

Understanding of blood pressure by people with type 2 diabetes: a primary care focus group study

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ABSTRACT

Background

For many people with type 2 diabetes most care is provided in primary care. While people with both diabetes and hypertension are at increased risk of complications, little is known about their understanding of blood pressure.

Aim

To explore the understanding and beliefs about the importance of blood pressure held by people with type 2 diabetes.

Design of study

Framework analysis of qualitative research using focus groups.

Setting

Thirty-two participants were recruited from four general practices and a religious meeting group in Nottingham. Discussions took place in five community centres providing familiar surroundings for participants.

Method

In order to get views expressed fully, white, Asian, and African-Caribbean participants met in five separate groups. Facilitators were fluent in the appropriate language and one member of the research team was present at all focus groups.

Results

Some participants, including those with raised blood pressure, were not aware of the increased importance of achieving good blood pressure control. No participants mentioned the increased risk of eye or kidney disease as a result of the combination of diabetes and raised blood pressure. Participants' perceptions regarding the control of blood sugar and blood pressure were different: blood sugar control was seen as their responsibility but blood pressure control was seen as the responsibility of the doctor. There was scepticism regarding the diagnosis of raised blood pressure, of targets and the management of blood pressure. There was also scepticism about the advice and education about diabetes given in primary care.

Conclusions

People with type 2 diabetes require more knowledge of the increased risks they have from raised blood pressure, although this alone is unlikely to improve blood-pressure control. Strategies to increase the degree of control over and responsibility taken for the control of blood pressure need development and may require the specific development of participatory and negotiating skills among people with type 2 diabetes. Increasing the participation of these people in their own care will require doctors and nurses to work in a different way.

Keywords

diabetes mellitus, type 2; blood pressure; patient education; patient-centred control; patient participation; primary care.

INTRODUCTION

Diabetes is a leading cause of renal failure, blindness, and limb amputation, and increases the risk of cardiovascular disease. Up to 90% of people with diabetes have type 2 diabetes,^{1,2} which commonly coexists with hypertension.¹ The prevalence of hypertension in those with type 2 diabetes rises from 40% among those aged 45 years to 60% in those aged 75 years.^{3,4} Hypertension in diabetes further increases the already increased risk of cardiovascular disease,¹ retinopathy,⁵ and microalbuminuria.^{6,7}

Recent evidence has shown that the control of blood pressure is at least as important, if not more important, than the control of blood sugar in type 2 diabetes. Among people with type 2 diabetes, tight blood sugar and blood pressure control have been shown to decrease the risk of any diabetes-related endpoint by 12% and 24% respectively.^{8,9} The risk of death related to diabetes was also reduced by 32% in patients with tight blood pressure control compared with those with less tight control.⁹

GPs in England and Wales now have significant input into routine diabetes care for 75% of their patients with diabetes.¹⁰ Until recently clinical care focused on achieving good blood sugar control, but the emphasis is now on achieving good control of blood sugar, blood pressure, and lipids.

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The objectives of this study were to explore the beliefs of people with type 2 diabetes about blood pressure control, the interaction between diabetes and blood pressure, and the impact of blood pressure on future health and wellbeing.

METHOD

We used focus groups to explore the understanding and beliefs about the importance of blood pressure held by people with type 2 diabetes. These formed part of the qualitative research being undertaken within a cluster randomised controlled trial in Nottingham, which assessed the effectiveness of a nurse-led algorithm in controlling blood pressure in people with type 2 diabetes in primary care. Informed written consent was obtained from all participants.

Recruitment and moderation

We held separate focus groups for white, African–Caribbean, and Asian participants as community workers advised us that views may be expressed more fully in separate groups. We provided culturally appropriate facilitators (who were fluent in the relevant patois and language) and venues for the African–Caribbean and Asian groups. Each group had a moderator and facilitator. One member of the research team was present in all groups and the facilitators for the minority ethnic groups were also experienced qualitative researchers. The focus groups were held between March and December 2002.

Participants were recruited via practices participating in the randomised controlled trial. Our knowledge of the locality allowed us to purposively select three practices that would enable us to collect a range of views, including people from more affluent to less affluent areas (Townsend scores are given in Table 1) and people from specific ethnic groups. In order to be eligible for invitation to the focus groups patients had to have type 2 diabetes, be aged between 18 and 80 years, not participating in the randomised controlled trial, and be physically well enough to participate in the focus group.

