price, of receive proper medical FUP.

Figure 4 Learning and change objectives related to external determinants of hepatitis B-screening.

Performance Objectives	Community awareness
1 As a member of the Turkish population in the Netherlands, (TPM), identify oneself as being at risk for having contracted HBV.	<p>Community leaders communicate about the existence of the opportunity to be tested.</p> <p>Mass and specific Turkish media pay attention to the programme, and the risk for HBV in this population.</p> <p>General practitioners address the campaign during a regular visit of a member of the target population.</p>
2 Decide to be tested for hepatitis B	<p>Community leaders communicate about the need for testing and vaccination.</p> <p>Mass and specific Turkish media make clear that testing is offered for free during the campaign period.</p>
3 Take action to be referred for a HBV test	<p>Community leaders stimulate testing and vaccination.</p> <p>Ease of use of the website and obtaining the labform is emphasized by community leaders and in the media.</p>
4 Go to the test-location to be tested for HBV	
5 Acquire and elaborate test result	<p>GPs understand test results correctly, and if consulted, are willing to discuss the test result in more detail with TDP.</p>
6 Make an appointment with MPHS, if test result indicates the need for follow-up	<p>GP is aware of the regular chain of care involved in HBV follow-up care.</p>



Social norms in community	Practical feasibility of testing	Financial feasibility
Key organisations approve of the offered test opportunity.	<p>Invitation letters should include clear instructions about a visit to the website and the use of the personal ID.</p> <p>The website should function well.</p>	GPs are aware of the program and prepared to refer TDP outside the target population for testing, if requested.
Key organisation members discuss and approve of testing and vaccination.		GPs know that TDP between 16-40 years old would benefit from testing and vaccination through this programme.
	Laboratory forms are made available by direct print, email or via postal mail.	
	Participants should be able to contact the project organisation in case they experience difficulties in accessing the website.	
Key organisation members support the individual TPM in going to get tested.	Employees of the test locations are well informed about the programme.	
	Test locations are easy to access, and directions towards the locations are provided to the client.	
Key organisation members discuss and understand the possible test results, and acknowledge the importance of knowing this.	Test results are timely and accurately processed, so that test results are known to the client within 3 weeks.	Susceptible persons for HBV are offered vaccination at a reduced fee. This is clearly presented in a letter guiding this specific test result.
Key organisation members support the individual TPM to receive the appropriate follow-up care.	The MPHS gives clear written instructions about necessary follow-up care, such as source- and contact tracing or vaccination.	

Specific methods and strategies

After the selection of the basic method, we looked into the literature for suitable methods and strategies for addressing the specific determinants and change objectives. We organised a brainstorm session with experts in the field of tailored Internet interventions, during which best practices were discussed. Using this information we translated the methods into practical strategies (see Figure 5). Important elements in the methods aimed at the social cognitive change objectives were: providing personally relevant information, conscious raising, direct feedback, modelling (personal testimonies and messages from key persons in the community) and shifting focus from sexual transmission to unconscious transmission during childhood. In addressing the environmental change objectives, we used the methods of agenda setting and increasing accessibility of health care services. Strategies used for agenda setting were informing the GP's about the health problem and the programme and asking for participation in using posters and flyers in waiting rooms. Representatives of 12 organizations in the Turkish community (such as women and youth associations, mosque associations) were involved in the programme development from the start onwards, participated in poster and flyer dissemination, and discussed the existence of the programme during their regular meetings. We tried to increase the accessibility to screening by contracting local community health centres conducting the blood tests, informing the management of these centres about the programme and by offering free testing to members of the target population.

Step IV: Programme Development

Channel of delivery

Our survey included questions on the feasibility of offering a cultural tailored intervention through the Internet as compared to printed materials. We found that 86% of the respondents used the Internet at home, often on a daily basis. Our findings confirmed earlier findings on Internet use among Turkish inhabitants of Rotterdam [37]. Although women over 30 years reported to make less use of the Internet, daily or frequent use was reported by 75%. In addition, the majority of non-users reported to live with someone who did use the Internet. Another important finding in the survey questions on delivery channel was that the respondents expressed to prefer to be invited for an HBV test in a formal way by a personal invitation from the Municipal Public Health Service (MPHS). IM made us consider these preferences of the target population carefully, but also to balance these with the feasibility, reach and effectiveness. Taking into account that the use of the Internet is very suitable when developing tailored health promotion programmes [33], it seemed justified to offer the HBV prevention programme through the Internet. Telephone lines were made available for those not having any access to the Internet. Last, IM and the findings of our explorative research also clarified the need for endorsement of the intervention by community leaders in their own networks and via mass media.



Figure 5 Specific methods and strategies for the determinants

Determinant	Method	Strategy
awareness	- information about personal risk - self evaluation of risk - consciousness raising	- personal invitation to visit the website - comparing the risk for Turkish community with general population
knowledge	active learning personalized information	quiz, and feedback on answers given
attitude	feedback on benefits and barriers personal testimony	radio-buttons with perceived benefits/barriers peer stories
self-efficacy	modeling	peer stories
social norm	shifting focus resisting social pressure	emphasizing the transmission from mother to child advice for explaining the relevance of testing to others
social support	mobilizing social support	advice for mobilizing support from parents, partner or friends
sexual association	shifting focus	emphasizing the transmission from mother to child
family values	consciousness raising modeling	peers expressing their feelings of responsibility
religious identity	consciousness raising modeling	peer stories
perceived rules	modeling	quotes of community leader explaining the importance of health in Islam
satisfaction Dutch health care	information personal testimony	clear explanation of the testing procedure

Design document

Based on the previous steps, we developed a design document which described the size and characteristics of the priority population, the idea of cultural tailoring, the important elements of the intervention, the logistic route of recruitment and the testing procedure, and a time frame. Based on this document, the website was designed by a professional, who was experienced in the development of tailored health interventions. The website guided the visitor through the following steps: (1) introduction to the health problem and aim of the website; (2) tailored test advice; (3) information and advice regarding screening, including perceived barriers and motivators; (4) obtaining laboratory form; (5) information on laboratory locations.

Surface structure elements

In order to make the Internet intervention attractive for the variety of participants in our priority group, the designer developed different website backgrounds (so called: skins) and used different peer pictures for men and women, and age-groups (16-30, 30-40). We used the logo and basic colours of the MPHS in order to make sure that users recognized the organization behind the programme, as the needs assessment showed that the priority population considers the MPHS to be a reliable health service. We pre-tested the skins and peer pictures in 10 Turkish people. There were clear likes and dislikes regarding the peer models, which helped us to choose the most appropriate pictures.

We produced programme components within the website design by taking each method and strategy and developing a programme component to deliver it. Because we planned to evaluate the effect of the intervention, we needed to gather information from the participants during the intervention, which also made tailoring of the message possible. For example, in the knowledge component of the programme, we asked the participant to answer five knowledge questions, on which tailored feedback for the participant followed. This also allowed us to calculate a baseline knowledge score.

Deep structure elements

We addressed the religious influence by peer-stories with quotes such as: “being a Muslim, I feel it is important to care for my health”, and “our religion teaches us: for every disease there is a solution” In the same way, we reinforced the motivating factor of the importance of family values by having the peers stressing the responsibility for the well-being of the family. For instance, a young woman stated: “I told my partner we should get tested and vaccinated, so that our children in future will not get the disease from us!”. Based on religious identification of being a Muslim and the number of perceived health rules, we tailored another message as: “On this website, you identified yourself as a Muslim. In your environment, you do not experience many rules regarding health and disease. Some Muslims think about it in this way...”. We then provided quotes regarding health and disease from an Islamic perspective, expressed by community members. The de-motivating factor of a low satisfaction with the Dutch health care was addressed by asking for the level of satisfaction. Visitors with a low satisfaction score were subsequently provided with some information about the difficulties migrants may experience in accessing the Dutch health care. We then explained how we dealt with these difficulties in the current health programme. Finally, the perceived association of screening uptake with sexual behaviour was addressed in a subtle way by stressing the main route of transmission in this community, i.e. at birth from mother to child. We furthermore offered visitors who expressed to find it difficult to talk with their partner or parents about screening, stories in which the peer explained how he discussed this with his parents: “I told them this disease is not just a sexual transmitted disease; I might have caught it when I was child without anyone knowing about it”.

Evidential, linguistic and constituent-involving strategies

Regarding the evidential strategies, we made sure to provide information regarding the occurrence and transmission of HBV which was specific for the Turkish community in Rotterdam. Furthermore, regarding the linguistic strategy, all components were translated into the Turkish language by a professional native translator. Last, related to the constituent-involving strategy, a trainee of Turkish origin was involved in the whole process of programme development, so that wording and cultural appropriateness was taken into account. Community members were also part of the pre-testing phase, and contributed in a linkage group (described here below and in Step V).

Pre-testing

In different phases of the development parts of the programme were tested. Based on the feedback received from the target population and health promotion experts changes were made with regard to the conceptual programme.

We conducted cognitive interviewing regarding the programme components with 20 members of the priority population, including 10 community leaders. The issues covered in the interviews were: the credibility of the MPHS, the answering options, and the comprehensiveness, relevance, attractiveness, sequence and completeness of the materials [38]. Comments were mainly regarding the preferred pictures or role-models and the background skins. After adapting the programme based on the results from these interviews, we pre-tested the Dutch version of the protected website in a classroom setting. Thirty-three participants were recruited with help of community leaders. We asked the pre-testers to go through the Internet intervention on the PC while filling out questions on paper about the issues mentioned above, including the usability. Important findings from the pre-test were the use of questions instead of statements in the active learning section, as the pre-testers considered the statements to be informative rather than provoking critical thinking. Furthermore, pre-testers asked for more detailed information about HBV. As we did not want the intervention to be too time consuming this resulted in hyperlinks to existing HBV information on the Internet. Last, we asked 15 health promotion Internet-intervention experts to go through the intervention. Comments were mainly about practical issues, such as the font size, participants having to fill out their email address twice, and the logical flow through the intervention elements. We were able to change the intervention according to these remarks.

Translation

After the final production and translation of the intervention, the Turkish version of the intervention was 20 times pre-tested by four Turkish persons, using different scenarios. Based on these we made a few improvements in the translation of words and sentences.

Step V: Planning for adoption and implementation

The Municipal Public Health Service was the organization responsible for the development and implementation of the programme in our region. During the development of the intervention, the developers worked closely together with the health care staff of the MPHS in order to determine the best logistical test procedure. As such, the programme fits within the existing logistic organization and is ready for long term use.

At the beginning of the project, members from other user groups were invited to participate in a linkage group. These were representatives of key organizations in the area of HBV control, experts in the field of public health and key persons in the Turkish community. This linkage group connected the programme developers and the users, in order to develop a user-relevant programme and to accomplish programme adoption and implementation in future. A sense of ownership was created in this linkage group, because they were able to give feedback on the progress and to plan further adoption and implementation during the development phase. Thus a platform for further implementation was established.

Other steps regarding adoption and implementation taken were the dissemination of the learning points derived from the development phase, and of the findings of the effect- and process evaluation amongst other MPHS. In order to facilitate adoption at a wider scale, other MPHS were informed about the project during public health information meetings, in order to exchange knowledge and increase awareness of the programme. Furthermore, we planned the organization of a workshop for interested MPHS staff from other regions by the end of May 2011. During this workshop, we can inform potential future implementers about the programme, and discuss the possibilities and opportunities for implementation of this programme in other regions. The website is set up in such a way that it can be easily adapted and made available nationally, for use by other MPHS. Involvement of key organizations in the community was important in order to facilitate current and future adoption of the programme in the target population. Given that this group is the immediate adopter of the programme, goals were set regarding reach of the population, and methods were selected to ensure reach and to increase acceptance.

Step VI: Planning for evaluation

An evaluation plan and the data collection measurements were developed during the programme planning [39]. The evaluation included an effect and process evaluation. The effect evaluation was performed to determine whether the culturally tailored intervention was more successful in promoting HBV-testing when compared with a standard information intervention and a behaviourally tailored intervention. Further, it was performed to identify which working mechanisms were effective in promoting testing in the target population, by measuring social cognitive and cultural determinants. In order to evaluate our project goals, we designed a randomised controlled trial, in which the priority population was randomly assigned to one of



three interventions. To prevent contamination of information, we assigned all eligible members of one household to one of the groups. Although targeted persons logged in on the same website, persons in group A received standard information about HBV, persons in group B received a behaviourally tailored intervention and persons in group C received the culturally tailored intervention. The difference between intervention B and C was that in intervention B tailored information was provided only related to the behavioural determinants. Intervention C addressed also the specific deep structure issues. Furthermore, peer stories in arm C showed a picture of a Turkish peer, while in arm B quotations were presented without a picture. Last, the skins in intervention C incorporated cultural attractive pictures (such as a Turkish banner, bathing house or market), while intervention A and B presented pictures of typical images from the city.

The effects were measured using a pre-post test randomized control trial design, including the two tailored intervention groups and the group which received standard information. Measurements were done during the intervention and 1-month post-intervention. The main outcome measure was having been tested due to the intervention. Process evaluation was carried out to collect data on the use, appreciation and exposure of the intervention.

Discussion

In this article we described the application of the IM protocol for the development of a culturally tailored Internet intervention aimed at the promotion of HBV screening in Turkish immigrants in the Netherlands, and thereby contribute to transparency of the intervention design.

Strengths

IM proved to be a useful tool, especially in describing exactly what participants need to do to perform the behaviour by formulating performance and change objectives. With regard to the added value of IM in the development of a culturally sensitive intervention, we experienced that by conducting an extensive needs analysis we could determine which important cultural factors should be addressed in the intervention. It was furthermore helpful to, next to the formulation of behavioural change objectives, develop a matrix of cultural change objectives. By doing so, we became conscious of the added value of the culturally tailored intervention compared with the behavioural tailored intervention. By using the IM approach we also consciously chose methods and strategies. For example, with regard to addressing HBV awareness, we decided not to single out participants by stressing their individual risk for HBV, but rather address them as a member of an at-risk group. In this way, we avoided negative social reactions and tried to reduce feelings of shame and stigma. IM also contributed to programme quality when choosing strategies for influencing the cultural factors. Because of their salience

to the target population these were sensitive issues to cover, for which IM made us consider the different strategies to touch upon these. This resulted in the choice for role models elaborating on several cultural values. The IM protocol also made us think about external factors that might contribute to the success of the intervention. This resulted in information letters to GP's, clear explanation of the test locations on the website, and finding funds in order to make the costs involved in testing and vaccination as low as possible. The protocol was also helpful in anticipating the data-collection in order to evaluate the outcome measures and in designing the randomised controlled trial.

