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Opinions on hypertension care and therapy adherence at the healthcare provider and healthcare system level: a qualitative study in the Hague, Netherlands

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ABSTRACT

Objectives Hypertension is a common cause of cardiovascular morbidity and mortality. Although hypertension can be effectively controlled by blood pressure-lowering drugs, uncontrolled blood pressure is common despite use of these medications. One explanation is therapy non-adherence. Therapy non-adherence can be addressed at the individual level, the level of the healthcare provider and at the healthcare system level. Since the latter two levels are often overlooked, we wished to explore facilitators and barriers on each of these levels in relation to hypertension care for people with hypertension, with a specific focus on therapy adherence.

Design Qualitative study using focus groups of healthcare providers. Data were analysed using the theoretical domains framework (TDF) and the behaviour change wheel.

Setting and participants Participants were from a highly urbanised city environment (the Hague, Netherlands), and included nine primary care physicians, six practice nurses and five secondary care physicians involved in hypertension care.

Results Nine domains on the TDF were found to be relevant at the healthcare provider level ('knowledge', 'physical, cognitive and interpersonal skills', 'memory, attention and decision processes', 'professional, social role and identity', 'optimism', 'beliefs about consequences', 'intention', 'emotion' and 'social influences') and two domains ('resources' and 'goals') were found to be relevant at the system level. Facilitators for these domains were good interpersonal skills, paying attention to behavioural factors such as medication use, and the belief that treatment improves health outcomes. Barriers were related to time, interdisciplinary collaboration, technical and financial issues, availability of blood pressure devices and education of people with hypertension.

Conclusions This study highlighted a need for better collaboration between primary and secondary care, for more team-based care including pharmacists and social workers, tools to improve interpersonal skills and more time for patient–healthcare provider communication.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ In this study, the theoretical domains framework and the behaviour change wheel facilitated the structured analysis of data.
⇒ By organising focus groups of healthcare providers from different disciplines in primary and secondary care we ensured a broad view of the problem.
⇒ As not all domains were fully addressed during the first focus group sessions, we organised a second round, which may have led to a disproportionate emphasis on certain domains.

INTRODUCTION

About 20%–25% of all adults globally have hypertension, defined as a systolic blood pressure >140 mm Hg and a diastolic blood pressure >90 mm Hg according to NICE guidelines.[1 2] Hypertension is associated with increased risk of cardiovascular complications and early death.[3 4] People with hypertension and type 2 diabetes have an even higher risk of developing cardiovascular complications.[5] A cardiovascular risk reduction of 25%–40% is achievable with blood pressure-lowering drugs,[6] and more than half of people with hypertension are treated with two or more of these drugs. About 75% of this group should be able to achieve adequate blood pressure control, compared with only 40%–60% of people with additional chronic conditions such as type 2 diabetes.[7–9] Adherence to prescribed medication is one of the main determinants of adequate blood pressure control.[10] Resistant hypertension is defined as systolic and diastolic blood pressures that remain above 140 mm Hg and 90 mm Hg, respectively, despite the prescription of three or more blood pressure-lowering drugs,

including a diuretic.[11] However, around 50% of all cases of resistant hypertension can be explained by medication non-adherence.[12 13] A Dutch trial found that 20% of people with resistant hypertension used none of the prescribed medications, 60% used part and only 20% was fully adherent.[14] According to national primary care guidelines, people with resistant hypertension should be referred to secondary care.[15] In general, the percentage of individuals on antihypertensive treatment achieving blood pressure control is low <50%[7 8 16] and around 30%–50% of individuals with hypertension is non-adherent.[17 18]

When hypertension is caused by therapy non-adherence, referral to secondary care may result in overtreatment, with inappropriate prescription of additional blood pressure-lowering drugs and/or unnecessary referral to secondary care. Recognising non-adherence in primary care is therefore of the utmost importance.

Reasons for therapy non-adherence are diverse and arise not only at the individual level, but also at the healthcare provider and the healthcare system levels.[19] On an individual level, studies of non-adherence in people with hypertension found misperceptions concerning the benefit and harm of medical treatment and suboptimal communication between healthcare providers and those with hypertension, with the lack of tailored information seen as the most important factor in non-adherence.[20 21] Furthermore, limited health literacy contributes to a lack of or the inappropriate use of prescribed medications.[22] A variety of additional factors also play a role in non-adherence, such as forgetfulness, schedule conflicts, financial issues and fear of or experience of adverse effects.[23]

To achieve adequate blood pressure control and improve treatment adherence, people's beliefs and perceptions concerning therapy (including adverse effects) and disease should be addressed by the healthcare provider. A study addressing self-reported behaviours of primary care professionals to support patients taking prescribed medications for chronic conditions, reported that healthcare professionals are limited in the extent to which they assist patients with therapy adherence.[24] Another large survey among hypertension healthcare professionals found that tools to detect adherence and improve adherence in patients with hypertension are not frequently used. Most frequently used methods to improve adherence are simplifying treatment schemes, combining medication intake with regular activities, more frequent consultations, use of reminders and home blood pressure monitoring. Barriers for addressing adherence were: identification of non-adherent patients, time of consultation, high workload, lack of continuity of hypertensive care and inadequate resources.[25]

In this study, we wanted to gain more in depth insight in healthcare providers' beliefs regarding current healthcare for people with hypertension or about their beliefs concerning therapy adherence. Our goal was, therefore, to explore facilitators and barriers in healthcare in order to identify determinants, at the level of both the healthcare provider and the healthcare system, which can be modified in order to improve therapy adherence in people with hypertension.