Participants for the groups of white patients were recruited by postal invitation; for the African–Caribbean group patients were contacted by telephone by a member of the general practice in the first instance and followed up by postal invitation if an expression of interest was shown. Participants for the Asian group were recruited from a local religious meeting place, with access facilitated by a local Asian diabetes link worker. These participants received a verbal invitation only.

Developing the topic guide

A topic guide, which allowed us to meet the

How this fits in

The majority of people with diabetes have type 2 diabetes and most care is provided within primary care. People with both diabetes and hypertension are at increased risk of complications. Little is known about people with type 2 diabetes' understanding of blood pressure. Some people with type 2 diabetes, even those with raised blood pressure, are not aware of the increased importance of achieving good control. Effective strategies are needed to improve patients' control of their blood pressure and the responsibility they take for it. This will mean that GPs and nurses will have to amend their working methods.

objectives of the study, was developed by a working group comprising two academic GPs, a researcher, representatives from the local self-help organisation whose remit was to work with African–Caribbean and Asian communities in Nottingham, and a local primary care researcher with experience in qualitative methods.

Piloting and data collection

The topic guide was piloted in a focus group involving participants from the local Diabetes UK group. This was followed by a pilot focus group involving people with type 2 diabetes registered with a suburban general practice that was not participating in the randomised controlled trial. No modifications to the topic guide were made following the pilot focus group and, therefore, we used these data in the analysis.¹¹

Each focus group lasted between 1 and 1.5 hours and all were tape recorded and transcribed verbatim. The Asian focus group was held in English with translation being carried out during the group by the facilitator. The tape was sent to an

Table 1. Composition of focus group participants.

	Groups 1–3	Group 4	Group 5
Male	12	2	3
Female	12	3	0
Age range (years)	47–78	59–72	67–71
Ethnic origin	White	Asian	African–Caribbean
Townsend Score ^a (range)	-4.52 to 3.24 1 missing	-3.24 to 0.01 3 missing	4.25 to 7.10
Treatment for diabetes ^b			
Diet alone	6	1	0
Oral medication	16	4	2
Insulin	3	1	2
Known hypertension	17	1	3

^aThe Townsend Score is a census-based measure of deprivation: a higher score indicates residence in a more deprived area. ^bSome participants were prescribed both oral medication and insulin.

independent translator to verify the accuracy of the translation.

Information regarding participants' address and postcode, age, self-ascribed ethnicity (using 2001 Census categories), treatment for diabetes, and whether the participant knew they had raised blood pressure were collected by completion of a form at the beginning of each focus group.

Analysis

Framework analysis was used,¹² where the analytical process was informed by the aims and objectives of the research.¹³ QSR NUD*IST N5 — a computer-assisted qualitative data analysis package — was used to manage the data.

Two of the researchers independently analysed three of the transcripts. Results were compared, checked, and the analysis framework agreed. As a check on the validity of the framework one transcript was independently analysed by a researcher who had not acted as a facilitator in any of the groups. The final framework was agreed and this was used for analysis of the remaining two transcripts. In line with good practice in qualitative data analysis contradictory cases were sought as themes emerged.¹⁴

RESULTS

Five focus groups were held with a total of 32 people with type 2 diabetes. The composition of these groups is outlined in Table 1. We report here on three themes:

- the participants' understanding of the increased health risks associated with having high blood pressure and diabetes,
- their understanding about managing and controlling blood pressure, and
- scepticism about various aspects of care they received.

Understanding of the increased health risks associated with having high blood pressure and diabetes

The participants had varying levels of understanding regarding the increased health risks associated with having high blood pressure and diabetes. The possibility of increased risk of kidney or eye disease was not mentioned in any of the groups. All the participants of the African-Caribbean group appeared aware of their increased risk of cardiovascular disease through the combination of diabetes and raised blood pressure; this contrasts with the other groups in which few were aware of these risks, even among those with raised blood pressure:

'I didn't know there was a connection between diabetes and blood pressure.' (Group 3, participant 6.)

