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CHECK'D?! : determinants of participation in a two-stage cardiometabolic screening among underserved groups

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General discussion

GENERAL DISCUSSION

Underserved groups have a poorer (quality-adjusted) life expectancy and an increased risk of cardiometabolic disease. These are the same groups shown to be least likely to attend health checks. This differential uptake of health checks may lead to suboptimal health gains from cardiometabolic screening and contributes to the widening of health inequalities in society. Increasing participation in a health check by improving informed decision-making among these underserved groups is eminent. The aim of this dissertation was, therefore, to obtain insight into the (psychosocial) determinants of participation of underserved groups in both stages of the Dutch cardiometabolic health check (Prevention consultation, module cardiometabolic risk) as well as into the actual response and participation rates in the two stages.

MAIN FINDINGS OF THIS THESIS

During focus group discussions with vulnerable groups (**chapter 2**), potential reasons for not completing the health risk assessment (HRA) were mainly cognitive: (flawed) risk perceptions, health negligence, (health) illiteracy, and language barriers. A face-to-face invitation from a reliable source and a community outreach to raise awareness were perceived as factors facilitating participation. Reasons for not attending the practice consultations (PC) overlapped, but were also more affective: risk denial, fear about the outcome, its potential consequences (lifestyle changes and medication prescription), and disease-related stigma.

The actual response rate among vulnerable groups to an invitation for a cardiometabolic health check was 70% (n=1152), of whom 62% (n=712) completed the HRA (**chapter 3**). Of these 712 HRA participants, 29% (n=207) were considered high-risk, of whom 59% (n=123) attended the PC.

The HRA participation rate was lowest among patients from GP practices with a predominantly non-Western patient population (**chapter 4**). The HRA participation rate was primarily accomplished through the postal and telephone invitations, while the added

value of a face-to-face invitation by the GP was negligible (**chapter 3**). Reasons for completing the HRA were: wanting to know one's risk, not remembering receiving the postal invitation (thus requiring a phone call, after which they participated), paradoxically: fear of the test result and/or need for adjustment of lifestyle, perceived control of staying healthy, and wanting to participate (**chapter 4**).

The PC participation rate was lowest among native Dutch with a low SES (**chapter 5**). HRA risk parameters did not differ between PC attenders and non-attenders. Reasons for PC attendance were: trust in getting the guidance needed in case of an increased risk, experiencing health complaints, having others finding it important for them to participate, feeling obliged to attend. Many participants found it unclear whose responsibility it was to make an appointment for the PC.

The GP records of the PC attenders were incomplete: in only 3% (n=4) of the cases the GP had verified all HRA parameters, which were indeed all above the cut-off (**chapter 6**). For 44% (n=66) of the cases we could calculate the cardiovascular risk, which indicated a (slightly) increased risk for 39% (n=26) of the PC attenders. The GPs prescribed medication to 20% (n=29) of the PC attenders, 36% (n=53) received lifestyle advice, and 69% (n=44) of the smokers received a quit smoking advice.

REFLECTION ON MAIN FINDINGS

Reach

With this study, we have managed to reach 70% of our target population whom we provided the opportunity to make an informed decision about participation in a cardiometabolic health check. Still, this means that we did not manage to reach 30% of our target population. From chapter 3 and 4 we know that reach and HRA participation rates were lowest among those from GP practices with a predominantly non-Western patient population, specifically Turkish and Moroccans. These practices were situated in neighbourhoods with stronger non-Western communities, with generally lower acculturation rates. It has been reported that less acculturated minorities more often feel that the doctor, God, or a higher power could help prevent disease, rather than they themselves (external locus of control) (1). A perceived lack

of control was indeed seen more often among HRA non-completers than among completers (chapter 4). Additionally, Turkish and Moroccan immigrants have been found to be less acculturated than Surinamese immigrants, and less often participate in Dutch society (2). These observations give rise to the hypothesis that it may be the least acculturated immigrants, with an external locus of control, whom we have not reached despite our extra efforts.