METHODS

Study design

This qualitative study was conducted among healthcare providers, using focus group sessions as our source of information.

Setting and population

Participants were recruited in the Hague, a large city in the Netherlands. To ensure that informants had sufficient practice-based experience with the delivery of hypertension care healthcare providers (general practitioners (GPs), secondary care physicians and practice nurses) in primary and secondary care delivering healthcare for people with hypertension at least 5 years were eligible for study participation. The focus groups took place in either the participant's work environment or a space with no specific meaning to the participants, in order to facilitate participation. Each participant took part in one focus group after they gave informed consent. The focus group session lasted for 1 hour and each participant received a financial reimbursement of 50 euros in the form of a gift card.

Conceptual model

Data from the healthcare provider focus groups were analysed based on the behaviour change wheel (BCW) and the theoretical domains framework (TDF).[26–28] The BCW is a guide for designing behaviour change interventions using a theoretical approach, as it was constructed based on 19 behaviour change frameworks. For this study, we focused on the first four steps of the BCW, which were designed to understand and explore a specific behaviour: (1) Define the problem in behavioural terms, (2) Select the target behaviour, (3) Specify the target behaviour and (4) Identify what needs to change[26] (figure 1A). To identify what needs to change for the target behaviour to occur, we used the TDF. The TDF is a theoretical framework based on behaviour change.[28] It consists of 14 theory-based domains which represent varying determinants for behaviour change such as knowledge, social influences and environmental context and resources. In this study, we defined the problem as: 'An elevated blood pressure despite the use of blood pressure-lowering drugs is often caused by therapy non-adherence. This is not always recognised in primary care, which may cause overtreatment in secondary care'. We defined the target behaviour as: 'Elevated blood pressure due to therapy non-adherence is recognised in primary care and patients are referred when underlying medical problems are present'. In order to identify which determinants are important to achieving the target behaviour, we coded