Weaknesses

IM stresses the importance of consultation of the target group. We have tried to do this by setting up the linkage group, and by including community members in the needs analysis, the formulation of performance objectives, the pre-testing of the project, and by sending out regular newsletters to ~20 organizations in the target community. Although some of the key persons and organizations have shown interest and have participated in the process, the majority of organizations did not respond to our request for participation. Hence, it remains to be seen whether the members of the target community that were involved, sufficiently represent their community in order to facilitate implementation.

Policy implications

Making use of faith-based organizations and including deep structure elements such as religion in health promotion messages, may give rise to questions in the area of policy and politics [40]. Issues regarding the separation of church and state arose during the initial start-up of the project, which led the politician in charge of health care in the city council to the decision to put the project on hold. This was an unanticipated implementation barrier, for which we had to develop a new strategy in order to ensure political acceptance for the programme. We therefore sought the advice of a legal specialist in the separation of church and state, who concluded that use of mediators (the peer models) expressing the religious values, sufficiently ensured the neutrality of the MPHS. The formal report of this independent expert ensured that the programme was accepted by the city council, and successively implemented. However, at the time of launching the intervention, we were limited in seeking public attention from mass media, as to avoid new questions about health programmes for specific populations. We therefore would recommend the inclusion of policy-makers at municipal, provincial or national level early in the development phase of cultural sensitive programmes, in order to create a political platform



Prospects for implementation

Recently, the need for migrant HBV screening on a national scale has been emphasized [2], and a dispute on the best strategies for this purpose was started. This was supported by a cost-effectiveness analysis, which suggested that the screening of first generation migrant groups is cost-effective [41]. Should the culturally tailored intervention prove to be effective in reaching the target population, this will therefore be important input for further national screening plans.

The IM protocol proved to be a useful tool in the development of a culturally tailored Internet intervention. By means of this description, we hope to contribute to the calls for programme content clarification, and hence to stimulate reproducibility, as well as providing key factors that may help understanding programme reach and effectiveness. The effect and process evaluation in the future will show whether our intervention has indeed been successful in motivating Turkish immigrants to be screened for HBV.

Ethical clearance

The Medical Ethical Review Board of Erasmus MC, University Medical Center Rotterdam, approved this study.

Acknowledgements

This study was funded by ZonMW, the Netherlands organization for health research and development and was conducted within the Huisman Research Centre for Infectious Diseases and Public Health and CEPHIR, Centre for Effective Public Health in the larger Rotterdam area.

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Chapter 7

The effectiveness of cultural tailoring for the promotion of hepatitis B-screening in Turkish Dutch: A randomized control study.

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Submitted to the European Journal of Public Health.

Abstract

Background

Hepatitis B is an important health problem in Turkish migrants in the Netherlands.

Purpose

To evaluate the effectiveness of a culturally tailored internet intervention promoting hepatitis B-screening in Turkish Dutch.

Design

A cluster-randomized controlled trial.

Participants

Inhabitants of Rotterdam, born in Turkey and aged 16 to 40 year, were invited to participate.

Intervention

The experimental group attended an online intervention offering behaviorally plus culturally tailored (BCT) information targeting social-cognitive and cultural determinants of HBV-screening. Control groups received an online behaviorally tailored (BT) intervention based on social-cognitive determinants only, or online generic information (GI). Subsequently, a laboratory form could be obtained, with which free HBV-screening was available at local venues.

Outcome measures

Primary outcome measure was screening uptake in eligible persons following BCT, BT and GI. Secondary outcome measures were scores for social-cognitive and cultural determinants of screening in the BCT group, as compared to the BT group and baseline information.

Results

Out of 10.069 invited persons, 1512 (15.2%) logged in on the website. The majority of visitors showed to be eligible for screening and requested a lab form. Test results for 623 people were obtained. Screening uptake was 43.9% in the BCT group, as compared to 46.0% in the GI group and 43.5% in group BT ($p=.74$). The BCT group showed favorable intervention effects for scores on determinants of screening as compared to baseline scores and BT.

Conclusion

BCT did not increase HBV-screening uptake as compared to GI or BT. BCT did show a favorable intervention effect for several socio-cognitive and socio-cultural factors addressed in the intervention. Only one of these factors (the perceived benefits of screening) was associated with screening uptake.

Introduction

Hepatitis B virus infection (HBV) is one of the major infectious diseases in the world [1]. Each year, around 1,800 HBV-infections, 79% of which are chronic, are reported in the Netherlands [2]. Chronic HBV infections cause 23% of all liver cancers in the Netherlands, and are an important problem in the Turkish community [3, 4]. The prevalence of chronic HBV infection is 0.2% in the general Dutch population, while a prevalence of 1.2-4.8% is reported for first generation Turkish migrants [5-8]. The majority of Turkish patients with chronic infection have acquired HBV through infection from mother to child at birth, or through infection at a young age by blood contact with household members [9, 10]. Carriers of the virus may infect others by blood contact or through sexual contact [11].

Current national HBV-control policy in the Netherlands focuses on pregnancy screening and on vaccinating specific risk groups, such as newborns from HBV-infected mothers, children of parents born in HBV-endemic areas, and people with high-risk behaviour [11]. These programs leave a substantial part of the adult Turkish population in the Netherlands undetected and unprotected regarding HBV. Furthermore, in the past decade, treatment options of chronic HBV have improved [12].

In the present paper, the evaluation of two interventions promoting HBV-screening in first generation Turkish migrants; one offering behavioral tailoring (BT) and one offering behavioral plus cultural tailoring (BCT), is described. Both interventions were based on computer tailoring, which can be defined as a strategy intended to reach one specific person, based on characteristics that are unique to that person, related to the outcome of interest, and having been derived from an individual assessment [13]. The interventions were systematically developed according to Intervention Mapping [14]; a protocol facilitating empirical and theoretical grounding of an intervention. Both interventions were tailored on social-cognitive determinants of screening, such as knowledge, attitude, self-efficacy, social norms and support, while the BCT intervention was additionally tailored on cultural factors. This so-called cultural tailoring can be defined as the use of health messages 'which recognize and reinforce a group's cultural values, beliefs, and behaviors and built upon those to provide context and meaning to the health message' [15]. Cultural sensitivity in tailoring can be conceptualized in surface structure and deep structure dimensions [15]. Surface structure increases comprehension and acceptance of messages, by matching interventions to characteristics of the target population. Deep structure conveys salience, by understanding how members of the priority population perceive hepatitis B, and how cultural values influence screening behavior. For the identification of cultural factors we relied on empirical evidence, which was collected based on Betancourt's Model of Culture and Behavior [16]. This model postulates that health behavior is a function of psychological processes, but also associated with aspects of culture such as value orientation, beliefs and expectations, which may be directly or indirectly associated with health behavior through mediating



psychological processes. BCT targeted cultural values such as perceived rules regarding health and disease, family values, personal norms, and the level of satisfaction with Dutch health care.

In the present study, the effectiveness of behavioral plus cultural tailoring (BCT) as compared to behavioral tailoring (BT) and generic online information (GI) was evaluated, examining the differential effects on actual HBV-screening uptake and determinants of screening.

Methods

Design

The primary outcome measure was screening uptake in eligible persons, which was evaluated in a clustered randomized three group pre- and post-test design. Changes in pre- and post-intervention intention scores were also measured according to this design. Secondary outcome measures were social-cognitive and cultural determinants scores, which were evaluated in a cluster randomized three group control post-test design, in which the GI group provided baseline scores and the BT and BCT groups provided the two tailored intervention group scores. Clustering was based on people living at one house address, being randomized into the same intervention group.

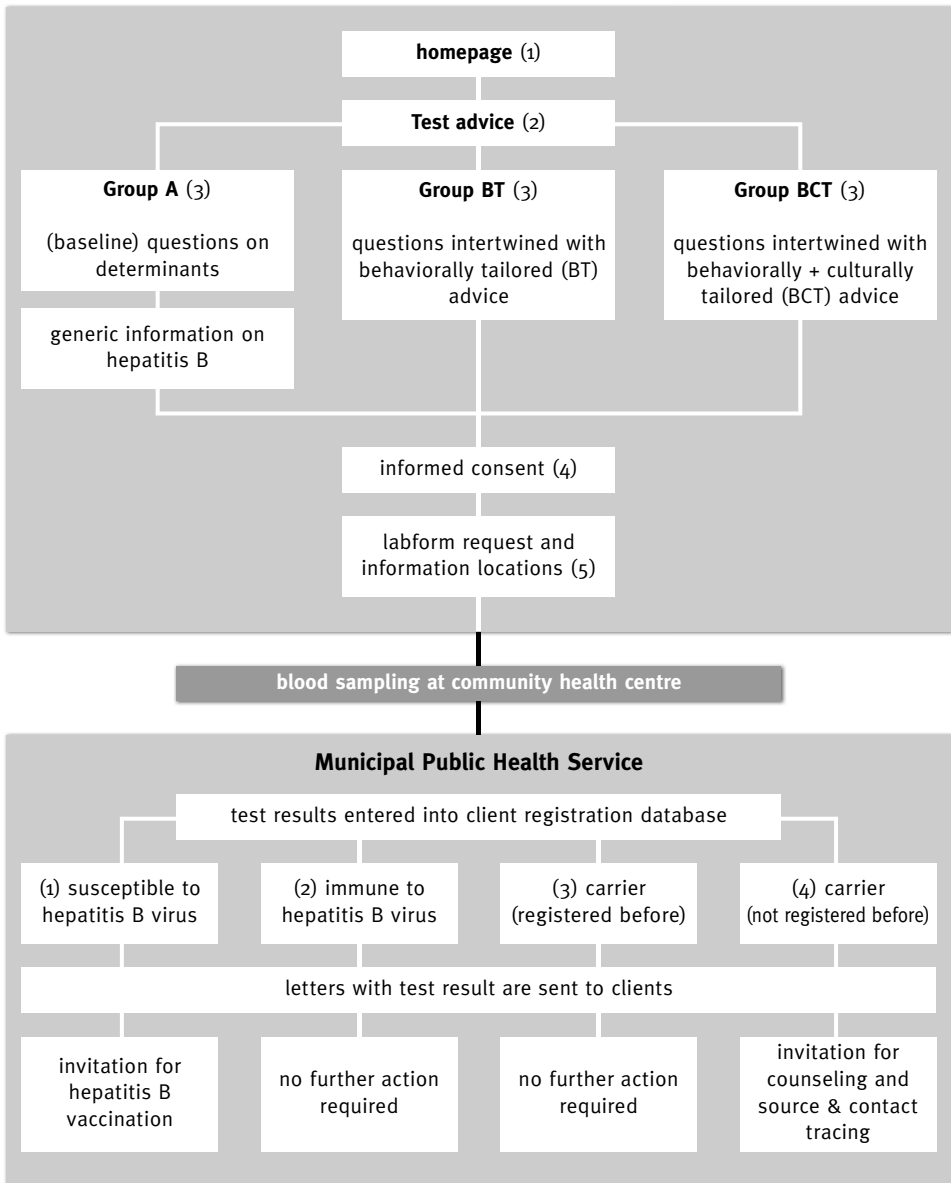
Participants and recruitment

Rotterdam registered people, born in Turkey and aged 16-40 as per 1 September 2010, received a postal invitation to visit the website, which functioned as a portal for the three interventions. The letter included an introduction to HBV in the Turkish population, and a unique code which could be used to log in on the website. Letters were sent between 13 September and 17 December 2010, used Dutch language, with a Turkish reference to a Turkish translation on the website. Reminder letters were sent in both languages. Sixteen, 19 and 21 weeks after the start of the program, all persons who had requested a lab form but were not tested by that time received a reminder.

Starting the intervention development phase, 20 Turkish organizations were invited to a discussion meeting regarding findings from the needs analysis. These organizations were sent regular newsletters, involved in pre-testing the materials and dissemination of information materials during the campaign. Furthermore, information packages including posters were sent to all GP practices in Rotterdam.

The Medical Ethical Review Board of Erasmus MC, University Medical Center Rotterdam, approved this study.

Figure 1 Intervention flow; Cultural tailoring for the promotion of hepatitis B screening in Turkish migrants



Website and test procedure *(Figure 1)*

The website guided the visitor through the following sections: (1) homepage; introduction to the health problem and aim of the website; (2) tailored test advice and demographic questions; (3) the GI, BT, or BCT intervention; (4) informed consent; (5) obtaining laboratory form and information on laboratory locations.

Participants could view the website in either Dutch or Turkish language. The visual design of the website only differed in the intervention section (3), the other sections were offered in the generic design to all participants. Based on their unique code, participants received tailored test advice and were considered eligible for testing, except when they were either aware of having been tested (and sure to be a HBV-carrier or immune to HBV), or having been vaccinated with sufficient vaccine response. Non-eligible persons were informed why testing was not needed, and the website was closed. Eligible persons continued with demographic questions, and subsequently with one of the three interventions. The website recognized the randomly assigned unique codes as either belonging to GI, BT or BCT. Group GI continued with a questionnaire measuring social-cognitive and cultural determinants, and then received generic information on HBV, its prevention, and treatment (containing the same topics as offered in the knowledge modules in BT and BCT interventions). In GI, the internet text from the National Hepatitis Centre was used [17]. Group BT answered the same questions, simultaneously receiving behaviorally tailored information regarding HBV, added by culturally tailored information in BCT. After signing for informed consent, participants could request a lab form, and have a free HBV-blood test at a community health centre. Within three weeks after the test, participants received a letter containing the result and advice for further action.