'I've never considered blood pressure as a side issue of diabetes until this formal [focus group] discussion group started out ... it must be just as important for non-diabetics to have low blood pressure as it is for diabetics' (Group 2, participant 4.)

'But the importance of it [diabetes and blood pressure] was never put together to me until the last review I had.' (Group 1, participant 7.)

'It's very important you maintain your blood pressure [at a normal level, because if it is high] that tends to [lead to] heart disease ... it's all joined together with diabetes.' (Group 4, participant 2.)

Managing and controlling blood pressure

Diabetes management was viewed by some as relating mainly to blood sugar control, while others felt blood pressure control was more important:

'I seem to, well to concentrate more on the diabetic side for health reasons than blood pressure.' (Group 2, participant 4.)

'I think blood sugar's more important really.' (Group 3, participant 5.)

Some deemed blood pressure control to be more important. This did not appear to be related to the increased risk of complications but, rather, because of the possible sudden and severe consequences of raised blood pressure. There was a sense that it was more important to get their blood pressure under control more quickly than their blood sugar:

'... to me the blood pressure's the most important. If you've got diabetes and it's a progressive thing in that you're not quite getting your balance right, you've got time to do it. But if your blood pressure's wrong you could drop dead and that's it.' (Group 1, participant 11.)

Generally, what was considered most important to control was influenced by what an individual perceived to be causing most difficulty for them at that particular time:

'I'm different you see because my blood sugar is always all right but my blood pressure's going up. So I've sort of had to switch worries from

blood sugar to blood pressure.' (Group 3, participant 6.)

Some participants felt they were unable to control their blood pressure (unlike their blood sugar level) and that while controlling blood sugar was the responsibility of the individual, controlling blood pressure was something health professionals were responsible for:

'So we check that [blood sugar] but blood pressure doctor keeps control of that.' (Group 1, participant 4.)

'But blood pressure I can't control that, I'm not in charge of that.' (Group 3, participant 5.)

'You can't keep worrying about it [raised blood pressure] because there's nothing you can do yourself to bring it down. So you just have to wait 6 weeks and have it done again.' (Group 3, participant 6.)

Scepticism regarding care received

The issue of scepticism is one that cuts across all groups, but different issues were raised in different groups.

Scepticism of the diagnosis of high blood pressure. For some this was related to the lack of symptoms associated with raised blood pressure:

'Well they say I do [have high blood pressure] but I don't, personally I don't feel ... everything's normal yet they keep telling me ... I've never had pain, never had angina ... but still the blood pressure is there and it is a concern to the doctors ...' (Group 1, participant 11.)

Some participants were sceptical about the accuracy of blood pressure measurements taken at the practice, either because it was viewed as an imprecise science, or because it was felt blood pressure measurements were bound to be above their normal level when taken at the practice as a result of the process of getting to the surgery and waiting to have their blood pressure checked:

'I think the blood pressure area's an imprecise science ... I had to persuade my doctor not to be on tablets ... But I actually have a blood pressure gauge at home, I don't use it so much now but I had to sort of use it on the hour every hour for quite a while and it [blood pressure measurement] fluctuates so much it's unbelievable.' (Group 2, participant 6.)

'Like last time I went, I sat there half an hour and thought crikey half an hour over my time. And you sit there getting agitated and sure as hell it's up [blood pressure].' (Group 1, participant 10.)

Scepticism of blood pressure targets. Some participants were aware of recent changes in blood pressure targets, but did not really understand why this had happened:

'They keep changing the parameters, it makes you wonder how, well au fait, [doctors are] themselves because [they] keep changing the parameters. I wonder if [they] fully understand these. You're never allowed to know that [why the parameters have changed] because all you get is parameters have changed.' (Group 1, participant 4.)

There was also scepticism about trying to fit individuals into a generic target although one person recognised the necessity for these:

'[Is] it a blanket fix-all or do we go back to tailoring to individual needs ... nobody starts off in the same parameters, that's where the difficulty comes in. We're not all made out of the same mould, from the same ingredients.' (Group 1, participant 7.)

