



## A Decision Aid Intervention to Improve Decisions about Weight Management Referral in Primary Care: Development and Feasibility Study

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### Abstract

Patient non-attendance after referral to weight management support is a problem in routine health care. The decision making process prior to referral is a useful focus for research. The present study aimed to develop a patient decision aid intervention and to investigate patient and clinician perspectives on its acceptability and implementation in primary care. The content of a decision aid booklet was developed following in-depth interviews with 52 adults (mean age 56 years; 26 women, 26 men). The content was refined within a study of patients (n=21, 15 women) and clinicians (n=45) comprising doctors (n=12), nurses (n=15) and allied professions (n=18). An exploratory study of implementation was undertaken in primary care with feedback obtained from 18 patients (mean age 52 years; 12 women) and 5 nurses in relation to weight review consultations. Study findings show the weight management decision process is potentially complex and challenging to patients for both cognitive and social reasons. A decision aid developed to address patient needs was liked by patients and, to a lesser extent, by clinicians. The intervention was viewed as acceptable and feasible for implementation into routine practice. Active ingredients within a complex intervention appeared to be improvements in cognitive processing for patients but also improvements in rapport between patient and clinician. Further research should now evaluate outcomes including consultation rapport and patient attendance.

**Keywords:** Obesity; Weight management; Decision aids; Complex intervention

### Introduction

The prevalence of obesity has increased rapidly in the past decades and is projected to continue increasing in many parts of the world including the United Kingdom (UK) [1]. It is estimated that a quarter of adults in England are sufficiently overweight to be categorised as obese and at risk of ill health [2,3]. Evidence-based guidelines in the UK, as elsewhere, recommend multi-component interventions that include behavioural and lifestyle change for weight management [4-6]. Primary care is an important setting for identification of individuals at high risk of ill health from obesity, and for their assessment and referral to weight management interventions [7,8]. However, even trials involving intensive support for patients to complete these interventions have a high drop-out rate and longer term maintenance of weight loss remains a challenge [9,10]. In routine practice patient non-attendance and early attrition from weight management programmes are significant problems [11-14]. Even well designed programmes find that a quarter or more of patients do not even make it to the start after referral [15,16]. Improving the involvement of patients in decision making in primary care prior to referral is a key area for research and development [17,18].

Decision aids increase involvement in and knowledge for informed decision making [19,20]. However, they are a complex intervention with multiple and variably active components [21,22]. Carefully structured information, or sets of information, to support cognitive processing is always a central element. Typically decision aids have taken the form of a booklet (paper or electronic equivalent) to help patients think through their knowledge and personal values for a good decision. These booklets may be introduced prior to or within a consultation with a clinician. Their impact upon the consultation interaction is also then, potentially, an active component in terms of facilitating rapport and communication within a social process of joint decision making. There is not an existing evaluated tool available for improving weight management decisions for patients who are obese [22].

The development and evaluation of a decision aid as a complex intervention has established methodological guidance [21-24]. A preliminary step is to clarify the information and other support needs

required for better decision making. It is also important to understand the intervention context with respect to implementing a decision aid as a complex intervention. This paper reports on a study over several stages to elucidate patient needs and to explore the decision process as a complex intervention involving a clinical consultation. The results focus particularly on patient and clinician perspectives on the decision aid as it developed and on its implementation in clinical practice.

### Methods and Materials

The first stage of the study aimed to develop the content of a decision aid booklet with in-depth interviews involving adults reflecting on their experiences of decisions to manage weight. This was followed by an iterative cycle of focused data collection involving service user groups and health care professionals that aimed to refine the content of a decision aid for primary care. Finally a small exploratory study aimed to investigate the feasibility of the decision aid for primary care consultations. In all stages a mainly qualitative methodology was employed with sampling, data collection and analyses involving established methods for health services research [25-27]. The study was approved by a UK National Health Service (NHS) Ethics Committee.

Initial sampling intended to maximise the variability of adult participants to reflect the target population of gender, age and social class groups. In the second stage a more developmental purposive approach was taken to sampling with attention to including a range of patients and a range of different clinical occupations. The final stage was

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of necessity a convenience sample of primary care patients. Interview guides with entirely open question were employed in early stages. In later stages more structured data collection with questionnaires were employed. Interview data were transcribed verbatim. In early stages analyses proceeded concurrently with further sampling and data collection in response to preliminary findings. For example, an issue raised by one focus group would be put to subsequent interviews. In this approach a judgement is made about a point of data saturation at which it appears no new data are emerging. The early exploratory data followed pragmatic 'Framework' methods to arrive at themes after multiple iterations and independent analyses within the research team [28-30]. Later stages employed methods more typical of content analysis for summarising key themes from questionnaires [26]. In each stage the reliability and quality of findings were tested by independent checks within the team.