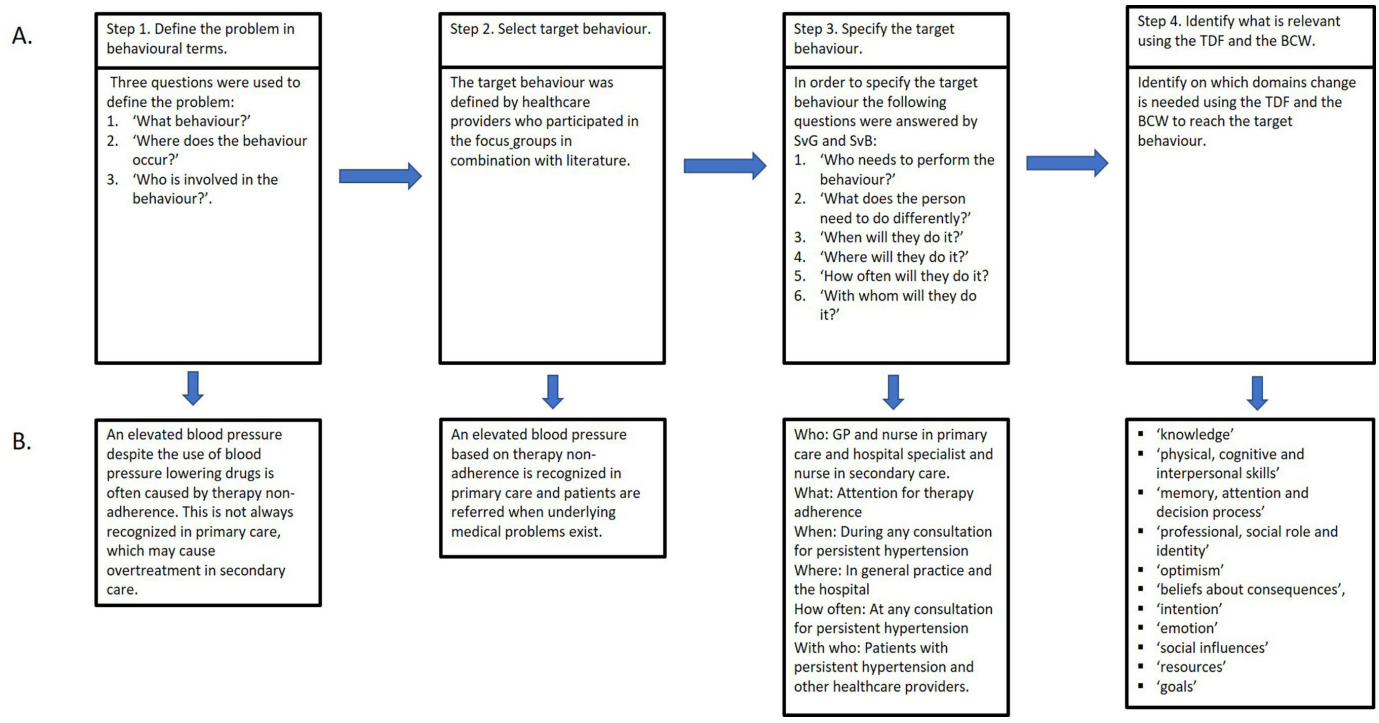

Figure 1 Flow chart conceptual framework (A) step 1–4 of the BCW. (B) Results of step 1–4 of the BCW. BCW, behaviour change wheel; GP, general practitioner; TDF, theoretical domains framework.

facilitators and barriers regarding hypertension care to the different TDF domains.

Data collection

To explore facilitators, barriers and ideals in relation to recognising and improving therapy adherence in current hypertension care, we organised focus groups of healthcare providers from primary and secondary care. Participants were recruited with flyers and in person through the professional networks of Hadoks (cooperative of GPs in the Hague region). To prevent bias caused by hierarchy, focus groups were separately organised by discipline, consisting of 'GPs', ' 'secondary care physicians' and 'nurses from primary and secondary care'. Considering that hierarchy-related barriers[29] are less reported among nurses,[30] we felt no need to separate nurse participants according to their work setting, that is, primary or hospital based care. We organised one multidisciplinary focus group. Since the participants of the multidisciplinary focus group already established a successful collaboration, the risk of hierarchy-related bias in a collective focus group was assessed as minimal. The groups met between September 2019 and September 2020, together with three researchers (SvB, RCV and JM). SvB and JM have a background in psychology, RCV has a background in epidemiology. They had no relationship with participants prior to this study. At the start of the focus group session, participants were asked about their ideals concerning care for people with hypertension. This was followed by discussion of current facilitators and barriers in hypertension care (topic list: see online supplemental appendix 1). Considering that healthcare providers' sex might affect delivery of care[31] and that the uptake of care might be influenced by their patient's socialeconomic characteristics[32] and ethnicity[33] we recruited focus group participants by purposive sampling. We focused on participants' sex, work experience and—regarding patient population—deprivation level and cultural background to obtain maximum variation among participants. Focus groups were organised until data saturation was reached[34] and all focus groups were audio-recorded.

Analysis

Focus group data were analysed and coded to the different domains by JM and SvG separately, using Microsoft Excel (2016). All coding was discussed in an iterative process and if necessary recoded by the two researchers coordinated by a third researcher (SvB) until consensus was reached. First, for each domain we defined what needed to happen for the target behaviour to occur. We then coded facilitators and barriers to the corresponding domains using these definitions. During the analysis, we recognised that not all domains were fully addressed (optimism, beliefs about consequences, goals, social influences and intentions). Therefore, we organised an additional multidisciplinary focus group with a new topic list to further explore these topics. This focus group was analysed in the same manner as the earlier focus groups. Second, we identified whether these domains were important at the healthcare provider or healthcare system level (topic list: see online supplemental appendix 2). The WHO has defined a healthcare system as all organisations, people and actions whose primary intent is to promote, restore or maintain health.[35] When a facilitator or barrier was beyond the

Table 1 Characteristics of healthcare providers. All healthcare providers had >5 years of working experience.

Focusgroup	N	Mean age in years (range)	Mean working experience in years (range)	Sex (% women)	Primary care (n)	Secondary care (n)	Specialty
Practice nurses	6	47.8 (24)	16.8 (19)	100	4	2	N.A.
GPs 1	4	48 (19)	18.3 (20)	50	4	0	N.A.
GPs 2	5	49.2 (10)	18.1 (12.5)	40	5	0	N.A.
Hospital specialists	5	50 (16)	16 (20)	60	0	5	Internal medicine (n=2), cardiologist (n=1), rheumatologist (n=1), pulmonologist (n=1)
Multidisciplinary	6	50.2 (18)	22 (14)	50	3	3	GP (n=2), practice nurse (n=2), internal medicine specialist (n=2)
Total	26	49.1 (24)	18.3 (23)	61.5	16	10	N.A.

GP, general practitioner; N.A., not applicable.

influence of an individual healthcare provider, we coded it on the healthcare system level. Domains were defined as 'relevant' if either facilitators or barriers were mentioned for that domain.

Patient and public involvement

Patients or the public were not actively involved in the development of the research question and study design. The results of the study will be shared with GPs in the Hague so they can be involved in the design of future research.