HRA participation

The response rate to the invitation for our cardiometabolic health check was 70% (n=1152), of whom 62% (n=712) completed the HRA. Thus, the HRA participation rate in the overall study population (n=1690) was 42%. This was lower compared to what was found in other studies in the Netherlands (3-5). Those studies found completion rates of 75%, 69%, and 55% respectively. This is most likely explained by the lower percentage of underserved populations in those studies, and their use of an additional online HRA. In those studies, the HRA score was not calculated by patients themselves, as it was in our study. A pilot study of the Dutch cardiometabolic health check in which, identical to our study, participants had to calculate their own risk score, found a lower HRA participation rate than we did, namely 33% (6). This gives rise to the idea that finding out the HRA result from the GP may have worked as an 'incentive' to return the HRA.

PC participation

Of the 207 participants who were considered high-risk according to the HRA, 59% (n=123) attended the PC. This PC participation rate was lower than what was found in other studies in the Netherlands (3-5). Those studies found attendance rates of 72%, 69%, and 73% respectively. The pilot study of the Dutch cardiometabolic health check found a lower PC participation rate, namely 36% (6). In the previous paragraph we suggested the hypothesis that finding out an indication of the personal risk seems to be an incentive for returning the HRA. Our PC participation results may imply the same: not providing an indication of the personal risk will result in the incentive of finding out the test result when attending the PC, thus, increasing PC participation rates. Additionally, participants may not have been aware of their responsibility for making the appointment for the PC themselves. From the interviews in chapter 5 we learned that in a large proportion of the cases the non-attenders were not

unwilling to attend but had simply not understood that they had a high-risk or that it was their responsibility to make the appointment for the PC.

Our PC participation rate was higher than what was found in studies on the British NHS health check in deprived, culturally diverse settings (7, 8). It should be noted, however, that of their patients, only high-risk individuals (based on already known data) were invited. Our patients were risk-stratified afterwards, based on their HRA. Patients who were faced with their calculated high-risk score were possibly more inclined to attend the PC. Additionally, these patients may have been more motivated to participate in stage two (the PC) as they had already decided to participate in stage one (the HRA).

Method of invitation

Based on findings from our qualitative research (**chapter 2**) and from the literature we had expected the face-to-face invitation strategy by the GP to be most successful (9). The literature suggests that, if used as a separate strategy, face-to-face invitation methods are more effective in reaching underserved groups. We found that, if used as an additional step in a multi-step strategy, the added value of the face-to-face invitation was negligible. Given the related labour-intensity and costs, a multi-step approach combining mailed materials and telephone approaches seems most recommendable. Suggestions to increase the effectiveness of this multi-step approach will be discussed later in the Implications section.

Reasons for (not) participating in the health check

An important aspect of non-participation was flawed risk perceptions. Both in our qualitative study and in our subsequent intervention study we found that a lack of personal relevance in participating in the health check was due to the individual not experiencing any health complaints. One possible solution for this problem is to raise public awareness about the often asymptomatic nature of cardiometabolic disease (10). Another, probably more effective, way to increase personal relevance is to individually tailor the invitation for the health check to important risk factors from the individual's already known cardiometabolic risk profile (age, smoking status, BMI, etc.) (11).

From our focus group discussions and the literature we knew that many individuals would fear the outcome of a health check and would not want to know their risk (12, 13).

Interestingly, we saw in chapter 3 that reported fear of the test result was not consistent when asked in a different manner. When asked for the most important barrier in an open-answer

fashion, the participants reported fear of the test result. However, when asked in a multiple-choice manner many respondents turned out not to be scared of the test result. Consequently, this barrier may have been a potential barrier imagined to be applicable to others in the same situation, not to the person self. On the other hand, these individuals may have participated despite of their anxiety so that in case of a high-risk test result, they would at least know that they would experience the benefits of early diagnosis (14, 15). Indeed, a large majority of the participants expressed their most important facilitator to be obtaining insight into risks. Our findings suggest that beside the internal motivation of wanting to know one's risk, external motivations play an important role as well. A well-known example of this is having significant others, such as family members, finding it important for them to participate, described in chapter 2 and 5, as well as in the literature (16-18). A different and contrasting aspect of these social influences is the fear of gossip and social stigma surrounding medical affairs, such as screening. Relatively new is the phenomenon of a personal feeling of obligation, which is not well-described in the literature. In chapter 2 we found that mainly the native Dutch had an aversion of feeling forced to participate, whereas in chapter 5 we found that mainly the Turkish felt obliged to participate. In a Dutch study on hepatitis B screening, this phenomenon was explained by a feeling of obligation to act upon the invitation from a medical organisation, and a Muslim's duty to take care of one's body (19). Participants in our study indicated that making the screening obligatory would not only increase participation rates, it would also reduce the gossip associated with the taboo surrounding the screening.