### Stage 1: Decision needs

In depth interviews were undertaken with 52 patients (mean age 56 years; 26 women, 26 men) from four health districts within Yorkshire in England (Box 1 questionnaire). All participants had a BMI>30 kg/m2. Analyses explored issues contributing to difficulty in decision making and hence the needs of patients for information, values clarification and coaching in decisions about weight control. The key issues were addressed in the design of the decision aid with input from clinical specialists and patient groups.

### Stage 2: Decision aid design

The decision aid then underwent refinement via a series of iterations involving service users groups and health professionals. The participants in this stage included: 21 service users (15 women; 6 men) with experience of weight management services; 15 nurses (11 generalists, 4 obesity specialists); twelve doctors (11 GPs, 1 specialist);

18 allied professionals all with specialist weight management roles and comprising 10 from dietetics, 4 physical therapists, 4 clinical psychologists. Data were collected via individual and group interviews and by postal questionnaire. Key verbatim quotes were transcribed in full. Participants could also respond by writing comments directly on to a copy of the decision aid.

### Stage 3: Practice implementation

Decision aid booklets were offered to 18 patients (12 women, 6 men) to consider if they wished prior to a consultation with the practice nurse. The setting was a medium sized general practice within an urban area with five nursing staff contributing to weight management support. Usual care was to invite patients known to have BMI indicating obesity for a review of weight and weight management support. Patients taking the booklet were asked to provide anonymous feedback on the booklets in a short questionnaire returned to the research team. The questionnaire included closed questions with Likert scales for rating how easy the booklet was to read, whether it was helpful, and liked (rating ranged 1-5 with high score most positive). Further open ended questions asked for comments on the content and value of a decision aid in relation to the experience of discussing weight control. Nurses were interviewed to obtain their impressions on the decision aid and issues in its implementation. Verbatim quotes were transcribed from these interviews. Finally an audit was undertaken comparing those patients who engaged with the materials and that previously attending weight management support over the previous year.

## Results

### Decision needs

Illustrative quotes from participants are shown in Table 1 to convey the mixed feelings and muddled thoughts that affect decision making. Fuller data from this stage have been reported elsewhere [18]. For many people, thinking about weight control brings a large volume of thoughts

<b>Previous (recent) weight management actions</b>
Can you think of a time you have done something about your weight? Please tell us about your most recent experience. Encourage to recall and describe actions.
<b>Deciding processes for weight management actions</b>
Looking back, just before you had actually done any of this, do you feel there was a clear point you decided what you were going to do? Did you feel in your mind that you were reaching a decision? Tell us more about the process of reaching a decision.
<b>Influences on decision making</b>
We'd like to explore a bit more about your thinking at the time just before taking action about your weight. What influenced your thoughts? Anything at all is relevant here.
<b>Exploring key influences ...</b>
When you came to make a decision what had the most influence on you?
* Please note interviewers were encouraged to maintain a good rapport, covering topic areas in depth but flexibly

Box 1: Interview guide.

Theme	Illustrative quotation from patient
Negative thoughts and ambivalence	It just makes it makes it worse really it makes you feel um it's hard to explain really it doesn't give me the incentive to do it, it just makes it more difficult to you know to sort of come out and do something about it you feel you know embarrassed and ashamed I do find it yeah its difficult. [W/L-020 age 55]
Hard to separate out a decision process	I'd say it's just its not a sort of you know a decision making process made of separate steps really it's a sort of its a way of life really [...] I don't see it as these sort of definite turning points you seem to be implying; really it's a way of life, keeping control of your weight for me. [W/U-023 age 62]
Muddled mix of triggers, vague about health risks	I thought I'm just setting myself up for an early death and I need to you know and when you make the decision to you know to do it [...] I know I have to eat less exercise more and I'm getting to that point where I was just I was disgusting the way I was looking and feeling really. [W/U-016]
Obesity stigma extra thoughts	you know it's like pointing the finger and saying 'it's your fault' and I, it's very hard to put into words but it just makes me very cross really instead of encouraging people it's the opposite side of the coin its very negative and other people jump on the band wagon and start to say the same words which they perhaps never thought of before. [W/L-022 age 65]
Overwhelming options	I mean I was conscious of it, the thing that puzzled me about it was all the information you kept getting seemed to contradict each other if you know what I mean? [...] I was getting all confused when I was asking for information. [M/L-013 age 60]

Table 1: Patient perceptions of decisions about weight control.