Behaviorally tailored intervention (BT)

The BT intervention was designed as an intervention for any citizen of Rotterdam, using background pictures of typical city sites. BT comprised 5 modules, focusing on the previously identified social-cognitive determinants of screening behavior: knowledge, attitude, self-efficacy, perceived subjective norm and support. BT used change strategies such as active learning, direct feedback, peer stories, and modeling. In all modules, for each individual, indicated barriers were addressed with counseling advice, while motivating factors were reinforced. In total, the BT intervention offered 122.880 different scenarios.

Behaviorally and Culturally Tailored Intervention (BCT)

The BCT intervention offered 1.474.560 different scenarios, by means of seven modules (five social-cognitive modules were added by two cultural modules). All modules were specifically tailored to the Turkish population, such as the knowledge module providing additional information on HBV and control policies in Turkey. With regard to surface structure elements, BCT included Turkish peer pictures (distinguishing men and women under and above 30 years), and incorporated cultural attractive background pictures. In

the cultural modules, religious rules regarding health were either reinforced or primed by peer-stories with quotes such as: “being a Muslim, I feel it is important to care for my health”, and “our religion teaches us: for every disease there is a solution”. With regard to the perceived quality of Dutch health care services, it was emphasized that testing was free of charge and explained how the route of care in this project was organized. Furthermore, the importance of family values was reinforced by peers stressing their responsibility for the well-being of the family. For instance, a young woman stated: “I told my partner we should get tested and vaccinated, so that our children in future will not get the disease from us!”. Last, the perceived association of screening uptake with sexual behavior was addressed in a subtle way by stressing the main route of transmission in this community, i.e. from mother to child at birth.

Data collection during the intervention

In all groups, demographic data was gathered prior to exposure to the randomized intervention. Requested demographic factors were: gender, age, socio-economic status of the residential area, marital status, education, income situation, health insurance, religion, and knowing someone with HBV. In GI, data on socio-cognitive and cultural determinants was gathered before the generic health information was provided, in order to gather baseline scores for these determinants. In BT and BCT, data on determinants was collected during the intervention. This was done in order to provide tailored information related to these determinants, and to record the direct intervention effect of BT and BCT on social-cognitive and cultural determinants.

Outcome measures

Primary outcome measure was screening uptake in eligible persons in BT, BCT and GI. Secondary outcome measures were scores for social-cognitive and cultural determinants of screening in BT and BCT, as compared to baseline information obtained in the GI group. The measures are described in *Figure 2*. Mean scores were calculated for the constructs with Chronbach’s $\alpha > 0.60$, and for knowledge, self-efficacy, subjective norm, social support, and perceived rules. Due to low Chronbach’s α ’s for barriers and health care satisfaction items, these are presented separately. All items were recoded in such a way that a higher score represents more of the construct. Screening intention was measured pre- and post-intervention.

Analyses

Demographic characteristics of eligible participants were compared across intervention groups using chi-square tests for all factors, except age for which ANOVA was used. Screening uptake was evaluated using logistic regression analysis, controlling for age and sex. Changes in pre- and post intervention intention scores were evaluated by ANOVA. Following the intention to treat principle, scores on determinants were analyzed for all who started with the randomized intervention section in one of the three groups, using ANOVA and controlled for age and sex. Simple contrast analyses were applied



Figure 2 Social-cognitive and cultural constructs measured and tailored on in the intervention

Social-cognitive constructs	Chronbach's alpha
Awareness (Score 0-4; never heard of-, never thought of-, heard of but not decided, heard of and decided, have had a HBV-test)	n.a.
Before you received our invitation letter, had you ever thought about a hepatitis B test?	
Knowledge (0-5; 1 point for every correct answer yes/no/don't know)	n.a.
Is hepatitis B a contagious disease?	
Can a mother infect her child during or after delivery?	
Does hepatitis B equally often in Turkish Dutch and native Dutch?	
May hepatitis B cause liver cancer?	
Can hepatitis B be prevented?	
Benefits of screening (0-3; 1 point per checked statement)	0.63
By being screened, I will be sure about being a carrier or not.	
By being screened, I can prevent transmission of HBV to others.	
Screening may show I am a carrier, for which I may be treated.	
Barriers regarding screening (0-3; 1 point per checked statement)	0.38
If I am screened, I will be more worried about my health.	
It takes too much time to be screened.	
I am afraid for health care costs after having been screened.	
Self-efficacy (scale 1-10, very easy - very difficult)	n.a.
How difficult would it be for you to discuss screening with your partner?	
How difficult would it be for you to discuss screening with your parents?	
How difficult is it for you to discuss personal issues with a medical doctor?	
How difficult is it for you to arrange being screened for HBV?	
Subjective norm (0-4; not important at all - very important)	n.a.
Would your parents feel HBV-screening is important for you?	
Would your partner feel HBV-screening is important for you?	
Social support (-2 no support, important to me; -1 no support, not important to me; 1 support, not important to me; 2 support, important to me)	n.a.
Would your parents support you if you decided to be screened, and is this important to you?	
Would your partner support you if you decided to be screened, and is this important to you?	
Susceptibility (1-100; very low chance - very high chance)	0.78
How would you rate the chance that you are infected with HBV?	
How would you rate the chance of you being infected with HBV, compared to the general Dutch population?	
Intention (0-4; definitely not - definitely be screened)	n.a.
Do you plan to be screened for HBV in the coming three months?	

Cultural constructs	Chronbach's alpha
Family values (0-4; very much disagree - very much agree)	0.93
When in trouble, your family should always stand beside you	
I can always count on my family	
In my family, our ties are very close	
Personal norm (0-4; disagree - agree)	0.75
I should care well for my own health	
I am responsible for the health of others	
Perceived rules (score 0-4; 1 point for each checked item)	n.a.
how to deal with health	
how to prevent disease	
being responsible for one's own health	
being responsible for the health of others	
Satisfaction with Dutch health care (score 0-4; disagree - agree)	0.20
Screening is more expensive in the Netherlands than in Turkey	
I am satisfied with the Dutch health care services	
Doctors in Turkey are more experienced regarding HBV	

for those determinants that overall differed (borderline) significantly, in order to test distinct differences between the intervention groups. Drop-out analyses were performed for eligible persons that dropped out after the eligibility assessment (n=231). Logistic regression analyses, treating drop-out as outcome and demographic characteristics as predictors were performed in each of the intervention groups. Non-response analyses were performed with regard to sex, age, and living area (as indicator for SES), by comparing persons who logged in on the website and those who did not, using chi-square tests and logistic regression. All analyses were controlled for the cluster randomization based on persons living at one house address, by multi-level analyses [18].

Results

Participants

Out of 10,069 invited persons, 1512 (15.2%) logged in on the website (*Figure 3*). The majority of website visitors (1400; 92.6%) showed to be eligible for screening, while lab forms were requested by 83.2% (1166/1400). Drop-out rates (those eligible not requesting a lab form) in GI, BT and BCT were resp. 18.5, 17.4 and 14.5% ($p=.39$), people with additional insurance (opposed to basic insurance or no insurance) being more likely to drop out during the intervention (p -values in GI, BT and BCT resp. 0.07, 0.04 and 0.07; data not shown). Non-response analyses showed that persons who logged in were more often females (16.0% versus males 13.7%; $p<.001$), slightly older (respondents mean age 33.4 year vs. 32.7 year in the target population; $p<.001$), and lived more often in mid/high SES area's (mid/high 16.4% versus low SES 14.1%; $p=.001$).

Descriptive analyses

Eligible participants had a mean age of 33.6 years, and 56.0% were female. Most participants were married (74.0%), and lived in a suburb with lower socio-economic conditions (58.6%). Levels of education were about equally divided between low (29.6%), medium (34.6%) and higher level (35.8%) of education. Half of the group (50.7%) of participants had a paid job, while 19.8% was fulltime house worker and 16.0% received social security. Almost all participants had a health insurance, either a basic (22.4%) or additional package (76.9%). Ninety percent (89.6%) indicated to identify with the Islamic religion, and 32.1% of the research population expressed to know someone with HBV. There were no significant differences regarding these demographic characteristics between the intervention groups (*Table 1*).

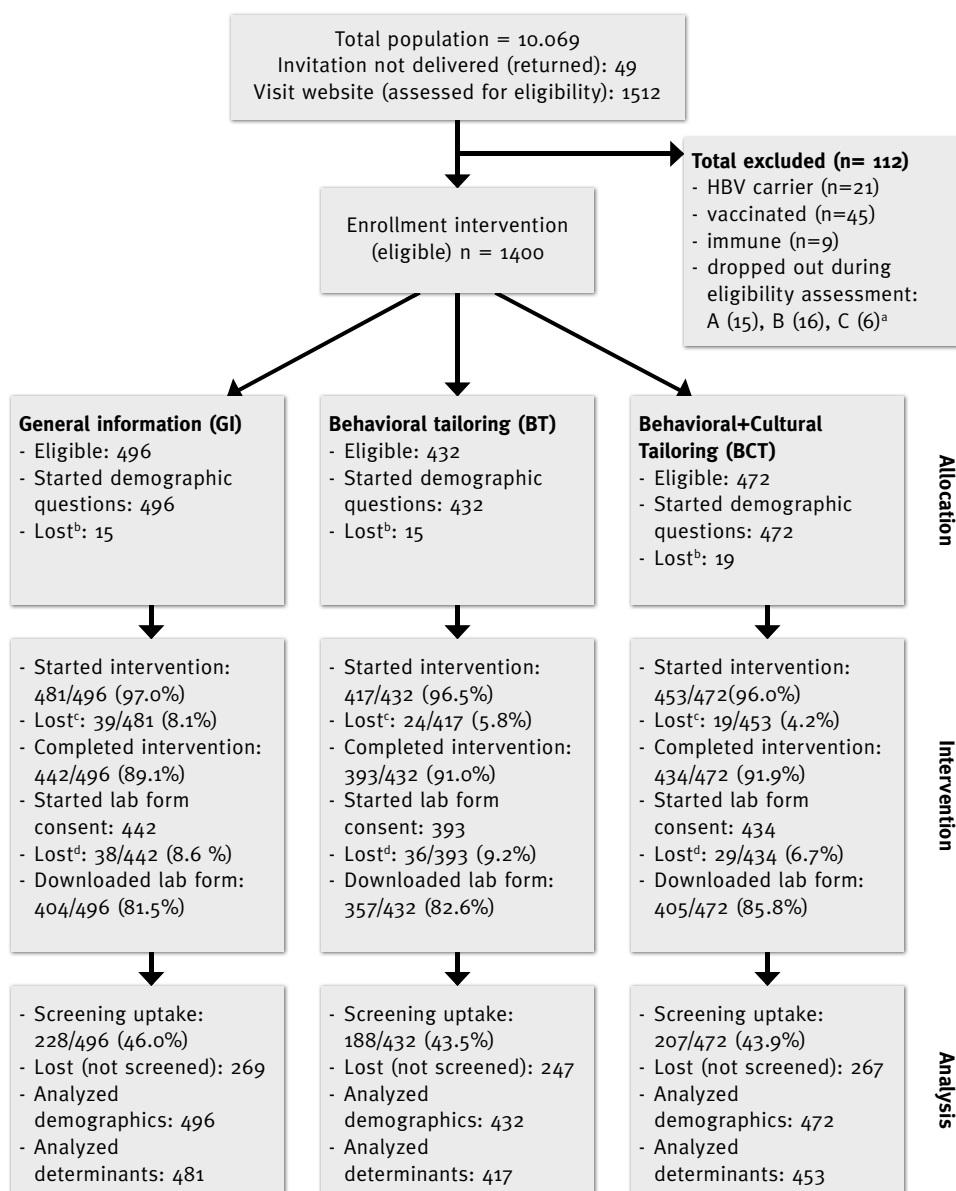
Screening uptake and test results

Screening uptake was 43.9% (OR 0.94; CI 0.69-1.26) following BCT, 43.5% (OR 0.88; CI 0.65-1.19) following BT, and 46.0% in the GI group. No differences in screening uptake could be observed between the three groups ($p=.74$) (*Table 2*). The MPHS received 623 test results; 12 unregistered carriers, 103 immune and 505 susceptible persons, and 3 already registered carriers. Source- and contact tracing at the MPHS was conducted for all newly detected carriers. Twenty percent of the susceptible persons voluntarily started HBV-vaccination.

Pre- and post-intervention screening intention

The overall pre-intervention intention score was 3.18 (scale 0-4), while this was 3.41 post-intervention. The increase in intention score was significant in all three groups ($p<.001$), but about equal between the three groups ($p=.63$) (*Table 2*).

Figure 3 CONSORT Flowchart. Participation in an Internet-intervention aimed at Hepatitis B-screening in Turkish Dutch.



^a dropped out during section 1, eligibility assessment (reasons unknown)

^b dropped out during section 2, demographic questions (reasons unknown)

^c dropped out during section 3, the randomized condition (reasons unknown).