Increasing the yield of the PC

In chapter 6 we found that the GP records of the PC attenders were very incomplete. For these kinds of prevention programs to work, follow-up of those at risk is crucial. Not surprisingly, the classic cardiovascular and diabetes parameters for which specific care is reimbursed in the Netherlands were much better recorded. The number of cases in which nutrition or physical activity advice was provided substantially fell behind the quit-smoking advices. In the UK, all types of lifestyle advice is better registered in the GP records than in every other European country, likely because GPs are financially rewarded for this in their Quality and Outcomes Framework (20). This framework has, however, been cause of much debate recently. Although it has reduced socioeconomic inequalities in the delivery of care, it is also related to problems: larger practices getting systematically higher payments than smaller practices for the same level of quality; problems with defining the codes so that people with less specific

codes vanished from the registers and subsequently receiving worse care; and a high administrative burden (21). Two advisors of the Quality and Outcomes Framework state that it was not a magic bullet to improve quality and reduce variation, but that quality and safety improvement require multiple strategies (combining persuasion, collaboration, and close alignment of professionals and managers, with the more technical elements of a quality improvement initiative), sustained over time (21). Other European countries, like the Netherlands, should look at what worked in this Framework and adopt these factors to improve the quantity and the quality of GP record registrations.

IMPLICATIONS

In 2015, the Prevention consultation blended into the new “Persoonlijke Gezondheidscheck” (Personal Health check). The Personal Health check also incorporated tools such as the COPD risk assessment and “PreventieKompas” [Prevention Compass]. The latter is an online tool providing employees the opportunity to identify lifestyle, psychological, physical, and family aspects increasing the risk of illness, with the aim to decrease or prevent occupational absenteeism and incapacity. Questionnaires and (optional) supplementary physical examinations and/or lab tests define one’s (online) health report (figure 1). The health report presents modifiable health factors and modifiable disease processes. An individual can click on each of the modifiable health factors and disease processes and receive information about one’s status with regard to that factor. Along with this information one receives practical advice as well as referrals to facilities in the community for follow-up examinations or interventions. In line with its predecessor (the Prevention Consultation), the Personal Health check also offers evidence based risk assessments and interventions only, thereby providing a scientifically sound response to the fragmented supply of (sometimes unreliable) health checks. The Personal Health check is available as an online tool online, and is provided by an individual’s GP, employer, or municipality. An individual can also take the initiative to visit the website and complete some (basic) modules him- or herself.



Figure 1. Health report of the Personal Health check

[Beïnvloedbare gezondheidsfactoren] Modifiable health factors: physical activity; smoking; nutrition; motivation for a healthy lifestyle; weight and waist circumference; blood pressure; cholesterol; alcohol; resilience; glucose; physical occupational balance; and occupation capacity.

[Beïnvloedbare ziekteprocessen] Modifiable disease processes: heart and vascular system; kidneys, lungs, psyche; and mental occupational balance.

Below, we will describe what has changed since the Prevention consultation became part of the Personal Health check, and what the implications of our findings are for the deployment of cardiometabolic screening initiatives such as the Personal Health check. Also, we will discuss the implications of our findings for future research. And finally, we will summarize what the implications of our findings for prevention among underserved groups in general are.