Decision aid section	Rationale	Patient responses	Clinician responses
<p><b>1. Need for a decision</b></p> <p>Outline: Introduces decision; acknowledge common to feel and be side-tracked by pressures; value to take time and think through with a focus on health; okay to decide not to try weight loss</p>	<p><i>Cognitive / social learning theory basis in rationale</i></p> <p>Bring decision for health into focus and model active role for patient, reduce sense of social pressure</p>	<p>So this is to help the patient who's got obesity see they've got to make a decision which is .. is must be a good thing. [F]</p> <p>I mean we've all had to make that decision and we know it's not easy. [...] I think leaflets like this help [F]</p> <p>Yeah something like this would have helped. You know don't rush at it just cause you're feeling you got to do it. [M]</p>	<p>I think this is a good idea if you can persuade the patient to actually read it. I suppose you're saying take time to think about it and your decision will be better. [AP]</p> <p>I'm not convinced it's always best to dwell on it like this. Just get on with it and don't worry about it is what I'm saying. Maybe if someone is really sensitive ... but most people, just get on with doing it and don't worry. [GP]</p> <p>Is this detailed information really going to get them off their backsides? It may not be PC but I think there's some have got to hear a worst case scenario [N]</p>
<p><b>2. Understanding of health risks</b></p> <p>Understanding BMI and other terms; understanding health risks now and potential for change with weight control; complete personal risk assessment with clinician; review current symptoms</p>	<p><i>Cognitive</i></p> <p>Risks poorly understood or attended to in decision</p> <p>Initial content focus on heart disease / stroke and type 2 diabetes.</p>	<p>My mum had a stroke.. and so.. well.. it's an eye opener for me. Cos I never thought it was that much for strokes. [...] So, yeah, this is... this is a help. [F]</p> <p>I can see what this is and I suppose it'll be good for ... but you know at the end of the day it doesn't look like much to me personally. [Long anecdote] .. So that's what I'm saying I could be hit by a bus. [M]</p>	<p>It's always a difficult one ... I'm not sure our patients will grasp this, maybe the middle class ones [...] Might be better to focus on just one condition if you must have it [GP]</p> <p>Very helpful. It would be great if a patient came to me already understanding all this. I wonder if they'd be put off if they think the damage is done if you see what I mean. [AP]</p> <p>I think this is okay. It made me think! Am I telling patients it's worse than it is. But we need to catch them earlier. [N]</p>
<p><b>3. Expectations and influences</b></p> <p>Review how social pressures and social beliefs about body size might affect thoughts</p>	<p><i>Mainly cognitive</i></p> <p>Common to feel social pressures or have unrealistic hopes; improve awareness of how these thoughts and feelings affect decision making</p>	<p>That's me... that's me all over. I want to be that lady with the slim figure. [F]</p> <p>I like this. Yeah, we've all had those... I want to look like a Greek god or [?somatt] It stops you ... thinking, thinking about it ... like your health I mean. [M]</p>	<p>Very helpful - love the pictures. [GP]</p> <p>Excellent. We always talk about expectations with our patients. Some have got really crazy hopes for how much weight will drop off. [AP]</p>
<p><b>4. Timing values</b></p> <p>Consider practical issues of timing and support; consider advantages of not taking steps immediately</p>	<p><i>Cognitive, values coaching</i></p> <p>Encourage to attend to practical issues affecting a decision and that may be lost in the sense of pressure to take action</p>	<p>It makes sense - you can get the car all revved up for it and find you left your specs on the mantelpiece! [M]</p>	<p>I think this section is fine. Patients forget these things in their haste to get going sometimes. [AP]</p>
<p><b>5. Intervention type</b></p> <p>How to choose support; taking account of previous experiences; understanding the key active elements common to all programmes; review needs for each element; awareness of available options; personal preferences within available options</p>	<p><i>Cognitive</i></p> <p>Information organised to reduce complexity and coach through thinking about personal needs and preferences</p>	<p>This is good to think about what you need - you know about diets and other things. [F]</p> <p>The one it made me see is this one about getting support. That's where I've gone wrong. You know you want to find out every last thing about diets and you forget you got to ... I don't know ... get your better half on board [F]</p>	<p>This figure about how much weight they can expect to lose where did it come from? It just doesn't look much to me. It's no good if it's not going to motivate them to change. [N]</p> <p>This simplified information is a good start for them. I wonder if it will encourage them to move to the next step. Time will tell. [GP]</p>
<p><b>6. Decision</b></p> <p>Review understanding; reach decision (including no action now or defer decision); record decision with clinician</p>	<p><i>Social learning / behavioural</i></p> <p>Shared process with commitment to the decision</p>	<p>I like this where you're signing it off and your doctor is too. Might stop them nagging for a bit if they can see you've thought about.. carefully like this is [F]</p>	<p>Very clear. Nice to have an end point like this I think. I think the patients will like it, feel like they own the decision before we see them [AP]</p>