RESULTS

Saturation was reached after conducting four monodisciplinary focus groups and one multidisciplinary focus group (see table 1).

During the focus groups, 11 of 14 domains of the TDF were identified as relevant to the above mentioned problem that 'an elevated blood pressure despite the use of blood pressure-lowering drugs is often caused by therapy non-adherence, which is not always recognised in primary care and may cause overtreatment in secondary care' (figure 1B). Nine domains were relevant on the healthcare professional level, the remaining two on the healthcare system level (table 2).

Level of healthcare provider

On the healthcare provider level, nine domains emerged as relevant for recognising and improving therapy adherence: 'knowledge', 'physical, cognitive and interpersonal skills', 'memory, attention and decision processes', 'professional, social role and identity', 'optimism', 'beliefs about consequences', 'intention', 'emotion' and 'social influences'. Table 3 provides exemplary quotations for each domain, which are briefly discussed below. For all quotations, see online supplemental table 1.

'Knowledge', 'Physical, cognitive and interpersonal skills' and 'memory, attention and decision processes'

Healthcare providers in both primary and secondary care acknowledged that therapy adherence can be a problem in people with hypertension. One GP argued that medications for symptom-free diseases or risk factors such as hypertension result in lower therapy adherence (Q1). Physical and cognitive skills were not identified as relevant for recognising therapy adherence. However, it was repeatedly mentioned by practice nurses as well as GPs that interpersonal skills that encourage open and honest conversation with a person with hypertension are important when discussing therapy adherence (Q2). Furthermore, participants emphasised the importance of paying sufficient attention during this conversation to behavioural factors such as medication use and lifestyle choices. Other factors that might influence therapy adherence in people with hypertension were mentioned, some of which, such as heavy debt, were not necessarily intuitive. When a patient has debts that require immediate and ongoing attention, this may act as a distraction from correct adherence to a medication regime for blood pressure control. Healthcare providers need to be aware that many factors, such as debt, can influence therapy adherence and pay attention to this (Q3).

'Professional, social role and identity'

Both primary and secondary care providers can assume responsibility for the treatment of hypertension. However, the distribution of tasks between the two disciplines is not always clear. For example, when a person with hypertension is referred back to primary care, secondary care physicians do not always verify that their treatment advice is followed. Similarly, the division of tasks within a general practice between the GP and the practice nurse is sometimes felt to be difficult (Q4). Furthermore, certain social problems that might affect therapy adherence (eg, debts) are the domain of social workers rather the GP or practice

Table 2 Key results per domain

Level of the healthcare provider	
'Knowledge'	Healthcare providers are aware that non-adherence can be a problem in people with hypertension.
'Physical, cognitive and interpersonal skills'	Interpersonal skills to encourage an open and honest conversation about adherence with a person with hypertension are important.
'Memory, attention and decision processes'	Healthcare providers need to pay attention to factors influencing adherence, such as stress, life style factors or financial problems.
'Professional, social role and identity'	Sometimes the division of tasks concerning hypertension healthcare is not clear for healthcare providers.
'Beliefs about consequences'	Healthcare providers believe attention to healthy behaviour factors improves disease outcomes.
'Optimism'	No progress despite a lot of effort is perceived as a barrier.
'Intentions'	Varying involvement of healthcare providers; limited involvement is reflected in less dedicated delivery of care.
'Emotions'	Uncertainty concerning adherence sometimes leads to referral to secondary care.
'Social influences'	Healthcare providers want to learn from each other.
Level of the healthcare system	
'Resources'	Healthcare providers think they have insufficient time for effective conversations with patients.
	Availability of social workers and lifestyle counsellors is helpful in the care for people with hypertension.
	Collaboration with secondary care and pharmacists can be improved.
	At home blood pressure measurement devices facilitate self-management.
'Goals'	Better collaboration between primary and secondary care will improve health of people.

nurses. 'Using your knowledge and skills' as part of the professional role to provide the best care to people with hypertension in light of the problems they face was also mentioned as an important factor (Q5).

'Beliefs about consequences', 'optimism', 'intentions', 'emotions' and 'social influences'

Healthcare providers in primary and secondary care are motivated by the belief that treatment of hypertension reduces the risk of cardiovascular disease (Q6 and Q8). However, they sometimes feel that there is no improvement in blood pressure levels despite their professional efforts and this was seen as a barrier (Q7). GPs reported that they sometimes feel unsure about the underlying causes of hypertension in a patient and therefore refer to secondary care. When medical reasons are excluded, they often feel sufficiently confident to continue treatment in primary care (Q10), and with this in mind, they would like to receive training concerning adherence and hypertension in general and (interdisciplinary) meetings to discuss cases of patients who were difficult to treat (Q11).

Level of the healthcare system

Two domains were found to be relevant at healthcare system level: 'resources' and 'goals'. Table 4 provides exemplary quotations for each domain, which are briefly discussed below. For all quotations, see online supplemental table 2.