Implications for screening among underserved groups

Method of invitation

The 70% reach of our target population was most likely attributable to the low-cost (culturally) adapted and personalized postal invitation strategy with follow-up telephone call. The postal invitation strategy was the standard method of invitation at the time. We found that the follow-up telephone call increased the number of people making a decision about

participation. This is in line with a Danish study among non-participants in cardiovascular screening, in which 40% changed their initial decision after receiving additional information about risks and screening (22). The Personal Health Check, relies solely on an online method. This does not seem to fit the underserved groups as good as it fits non-immigrants and those with a higher SES. In a decade's time, the use of e-health services overall has increased: access to the internet increased, as well as the number of people who used an e-health service (23). However, immigrants and those living in low SES neighbourhoods are still less likely to use e-health services. What is worse, disparities by ethnicity and SES seem to widen over time (23). Focusing solely on online methods, therefore, will rather increase health inequalities than reduce them.

Invitation strategies for screening initiatives have relied to a large extent on traditional methods: postal, telephone, face-to-face, online, etc. We believe, however, that reach can be increased, especially among underserved groups, by expanding these basic strategies with a more comprehensive community approach (24-26). This approach can include, and may not be limited to: mouth-to-mouth publicity from key figures, and family and friends advising to participate or participating themselves; community workers explaining what to expect from the health check and the potential benefits; health check participation in a well-known location within the community, preferably with (supported) internet access provided, leading to more flexible drop-in, a more informal location and staff, and more opportunities to receive, understand, and ask questions about (the results of) the health check; involving family and friends in the patient's lifestyle advice and/or treatment to increase acceptance and diminish the stigma associated with 'being different' (ill or high-risk); key figures within the community, such as an Imam, helping to eliminate some of the taboo as well during their sermons (24-26).

Setting

The Prevention Consultation was especially embedded in primary care, whereas the Personal Health check is also embedded in settings outside primary care, such as the occupational environment and the home environment (in case health insurance companies or municipalities provide this service). Also for the Personal Health check high-risk patients will remain visiting their GP for a practice consultation. The reason for a focus on recruitment outside primary care is that structural financing remains a problem in the primary care setting. One of the main reasons is the current lack of evidence concerning the cost-effectiveness of the Prevention Consultation. However, the social business case, based on the Social Return On

Investment method, has shown to be positive (27). Every euro invested the Prevention Consultation yields €2,38 in social value (such as prolonged occupational participation and reduced burden of disease). Unfortunately, the costs and benefits are not equally distributed among stakeholders (figure 2): primary healthcare professionals invest more money than they get in return. Therefore, the healthcare insurance companies have been approached to embrace the Personal Health check, because a large proportion of the benefits are theirs. Some health insurance companies now offer their clients the opportunity to participate in the Personal Health check with supplementary insurance arrangements. We believe that this will less often benefit the underserved groups, as people with a lower income (usually those with a lower SES) less often choose for a supplementary insurance policy (28). Also, certain employers now offer their employees a voucher for the Personal Health check. Unfortunately, people with a low and middle educational level, usually those with a lower SES, are twice as often unemployed as people with a high educational level (29). Non-Western immigrants are even three times as often unemployed as native Dutch (29). Finally, municipalities have been approached to play a role in the implementation of the Personal Health Check. It is at this time unclear whether municipalities will put extra efforts in underserved groups. If they will, this provides excellent opportunities. Municipalities are well aware of their most deprived neighbourhoods and can target these communities specifically. The social business case also calculated the cost/benefit ratio of a combined primary care/municipal health service effort (27). In that scenario, the municipal health service would take care of the guidance towards the first stage (HRA) of the Prevention Consultation; primary care professionals would take care of the second stage (PC). The social business case of this scenario remained negative: GP practices would still have to invest more than they would receive in return. However, our studies add certain elements that may turn this business case positive (thus, the (social) yield is larger than the money invested), at least when deployed to reach underserved groups. First, the municipal health services are well suited to provide the community outreach described above. Secondly, the trusting relationship with the GP as authority to provide screening such as this (24, 30). Finally, structural reimbursement for the implementation of the Personal Health Check is likely to increase the number of participating GP practices, which in turn will decrease the overall costs (27).