^d lost in the process of informed consent, two questions for participation in further research (reasons unknown)

Table 1 Characteristics of eligible participants, by intervention group

Intervention groups	GI (n=496)	BT (n=432)	BCT (n=472)	p-value
mean age (SD)	33.5 (5.5)	33.5 (5.3)	33.7 (5.2)	0.87
age categories				0.55
% 16-20 year	4	2	2	
% 21-25 year	7	7	6	
% 26-30 year	14	19	19	
% 31-35 year	32	32	27	
% 36-40 year	44	40	46	
% females	59.1	55.5	52.2	0.10
subgroups				0.17
% women < 30 year	13	13	11	
% women ≥ 30 year	44	42	40	
% men < 30 year	7	8	11	
% men ≥ 30 year	33	35	37	
% married	73.7	71.8	76.9	0.38
% low SES	58.1	57.6	61.4	0.59
education				
% low level	31.1	27.3	30.1	0.30
% medium level	35.0	34.2	35.1	
% high level	34.0	38.5	34.9	
employment				
% paid job	49.0	52.0	51.6	0.70
% social security	18.4	15.0	16.0	
% housework	18.6	18.9	21.4	
% study	5.8	4.1	3.9	
% other	8.3	10.0	7.0	
insurance				
% basic	21.3	23.0	23.2	0.61
% additional	77.7	76.6	76.3	
% no insurance	1.0	0.5	0.4	
% islam	89.7	88.7	90.6	0.62
% HBV in family/friends	29.0	37.2	30.8	0.21

GI generic information intervention group

BT behaviorally tailored intervention group

BCT behaviorally plus culturally tailored intervention group

SES socio-economic status

HBV Hepatitis B virus infection

Table 2 Changes in intention scores and screening uptake (including odds ratio and 95% confidence interval) in eligible persons in the three intervention groups

	overall	comparison group	BT	BCT	p-value ^a
Eligible persons	1400	496	432	472	
Increase intentionscore (0-4)	0.23	0.22	0.23	0.23	0.63
Number of tests	623	228	188	207	
Test rate (%)	44.5	46.0	43.5	43.9	0.74
Odds ratio (95% CI)		ref	0.88 (0.65-1.19)	0.94 (0.69-1.26)	

^a controlled for age and sex

BT behaviorally tailored intervention group

BCT behaviorally plus culturally tailored intervention group

CI confidence interval

Table 3 Post-intervention intention scores and test rates in the four subgroups (based on age and sex)

post-intervention intention score	overall	GI	BT	BCT	p-value
overall	3.40	3.35	3.39	3.47	0.20
women < 30 year	3.41	3.31 ^b	3.33 ^c	3.62 ^{bcd}	0.07
women ≥ 30 year	3.40	3.36	3.36	3.48 ^e	0.27
men < 30 year	3.23 ^a	3.27	3.26	3.17 ^{def}	0.84
men ≥ 30 year	3.44	3.35	3.49	3.49 ^f	0.26
% tested					
overall	44.5	46.0	43.5	43.9	0.74
women < 30 year	44 ^{gh}	46	33 ^{kl}	55 ^{km}	0.07
women ≥ 30 year	50 ^{hi}	48	49 ^l	52 ⁿ	0.76
men < 30 year	32 ^{ghj}	37	42	22 ^{mnoq}	0.15
men ≥ 30 year	44 ^{ij}	49	43	40 ^q	0.25
p-value	<.001	0.40	0.06	<.001	

^a differs from all other subgroups (p=.04); ^b p=.04; ^c p=.05; ^d p<.01; ^e p=.02; ^f p=.02; ^g p=.04; ^h p<.001; ⁱ p=.03;

^j p=.01; ^k p=.02; ^l p=.01; ^m p<.001; ⁿ p<.001; ^o p<.01.

GI generic information intervention group

BT behaviorally tailored intervention group

BCT behaviorally plus culturally tailored intervention group



Table 4 Mean scores (SD) on social-cognitive and cultural determinants at baseline and during the behaviorally tailored (BT) and behaviorally + culturally tailored (BCT) interventions.

	tailoring ^a	baseline ^b (n = 481) ^c	BT ^b (n = 417) ^c	BCT ^b (n = 453) ^c	overall p-value
Awareness (0-4)	n.a.	1.74 (1.51)	1.91 (1.50)	1.89 (1.48)	0.19
Personal norm (0-4)	n.a.	3.08 (0.92)	3.13 (1.10)	3.18 (0.96)	0.42
Susceptibility (0-10)	n.a.	2.93 (2.17)	3.19 (2.20)	3.03 (2.21)	0.36
Start intention (0-4) ^d	n.a.	3.10 (0.96)	3.12 (0.99)	3.22 (0.87)	0.25
Knowledge (0-5)	BT and BCT	2.71 (1.52)	3.43 (1.48) ^e	3.40 (1.39) ^e	<0.001
Perceived rules (0-4)	BCT	2.55 (1.65)	2.97 (1.50) ^e	3.27 (1.28) ^g	<0.001
Family values (0-4)	BCT	3.09 (1.09)	3.19 (1.02)	3.23 (0.97) ^f	0.06
Benefits of screening (0-3)	BT and BCT	2.14 (0.99)	2.36 (0.93) ^e	2.37 (0.91) ^e	<0.001
Barriers (0-3) worries time-spend	BT and BCT	0.20 (0.40)	0.21 (0.41)	0.22 (0.42)	0.60
costs	BT and BCT	0.04 (0.20)	0.06 (0.23)	0.03 (0.17)	0.13
Higher cost of testing in NL (0-4)	BCT	0.15 (0.35)	0.15 (0.36)	0.13 (0.34)	0.77
Satisfied with quality of care NL (0-4)	BCT	2.07 (1.04)	2.12 (0.99)	2.00 (1.06)	0.22
TR doctors more HBV experience (0-4)	BCT	2.31 (1.10)	2.44 (1.09)	2.48 (1.06) ^f	0.09
SE (0-10)	BT and BCT	2.29 (0.98)	2.39 (0.95)	2.33 (0.93)	0.26
Subjective norm (0-10)	BT and BCT	6.85 (2.03)	7.03 (1.91)	7.15 (2.02) ^f	0.06
Social support (-2 - 2)	BT and BCT	3.24 (0.90)	3.41 (0.83) ^f	3.49 (0.73) ^e	<0.001
Final intention (0-4) ^d	n.a.	1.47 (0.61)	1.49 (0.53)	1.56 (0.59)	0.16
		3.35 (0.89)	3.39 (0.79)	3.47 (0.77)	0.20

^a BT (behaviorally tailored) or BCT (behaviorally+culturally tailored) information was provided in resp. groups BT or BCT regarding the indicated determinants.

^b Baseline data gathered in the comparison group (G1), BT=behaviorally tailored, BCT=behaviorally and culturally tailored.

^c Those who started with the randomized section of the intervention (intention to treat).

^d Start and final intention marked the start and end of the tailored section of the intervention.

^e Differed from baseline score, $p < .001$

^f Differed from baseline score, $p < .05$

^g BCT score differed significantly from BT score ($p = .01$)



Subgroup analyses

Intention scores and screening uptake were analyzed in four subgroups distinguished in BCT (men/women younger than 30 or 30 years and above). *Table 1* shows that the subgroups were equally distributed over the intervention groups. *Table 3* shows that young women in the BCT group had significantly higher post-intention scores than those in the GI and BT group, given that there were no significant differences in pre-intervention intention scores between the subgroups, nor did drop-outs differ with participants with regard to pre-intervention intention (data not shown). Young men in the BCT group had significantly lower post-intervention intention scores and screening uptake than the three other subgroups. BCT led to higher screening uptake in young women as compared to uptake in young women in BT. Last, young women were significantly less often tested than women above 30 years in the BT group.

Social-cognitive measures

Regarding the social-cognitive measures, *Table 4* shows that the two tailored intervention groups scores were overall significantly higher than baseline scores regarding knowledge ($p < .001$), perceived benefits of screening ($p < .001$) and subjective norm ($p < .05$). For self efficacy, only BCT led to higher scores as compared to baseline ($p = .01$).

Cultural measures

BCT group scores regarding perceived health rules were significantly higher than those at baseline ($p < .001$) and in BT ($p = .01$), which in turn were higher than at baseline ($p < .001$). Furthermore, BCT group scores were significantly higher than baseline scores with regard to family values ($p = .03$), and satisfaction with Dutch health care services ($p = .04$).

Discussion

This study evaluated the effect of behavioral plus cultural tailoring on hepatitis B-screening uptake in Turkish citizens in Rotterdam, as compared to the effect of behavioral tailoring and generic online information. The results show that the overall screening uptake of those eligible for screening was 44%, and about equal in the three intervention groups. Pre- and post-intervention intention scores showed a significant increase in intended screening for all three groups. Specifically, young women in BCT reported the highest intention scores, and were more likely to get tested, following BCT than BT. Both tailored interventions led to more positive scores on knowledge, perceived benefits of testing, subjective norm and perceived rules regarding health and disease, as compared to baseline scores. In addition, the BCT group scored significantly higher with regard to the perceived rules than the BT group, and had significantly improved scores as compared to baseline data with regard to self efficacy, family values, and the level of satisfaction with the Dutch health care services.

The strength of this study into the effect of cultural tailoring is that it is the first one having a robust outcome measure, i.e. the MPHS registered screening uptake, as compared to self reported outcomes in other studies [19-21]. Second, although other internet interventions have shown lower screening-uptake rates in eligible participants e.g. 10% in syphilis-screening, and 28% in hepatitis C-screening in the general population [22, 23], this intervention obtained relatively high test rates. Third, a non-tailored intervention group was included in the design, as was lacking in other studies on cultural tailoring [21], as to be able to measure the added value of both BT and BCT on screening uptake. Last, this is the first report on the application of cultural tailoring in an Islamic ethnic minority population. However, this research has also several limitations. First, the low response rate (15%) may have caused selection bias as participants were likely more motivated regarding HBV-testing than non-participants, which may have influenced their response to the randomized interventions. Second, due to unanticipated political sensitivity regarding culturally specific health promotion activities in the target population, the program organization was severely limited in seeking public attention for this program. This may have discouraged participation in some subpopulations, for instance those who depend strongly on public opinions with regard to health decisions [24, 25], or those less motivated to be screened for hepatitis B. As the intervention strategies aimed to reinforce motivating factors and remove barriers, this might have had stronger convincing impact on those less motivated than has been shown in this already motivated study population. Third, non-response analyses comparing persons who logged in on the website with those who did not, showed that respondents were more often females, older than 30 years, and from an area with medium to high socio-economic status. This should be taken into account when generalizing results. Last, in this study baseline data on behavioral and cultural determinants was collected in the comparison group before the generic information was provided, while in BT and BCT this was done during the interventions. In order to measure the effect of the intervention, other studies have collected data on the intervention effect directly after the intervention [26, 27], or collected baseline data before as well as follow-up data after the intervention in each of the study groups [19, 21, 28, 29]. As high drop out rates were expected when providing the questionnaire after the intervention was finished, the data collection was combined with the information needed for the tailoring of messages.

The results provide insight in the immediate effect of BT and BCT as compared to baseline information. It shows that both tailored interventions led to more positive scores on knowledge, perceived pro's of testing, and subjective norm, while the added value of the cultural tailoring was reflected in higher scores for self efficacy, family values, satisfaction with Dutch health care services and perceived rules regarding health and disease. Although conclusions on the intervention effect should be drawn cautiously due to a lack of baseline data on the social-cognitive determinants in BT and BCT, this finding is supported by the significant increase in intention scores between start and

finish. Furthermore, the intervention effects are only present with regard to the items in the randomized (culturally) tailored sections of the intervention, which supports the assumption that the differences in scores were indeed due to these interventions. This is also argued in literature suggesting that message persuasiveness is enhanced when processing the information feels fluent. Anything that increases processing ease influences judgments about the informational value of health messages [30]. Processing ease has also been described as ‘feeling right’ and messages that feel right are more likely to be persuasive [31], which is likely the case for individually tailored messages [32, 33]. Thus, it seems plausible that both tailored interventions positively influenced the processing of the provided information during the intervention, with regard to knowledge, perceived benefits and the subjective norms.

The added value of the BCT intervention is shown in the improved self-efficacy score, as scores in the BCT group were significantly higher than in the BT group. This may be due to the use of quotes and pictures of peer models used to show how to overcome barriers, which is supported by the Social Cognitive Theory of Bandura stating that modeling is an effective method for changing outcome and self-efficacy expectations [34]. Regarding the cultural factors, BCT participants reported stronger family values, more perceived rules regarding health and disease and were more positive about the quality of Dutch health care than those in GI. This is in line with literature on (media) priming suggesting that by reminding people of their cultural orientation, in our study by providing a cultural appropriate website design, message effectiveness can be increased [30, 35, 36] and messages will be more persuasive when framed in culturally relevant terms, particularly when the cultural frame has been made salient and therefore is an accessible processing framework [37]. The improvements in both socio-cognitive and cultural determinant scores, and the increase in intention scores may also reflect an increased level of informed consent, which is an important condition for participation in screening [38].

Despite the strongest effects of BCT with regard to the determinants of screening, this did not result in higher screening uptake in BCT. Subgroup analyses indicate that young women were most motivated by BCT, while young men seem to be least appealed to BCT. The lack of change in intention scores in other subgroups may be due to the high pre-intervention intention scores, which left little room for further improvement, the so-called ceiling effect as previously described with regard to attitude scores [20]. An explanation for the lack of effect of the interventions on screening uptake may be shown by additional exploratory analyses of the predictors of actual screening uptake in the baseline data (data not shown). These analyses showed that higher levels of awareness, perceived susceptibility for hepatitis B, and more perceived benefits of screening were the most important motivating factors, while the perceived higher cost of screening in the Netherlands was a barrier for screening. Of these predictors, BCT only affected the perceived benefits of testing (OR 1.36 (1.07-1.71); $p=.01$), as awareness and perceived susceptibility were not specifically addressed in either BT or BCT. As we offered free



testing for all participants, we could not influence the perceptions with regard to costs in the interventions. The predictors in baseline data only partly correspond with previous findings, which showed that the perceived benefits of screening and subjective norm were the most important determinants of screening intention [39]. This discrepancy in predictors of screening (intention) may be due to the selected subpopulation reached with this intervention.

In total, 6.2% (623/10.029) of the target population was screened for HBV in this program, which indicates that an internet intervention may be a suitable, low cost strategy for migrant screening. Although the actual screening rate of 44% of all those eligible, corresponding with 53% of those requesting a lab form, is high, the drop-out in this process leaves room for improvement. Reasons for drop-out may be the waning effect of the information provided, which was pointed out in a review of tailored health promotion interventions [40] reporting shorter periods between intervention and follow-up as a crucial factor for success. In addition, during this time between intervention and actual testing, unanticipated practical barriers may have come up which discouraged persons with a lab form from being tested. Last, participants may have gained a more realistic perception of their risk for having HBV, for instance by gathering information on the HBV-status of their mother, after their lab form request.

Conclusion

Cultural tailoring for the promotion of hepatitis B-screening did not have an overall effect on screening uptake as compared to behavioral tailoring or generic information. Although cultural tailoring caused favorable intervention effects for several socio-cognitive and socio-cultural factors addressed in the intervention, only one of these (i.e. the perceived benefits of screening) showed to be a predictor of actual screening uptake in this study population. Screening uptake and the effect of the intervention on determinants of screening may have been hampered by limitations in public attention.