'Resources'

Within the resources domain, barriers were related to time, interdisciplinary collaboration, technical and financial issues, availability of blood pressure devices and education of people with hypertension.

Regarding time, practice nurses and GPs mentioned that they generally have insufficient time for an effective conversation about disease management, although they acknowledge that allowing sufficient time is extremely valuable in the treatment of people with hypertension (Q12).

Likewise, interdisciplinary collaboration with social care, pharmacists and lifestyle professionals was considered important when providing tailored education and support to people with hypertension (Q13). For example, one GP mentioned that the brand of medication is often changed due to the so-called preference policy favoured by Dutch healthcare insurers. Pharmacists need to explain this policy to people with hypertension (Q14). Nurses, GPs and secondary care physicians all felt there was room for improvement regarding this issue, and that pharmacists can support patient education concerning hypertension and help identify non-adherence. Furthermore, it was felt

Table 3 Level of the healthcare provider

Domains	What needs to happen for the target behaviour to occur?	Summary	Example quotes
Knowledge	GPs need to have factual knowledge that persistent hypertension is often caused by non-adherence.	Facilitator: It is known that therapy adherence often plays a role when patients have persistent hypertension.	**GP1 (Q1**): Then almost everything turns out to be non-compliance… (…) A problem you don't really feel but requires you to take medication has low compliance.
Physical, cognitive and interpersonal skills	GPs need to develop interpersonal/ communicative skills which enable a relationship in which both GP and patient feel safe to talk freely about treatment adherence.	Facilitator: Collaboration between physician and patient and an open and honest conversation are important factors when discussing therapy adherence.	**PN pc1 (Q2):** – but I do notice that if you build a certain rapport with people, foster their confidence, then they also tend to be a bit more honest with you.
Memory, attention and decision process	GPs need to have attention for adherence factors affecting persistent hypertension.	Facilitator: Attention for other factors in someone's life is important when discussing therapy adherence.	**PN pc2 (Q3**): When you talk about treatment resistance, I think you then start to wonder why someone has elevated blood pressure in the first place. In society people feel an incredible amount of stress. Money problems, smoking, obesity, all the trimmings. And people are chronically ill, they're taking continual medication. At a certain point they think 'I don't feel like taking those tablets anymore'. But then turn around and say 'Of course, I take them all regularly'
Professional and social role and identity	Stimulating adherence and talking about this with patients should be incorporated into the professional norms and values of GP.	Barrier: Sometimes the division of tasks is not clear for healthcare providers.	**SCP 1 (Q4**) I have to confess that we as rheumatologists have outsourced cardiovascular risk management to general practitioners. We don't always actively check whether this occurs, although we do in some cases. Indeed, as rheumatologists we have decided that this no longer belongs in our outpatient clinic, just because we already have so many other things to do. I don't know if how we communicate this is actually understood and if anything is done about it.
		Facilitator: Enthusiasm about your profession and using your knowledge and skills to treat and educate patients is important.	**PN sc1 (Q5**) It is not poor literacy but personal competencies that are relevant; the patience to search for more complex underlying problems. Patients are given up on too easily.
Beliefs about consequences	Beliefs concerning realistic outcomes of discussing adherence during hypertension consultations.	Facilitator: More attention for healthy behaviour factors improves disease outcomes.	**SCP 2 (Q6**) All lifestyle factors (…) focusing on these avoids a lot of the cost of medication and therefore overall costs. And you immediately tackle various multimorbid cardiometabolic diseases.
Optimism	GPs need to feel that recognising and addressing non-adherence will improve delivery of hypertension care and patient health outcomes.	Barrier: No progress despite a lot of effort.	**GP1 (Q7**) That's the last thing we need. We are constantly pushing but nothing happens.
		Facilitator: The hope for reduction of risk on cardiovascular disease and a healthcare system which is optimally organised.	**GP2 (Q8**) You naturally hope for an eventual reduction in the risk of cardiovascular disease.

Continued

Table 3 Continued

Domains	What needs to happen for the target behaviour to occur?	Summary	Example quotes
Intentions	GPs need to make a conscious decision to discuss adherence with the patient.	Barrier: Varying involvement of care providers with training; limited involvement is reflected in less dedicated delivery of care.	**PN pc3 (Q9**) I think that, (as) with education and training, there are big differences between the healthcare providers you end up with. (…) I think we all know: some will do everything for you, while others (…) just want to make you someone else's problem.
Emotions	GPs have to be aware that detecting non-adherence will reduce undertreatment in primary care and overtreatment in hospital care.	Barrier: GP uncertainty leads to a need for referral.	**GP3 (Q10**) Yes, of course you're figuring everything out about that patient, making sure that you are not overlooking anything; that it is not something else after all. And then you eventually send your patient to the internist. If he can't figure it out either, then it's clear.
Social influences	GPs need to feel skilled and confident in recognising non-adherence and treatment of persistent hypertension.	Facilitator: Learning from each other via case studies and refresher courses. Communicating enthusiasm.	**PN sc2(Q11**) You can ask everyone to bring along a case that they are currently struggling with and then work out a decent plan together. **PN pc4**: And finding the time, because we had to arrange that with our supervisor again. **PN pc3**: That is not a matter of course, and not everyone does it. **PN pc2**: I also think it depends on what setting you're in. I have the advantage of being in a practice that is very innovative. (…) Do you want to consult the second line? Well fine, just arrange it. A lot of people don't get that (sort of leeway).