'... all people are different. And that is a basic problem that no matter what illness you've got you're all made differently and what they have to do, they have to have some kind of guideline, some kind of standard in which to go by. And I think at the end of the day if they're keeping the people mobile and healthy then they're not doing a bad job.' (Group 1, participant 11.)

Scepticism of the appropriateness of prescribing decisions. Many participants felt that doctors were too quick to prescribe medication, especially those who were sceptical of their diagnosis of high blood pressure, and this made them less willing to accept prescribing decisions. There was a perception that blood pressure targets were frequently changing and that this led to an increase in prescribing:

'I think the medical profession have borderline cases and they play safe and they tend to dish out tablets as a first procedure rather than the last.' (Group 2, participant 6.)

The following shows a conversation between participants in Group 1:

Participant 10: *'My main concern is that they change the goal posts every time.'*

Participant 6: *'They say oh you were perfect last time, but they've changed that now [blood pressure target] and you need to be this and you're not there, so we need to do this with you.'*

Participant 1: *'It seems that they just want to give you more and more tablets.'*

Scepticism about lifestyle advice. Although participants felt that the lifestyle advice they were given was sound, many spoke about it with a sense of weariness and felt that health professionals overestimate the impact making such changes could have on measurable outcomes such as weight, blood sugar, and blood pressure:

'You could use a manual when you go back and listen to them [the practice nurse and GP] ... "watch your diet, watch your salt" ... It doesn't work as easily as what they say ... the answer is not where they seem to think the answer is.' (Group 1, participant 7.)

'The implication is you can sort of manage all these things [blood pressure and blood sugar] by what you eat, you know, but you can't half the time it's not possible. They give you these diet leaflets or booklets or whatever and the implication is that if you eat these vegetables and you eat this wholemeal bread, everything will settle down ... But it doesn't.' (Group 3, participant 9.)

Some participants also felt health professionals underestimate how difficult it is to incorporate and maintain these changes in the context of their own lives:

'... you tell me that I must eat certain diets, but no, it doesn't work that way and it can't, because you can't afford them.' (Group 5, participant 3.)

Scepticism of diabetes education in primary care. There were variations in the perceptions regarding the adequacy of diabetes education provided in primary care. Those with access to hospital diabetes teams felt the education they had received was superior to that received at the general practice:

'I think I got a lot more information from the specialist than I am getting from the GP and the

practice nurse. I'm not trying to be critical of them because when you think of the spectrum of illnesses a GP's got to handle they can't possibly know everything there is to know about diabetes or blood pressure'. (Group 2, participant 4.)

Many felt they had not received enough information about diabetes and looking after themselves from their general practice; others, however, seemed satisfied with the diabetes education they had received:

'[I would have liked] more information from the beginning ... what it affects, what effects it has on other organs and other parts of the body, so that you're prepared for it.' (Group 3, participant 4.)

'Isn't it normal for literature to be given to diabetics though? I mean when I was first diagnosed, every week I went I came away with another heap of papers about it, and could read about different aspects of it.' (Group 2, participant 1.)

DISCUSSION

Summary of main findings and comparison with existing literature

People with type 2 diabetes — even those with raised blood pressure — may not be aware of the association between diabetes and raised blood pressure and of the increased risk of developing cardiovascular, eye, and kidney disease. These findings are consistent with survey results that showed that less than 20% of people with diabetes knew that this increased their risk of heart disease.¹⁵

Controlling blood sugar is perceived to be within each individual's control, but controlling blood pressure was viewed by some as beyond personal control and they therefore considered health professionals to be responsible for this. This view has been found in other studies of patients with hypertension.^{16,17}

There is scepticism about the diagnosis of raised blood pressure, of targets and management of blood pressure, and some people with type 2 diabetes were sceptical about the advice and education about diabetes they received within primary care. This closely resembles the ambivalence described in relation to the diagnosis of diabetes with subsequent difficulty in accepting medical advice,¹⁸ and in relation to patients with hypertension.^{19,20}

Strengths and limitations of the study

Holding separate focus groups for white,

African–Caribbean and Asian participants, and facilitating these in the appropriate language with the use of interpreters, enabled the expression of the range of views of the predominant cultures in Nottingham. We made pragmatic decisions about recruiting participants from both minority ethnic groups. Rather than not have them represented, we chose to recruit from a pre-existing group for the Asian cohort and to include the data from the African–Caribbean group even though numbers were small. Although a range of views are represented, this data cannot be considered representative of all people with diabetes, and far more groups would have been needed to allow us to make comparisons between views of different minority ethnic groups.