Acknowledgements

We want to thank all participants of the screening project. Furthermore, thanks to all staff of the Infectious Diseases Division (Municipal Public Health Service Rotterdam-Rijnmond), who took care of the telephone services, administration and patient care involved. In particular, thanks to Reinoud Wolter, Angelique Blom, Diana Pols, Fatma Sahintas-Altuntas, Mila Cecilia, Demet Saygili, Filiz Alan, Kevin Lanser, Remon Vredereg, Zorina Ramhiet-Kudratullah, Hoa Le and Henk Visser who were part of the project group. Thanks to Caspar Looman for his advice on the multi-level analyses performed. This study was funded by ZonMW (project 71100005), the Netherlands organization for health research and development and was conducted within the Huisman Research Centre for Infectious Diseases and Public Health and CEPHIR, Centre for Effective Public Health in the larger Rotterdam area.

Trial Registration: The Netherlands National Trial Register NTR 2394.

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Chapter 8

General Discussion

General Discussion

The overall aim of this thesis was to study the effect of cultural tailoring in promoting hepatitis B-screening in the Turkish migrants in Rotterdam. In this chapter, results regarding the study questions are presented and methodological issues are discussed. Subsequently, the study's contribution to the field of health promotion and specifically cultural tailoring is described. We then discuss implications of our findings for migrant screening policy, specifically with regard to cost effectiveness and participation rates. This chapter finishes with conclusions and recommendations with regard to the use of cultural tailoring in health promotion practice.

8.1. Main findings

8.1.1 Which are the social-cognitive and cultural determinants of hepatitis B-screening behavior in the Turkish population in Rotterdam?

Information gained in Focus Group Discussions in the Turkish Dutch population suggested the importance of several socio-cultural determinants for HBV-screening. These were the – often religiously inspired - responsibility for one's own health and that of the family, the perceived obligation when being invited for screening, the association of hepatitis B screening with STDs or sexual activity, low perceived health control, and the perceived low efficacy of the Dutch health care services.

We further investigated determinants of hepatitis B-screening in a survey among 355 respondents in the priority population. The cultural determinants examined in the survey were the importance of family values, religious identity, ethnic identity, the perception of sexuality (conservative vs. liberal), the association of hepatitis B-screening with sexuality, shame and stigma regarding hepatitis B, and the perceived quality of the Dutch health care services. None of these cultural factors were shown to be significantly related to screening intention, except for a weak association of the level of satisfaction with Dutch health care services.

However, we also studied the association of social-cognitive factors with screening intention. We found that a positive intention towards screening was associated with a positive attitude towards screening, high levels of perceived behavior control (PBC), positive social support and perceived subjective norms regarding hepatitis B-screening. Multivariate analysis showed that PBC and subjective norm were the most important factors related to screening intention.

Despite the lack of direct association between cultural factors and screening intention, PBC and subjective norms did show to be related to some specific cultural factors. PBC

showed to be negatively associated with the cultural stigma and shame regarding HBV and the association of hepatitis B-screening with sexual behavior. In addition, subjective norms regarding screening were positively associated with perceived strong family values.

8.1.2 Is cultural tailoring more effective in promoting hepatitis B-screening in Turkish Dutch, than generic health information or behavioral tailoring?

Hepatitis B screening uptake was evaluated in a randomized three group design, comparing screening uptake in eligible people, exposed to one of three online interventions: behavioral plus cultural tailoring (BCT), behavioral tailoring only (BT) or generic health information (GI). This resulted in overall screening uptake of 44%, which was 43.9% in BCT, 43.5% in BT and 46.0% in the GI. The difference in screening uptake was not statistically significant. Intention scores preceding and following the randomized intervention sections, showed a significant increase in intention scores in all three groups. However, the intention scores did not significantly differ between the groups.

Data collection during the intervention revealed an overall intervention effect with regard to more positive scores on knowledge, perceived benefits of testing, subjective norm and perceived rules regarding health and disease in both BT and BCT interventions as compared to baseline scores. In addition, the BCT intervention group scored significantly higher with regard to the perceived rules regarding health and disease than the BT intervention group. Furthermore, only the BCT group had significantly improved scores as compared to baseline data regarding self efficacy, family values, and the level of satisfaction with the Dutch health care services.

Subgroup analyses, distinguishing men and women aged below and above 30, showed that the culturally tailored intervention was borderline significantly more effective in motivating women younger than 30 years to be screened for hepatitis B, as compared to the BT intervention. Young women also had the highest post-intervention intention rates, which were significantly higher than those after behavioral tailoring and generic information.

Multivariate regression analyses in the baseline data showed that the main predictors of screening were higher levels of awareness and perceived susceptibility, more perceived benefits of screening, and a lower estimation of screening costs. This contradicts the findings of our initial survey into determinants of screening, which indicated that a positive attitude towards screening, high levels of perceived behavior control (PBC), positive social support and perceived subjective norm regarding hepatitis B-screening were the most important factors to address in the intervention. This will be further discussed in section 8.2.



8.2 Methodological issues

8.2.1 Low response rate in the survey questionnaire.

Survey research in ethnic priority populations in the Netherlands shows a decreasing participation rate over time [1, 2]. In line with this, our survey into the determinants of hepatitis B screening also achieved a low response (30%), which may have biased the survey findings. This may have resulted in addressing not or not all of the relevant determinants of screening in the intervention, as we based the development of the intervention on the findings from the Fads and survey.

8.2.2 Reliability of the measured scores for determinants of screening

In the effect evaluation, data on behavioral and cultural determinants was collected during the intervention. The results provide insight in the immediate effect of the behaviorally tailored and culturally tailored interventions compared to the baseline data. However, conclusions on the intervention effect should be drawn cautiously as there is no baseline information on the determinants of screening behavior in the BT and BCT intervention groups themselves. Ideally, the effect of the intervention should have become clear from a baseline and follow-up measurement in all three intervention groups, but despite our efforts in stimulating participation, we did not succeed in gathering sufficient data for this purpose. The follow-up questionnaire, which was sent to those providing an email address during the intervention and voluntarily indicating to want to participate (n~700), was returned by less than 15% of this group. We therefore did not consider the data from this follow-up questionnaire to be valid. The suggested direct intervention effect, shown by the differences between the groups with regard to various determinants, is however supported by the significant increase in intention scores between start and finish. Furthermore, the intervention effects are only present in the items of the tailored sections of the intervention, which also supports the assumption that the differences in scores were indeed due to the tailored interventions.

8.2.3 Insufficient exposure to the intervention campaign

Another limitation of the study may be the lack of exposure to the intervention, as only 15% of the target population logged in on the website. Exposure may matter for effects for a variety of reasons: increased opportunity for learning specific messages; increases in perception that an issue is important to take into account; increases in the likelihood that social discussion of messages will be stimulated; and increases in the perception that a new behavior is socially expected [3, 4]. We therefore had planned to seek attention for the program in general mass media and specific Turkish media in the Netherlands, with the purpose of raising community awareness regarding hepatitis B and the opportunity of free screening offered in this program. However, we were limited in seeking mass media attention for the project. This limitation was caused by public sensitivity and debate regarding the separation of church and state. The launch of the

project drew media attention which suggested and criticized the use of Koran texts in this culturally tailored program of the MPHS. This led the official in charge of health care in the city council to decide to put the project on hold, and to seek the advice of a legal specialist in the separation of church and state. This expert concluded that the fact that the religious values, including the reference to the text of the Koran, were expressed by peer models, this sufficiently ensured the neutrality of the MPHS. The formal report of this independent expert ensured that the program was accepted by the health care official. However, at the time of re-launching the intervention, the campaign organization was not allowed to seek public attention from general mass media or Turkish media, as to avoid new questions from either the media or city council about health programs for specific populations. This limited us to sending out the personal invitations, and the dissemination of posters and flyers through our contacts in the Turkish community and network of GPs. Especially in the Turkish community, where social discussion of issues and social expectations are likely to be very important in increasing acceptance of screening, this may have seriously limited the attention for the program in the target population, resulting in a hampered participation rate. The lack of program awareness in the community may have affected specifically those who were less motivated to be screened for hepatitis B, and therefore would likely have benefitted more from the health promotion messages in the intervention.

8.2.4 Selection bias

The survey preceding the intervention development, employing a response rate of 30%, indicated that a positive attitude towards screening, high levels of perceived behavior control (PBC), positive social support and perceived subjective norm regarding hepatitis B-screening were all associated with screening intention; PBC and subjective norm being the most important factors. However, findings from the baseline data in the effect study showed that the main predictors of screening uptake were higher levels of awareness and perceived susceptibility, more perceived benefits of screening, and a lower estimation of screening costs. The discrepancy between the determinants addressed in the interventions, and those showing to be relevant in the people who logged in on the website, may have been caused by the previously described lack of exposure to the campaign leading to a selected group of participants in the screening program. Furthermore, because the implementation of this intervention in one and the same target population and in a real-life setting, we had not been able to address the other factors which eventually were shown to be predictors of actual screening uptake, i.e. levels of awareness, the perceived susceptibility and cost of screening. The issues of awareness and susceptibility were raised in the invitation letters, which were sent to all members of the target population. Furthermore, due to the real-life setting we had to offer free screening to all participants, and therefore targeted the concern of screening costs in all three intervention groups in an equal way. In the interventions, we were only able to specifically address the perceived benefits, which led to improved scores in the tailored interventions as compared to baseline data.



8.3 Comparison of the findings with other literature

The results of the FGDs and survey with regard to cultural determinants of HBV-screening reflected the most explicit characteristics of Turkish culture suggested by Hofstede [5]; the dimensions of power distance, individualism, and uncertainty avoidance. Power distance refers to the extent to which the less powerful members of a community or family accept and expect that power is distributed unequally. This aspect may be seen reflected in the expressed importance of having a good reputation, which relates to one's position in the community. In addition, the perceived authority of the Municipal Public Health Services as a government institution, also reflects the acceptance of power differences. Women in the group discussion indicated to have a low level of perceived health control, as they expressed to be depending on their husbands' health and behavior, because of the risk of sexual transmission. Furthermore, in our study the dimension of collectivism is reflected in the role of family values, which were associated with more positive perceived subjective norms and may be beneficially used for the promotion of screening behavior. In line with this, the role of social support and subjective norm regarding screening showed to be important determinants of screening, either in a motivating or de-motivating role, depending on the social opinions with regard to screening. The association of screening with sexual behavior however, contributed negatively to levels of perceived behavior control. Last, according to Hofstede, Turkey scores high on the uncertainty avoidance continuum, which includes the belief in an absolute Truth. This may be seen reflected in the expression of religious values underlying health beliefs, perceived rules regarding health and disease, and feelings of religious responsibility for the well-being of oneself and others.

Our findings with regard to social-cognitive determinants of screening are supported by the generally accepted behavioral theories such as the Integrative model, or the Theory of Planned Behavior [6, 7]. Recent research into the key predictors of cancer screening uptake in five multi-ethnic populations in the USA, also found the constructs of intention, self-efficacy, perceived susceptibility, perceived benefits, and subjective norms to be most relevant. This supports the cross-cultural applicability of these behavioral constructs, to (cancer) screening [8]. However, the findings in our study into determinants of screening behavior were partly contrary to the expectations based on Betancourt's model of Culture and Behavior [9], as we did not find any direct relationships between the cultural factors and screening intention. The relative importance of cultural factors has been argued before by authors stating that cultural factors do not have a unique direct effect on behavior, but that culture is reflected in the social-cognitive determinants [6, 10, 11]. The findings of the survey preceding the intervention development neither corresponded with the predictors of screening, as shown in baseline data gathered just before the generic health information was delivered. These suggest that by increasing levels of awareness and perceived suscep-

tibility regarding hepatitis B, and by emphasizing the benefits of screening, people may be sufficiently motivated to participate, particularly when screening is offered free of charge.

The effect evaluation showed improved scores on knowledge, perceived pro's, subjective norms and perceived rules regarding health and disease, following the behavioral plus cultural tailored intervention as compared to baseline information. Cultural tailoring furthermore showed an added value in improving self-efficacy, as scores in this intervention group were significantly higher than in the behaviorally tailored group. This finding is supported by literature suggesting that message persuasiveness is enhanced when processing the information feels fluent and messages 'feel right' [12], which is likely the case for individually tailored messages [13, 14]. Regarding the cultural factors, participants in the culturally tailored intervention group reported stronger family values and were more positive about the quality of Dutch health care than in the group which perceived generic information. In addition, the cultural tailored group perceived more rules regarding health and disease as compared to both other intervention groups. This is in line with literature suggesting that by reminding people of their cultural orientation, so called priming, in our study by providing cultural appropriate pictures and peers, message effectiveness can be increased and messages will be more persuasive when framed in culturally relevant terms, particularly when the cultural frame has been made salient and therefore is an accessible processing framework [15-17].

Evaluations of recent culturally tailored programs

Since the National Institutes of Health called for evidence of effective diversity strategies in health communication [4], cultural tailoring has received attention in health promotion and several publications have reported on cultural values in relation to health behavior [18-23]. However, only a few of these interventions have been evaluated as to date. The first publication reporting on the added value of cultural tailoring as compared to behaviorally tailoring described the effect of the interventions on mammography and fruit and vegetable intake among low-income African-American women [18]. This study found a favorable effect of the culturally plus behaviorally tailored intervention with regard to the targeted behaviors. However, weaknesses in this study included the lack of a non-tailored control group, the self-reported outcome measures, and different doses of behaviorally and culturally tailored messages in the intervention groups. Another study aimed at increasing fruit and vegetable intake in African Americans [23], tailored the intervention on ethnic identity. As occurred with the screening intention in our study, this intervention did have a positive effect on health behavior within the control and experimental groups, but not between the groups. The investigators suggest that this lack of evidence of effectiveness might be due to a too short follow-up period, insufficient intervention dose (magazines), the intensity of the background tailoring and the culturally tailoring of the control group (targeted general Black audience). Another study, very similar in design to our study, tried to influence kidney disease prevention



behaviors by offering either a generic online leaflet, targeted information, or tailored internet intervention to the Hispanic target population [24]. The tailored intervention was taking into account the level of acculturation, which may be seen as a form of cultural tailoring. Key learning points in this study were that the tailored intervention was significantly more effective in increasing the perceived susceptibility for kidney disease, but that the tailored intervention was not more effective in changing attitudes and intention towards kidney prevention behavior than the other intervention groups. It is suggested that the lack of effect in attitude was due to ceiling scores for this in all groups, leaving little room for improvement. Furthermore, according to the authors, the mediating effect of perceived susceptibility suppresses the relationship between message and intention, and the increase in perceived susceptibility was highest in the culturally tailored group. An important finding of this study was that it was not the presence of personally relevant information that increased susceptibility, but rather the absence of personally irrelevant information (i.e., the absence of risk factors for kidney disease that an individual does not have). This may point out an important field of attention for hepatitis B-control programs in the Netherlands, which generally depict hepatitis B as a sexual transmitted disease and may cause members of the Turkish population to discard HBV as an irrelevant risk for them. The program under study focused on the main route of HBV-transmission, i.e. from mother to child, and it is likely this improved the salience of the perceived relevance of screening.