GP, general practitioner; PN pc, practice nurse primary care; PN sc, practice nurse secondary care; SCP, secondary care physician.

Table 4 Level of the healthcare system

Domains	What needs to happen for the target behaviour to occur?	Summary	Example quotes
Resources	GPs need time with their patient for appropriate delivery of care.	Barrier: Insufficient time for effective conversation with patients about disease management.	**PN pc3(Q12**) The things you discover when there is enough time for a conversation (…) is incredibly valuable. But yes (…), time is a continual problem, that's a tough aspect of my profession.
	Social and lifestyle care professionals.	Facilitator: Availability of social workers and lifestyle counsellors to provide tailored education and support to (culturally diverse) patients.	**SPC 3 (Q13**) Medications are only a small part of a treatment. A large part of the treatment is lifestyle intervention. Well, if I see people for 10 minutes twice a year at an outpatient clinic, I needn't have the illusion that I'm going to trigger a lifestyle intervention. I can push them in the right direction, but that sort of thing really needs to be much closer to the patient. I assume that a general practice or a lifestyle coach is the right setting.
	Involvement of pharmacist.	Barrier: Limited cooperation with pharmacist hinders appropriate delivery of medication instruction.	**GP4 (Q14**) (…) And when you have finally convinced them to take that pill and they're therapy-adherent, it's switched. (…) That can be annoying. (…) The pharmacy keeps telling them "it's the same pill.", but the patient says (…) "no, it's not the same pill because it looks different (…)." This causes distrust (…) And if they also have side effects, then (…) trust completely evaporates. The pharmacy clearly needs to provide more guidance.
	Collaboration with hospital care.	Barrier: GPs experience insufficient room to ask questions and discuss patients with hospital care providers.	**GP5 (Q15**) when I want to discuss medication with an internist and call the hospital, I notice that they have much more urgent problems. My phone call isn't always convenient. That is not a great way to work or communicate. (…). The lines of communication aren't great, so I think something really needs to be done about that.
		Facilitator: Effective, neighbourhood-oriented cooperation between primary and hospital care providers with the help of specialised GPs and nurses.	**SCP 4 (Q16**) Ideally, general practitioners should discuss their questions (…) about CVRM with their specialist general practitioner and that general practitioner can then call me once a fortnight and say: "I need some help with this patient, what can we do?" The general practitioner then handles the rest himself. That's efficient in my view.
		Facilitator: Appropriate IT infrastructure.	**SCP 5 (Q17**) In secondary care we see patients at extreme risk. People who were admitted to a cardiology ward with an infarction at the age of 30, 40 or who are already very overweight at that age or have early diabetes. That's a group we are not serving well right now. (…) I think that if we could communicate more easily, using telephone consultations or [for example] co-consultations, the educational value for general practitioners would also be much greater. And of course it is about signalling that "this really should be in the second line". (…) .
		Barrier: Finances.	**SCP 6 (Q18**) The problem is that these insurers are a kind of black box for us; we never communicate with them and are unfamiliar with their way of thinking. They seem to make most of the decisions. (…) **SCP5**: As long as it remains like that, you develop very slow reflexes, don't you? Then you get things like "You have to achieve a number of first patient visits here at your outpatient clinic." And (…) if you don't, you'll have less money to spend next year. As long there's no alternative, it will continue like this. **SCP1**: This actually discourages all new initiatives.