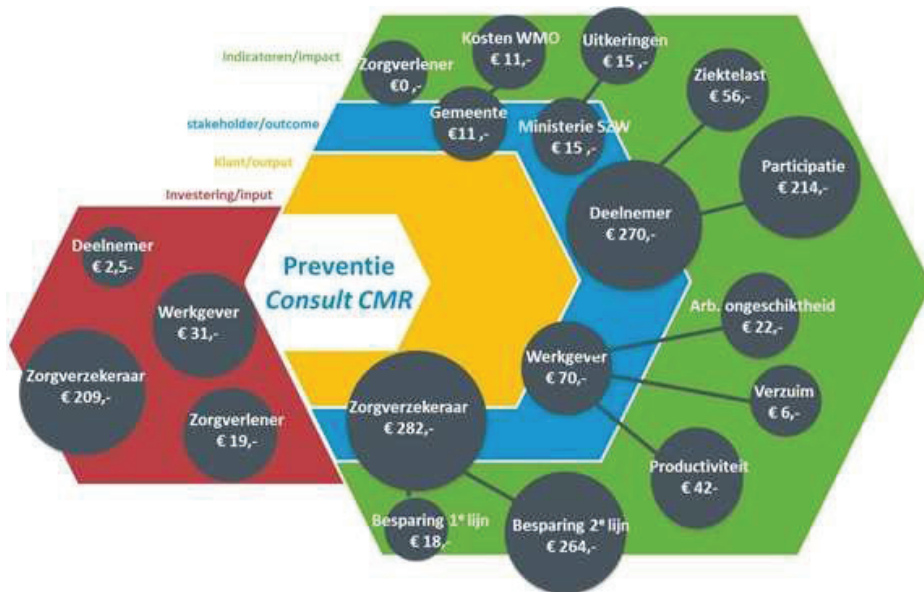


Figure 2. Social Return On Investment (SROI) overview of social and economic costs and benefits of the Prevention Consultation

[Investering/input] Investment/input from health insurance company (€209,-), employer (€31,-), healthcare professional (€19,-), and participant (€2,5).

[Klant/output] Customer/output, the Prevention Consultation.

[Stakeholder/outcome] Stakeholder/outcome, health insurance company (€282,-), participant (€270,-), employer (€70,-), Ministry of Social Affairs (€15,-), and municipality (€11,-).

[Indicatoren/impact] Indicators/impact in the form of savings in hospital care (€264,-), participation (€214,-), burden of disease (€56,-), productivity (€42,-), occupational incapacity (€22,-), savings in primary care (€18,-), savings in social benefits (€15,-), savings in costs from the Social Support Act (€11,-), and absenteeism (€6,-).

Appointment for the PC

We found (in chapter 3) that almost 60% of those with an increased risk according to the HRA attended the PC. This means that about 40% of those who are advised to attend the PC did not do this. As we described above, this may in part have been the lack of ‘incentive’ of finding out the test result from the GP, and in part the unawareness of the own responsibility of making an appointment for the PC. A prerequisite of cost-effectiveness of the cardiometabolic health check is PC attendance of as many high-risk participants as possible: lifestyle changes and risk reductions purely based on a high-risk HRA result are highly unlikely. Under the heading Implications for future research hereunder, the issues with regard to the (lack of) evidence regarding cost-effectiveness are further described. Shifting the responsibility of making the appointment for the PC towards the GP, and disclosing the HRA result in the ensuing consultation seem promising in optimizing health gains from screening.

Naturally, the practical implications regarding, for example, privacy and technical aspects of such a measure need to be carefully sorted out first.