We are also aware that practices that were participating in the randomised controlled trial may have had an increased awareness of the importance of controlling blood pressure in people with type 2 diabetes. It is possible that people with diabetes registered at practices not participating in the randomised controlled trial may have even lower levels of awareness of the increased risks associated with having both diabetes and raised blood pressure. Our findings may, therefore, overestimate the degree of such awareness in the wider population of people with diabetes.

It could be argued that our findings regarding the lack of understanding of the increased risk of raised blood pressure and diabetes reflect a natural time delay between medical and lay knowledge. However, they may also indicate that diabetes education does not reflect newer and broader understandings of diabetes management; this may be related to a lack of ongoing diabetes education.²¹

Implications for clinical practice and future research

This study has demonstrated that people with type 2 diabetes are often not aware of the increased health risks associated with having both high blood pressure and diabetes. In addition, it showed that some patients consider controlling blood pressure to be the doctors' responsibility and remain sceptical about blood pressure diagnosis, management, targets, and education in primary care. It is important that these issues are addressed.

In practice, the lack of recognition of the increased health risks may result in reluctance to follow advice regarding lifestyle and drug treatment for high blood pressure. Clearly, improving people with diabetes' understanding of modern diabetes management is important, but this alone is unlikely to be enough to improve blood pressure control.²⁰

Health beliefs have a significant impact on people's adherence to both lifestyle advice and medical interventions in diabetes.^{18,22} It is, therefore, important that these are explored by clinicians in order for them to be able to address scepticism regarding diagnosis and management of raised blood pressure. In addition, this may help to develop and encourage partnership in decision making. As some participants believed the control of blood pressure was the doctors' responsibility rather than their own, strategies to increase the degree of control over and responsibility taken for the control of blood pressure among those with type 2 diabetes need development.

Such strategies may include increasing the participation of people with type 2 diabetes in their own care. This may require doctors and nurses to work in a substantially different way from the traditional model of health professional as expert²³ and involve the development of participatory and negotiating skills among patients.²⁴ Previous work has shown that involving people with diabetes in disease management, including self-monitoring of blood pressure and self-adjustment of antihypertensive medication resulted in improved blood pressure outcomes.^{25–27} Such an approach should be integrated into a wider educational strategy to promote autonomy, as promoting the self-monitoring of blood glucose without the ability to self-adjust medication has been shown to result in higher HbA_{1c} levels and higher levels of worry and distress.²⁸ Clearly, this approach would only be suitable for some, as people inevitably vary with regard to their desire for active involvement in their care and medical decisions.²⁹

Further research is required to assess whether improving patient education and participation in decision making and management of high blood pressure improves the processes and outcomes of care for people with type 2 diabetes and raised blood pressure in primary care settings in the UK.

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Ethics committee

Nottingham City Hospital ethics committee (EC00/194)