8.4 Implications for migrant screening policy

Taking into account recent calls for hepatitis B migrant screening in Europe and the USA [25] [26], the current study may also inform decisions on national strategies for migrant screening, with specific regard to the cost effectiveness and potential yield of an Internet intervention in migrant populations.

8.4.1 Cost effectiveness

A recent study explored the cost-effectiveness (CE) of systematically screening migrants from countries that have high and intermediate HBV infection levels, living in the Netherlands [27]. The model included the factors HBsAg prevalence (i.e. HBV carrier rate), participation rate, program costs, referral rate, and treatment adherence. The findings show that systematic screening of the total migrant population is likely to be cost-effective with an incremental cost-effectiveness ratio (ICER) of screening compared to the status quo of 8,966 euro per QALY (quality-adjusted life-years) gained, which is well below the generally accepted threshold of 20,000 euro per QALY [28]. In our study, the HBsAg prevalence was 1.9%, which is comparable to the lower boundary used in the sensitivity analysis in the described cost-effectiveness study, which was 2.2%. With regard to the participation rate, the CE study assumed a base detection rate of 12.6% in the status quo (due to pregnancy screening, testing resulting from medical complaints,

Figure 1 Participation rates in population based seroprevalence studies and screening programs in the Turkish population in the Netherlands.

Authors	Methods ^a	Test	Participation	Age group	Sexe
de Nooijer et al., 2005	GBA invitation -> screening	Papsmear	59% ^b	30-60 year	females
Vermeer, B., 2008	GBA invitation -> screening	Breastcancer screening	62%	50-75 year	females
Baaten, G., 2007	GBA invitation -> screening	Health monitor 2004 ^c	33.7% ^d	18+	m/f
Veldhuijzen, I. et al., 2008	GBA invitation -> screening	HAV, HBV, HCV screening	26%	18-65 year	m/f
van de Klis et al., 2009, Pienter II	GBA invitation -> screening	General antibody screening ^e	21%	0-79 year	m/f
Van den Broek, I. et al., 2011	GBA inv -> WWW -> home screen ^f	Chlamyida screening	5.6%	15-29 year	m/f
Van der Veen, YJJ et al., 2011	GBA inv-> WWW -> screen ^g	HBV screening	6.8%	16-40 year	m/f

^a all invitations were based on registration in the Municipal Population Registers (*Gemeentelijke Basis Administratie*)

^b invitations via GGD 49.8%; via GP 67.7%

^c comprised a questionnaire and physical (blood) test, results sent to participants, vouchers of 15 euro were offered

^d participation rate in general Dutch population (*Turks lower respons*)

^e gift vouchers of 10 euro were offered, results remained unknown to participants.

^f requesting a test package on the internet (first round of invitations)

^g requesting a lab form on the internet

contact tracing, or check up for sexually transmitted infections). The lower boundary for participation used in the sensitivity analysis was 21%. In our study, 623 persons were tested via the Internet route, while another 57 persons were tested by requesting a laboratory form via the telephone services. (The latter service was made available for those having no access to the Internet.) This adds up to a participation rate in the total population of 6.8% (680/10.069), which in addition to the 12.6% base detection rate sums up to 19.4%, which is comparable to the lower boundary used in the CE study. With regard to program costs, the CE study assessed this to be approximately 3 euro's per person (3,5 million for 1,3 million migrants), which is comparable to the cost of the screening program under study. Assuming that the referral and treatment adherence rates in our project will be equal to those assessed in the CE study, we were able to roughly estimate the ICER for our screening program to be 15,600 euro per QALY [29].

8.4.2 Participation rate of Turkish migrants in public health screening

Several population based health screening programs and seroprevalence studies have reported participation rates for Turkish migrants, often not distinguishing first generation and second generation migrants [30-35]. *Figure 1* suggests that participation rates may depend on sex, age, familiarity of the population with the screening, the condition being screened for, or benefits for the participant (gift voucher and/or medical intervention such as treatment or vaccination). Furthermore, a time dimension may be of influence, in terms of the year of introduction of the screening and the build up history in years. Up to date, only this study and one other screening program [35] have used the internet as an intermediate step in order to increase cost-effectiveness or to enable the provision of tailored health information, both resulting in lower participation rates as compared to the other programs. It should be taken into account that both these programs addressed sexual transmitted diseases (STD), which as shown in our study, is a sensitive subject in the Turkish population, while the conditions under study in the other programs were not specifically focused on STD. In addition, it seems likely that an intermediate step of requesting a laboratory form or a test kit on the Internet explains some of the differences in screening uptake, by its nature of additional effort- and time consumption for the participants. However, more research into the effect of the use of Internet as an intermediate step and other variable conditions (such as age, sex and benefits) is necessary.

8.5 Conclusions and recommendations

This study is the first to measure the effect of cultural tailoring on preventive health behavior by using a robust outcome measure. It describes in detail how cultural tailoring for -predominantly Islamic - minority populations may be applied, and the effect be measured in a randomized controlled design, by using the Internet. It furthermore shows that a web based application can be used for the promotion of hepatitis B-screening in migrant populations, yielding a population test response of 6.2%. The social-cognitive and cultural determinants of hepatitis B-screening in Turkish migrants - identified in qualitative and quantitative research preceding intervention development - were attitude, perceived behavior control, social norms and support, the level of satisfaction with Dutch health care services, cultural stigma and shame regarding hepatitis B and the association of hepatitis B-screening with sexual behavior. However, these were not confirmed by the evaluation of determinants of actual screening uptake in this program, which suggested that for people with high screening intentions, health information regarding awareness, susceptibility, benefits of screening, and the free provision of screening may be sufficient to ensure participation. Although in this study we could not show an additional effect on screening uptake for participants who received behavioral plus cultural tailoring, it is likely this kind of tailoring did have additional

impact on some social-cognitive and cultural determinants of hepatitis B-screening, as compared to behaviorally tailored- and non-intervention groups. As we did not succeed in gathering information on process evaluation indicators, more research, including process evaluation measures, is needed in order to fully understand the impact of this. In sum, it is feasible to promote hepatitis B-screening in Turkish migrants by means of a web-based application, but we were unable to demonstrate the the additional effect of cultural tailoring on hepatitis B-screening uptake in this population.

Recommendations

Research

- More research on cultural tailoring using designs with robust outcome measures, and applying pre- and post test measurements of determinants, is needed to test the additional effect of cultural tailoring on health behavior and its determinants.
- More research on participation rates of migrant populations in web-based health screening programs is needed, in order to draw conclusions on the feasibility of the application of web-based interventions.

Policy

- In future, new ways of information gathering in ethnic minority populations need to be addressed, as there is a trend of decreasing participation of these groups in questionnaire surveys which hampers the external validity of studies.
- When conducting a public health program, accompanied by scientific research, methods for effect- and process evaluation should be feasible and in place to avoid loss to follow-up.
- In culturally sensitive programs, policy makers at municipal, provincial or national level should be involved early in the development phase, in order to create a political acceptance platform.
- In the planning of migrant hepatitis B-screening interventions, it should be taken into account that public awareness may be hampered by political or societal processes, and alternative strategies for optimal communication to the public should be developed.
- Future migrant screening programs on hepatitis B should study the effect of interventions addressing the awareness and susceptibility regarding hepatitis B, the benefits of screening and the free provision of screening services.
- Cultural beliefs provide insight into the perceptions of Turkish migrants regarding hepatitis B-screening, and may assist in the development of interventions targeting this population.



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**Summary
Samenvatting
Dankwoord
Curriculum Vitae
PhD Portfolio Summary**

Summary

This thesis describes the development and evaluation of a culturally tailored intervention aimed at the promotion of hepatitis B-screening in first generation Turkish migrants in Rotterdam. The **general introduction** describes the health problem of hepatitis B virus (HBV) infections in Turkish migrants, current hepatitis B-control policies and the rationale for a screening programme in this population. It also presents some background information on the migrant history and elements of the Turkish culture. We then describe some theoretical health behaviour change models which may be applied to hepatitis B-screening, specifically with regard to the role of culture in health promotion programs. Last, we present definitions and current knowledge about the effectiveness of tailoring and cultural tailoring. The introduction finishes with the research questions of this thesis, which are formulated as:

1. Which are the socio-cognitive and cultural determinants of hepatitis B-screening behavior in the Turkish population in Rotterdam?; and
2. Is cultural tailoring more effective in promoting hepatitis B-screening in Turkish Dutch, than generic health education or behavioural tailoring?

Chapter 2 reports the findings of seven Focus Group Discussions conducted in the target population. It focuses on the socio-cultural characteristics related to hepatitis B-screening behaviour or the intention to be screened. Several socio-cultural themes related to hepatitis B screening were identified; these were social norm, social support, sensitivity regarding sexuality, reputation, responsiveness to authority, religious responsibility, religious doctrine regarding health and disease, and the perceived efficacy of Dutch health care services. Motivating factors were the (religious) responsibility for one's health, the perceived obligation when being invited for screening, and social support to get tested for hepatitis B. Perceived barriers were the association of hepatitis B screening with STDs or sexual activity, the perception of low control over one's health, and the perceived low efficacy of the Dutch health care services. Reputation could act as either a motivator or barrier. The identified themes informed the development of a survey questionnaire which aimed to identify determinants of screening in a quantitative way. The results of the survey are described in chapters 3 and 4.

Chapter 3 presents the results of the postal survey amongst first and second generation migrants, aged 16–40 years, with regard to levels of HBV awareness and knowledge, and self-reported HBV-test rates. The response rate in the survey was 30.2% (n=355 respondents). The levels of awareness and knowledge regarding hepatitis B were low, as the majority of respondents (73%) never thought about the disease and 58% of the respondents scored 5 or less out of ten knowledge items. Weighted analysis of self-reports showed a test rate of 15%, and a vaccination rate of 3%. Self-reported test rates were shown to be lower in people who were not married, and in those who had low levels of awareness and knowledge. Especially, knowledge about the consequences of hepatitis B, such as liver cancer, was lacking.

The survey also provided information about the association of social-cognitive and socio-cultural determinants with screening intention, which is presented in **chapter 4**. Univariate analysis showed that people with a positive intention towards screening were older, Dutch speaking, reported higher levels of perceived behavior control (PBC), a positive attitude, social support and positive subjective norms, and were more satisfied with Dutch health care services. Screening intention was strongest associated with higher levels of PBC and positive subjective norms. HBV-related shame and stigma, and the association of screening with sexual behavior were negatively associated with levels of PBC, while strong family values were positively associated with subjective norms.

Following the information gathered in the FGDs and survey, **chapter 5** presents the design of a randomized controlled trial, which we planned to use in order to evaluate the effectiveness of cultural tailoring. We planned to offer behaviorally plus culturally tailored (BCT) online information targeting social-cognitive and cultural determinants of HBV-screening to the experimental group. Control groups received an online behaviorally tailored (BT) intervention based on social-cognitive determinants only, or online generic information (GI). Subsequently, a laboratory form could be obtained online, with which free HBV-screening was available at local venues. We planned for the registration of test results by the Municipal Public Health Service, which would also inform the participants about their results. For carriers of the virus counseling and source and contact tracing would be available, while people still susceptible to HBV would be offered vaccination for a reduced fee. No further action was required for those whose test results would show that they were immune.

In **chapter 6**, the development of both the behaviourally plus culturally tailored intervention, and the behaviourally tailored only intervention is extensively described, thereby aiming to contribute to the transparency of the theory guided planning process of the HBV-screening programme. We explain how the Intervention Mapping protocol was used to develop the BCT Internet intervention, incorporating both social-cognitive and socio-cultural motivators and barriers. In addition, we describe two dimensions of cultural sensitivity, i.e. surface structure and deep structure, and how both elements were used. Surface structure comprises the matching of intervention materials and messages to characteristics of the target population. Deep structure aims to understand how members of the priority population perceive the cause, course, and treatment of HBV, as well as how they perceive the determinants of the desired screening behaviour. It addresses factors such as religion, family and society that influence the target behaviour. In this project surface structure elements were addressed by the use of different Internet skins and peer-stories for subgroups, such as young women. Deep structure elements in the programme comprised cultural motivators such as the religiously inspired feelings of responsibility and strong family values, and perceived community rules regarding health and disease. Cultural barriers that were addressed were the satisfaction and trust in Dutch health care, and the association of hepatitis



B screening with sexual behaviour. We also described how members of the target population were involved in all steps of programme development. The chapter ends with the conclusion that the Intervention Mapping protocol provided a useful framework for the systematic development of our theory- and evidence based intervention to promote HBV-screening in the Turkish community in the Netherlands.