Implications for future research

Hardest-to-reach

As we described above, our observations give rise to the hypothesis that it may be the least acculturated immigrants, with an external locus of control, whom we have not reached despite our extra efforts. It would be an interesting challenge to investigate whether the least acculturated groups in the Netherlands are indeed the ‘hardest-to-reach’ among the underserved groups. Non-response research is difficult, and it may be virtually impossible to ever reach everyone within a certain population. An important question to ask is, therefore, how much extra effort do we want to invest in these groups who really are the hardest-to-reach among the underserved groups? What is the cut-off for accepting which proportion of the Dutch population will never be reached? Setting a clear cut-off for reach may be undesirable, however, striving for engaging in a dialogue with every individual in a study (or other project) population seems plausible. Less acculturated immigrants have been shown to have a higher perceived susceptibility to disease (1). Perceived susceptibility has been correlated with taking preventive action. This may provide a unique opportunity for healthcare professionals to start the dialogue, and provide the individual with the correct information about the modifiability of cardiometabolic risk factors. The concept of (culturally) tailoring would be interesting to further study in this context. The two most important elements of tailoring are: 1) it is directed toward individuals, not groups (which is called ‘targeting’ in that case); and 2) it is based on known (i.e. measured) differences that exist between individuals (31). Although culture is a shared group characteristic, individuals can have varying levels of certain cultural beliefs. Tailoring a health-related message may, thus, also be based on relevant cultural elements that are more compelling to some than others. The findings of our studies may be used to further investigate the effect of the cultural tailoring we used to promote informed decision-making among underserved groups to participate in a cardiometabolic health check. For this, the ‘black box’ of tailoring needs to be systematically unravelled and incorporated in the design of a future study. A useful framework would be that of Hawkins *et al* who propose a 2 x 3 matrix of two classes of goals and three strategies of tailoring in which some strategies match better to some goals than to others (32). The two classes of goals comprise: 1) enhancing cognitive preconditions for

message processing; and 2) enhancing message impact through modifying behavioural determinants of goal outcomes. The three tailoring strategies comprise: 1) personalization to increase attention or motivation to process messages by conveying, explicitly or implicitly, that the communication is designed specifically for 'you'; 2) feedback to present individuals with information about themselves, obtained during assessment or elsewhere; and 3) content matching to direct messages to individuals' status on key theoretical determinants (knowledge, outcome expectations, normative beliefs, efficacy, and/or skills) of the behaviour of interest.

Risk perceptions

We saw in our studies that many (flawed) risk perceptions are present among underserved groups, one of the most prominent being that individuals feel healthy because of the often asymptomatic nature of cardiometabolic disease and, thus, are less motivated to take action. Besides tailoring risk information to the individual, it has been justly pointed out in the literature that risk factor control is a multidimensional challenge of which patient motivation is only one element (33). It requires knowledge of the disease and its precursors and is strongly influenced by the environment in which patients live. Promising results have been shown to increase an individual's adherence to preventive cardiovascular (drug) therapies when coronary artery calcium imaging was used in addition to risk stratification (34, 35). Cost-effectiveness of this approach has not been established but it may also provide an interesting lead to raise public awareness. Strategies from cancer awareness campaigns may provide an interesting basis. For example, the international body of literature supports pictorial cigarette pack warnings as much more effective than text-only warnings (36). A similar approach to visualize asymptomatic cardiometabolic risk to raise public awareness may warrant future research.

Cost effectiveness

One of the most important questions to ask, however, is whether screening - and more specifically two-stage screening - is (cost-)effective for underserved groups. Although the components of the Dutch cardiometabolic health check are evidence-based and validated, its overall cost-effectiveness is still under study (37). As a result, there has been much debate about whether to screen for cardiometabolic disease and, if so, what approach works best. Those who support (two-stage) cardiometabolic screening argue that, although the cost-effectiveness of the Dutch cardiometabolic health check has not been shown, there is

sufficient international literature indicating the cost-effectiveness of a two-stage screening. For example, Khunti *et al* state that a risk stratification tool followed by a screening blood test is the most cost-effective method of screening for diabetes and abnormal glucose tolerance (38). Also, Pandya *et al* state that non-laboratory based cardiovascular risk assessment can be useful as the initial component of a multistage screening approach in primary cardiovascular disease prevention, potentially avoiding 25-75% of laboratory testing (39). A risk stratification tool as a first step is simple, fast, inexpensive, non-invasive, and reliable (40, 41). Additionally, pilot studies using a two-stage screening approach report satisfactory response and yield (3, 4, 42, 43).