Competing interests

None

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REFERENCES

1. Department of Health, Medical Research Council. *Current and future research on diabetes. A review for the Department of Health and Medical Research Council*. London: Department of Health, 2002.
2. Rayner M, Peterson S, Buckley C, Press V. *Coronary heart disease statistics: diabetes supplement*. London: British Heart Foundation, 2001. <http://www.heartstats.org/datapage.asp?id=711> (accessed 4 Mar 2005).
3. Prescott-Clarke P, Primatesta P (eds). *Health survey for England 1995*. London: HMSO, 1997.
4. Harris MI, Cowie CC, Stern MP, et al (eds). *Diabetes in America*. 2nd edn. Washington DC: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, 1995.
5. UK Prospective Diabetes Study Group. UK prospective diabetes study 30: diabetic retinopathy at diagnosis of type 2 diabetes and associated risk factors. *Arch Ophthalmol* 1998; **116**: 297–303.
6. UK Prospective Diabetes Study Group. UK Prospective Diabetes Study X. Urinary albumin excretion over 3 years in diet-treated type 2, (non-insulin-dependent) diabetic patients, and association with hypertension, hyperglycaemia and hypertriglyceridaemia. *Diabetologia* 1993; **36**(10): 1021–1029.
7. Nelson R, Bennett P, Beck G, et al. Development and progression of renal disease in Pima Indians with non-insulin-dependent diabetes melitus. *N Engl J Med* 1996; **335**(22): 1636–1642.
8. UK Prospective Diabetes Study Group. Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes: UKPDS 33. *Lancet* 1998; **352**: 837–853.
9. UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *BMJ* 1998; **317**: 703–713.
10. Pierce M, Agarwal G, Ridout D. A survey of diabetes care in general practice in England and Wales. *Br J Gen Pract* 2000; **50**: 542–545.
11. Kruegar RR. *Focus groups*. 2nd edn. London: Sage Publications, 1994.
12. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess RG (eds). *Analysing qualitative data*. London: Routledge, 1994: 172–194.
13. Pope C, Ziebland S, Mays N. Qualitative research in health care: analysing qualitative data. *BMJ* 2000; **320**: 114–116.
14. Murphy E, Dingwall R, Greatbatch D, et al. Qualitative research methods in health technology assessment: a review of the literature. *Health Technol Assess* 1998; **2**(16): iii–ix, 1–274.
15. Diabetes UK. Health threatened by ignorance, diabetes survey revealed. *Diabetes Update* 2002; **Autumn**: 1–3.
16. Sims J. What influences a patient desire to participate in the management of their hypertension? *Patient Educ Couns* 1999; **38**(3): 185–194.
17. Rickerby J, Woodward J. Patients' experiences and opinions of home blood pressure measurement. *J Hum Hypertens* 2003; **17**(7): 495–503.
18. Murphy E, Kinmonth AL. No symptoms, no problem? Patients' understandings of non-insulin dependent diabetes. *Fam Pract* 1995; **12**(2): 184–192.
19. Lahdenpera T, Kyngas H. Levels of compliance shown by hypertensive patients and their attitude toward their illness. *J Adv Nurs* 2001; **34**(2): 189–195.
20. Ebrahim S. Detection, adherence and control of hypertension for the prevention of stroke: a systematic review. *Health Technol Assess* 1998; **2**(11): i–iv, 1–78.
21. Audit Commission. *Testing times. A review of diabetes services in England and Wales*. London: Audit Commission, 2000.
22. Gentili P, Maldonato A, Grieco R, Santini A. Influence of patients' representations and beliefs about diabetes and its treatment on their adherence to therapy. *Diabetes Nutr Metab* 2001; **14**(3): 140–152.
23. Day JL, Coles C, Walford S. Self-management in diabetes: training implications for professional carers. *Clin Med* 2003; **3**(4): 338–341.
24. Van Dam H, van der Horst F, van den Borne B, et al. Provider–patient interaction in diabetes care: effects on patient self care and outcomes. A systematic review. *Patient Educ Couns* 2003; **51**(1): 17–28.
25. Rachmani R, Levi Z, Slavachevski I, et al. Teaching patients to monitor their risk factors retards the progression of vascular complications in high-risk patients with Type 2 diabetes mellitus: a randomised prospective study. *Diabet Med* 2002; **19**: 385–392.
26. Follett A, Burden M, Burden AC. Patient-centred monitoring and adjustment of therapies for hypertension in people with diabetes: a randomised controlled trial. *Diabetic Medicine* 2001; **18**(Suppl 2): 174.
27. Trocha AK, Schmidtke C, Didjurgeit U, et al. Effects of intensified antihypertensive treatment in diabetic nephropathy: Results of a controlled, prospective, 10-year study on mortality and morbidity. *Journal for Hypertonie* 2000; **4**(4): 36–45.
28. Franciosi M, Pellegrini F, De Berardis G, et al. The impact of blood glucose self-monitoring on metabolic control and quality of life in type 2 diabetic patients: an urgent need for better educational strategies. *Diabetes Care* 2001; **24**(11): 1870–1877.
29. Robinson A, Thomson R. Variability in patient preferences for participating in medical decision making: implication for the use of decision support tools. *Qual Health Care* 2001; **10**(Suppl 1): i34–38.