Notes: M: Male; F: Female; GP: General Practitioner; N: Nurse; AP: Allied Profession

**Table 2:** Decision aid sections with patients and clinician responses.

and feelings. Stigma about obesity, body size stereotypes, weight loss experiences all add extra layers to thoughts and feelings. Feelings can be very negative and ambivalence is typical. These extra (ambivalent) thoughts and feelings add to the perception of being under pressure and get in the way of clear thinking. Within these pressures apparently simple decisions about practicalities of time and type of support become more difficult. Decision making is also difficult in the context of mixed thoughts of this type over a long time. Thoughts become ingrained with habits and it is hard to separate out what is needed to think through

a good decision. People do not have accurate understanding of health risks or awareness of how body image and weight loss expectations may inappropriately influence decision making for health. Finally the range of options can seem overwhelming and uncertainty about their effectiveness adds to difficulties in deciding what to do about weight.

### The decision aid

Work over several iterations with health service colleagues, patient groups and graphic design specialists was undertaken to develop and

refine a booklet decision aid (Table 2). The booklet initially sets out a two part decision for the patient and their clinician. First, whether it is a good time to take action about weight control for health. Second, to decide what kind of support, from among the available evidence based programmes, will be best for them. The aid clarifies that it is okay to decide not to take action at this time or not choose a support programme. It reinforces messages that taking steps for a healthy lifestyle are always important but distinguishes this from the need, nevertheless, to reach a good decision about weight control.

Subsequent sections address other issues to facilitate thinking through relevant information for reaching a good decision. As noted previously the context here is that a high proportion of patients currently taking these decisions do not turn up after agreement to be referred to a weight control programme. The booklet includes materials to improve knowledge and its organisation for informed decision making, materials to develop awareness of influences on decision thoughts and coaching in the process steps for reaching a decision. The booklet is designed for a clinician to introduce and personalise for a patient who might consider lifestyle weight management options. It is not intended as a decision aid for medicine and surgery options.

### Decision aid design

Typical responses of patients and clinicians to the decision aid sections are shown in Table 2. Overall the responses were most positive from those in specialist services who felt they were at the sharp end of poor attendance. These were mainly allied professions and typically with longer consultations in their own practice. Patients too were positive about a decision aid. Especially those patients who felt they had a poor experience in their own referral process. A few of these patients expressed views about being weary of every consultation being a reminder about weight. They saw the decision aid as having potential to put weight aside to let decisions rest for a while. The more mixed responses were from generalist clinicians. These certainly supported the idea of shared decision making and involving patients but they were more likely to highlight potential drawbacks of a decision aid. Three areas in which there were contested views between groups will be presented more fully now with reference to data in table 2.

**The decision and the decision making process:** An initial reaction from clinicians, more typically expressed by generalists, was whether the booklet was going to motivate change. Doubts were expressed about the value of the booklet if it did no more than improving a patient's satisfaction with a decision to not take action. In part these views appeared to arise from a lack of familiarity with decision aids as against health education materials. However, there were also more fundamental disagreements about the kind of decision that is offered to the patient in this context. This was expressed by one nurse as, 'Is it okay, given the risks, to decide not to take action about weight?'

**Presentation of risk information:** Patient impressions of the risks of excess weight for health were diverse and often inaccurate. For example, within the same focus group (Table 2) one person is apparently struck by how high the risk appears whilst another sees it as much lower than they had thought. It indicates that risk is difficult to conceptualise and that patients may be a long way out in their estimates. Either way this affects informed decision making. Patients agreed it was useful to consider this information when making a decision. Clinicians were more accurate in risk perception but had more contested views about how to present the information and its purpose, as above, in motivating or demotivating a patient. A few clinicians, particularly those without experience of using decision aids, expressed the belief that the worst picture should be presented to patients if they were going to be motivated. Nevertheless there was general agreement about formatting and presenting numerical information about risk to patients. Other constructive comments were about focusing on just diabetes within the information.