Those who do not support (two-stage) cardiometabolic screening argue that the questionnaire as first risk stratification tool is an obstacle for patients and that a higher response rate can be obtained when individuals are invited for a consultation directly (44). They also argue that the current lack of insurance compensation for costs made (such as the €10,- start-up costs of the Personal Health Check, and the costs of the additional laboratory tests) disadvantage the underserved groups unequally. Non-Caucasians and people with a low SES are less future-oriented, which affects their health and disease management in various ways, for example, by feeling less susceptible to the consequences of disease (45, 46). If that is the case, then why pay costs for a situation (unknown disease) perceived to be unlikely? Health behaviour competes for people's time and energy (and money!) against other activities. Taken into account their increased disease and mortality risks and their decreased investment in health behaviour, the final inequality in health outcomes is greater than the initial inequality in socioeconomic conditions (47). Then, there is the argument that risk scores are too much driven by age: those younger than 45 years hardly ever have increased risk, while those older than 60 almost always have. Population risk rates are translated into personal risks leading to medicalization of a group of people who are not (yet) ill. This absolute risk approach is said to lead to overdiagnosis and overtreatment of the elderly at the expense of younger people (48, 49). Focus should therefore not be on risk stratification tools, but on modifiable risk factors of all individuals, young and old. Lastly, a systematic review did not show that health checks reduce morbidity or mortality, neither overall nor for cardiovascular causes, although they increased the number of new diagnoses (50). However, a couple of remarks to these findings should be made. First, changes in risk factors or delivery of preventive services were not investigated. Second, most of the included trials were from years ago and consequently diagnosis and treatment differed from what would be used today. Third, as many physicians already screen for cardiovascular risk factors in patients whom they judge to be at risk during

a consultation for an unrelated issue, many people at high-risk may have already been identified. This dilutes the potential benefits from systematic screening. Finally, individuals participating in an health check more often have a higher socioeconomic status, a Western origin, lower cardiovascular risk, less cardiovascular morbidity, lower mortality, and are more often health-conscious (42, 50-52).

Thus, the high-risk two-stage approach to cardiometabolic disease prevention in its current form seems to widen health inequalities and is an example of the “Inverse Care Law”. This Inverse Care Law states that *the availability of good medical care tends to vary inversely with the need for it in the population served. Those in the poorest health gain the lowest net health benefits from intervention. This disadvantage can occur at every stage in the process, from the person’s beliefs about health and disease, and actual health behaviour, to presentation, screening, risk assessment, negotiation, participation, program persistence, to treatment adherence* (53). Consequently, focus should be on underserved groups.

The cost-effectiveness of the high-risk two-stage approach specifically targeting underserved groups is currently under study, both in the Netherlands as elsewhere (37, 53).

Implications for prevention in the future

In the previous paragraph we argued that cardiometabolic screening should be more directed at underserved groups. However, we believe that this is not enough to tackle the health gap. A coordinated approach combining cardiometabolic screening targeting underserved groups with population-based prevention approaches may be most effective in tackling the ever-growing health gap between groups in a society. Is the time right for such a combined approach?

The Government’s focus on own responsibility

As we described above, the current political environment in the Netherlands has a focus on curative (not preventive) healthcare, and relies to a large extent on a person’s own responsibility (an ‘active patient’ or ‘active civilian’). Policy documents contain terms such as “the patient as partner”, “self-management”, and “autonomous control”. In 2011, a new definition of health was developed by Huber *et al.*: *The ability to adapt and self-manage in the face of social, physical, and emotional challenges of life* (54). This definition fits the current opinion that people should and are capable of playing an active role regarding their

health. In 2006, the idea of active patients taking their own responsibility received another boost by the introduction of the Healthcare Law ('Zorgverzekeringswet') and the Healthcare Market Law ('Wet Marktordening Gezondheidszorg'): individuals were all of a sudden customers or clients in the competitive healthcare market. The idea was that when people chose their insurance company they would consciously look at the quality of the healthcare purchased by insurers. However, each year only a limited number of people actually change insurance companies and if they do so, financial considerations play the most important role (55). Also, even though the government is capable of coercive measures against unhealthy behaviour, such as fines and taxes, these measures are not broadly implemented because they would go against the right of self-determination. Finally, an unhealthy lifestyle is a substantial source of tax revenues for the government, for example, from cigarettes and alcohol. This deliberate lack of focus on preventive measures is clearly demonstrated by the healthcare expenditures. In 2011, slightly more than 89 billion euros was spent on healthcare, of which only a fraction was spent on prevention in healthcare: namely a little over 2,5 billion euros (3%) (56). And this number is falling: in 2007 some 13 billion euros was spent on prevention, of which 3 billion euros was spent within healthcare (57). And this was even a 2% decline since 2003. The majority of the prevention expenditures (10 billion euros) is, thus, spent outside healthcare, for example, on air pollution control and promoting road safety. Healthcare prevention expenditures (3 billion euros) were largely (83%) spent on illness prevention (vaccination, screening, and preventive medication), whereas health promotion measures such as lifestyle education received only 17%.