Continued

Table 4 Continued

Domains	What needs to happen for the target behaviour to occur?	Summary	Example quotes
	Resources to support delivery of primary hypertension care and to signal non-adherence.	Barrier: Lack of reliable blood pressure devices.	**GP6 (Q19**) What bothers me (…) Home measurement could also be better facilitated. [There is] uncertainty about whether it is correct; how reliable is the measurement? [That is a] precondition of good treatment. (…)(I)feel uncertain regarding treatment. Home measurement [with] more reliable equipment…
		Facilitator: At home blood pressure measurement device is facilitating for self-management.	**GP7 (Q20**) (…) With most people you really can cope using blood pressure monitors and self-management. That has already given me real peace of mind, because [patients] note the measurements down. They come in once a month or every six weeks and have the list with them. That really is more efficient than taking measurements every time. (…) That already represents considerable added value (…) … doing the measurements themselves does encourage a bit of support at home.
		Facilitator: Public campaigns to educate patients.	**PC sc1 (Q21**) I think that education (…) could also be done nationally as far as I'm concerned. TV adverts [about] the importance of blood pressure. That (…) could be better highlighted. People don't realize it. Even highly educated people in your own social circle who have high blood pressure will say: "(…) I'm taking a pill and when it improves I can stop taking it." Or: "No thanks, no more pills, I don't need even more pills."
Goals	GPs have to be aware that detecting non-adherence will reduce undertreatment in primary care and overtreatment in hospital care.	Barrier: Lack of insight concerning treatment possibilities in primary and hospital care results in unnecessary or overtreatment.	**PN pc2 (Q22**) I think: we really don't know what each of us is doing in the 2nd and 1st line. When I hear that as a second-line nurse you can arrange home visits. (…). Then I think, "Those are things we do in primary care" (…) You could also just call the GP practice and ask: 'Could you visit that patient at home and take some measurements?'
		Facilitator: Better collaboration between primary and hospital care improves health of people.	**PN sc2(Q23**) I hope that it will be possible to do more work on 'one and a half line care'; so that people don't necessarily have to go to hospital because care outside of hospital has been improved. **SCP2 (Q24**) (…) I think it is very important that you work together, speak the same language and together support the patient, who will be much more motivated if the right tools are available. That together you can (attempt) to make The Hague healthier and happier.

GP, general practitioner; PN pc, practice nurse primary care; PN sc, practice nurse secondary care; SCP, secondary care physician.

that collaboration between primary and secondary care could be improved, for example, by using GPs and nurses specialised in cardiovascular diseases as a liaison between primary and secondary care (Q15 and Q16).

To improve collaboration and communication between primary and secondary care, adequate digital tools for (bidirectional) communication were felt to be essential. The IT system should be accessible and pragmatic and also suitable for use in e-consultation. A barrier to the implementation of e-consultation and other new initiatives mentioned in group sessions was the current reimbursement structure in the Netherlands (Q17 and Q18). In the Netherlands hospitals are reimbursed with a diagnosis-related payment (diagnosis-based care). This includes all services and activities with respect to the hospital admission. Consequently, extra time spent on implementation of new initiatives are not reimbursed.

Furthermore, healthcare providers in primary care expressed a need for reliable ambulatory blood pressure measurement devices and valid ways to measure elevated blood pressure (Q19 and Q20). Nationwide campaigns to educate people about hypertension and its treatment were thought to facilitate hypertension care, and one participant stated that he thought the government could play this role (Q21).

'Goals'

A nurse stated that her goal was to align collaboration and communication between primary and secondary care, thereby reducing unnecessary referral to secondary care (Q23). To promote this, healthcare providers in primary and secondary care should be cognizant of each other's expertise. One nurse viewed this as an existing barrier that could be improved (Q22). The main goal of interdisciplinary hypertension care is to improve the health outcomes of people with hypertension in the correct treatment setting (Q24).

DISCUSSION

The results of our study indicate that there are important facilitators and barriers at the healthcare provider and healthcare system levels concerning the issue 'An elevated blood pressure despite the use of blood pressure-lowering drugs is often caused by therapy non-adherence, which is not always recognised in primary care and may cause overtreatment in secondary care'.

Domains relevant to healthcare providers were 'knowledge', 'physical, cognitive and interpersonal skills', 'memory, attention and decision processes', 'professional, social role and identity', 'optimism', 'beliefs about consequences', 'intention', 'emotion' and 'social influences', while two domains, 'resources' and 'goals', were found to be relevant at the healthcare system level. These findings will be useful when developing interventions designed to promote the defined target behaviour: 'Elevated blood pressure due to therapy non-adherence is recognised in primary care and patients are referred when underlying medical problems are present.'

Previous studies addressing beliefs of healthcare providers about non-adherence in hypertension care stated that in general, physicians are well aware of non-adherence, although tools to address and improve adherence are not frequently used, such as chemical detection of medications or electronical monitoring to detect non-adherence. The most frequently used method is to ask specific questions to patients to address adherence. From previous studies it is known that only half of physicians discuss adherence during a consultation[24 25 36] Obviously, an open and honest conversation is important when discussing therapy adherence. Similarly, previous research showed an association between good communication between physician and patient and better therapy adherence.[37–40] It is important that healthcare providers use shared decision making and give patients the opportunity to ask questions, discuss treatment and possible barriers regarding treatment. Patients who are engaged in decisions regarding therapy tend to be more adherent than patients who are not. Patients who are engaged in decisions regarding therapy tend to be more adherent than patients who are not.[41 42] Although these conclusions match our results, participants felt that patients often had an insufficient understanding of hypertension, despite the fact that they discussed and explained the need for adequate blood pressure control. This suggests there is a gap between the explanations of healthcare providers and what patients actually understand and recall, stressing the need for effective communication. Effective communication might be achieved by communication skills training for healthcare professionals and thereby improve health literacy and adherence in patients.[43]

Additionally, we found that social problems, such as heavy debt, also need to be recognised, highlighting the possibility that adequate blood pressure control might not be a patient's main priority. Debt might influence adherence directly.[8 44] In the Netherlands a basic health insurance package is mandatory, but within this insurance people have to pay a compulsory excess for healthcare other than GP-care. This compulsory excess is 385 euro per year per person, which might be a barrier to collect prescribed medication at the pharmacist. Social problems, such as indebtedness, might also indirectly influence adherence, in a way that it can cause distraction and that adequate blood pressure control might not be patient's main priority, as was mentioned in our focus groups.