**Intervention type values:** The apparent range of different activities within lifestyle interventions for weight control is potentially difficult to grasp. This remained a contested area. Overall, though, it was seen as useful to organise the interventions into four components typical of evidence based programmes. Another question raised was how the likely weight loss outcome is presented; whether to present a best case scenario or typical scenario to the patient. Again this rests on beliefs about what will motivate the patient to take action.

Positives	Areas for improvement
All in all a very good publication that is thought provoking	Would like it to have actual amounts of weights.
Keep all in the book - it is okay as it is.	I wasn't clear when I was meant to be using the booklet - was the doctor meant to give it to me? I didn't know my BMI and the booklet goes on about BMI but doesn't provide a table for working it out.
Very clear and good to read and informative.	I'd like a few more facts about weight in the booklet. I didn't understand BMI fully.
All the booklet was useful	Maybe changing the colour scheme would improve the booklet.
The booklet is fine providing you can get hospitals and doctors to use it!	Could more information be included about the myth or otherwise of available medicines to assist weight loss? Also more tips on food and exercise.
The booklet was very useful.	Perhaps more information about weight loss targets and a chart to keep weight loss notes.
This booklet was easy to understand. It made me think carefully on how to get the right help. The importance of having support from your family and friends.	One thing that didn't make sense is if the person should fill it in before during or after seeing the nurse. I mean I was confused as to whether the nurse fills in in when you are there and have your BMI test measured.
Every part of the booklet was helpful to me.	I think it should be filled in entirely while you are with the nurse and decide a programme to suit you together. I realise this could be time consuming so perhaps a nurse assistant would have time than a doctor or nurse. Or perhaps initially a special clinic could be set up in handy locations with follow up being done at your local GP.
I'm someone who is a success story who followed advise [sic] in the booklet.	
The explanations and diagrams were clear. The booklet appears fine.	
A nice balance of information, suggestions etc.	
All useful.	

Note: Each comment in the column is from a different individual.

**Table 3:** Patient feedback on the decision aid in practice.

## Feedback on implementation

From 28 primary care patients approached 18 (64%) agreed to take the decision aid to read in relation to a consultation about weight management. Fifteen provided feedback on the booklet following their consultation. Patient ratings of the booklet were very high: it was rated as easy to read (mean=4.9 out of possible 5); helpful (mean=4.3/5) and liked (4.2/5). Feedback comments are shown in table 3. Again these are positive but with important exceptions. First, one patient did not like the colloquial wording style even though they thought it easy to read. Second, BMI requires clarification during a face to face preparation at the time of weight measurement. Third, the first few patients were unclear about how the decision aid was meant to be employed in relation to their consultation. The second and third issues were essentially teething problems in implementing the decision aid within the practice team.

Nurse comments are shown in table 4. These show more mixed views with reservations about implementing the decision aid and its value for changing patient weight loss actions. The main issue was the perception that it will add to time within a pressurised consultation. However, it was valued for how it might improve rapport and patient satisfaction and for structuring the consultation discussion. Furthermore, despite the concerns, none of the consultations exceeded the usual time (30 minutes) allocated for a nurse weight management consultations.

An audit within the practice of referrals to local weight management programmes was undertaken as part of the usual service management. The practice served a population with a typically low attendance rate to specialist weight management services. The decision aid was provided to 18 patients in the age range 45-55, mean age 52 years, with a greater proportion of women (12) to men (6). Only 44.4 per cent of these patients agreed to and then attended a weight programme (at least once) following the weight management consultation. However, this compares with only about a quarter typically agreeing to and then attending a first appointment from the practice in the previous year.

These comparisons of attendance outcomes should be viewed with great caution. It was not possible to make any meaningful comparisons of weight changes.

## Discussion

The decision making process prior to referral is a useful focus for improving patient attendance at weight management programmes. The present study adds to understanding of the needs of patients in making decisions and their views of a decision aid. It also adds understanding of the perspectives clinicians on a decision aid intervention.