Health literacy as an essential prerequisite for own responsibility

Unfortunately, not everyone is equally capable of taking their own responsibility for a healthy life(style). The World Health Organization considers health literacy to be a fundamental predictor of health inequalities (58). Definitions of health literacy vary, from basic reading and language skills (literacy) to a more complex conglomeration of literacy levels, psychological, and social skills. Almost half of the Dutch individuals finds it (very) difficult to play an active role in managing their health and illness, especially those with a lower education (59-61). Efforts should be put into increasing health literacy levels of those with low health literacy levels to enable them to take responsibility for managing their health and disease. At the same time, the government should invest in population-based prevention, as this type of prevention reaches a diverse population through a variety of routes that extend beyond clinics and traditional health services (62). Additionally, cost-effectiveness of

population-based prevention is generally higher when the prevalence of a condition is high (which is the case for cardiometabolic disease) (62).

Combined screening and population-based prevention in Europe

A successful example comes from Sweden, where researchers combined population-based health and health sector interventions with systematic cardiovascular risk factor screening and counselling specifically aiming to evaluate the health gap between social groups (63). The researchers created local health promotion collaborations between healthcare providers, grocery stores, schools, and municipal authorities. The predicted cardiovascular mortality risk was reduced by 36% in the intervention area compared to 1% in a control community. What is more, socioeconomically less privileged groups benefited most from the program.

Also, policy advisors share the opinion of a coordinated prevention approach. In the words of Prof. Em. Vanholder, chair of the European Kidney Health Alliance: *Increasing screening of the at-risk population, promoting healthy diets and lifestyle modifications, working with industry to develop healthier food products and easier to understand food labelling, and starting early in schools to improve health literacy amongst the European population would have significant impacts in terms of public health and lead to a sustainable reduction of the prevalence of chronic diseases in Europe* (64).

Opportunities for population-based prevention in the Netherlands

As a reaction to the letter written by the Minister and State Secretary for the Ministry of Health, Wellbeing, and Sports regarding their solutions to problems with prevention in the current healthcare system, the Director of the Dutch journal 'De Eerstelijns' ['The Primary care'] published some additional sustainable solutions to problems with putting prevention into practice (65):

- The government finances population-based prevention from tax revenues and the implementation is delegated to the municipalities. This local policy is monitored, publicly disclosed, and municipalities are redirected where necessary. Practice- and evidence-based e-tools are made freely available by the government through internet and applications.
- Health insurance companies finance individual prevention through a remittance to a prevention fund, which generates structural revenues. This fund is available to all insured and all citizens of a municipality, and is deployed locally in a non-competitive manner by the insurance companies in consultation with the municipalities.

- Individuals finance prevention themselves. By tax exemptions desired behaviour is encouraged and undesirable behaviour is discouraged.

These solutions demand major transformations within the current healthcare system, and require stamina of the government. However, with the ever-growing gap in (quality-adjusted) life expectancy between different groups in the Netherlands, drastic measures are called for.

CONCLUSION

Underserved groups have a poorer (health-related) life expectancy, an increased risk of cardiometabolic disease, and are least likely to attend health checks. This differential uptake of health checks leads to suboptimal health gains from cardiometabolic screening and contributes to the widening of health inequalities in society. Although the cost-effectiveness of the Dutch cardiometabolic health check is still under study, it seems advisable to focus on the underserved groups, as they have the most to gain from systematic screening. Our findings provide strategies to optimize uptake and may be used to design future studies on this topic. To further provide underserved groups the best possible opportunities for a healthy life(style), the Government should invest in population-based prevention and move away from the trend of taking own responsibility.

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