The last step of the research project was the evaluation of the effectiveness of the behaviorally plus culturally tailored internet intervention promoting hepatitis B-screening in Turkish Dutch. The results of this cluster-randomized controlled trial are described in **chapter 7**. The primary outcome measure was screening uptake in eligible persons following BCT, BT and GI group. Secondary outcome measures were changes in social-cognitive and cultural determinants of screening in the BCT group, as compared to the BT group and baseline information. Out of 10.069 invited persons, 1512 (15.2%) logged in on the website. The majority of visitors showed to be eligible for screening and requested a lab form. Test results for 623 people were obtained. Screening uptake was 43.9% in the BCT group, as compared to 46.0% in the GI group and 43.5% in group BT. These rates did not differ significantly between the intervention groups. The BCT group showed favorable intervention effects for scores on determinants of screening as compared to baseline scores and BT. We concluded that although BCT did not increase HBV-screening uptake as compared to GI or BT, it did show a favorable intervention effect for several socio-cognitive and socio-cultural factors addressed in the intervention. However, only one of these factors (the perceived benefits of screening) was associated with screening uptake in the evaluation study.

In **chapter 8**, we summarize the findings related to the research questions of this thesis. Subsequently, several methodological limitations of the study are discussed, specifically focusing on the possible consequences of limitations in public attention, which may have hampered enrolment of the target population in the program, the effect of the intervention on determinants of screening and ultimately screening uptake. The findings of the current study are related to other literature on determinants of screening and the effectiveness of culturally tailored health promotion programs. As the findings of the research project may be used for future migrant screening policies and planning, we also concisely address issues of cost-effectiveness and the yield of an Internet intervention in this chapter. This thesis finishes with the conclusion that although in this study we could not show an additional effect on screening uptake for participants who received behavioral plus cultural tailoring; it did have additional impact on some social-cognitive and cultural determinants of HBV-screening, as compared to behaviorally tailored- and non-intervention groups. We therefore recommend more research, including maximal public attention, robust outcome measures and process evaluation measures, in order to fully understand the effect of cultural tailoring on health behavior and its determinants. In addition, we formulated policy recommendations for future migrant HBV-screening programs.



Samenvatting

Dit proefschrift beschrijft de ontwikkeling en evaluatie van een cultureel advies-op-maat interventie gericht op het stimuleren van hepatitis B-testen door eerste generatie Turkse Rotterdammers. De **algemene introductie** beschrijft het gezondheidsprobleem van hepatitis B, huidige maatregelen ter bestrijding van hepatitis B en de aanleiding voor een screeningsprogramma in deze doelgroep. Daarnaast wordt achtergrondinformatie gegeven over de migratiegeschiedenis en elementen van de Turkse cultuur. Daarna worden enkele gedragsveranderingmodellen beschreven die van toepassing zijn op het bevorderen van hepatitis B-screening, in het bijzonder waar dat de rol van culturele aspecten in gezondheidsvoorlichtingprogramma's betreft. Tot slot wordt het begrip 'cultural tailoring', cultureel advies-op-maat, gedefinieerd en wordt de huidige kennis over de effectiviteit van dit soort voorlichting beschreven. De introductie besluit met de onderzoeksvragen van dit proefschrift, die als volgt zijn geformuleerd:

1. Wat zijn socio-cognitieve en culturele determinanten van hepatitis B-screeningsgedrag bij Turkse Rotterdammers?
2. Is cultureel advies-op-maat effectiever in het stimuleren van hepatitis B-screening dan algemene gezondheidsvoorlichting over hepatitis B (testen) of advies-op-maat zonder culturele aspecten?

Hoofdstuk 2 beschrijft de resultaten van zeven focus groepsdiscussies die werden gehouden in de doelgroep. Dit hoofdstuk beschrijft in het bijzonder de sociaal-culturele factoren die gerelateerd zijn aan het zich al dan niet laten testen op hepatitis B door middel van een bloedtest. Uit het onderzoek kwamen verschillende factoren naar voren: de sociale normen en sociale steun ten aanzien van hepatitis B-testen, gevoeligheid van het onderwerp seksualiteit en seksueel overdraagbare aandoeningen, reputatie, de rol van autoriteit, religieuze verantwoordelijkheid, religieuze leerstellingen ten aanzien van gezondheid en ziekte, en de waargenomen kwaliteit van de Nederlandse gezondheidszorg. Motiverende factoren om zich te laten testen waren de religieuze verantwoordelijkheid voor de eigen gezondheid, de mate van verplichting die men ervaart wanneer men uitgenodigd wordt om zich te laten testen, en sociale steun om zich te laten testen voor hepatitis B. De waargenomen barrières waren de associatie van hepatitis B-screening met seksueel gedrag, het gevoel weinig controle te hebben over de eigen gezondheid, en ontevredenheid over de geboden gezondheidszorg in Nederland. Het belang van reputatie kon zowel positief als negatief van invloed zijn op het zich al dan niet laten testen. Deze uitkomsten waren het uitgangspunt voor de ontwikkeling van een vragenlijst, die als doel had om op een kwantitatieve manier de belangrijkste determinanten van screening te identificeren. De resultaten van dit vragenlijstonderzoek worden beschreven in de hoofdstukken 3 en 4.

In **hoofdstuk 3** worden de resultaten uit het vragenlijstonderzoek onder zowel eerste als tweede generatie migranten, in de leeftijd van 16 tot 40 jaar, beschreven. Dit hoofdstuk richt zich op de aanwezige kennis en het bewustzijn ten aanzien van hepatitis B, en het zelfgerapporteerde hepatitis B-testpercentage. De respons op het onderzoek was 30.2% (n=355 respondenten). De mate van bewustzijn en kennis ten aanzien van hepatitis B was laag, aangezien de meerderheid van de respondenten (73%) nooit had nagedacht over de ziekte, en 58% van de respondenten van de 10 kennisvragen 5 of minder items correct beantwoordde. In het bijzonder kennis over de ernstige gevolgen van hepatitis B, zoals leverkanker, ontbrak. Gewogen analyse van het aantal gerapporteerde (al ondergane) testen resulteerde in een testpercentage van 15%, en een vaccinatiepercentage van 3%. Ongehuwde personen, en personen met een lager bewustzijn en minder kennis over hepatitis B rapporteerden minder vaak dat ze ooit getest waren voor hepatitis B.

Het vragenlijst onderzoek leverde ook informatie op over de invloed van socio-cognitieve en sociaal-culturele factoren die van invloed waren op de intentie zich al dan niet te laten testen. Deze informatie wordt weergegeven in **hoofdstuk 4**. Univariate analyses lieten zien dat mensen met een positieve intentie ten aanzien van screening een hogere leeftijd hadden, Nederlandstalig georiënteerd waren, en hoger scoorden op de determinanten waargenomen zelfcontrole, positieve attitude, sociale steun en positieve sociale normen ten aanzien van hepatitis B-testen. Gevoelens van schaamte en stigma in verband met hepatitis B, en de associatie van het zich laten testen met seksueel gedrag waren van negatieve invloed op de mate van waargenomen zelfcontrole, terwijl sterke familiewaarden van positieve invloed waren op de waargenomen sociale normen ten aanzien van hepatitis B testen.

Volgend uit de informatie uit de groepsdiscussies en het vragenlijstonderzoek, wordt in **hoofdstuk 5** het onderzoeksplan van de randomized controlled trial beschreven, die werd gebruikt om het effect van het cultureel advies-op-maat te meten. De onderzoeksopzet beschrijft het aanbieden van online cultureel advies-op-maat gericht op zowel socio-cognitieve als sociaal-culturele factoren aan de experimentele groep (de zogenaamde behaviorally plus culturally tailored, BCT groep). Controle groepen ontvingen een online advies-op-maat interventie slechts gericht op socio-cognitieve factoren (behaviorally tailored, BT interventie), of online generieke informatie (GI). Na het doorlopen van deze interventies kon door alle drie groepen een laboratoriumformulier worden aangevraagd, waarmee men zich gratis kon laten testen bij (huisartsen)prikposten in Rotterdam. De testresultaten werden bij GGD Rotterdam-Rijnmond geregistreerd, en vervolgens per brief teruggekoppeld naar de deelnemers. Voor dragers van het hepatitis B-virus was een bestaande structuur van counseling en bron- en contactopsporing beschikbaar. Personen bij wie uit de test bleek dat zij nog vatbaar waren voor hepatitis B-virus, konden zich laten vaccineren tegen een gereduceerd tarief. Voor mensen die al immuun bleken te zijn volstond een brief met deze uitslag.



In **hoofdstuk 6** wordt de ontwikkeling van de beide advies-op-maat interventies uitgebreid beschreven, met als doel bij te dragen aan de transparantie van het ontwikkelingsproces van het hepatitis B-screeningsprogramma. Er wordt beschreven hoe het Intervention Mapping protocol werd gebruikt om de internetinterventies, waarin zowel socio-cognitieve als sociaal-culturele factoren die van invloed zijn op testgedrag werden gebruikt, te ontwikkelen. Daarnaast beschrijven we twee dimensies van cultuursensitiviteit, namelijk de zogenaamde surface structure en deep structure elementen, en hoe deze werden toegepast. Surface structure sensitiviteit houdt in dat interventiematerialen en boodschappen passend worden gemaakt aan de doelgroep. Deep structure elementen hebben als doel om in te gaan op de door de doelgroep ervaren oorzaak, verloop, en behandeling van hepatitis B, evenals de waargenomen determinanten van het gewenste screeningsgedrag. Hierbij richt deep structure sensitiviteit zich op factoren als religie, familie en samenleving voor zover deze het screeningsgedrag beïnvloeden. In dit project kwamen surface structure elementen aan de orde door het gebruik van verschillende internetpagina-achtergronden, en verhalen van rolmodellen voor subgroepen, zoals jonge vrouwen. De deep structure elementen kwamen terug in cultureel motiverende aspecten zoals op religie geïnspireerde gevoelens van verantwoordelijkheid en sterke familie waarden, en waargenomen regels ten aanzien van gezondheid en ziekte in de gemeenschap. Culturele barrières die aan de orde kwamen in de voorlichting waren de mate van tevredenheid en het vertrouwen in de Nederlandse gezondheidszorg. Daarnaast werd de vermeende associatie tussen het zich laten screenen en seksueel gedrag indirect aan de orde gesteld. In dit hoofdstuk wordt verder beschreven op welke manier leden van de doelgroep betrokken werden bij iedere fase van de interventieontwikkeling. Het hoofdstuk eindigt met de conclusie dat het Intervention Mapping protocol een bruikbaar raamwerk was bij het systematisch ontwikkelen van deze - op theorie en wetenschappelijk bewijs gebaseerde - interventie.

De laatste fase van het onderzoeksproject was de evaluatie van het effect van cultureel advies-op-maat op het hepatitis B-screeningsgedrag van Turkse Rotterdammers. De resultaten van dit clustergerandomiseerde onderzoek worden beschreven in **hoofdstuk 7**. De primaire uitkomstmaat was het aantal personen - die voor een hepatitis B-test in aanmerking kwamen - dat zich daadwerkelijk liet testen naar aanleiding van de BCT, BT en GI interventies. Secundaire uitkomstmaten waren de veranderingen in scores op socio-cognitieve en sociaal-culturele determinanten van screening in de BCT groep, vergeleken met de scores in de BT groep en scores voorafgaand aan de interventie in de GI groep. Van de 10.069 personen die werden uitgenodigd deel te nemen aan het project logden 1512 (15.2%) personen in op de website. Het merendeel van de websitebezoekers bleek (na een korte vragenlijst) in aanmerking te komen voor een test, en vroeg ook een laboratoriumformulier aan. In totaal kwamen er 623 testresultaten binnen bij de GGD. Het testpercentage in de BCT groep was 43.9%, 46.0% in de GI groep en 43.5% in de BT groep. Deze percentages verschilden niet significant van elkaar. De BCT groep scoorde beter op de determinanten van screening in vergelijking met de scores in de

BT groep en de scores voorafgaand aan de interventie in de GI groep. We concluderen dat hoewel cultureel advies-op-maat niet resulteerde in een hogere deelname aan het testen in vergelijking met de controle groepen, het cultureel advies-op-maat wel een gunstig interventie-effect leek te hebben op verschillende socio-cognitieve en sociaal-culturele factoren die aan de orde kwamen in de interventie. Echter, slechts één van deze factoren (de waargenomen voordelen van het zich laten testen) bleek in dit evaluatieonderzoek gerelateerd te zijn aan het zich daadwerkelijk laten testen.

In **hoofdstuk 8** worden de onderzoeksvragen beantwoord. Daarna worden verschillende methodologische vraagstukken bediscussieerd. In het bijzonder worden de mogelijke consequenties van de beperkte mogelijkheden om publieke aandacht voor dit project te vragen, besproken. Deze beperking heeft mogelijk geleid tot een lagere deelname aan het project en daardoor tot een lager effect van cultureel advies-op-maat op zowel determinanten van screening als het daadwerkelijke screeningsgedrag. De resultaten van het huidige onderzoek worden in verband gebracht met andere onderzoeksresultaten op zowel het gebied van determinanten van screening als het effect van cultureel advies-op-maat. Omdat de bevindingen van dit onderzoeksproject gebruikt kunnen worden als input voor toekomstig beleid ten aanzien van de hepatitis B-screening van migranten, wordt ook een korte overweging van de kosteneffectiviteit en het bereik van een dergelijk project beschreven. Dit proefschrift eindigt met de conclusie dat dit onderzoek niet heeft kunnen aantonen dat cultureel advies-op-maat een toegevoegde waarde heeft op hepatitis B-screeningsgedrag; echter het cultureel advies-op-maat resulteerde wel in hogere scores op enkele socio-cognitieve en sociaal-culturele determinanten van hepatitis B-screening ten opzichte van de controlegroepen. Voor een beter begrip van het effect van cultureel advies-op-maat bevelen we daarom aan meer onderzoek te doen naar het effect van cultureel advies-op-maat, waarin maximale publieke aandacht wordt gevraagd, robuuste uitkomstmaten worden gehanteerd en een procesevaluatie wordt gedaan. Daarnaast worden beleidsaanbevelingen gedaan voor toekomstige hepatitis-B-screeningsprojecten voor migranten.



Dankwoord

Het uitvoeren van dit onderzoeksproject was voor mij een hele mooie kans om allerlei aspecten van mijn vak, de gezondheidsvoorlichting, uit te proberen. Ik heb het als een voorrecht ervaren dit project te mogen uitvoeren, en daarbij ook nog eens een Master in Public Health te mogen doorlopen. Dank aan iedereen die mij deze kans heeft gegeven!