Social and financial problems might also cause stress, which in itself can influence blood pressure. Literature shows that psychological characteristics, such as the ability to modify the emotional impact of stressful situations might also influence blood pressure control.[45] Besides, past traumatic experiences and related stress are also related to low levels of adherence.[46 47] As discussed in our focus groups, healthcare providers should pay attention to social problems and stress during the conversation with a patient and be aware of the context in which patients develop hypertension.

At the healthcare system level, the domains 'resources' and 'goals' were found to be relevant.

Lack of time was a repeatedly mentioned factor; on the other hand, healthcare providers stated that investing time in patient relationships can be extremely valuable for understanding patient beliefs about medication. Currently, the relation between consultation length and patient outcomes is unclear, although it has been suggested that longer consultations decrease the number of referrals.[48] Studies of consultation length have also found associations between shorter consultations and increased workload,[49] burnout[50] and dissatisfaction with time spent on patients.[51] Thus, longer consultations might improve job satisfaction for healthcare providers and reduce the number of referrals, suggesting that consultation length will be an interesting subject for future research.

Healthcare providers stated that collaboration between primary care and secondary care can be improved. Similarly, previous literature suggests that team-based care can improve blood pressure control and is cost-effective.[52–54] Adding a pharmacist to the team, together with members who could independently adjust medication such as nurse practitioners, supported improved blood pressure outcomes.[53] Previous studies suggest that pharmacist interventions based on counselling patients, such as

disease management, strategies to improve adherence, adverse effects and life-style modifications, could improve adherence and blood pressure control.[55–57] Our focus groups also mentioned that the role of the pharmacist in hypertension care could be more prominent, as they not only play a crucial role in informing and educating patients about medications, but can also help detect non-adherence when patients fail to pick up their prescription. Policy changes that impact medication costs and brands can negatively influence therapy adherence.[58 59] As patient perceptions and beliefs concerning medications are an important factor,[60 61] our participants pointed out the crucial role of the pharmacist in informing patients about changes to brands of medication. Thus, involving a pharmacist in team-based care to improve adherence is important. Our results also suggest that telephone consultations and consultations with specialised GPs and nurses can be used as tools to improve collaboration and stimulate team-based care. Furthermore, better collaboration with social workers and lifestyle professionals seems important.

Strengths of this study include the systematic way, using the TDF and BCW, in which the problem was approached and defined. These widely used theoretical frameworks are well recognised, and are based on multiple psychological theories.[27 28 62 63] This allowed facilitators and barriers to be identified in a structured manner, together with the theory-driven recommendation of interventions. To the best of our knowledge, this is the first study to use the TDF to explore facilitators and barriers to therapy adherence in hypertension care. To ensure a broad view of the problem, we organised focus groups that included healthcare providers from both primary and secondary care.

However, some limitations need be mentioned. First, during the analysis we recognised that not all domains had been fully addressed. We therefore organised an additional multidisciplinary focus group with a new topic list to explore these topics further. This may have resulted in an undue emphasis on domains that were less relevant to healthcare providers. However, as at least one discipline in the first round of focus groups yielded data on these domains, we wished to ensure that relevant data from other disciplines was not missed. Second, since our participants were recruited in the context of a highly urbanised population, with its known relatively large socioeconomically determined health differences, it is unclear to which extent our findings are applicable to more homogeneous suburban or rural population. Third, in order to obtain a practice-based insight in the reality of hypertension care, 5 years of professional experience were required for study participation. Nevertheless, it cannot be ruled out that younger professionals are better educated with regard to shared decision making and the importance of therapy adherence and lifestyle education.

In conclusion, our study, based on the perspective of experienced professionals serving a highly urbanised population, shows that interventions that seek to improve blood pressure outcomes by increasing therapy adherence should ideally reflect a multilevel approach and encompass all aspects related to therapy adherence. Besides known facilitators and barriers on the patient level, the results of this study stress the need for better collaboration between primary and secondary care, more team-based care that includes pharmacists and social workers, tools to improve interpersonal skills and more time for patient–healthcare provider communication.

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Contributors SvB and RCV coordinated and collected data by organising the focus groups. SEvG, JM and SvB analysed the data. SEvG wrote the paper. RCV, SvB, EvD, MLB, GR, HMMV and MEN commented on the paper. RCV is responsible for the overall content as the guarantor.

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