Dat zijn als eerste de mensen die mij gedurende dit onderzoek begeleid hebben. Jan Hendrik Richardus was gedurende de afgelopen jaren de stabiele factor in de begeleiding. Van co-promotor ben jij inmiddels door je professorschap veranderd in één van mijn promotoren. Het was prettig en geruststellend te weten dat ik altijd bij je terecht kon met vragen, vooral als het ging om de grote lijnen van het project. Je hebt me veel vrijheid en verantwoordelijkheid gegund tijdens dit traject, en ik dank je voor dat vertrouwen. Ook mijn andere promotor Johan Mackenbach dank ik voor de begeleiding, in het bijzonder bij de start en afronding van het proefschrift. Je vragen en kritische noten heb ik altijd als opbouwend ervaren, en waren daardoor leerzaam. De leden van de promotiecommissie dank ik voor hun bereidheid zitting te nemen in de commissie.

Daarnaast bedank ik de collega's die mede-auteur zijn van één of meerdere artikelen. Dit onderzoek is medebedacht door Onno de Zwart, vijf jaar geleden clustermanager van Infectieziektebestrijding. Bedankt voor je begeleiding in het eerste jaar, en je talent en visie voor het initiëren van dit soort innovatieve interventies. Daarnaast was ik erg blij een beroep te mogen doen op het meedenken en advies van Pepijn van Empelen. Alhoewel je maar zijdelings betrokken was bij het onderzoeksproject wist je altijd met goede opmerkingen te komen. Ik heb veel gehad aan jouw GVO-input, en ben je dankbaar voor de tijd die je hiervoor hebt vrijgemaakt. Héléne Voeten, jij hebt hard meegewerkt aan de verbetering van mijn eerste twee artikelen. Hoewel ik het soms lastig vond om te gaan met je kritische blik, heb ik er wel veel van geleerd. Bedankt! Caspar Looman, met geduld heb je me verschillende analysemethoden uitgelegd, en eindeloos scriptfouten in R achterhaald - veel dank daarvoor. Henk Visser, als arts Infectieziektebestrijding heb jij het effectartikel kritisch bekeken, bedankt voor je inbreng hierin.

Leden van de begeleidingscommissie Mesut Dişli van SPIOR, Greet Boland van het Nationaal Hepatitis Centrum, Quita Walhofer en Laura Rust van GGD Nederland, bedankt voor jullie inbreng tijdens de bijeenkomsten. Mesut Dişli, jij bent een belangrijke schakel geweest in het leggen van contacten in de Turkse gemeenschap in Rotterdam, hartelijk dank daarvoor. Zonder de medewerking van de doelgroep was het niet mogelijk geweest dit project te realiseren, daarom dank aan alle mensen die hun steentje hebben bijgedragen in de groepsgesprekken, de enquêtes, het pre-testen van materialen, het promoten van en deelnemen aan dit project.

Bij de praktische uitwerking van het screeningsproject heb ik nauw samengewerkt met de collega's van de afdeling Infectieziekten van GGD Rotterdam-Rijnmond. Angelique Blom, Diana Pols, Fatma Sahintas-Altuntas, Mila Cecilia, Saskia Kooijman-Castelijns, Zorina Ramhiet, Kevin Lanser, Remon Vrederegts en Marcel Koopman hartelijk bedankt dat jullie wilden meedenken en meewerken aan de logistieke organisatie van het project. Ik vond het leuk om met jullie samen te werken! Ook dank aan Demet Saygili en Filiz Alan van de Gezondheidslijn. Jullie hebben heel wat telefoontjes van Turkse Rotterdammers gekregen over dit project, en deze correct afgehandeld. Ook Eliora Klijnsmit van Star-MDC bedankt voor het meedenken over de logistiek. De website werd gemaakt door Netdesign, Bas den Braver en Iwin van de Kamp bedankt voor de prettige samenwerking!

Twee mensen hebben op een bijzondere manier meegewerkt aan dit onderzoeksproject. Als eerste dank ik Fadime Güzel, stagiaire vanuit de studie International Public Health aan de VU. Jij hebt met je afstudeeronderzoek een belangrijke bijdrage geleverd aan mijn onderzoek door het pretesten van verschillende voorlichtingsboodschappen en materialen onder de doelgroep en sleutelpersonen. Verder mijn hartelijke dank aan Reinoud Wolter, die tijdens mijn zwangerschapsverlof als projectleider de honneurs waarnam. Op de dag dat ik beviel van Jantsje, kreeg jij ook het één en ander voor je kiezen door alle politieke en publieke ophef die er ontstond rond de lancering van dit project. Je hebt je daar prima door heen geslagen, maar het heeft je wel de nodige stress gekost... Nogmaals dank voor alles wat je in die tijd hebt doorstaan en gedaan!

Ook de collega's van het secretariaat van het cluster Infectieziektebestrijding wil ik bedanken voor de samenwerking. Astrid, Diane, Inci, Purcy en Stijn bedankt voor jullie hulp daar waar dat nodig was.

Mijn lieve collega-onderzoekers en beleidsmedewerkers, Irene, Hélène, Marloes, Mireille, Jeanelle, Tizza, Anita, Marja, Sander, Reinoud, Pjer, Paul, Marijke, Hannelore, Alvin, Jan, allemaal hartelijk bedankt voor de collegialiteit. Ik heb me heel prettig gevoeld in dit teamverband, en vind het jammer dat dit voorbij is. Mireille en Marloes, jullie bedankt voor de GVO-gesprekken. Irene, jij bent toch wel Miss Hepatitis van de GGD en staat altijd klaar voor vragen en discussie over dit onderwerp, ook al ben je druk. Dank daarvoor! Sander, dank voor je uitleg van de GBA-procedures van het Chlamydia-project waar ik veel aan had.

Mijn paranimfen Susan Hahné en Sander Kole wil ik bedanken voor hun hulp bij de voorbereidingen van de promotie, en hun steun op de dag zelf. Fijn dat jullie beiden binnen een straal van 500 meter wonen zodat we gemakkelijk konden overleggen. Lieve Susan, ik wist meteen dat jij mijn paranimf moest worden. Toen we samenwerkten bij het RIVM vond ik je manier van werken heel inspirerend, en misschien ben ik daarom wel aan dit promotieonderzoek begonnen. Je was voor mij ook een soort adviseur



als het ging om lastige hepatitis B- of promoveervraagstukken. Lieve Sander, ik vind het mooi dat jij mij ook bij mijn promotie ter zijde staat. Het was bijzonder om als promovendi een tijdlang in hetzelfde schuitje te zitten. Hoewel onze vakgebieden erg van elkaar verschillen, konden we toch wel meedenken met elkaar. Laten we nu echter maar stoppen met die discussies over significante onderzoeksresultaten op zaterdagochtend, en lekker gaan fietsen met Jantsje!

Als laatste wil ik mijn ouders bedanken. Hoewel aan mijn CV is af te lezen is dat ik nooit door mijn ouders ben gepusht om als doctor te eindigen, is de manier waarop ik ben opgevoed toch bepalend geweest voor dit hele traject. De stimulans om op een ontspannen manier met je talenten om te gaan en het basisvertrouwen dat je mag zijn wie je bent, scheppen ruimte en durf om een uitdaging als het schrijven van een proefschrift aan te gaan.

Curriculum Vitae

- 15 October 1974 Born in Elspeet, the Netherlands
- 1986 – 1990 MAVO, Chr. Scholengemeenschap Juliana, Uddel.
- 1990 – 1992 HAVO, Chr. College Nassau Veluwe, Harderwijk.
- 1992 – 1996 HBO-Verpleegkunde, Chr. Hogeschool Ede.
Thesis on the planning of patients in home health care.
- 1996 – 1998 MA. Health Sciences, specialization in Health Education and Promotion. Maastricht University. Thesis: Womens' needs for patient education for reproductive health, Harare, Zimbabwe.
- 1999 – 2001 Assistant at the Monitoring and Evaluation Service, The Leprosy Mission International, Apeldoorn.
- 2001 – 2004 Health education officer for The Leprosy Mission International in the province of South Kalimantan, Indonesia.
- 2004 Summercourse Intervention Mapping; Designing Theory-based and Evidence-based Interventions, Maastricht University.
- 2005 – 2006 Employee of the Unit of Safety Monitoring of the National Vaccination Programme, Centre for Infectious Diseases Epidemiology, RIVM, Bilthoven.
- 2006 – 2008 Msc. Public Health, NIHES (Netherlands Institute for Health Sciences), Rotterdam.
- 2006 – 2011 PhD student for CEPHIR, Centre for Effective Public Health in the larger Rotterdam area. Academic collaboration between the Department of Public Health, Erasmus MC and Municipal Public Health Service GGD Rotterdam-Rijnmond, Rotterdam.
- 2011 – current Project consultant at Diabetesvereniging Nederland, Leusden/Amersfoort.

Ytje is married to Sander Kole, and mother of Jantsje.



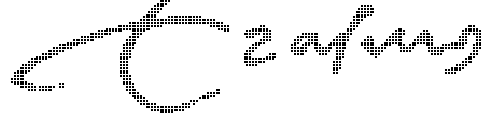
PhD Portfolio Summary

Summary of PhD training and teaching activities

Name PhD student: Ytje van der Veen
Erasmus MC Department: Public health

PhD period : 2006 - 2011
Promotor: Prof.dr. J.P. Mackenbach
Promotor: Prof.dr. J.H. Richardus

1. PhD training	Year	Workload (Hours/ECTS)
Research skills and in-depth courses		
Master in Public Health (Nihes)	2007-2009	27 ECTS
Biomedical English Writing and Communication, Erasmus MC Rotterdam.	2009	4 ECTS
Presentations		
CEPHIR seminar Infectious Diseases control, Rotterdam, September 10; oral presentation 'Cultural tailoring for the promotion of Hepatitis B screening in Turkish Dutch'.	2007	0.5 ECTS
World Hepatitis Day, Bilthoven, May 19; oral presentation 'Hepatitis B preventie in de Turkse gemeenschap'.	2008	0.5 ECTS
MPHS GGD Rotterdam-Rijnmond, Division of Infectious Diseases, Rotterdam, July 10; oral presentation 'Hepatitis B preventie in de Turkse gemeenschap'.	2008	0.5 ECTS
Refresher course for professionals Penitentiary Services, Utrecht, October 8; oral presentation 'Hepatitis B preventie in de Turkse gemeenschap'.	2008	0.5 ECTS
Erasmus MC, Dept. of Public Health, section Determinants of Health Behaviour, Rotterdam, December 6; oral presentation 'Promoting Hepatitis B screening in Turkish Dutch'.	2008	0.5 ECTS
Nationaal Congres Volksgezondheid, Rotterdam, April 9; oral presentation 'Bevorderen van Hepatitis B screening in de Turkse gemeenschap'.	2009	0.5 ECTS
MPHS GGD Rotterdam-Rijnmond, Infectious Diseases (staff meeting), Rotterdam, November 24; oral presentation by Reinoud Wolter 'Hepatitis B'ye hayir – get tested!'.	2009	0.5 ECTS
Nationale Hepatitis Week 2010, Amersfoort, January 19; oral presentation (presented by JH Richardus) "Bevorderen van Hepatitis B screening in de Turkse gemeenschap"	2010	0.5 ECTS
Expert group HIV HBV, Amsterdam, May 19; oral presentation 'Bevorderen van Hepatitis B screening in de Turkse gemeenschap'.	2010	0.5 ECTS
FEDERA Medisch Wetenschappelijke Dag, Leiden, June 18; oral presentation 'Bevorderen van Hepatitis B screening in de Turkse gemeenschap'.	2010	0.5 ECTS
Nationaal Congres Volksgezondheid, Amsterdam, April 6; oral presentation.	2011	0.5 ECTS



1. PhD training (vervolg)	Year	Workload (Hours/ECTS)
Werkgroep Epidemiologisch Onderzoek Nederland, IJmuiden, June 9; oral presentation.	2011	0.5 ECTS
MPHS GGD Rotterdam-Rijnmond, Division of Infectious Diseases, Rotterdam, June 14; oral presentation.	2011	0.5 ECTS
MPHS GGD Rotterdam-Rijnmond, GGD 2.0 (expert group Internet use in Public Health), Rotterdam, June 21; oral presentation.	2011	0.5 ECTS
International conferences		
International Conference on Urban Health, Vancouver, October 30; oral presentation "Promotion of Hepatitis B screening in the Turkish population, the Netherlands.	2008	0.5 ECTS
European Association for the Study of the Liver, Berlin, March 30; poster presentation (presented by G. Boland) 'Cultural tailoring for the Promotion of Hepatitis B screening in Turkish Dutch; a randomized controlled trial'.	2011	0.5 ECTS
Seminars and workshops		
4 ^e Conference on Ethnic minorities 'Fighting STI and HIV in the Netherlands', Amsterdam, SOAIDS/Pharos.	2009	0.25 ECTS
Symposium 'Focus op cultuur in gezondheidsbevorderende interventies: PEN-3 een model om culturele sensitiviteit te bevorderen', Amsterdam (VU).	2010	0.25 ECTS
Training Social Marketing (3 day course), Rotterdam.	2010	1 ECTS
Nationale Hepatitis Week 2011, Amersfoort, May 26; workshop presenter 'Bevorderen van Hepatitis B screening in the Turkse gemeenschap'.	2011	1 ECTS
2. Teaching activities		
Lecturing		
Supervising practicals and excursions		
Curriculum Medical students, 4 th year, Erasmus MC Rotterdam; supervising students in writing a paper on Public Health aspects as part of Theme 4.2 'De populatie als patiënt'.	2007	20 hours
Supervising the coördination of the STOLA tropical course, STOLA foundation, Rotterdam, the Netherlands.	2007	40 hours
Supervising essays of STOLA tropical course, STOLA foundation, Rotterdam, the Netherlands.	2007	80 hours
Supervising Master's theses		
MSc-internship and theses student VU University Amsterdam	2009	50 hours