## Summary of findings

The weight management decision process is potentially complex and challenging for patients. It is a cognitive challenge simply for the range of information that needs to be attended to within an informed decision. However, it is apparent as well that some patients may begin from a feeling of being disapproved of and under pressure to take action. It is likely that considerable extra pressures and ambivalence arise for those most sensitive to obesity stigma and other social pressures. This is not a sound basis for making decisions about longer term weight control for health. The content of a decision aid booklet, designed to address these complex needs, received positive feedback from patients who responded also that it covered relevant material for them in making decisions. This is evidence therefore of good face-validity for the decision aid design and that improvement in cognitive processing is an active ingredient in the intervention. In other words, that it helps the patient to attend to relevant information and filter out unhelpful thoughts that may bias a decision.

The decision aid content also received positive support from clinicians but with more reservations expressed particularly in relation to its implementation by generalists. The use of decision aids is widely advocated and supported in policy in the NHS but practice is variable and clinicians may be unfamiliar with them [19-21]. Another probable factor is that clinician perspectives arise from beliefs that obesity is a

Theme	Nurse quotation
Implementation	<p>No disrespect... I think it's a good thing... it's just have you got time to sell it to the patient as well as everything else. I think if they're keen they'll do something about their weight anyway. But it was easy to follow what's in the booklet. In that way it just goes how you'd talk about it anyway.</p> <p>My worry is that I might be trying to force a patient into.. you know, is it something they really want to read and we end up taking twice as long as normal and then you've still got all the QoF stuff outstanding. [...] It might be very nice in an ideal world but you've still got to make sure the bloods are up to date. I mean that's for the patients benefit isn't it. I mean if a patient brought it to me I'd use it with them but I'd want them to take the initiative is what I'm saying.</p> <p>It was easy to pick it up - you know training wise.</p> <p>I thought it was quite alright. I'd like them to have more time to read it first and then talk to someone when they're ready with it. But I thought it was good. Maybe the nursing assistants could give them to patients first and then see the nurse or GP if they're wanting to actually be referred up to [name]. ...</p>
Consultation rapport	<p>Yeah [name of patient] it has been a bit awkward. He knows his weight's a problem. You try not to nag him. Anyway we had one of those moments [laughs]. You know when you feel like you're finally what is it? Seeing the light or something ... And he said it ... he was even a bit tearful you know ... like it was ... I think it's that bit that you can decide not to. That said I don't think it will affect what he does one jot and it doesn't alter the fact that with his BMI he needs to lose weight.</p> <p>I must tell you what [name] ... 'You should make all the staff read these' she said. 'Not just patients'.</p> <p>And it was good how it helped to go over issues in the consultation. You know it made sense for how you would discuss it in the consultation.</p>
Effectiveness	<p>I think it helped some patients, like [name]. You know I think they're a good idea. But then you see I'm not even sure she read it, not properly. You know what she's .... maybe she skimmed it. But it seemed to help concentrate the mind ... being a bit more careful about agreeing to be referred to [name].</p> <p>It's a good idea like this kind of thing. I don't think the GPs have got time for you know... it might be a kind of long chat though. So it's talk it over with the nurse and read the booklet first will help some patients. It can help some make your mind up to do something. It won't alter the mind of most though 'cause ... you know... they know if they got to lose it already.</p>

Table 4: Nurse feedback on the decision aid.

serious health problem that can be readily and successfully tackled by weight loss. In this context it appears less acceptable that the patient has a choice. Clinicians have legitimate concerns about pressures on consultation time but the study suggests that it did not add to the consultation length. The insights about improved rapport are very useful because they indicate other potentially active ingredients within a complex intervention. The benefits of a decision aid intervention may be that it improves rapport and allows the patient a break from a sense of pressure to take action immediately.

### Comparison with other literature

Patient needs of the type found in our study and the impact of obesity stigma are backed up by much other research over several decades [2,31]. Obesity stigma is a complex psycho-social phenomenon that has powerful effects on emotions and thought processes as patients consider what to do about weight [32,33]. Studies of patient experiences provide evidence of difficulties in rapport and communication with heightened ambivalence, discomfort and tensions in the context of health care consultations [34,35]. There is also substantial evidence that health care clinicians have mixed and even negative views about obesity and patients who are obese [33-38]. Indeed other research with suggests a weakening of rapport may be a fundamental issue in contributing to a poorly followed through decision [38-42]. Other studies suggest nurses in particular may overstate the health risks of obesity and may have beliefs that it is readily tackled by weight loss [43]. The findings about patient difficulties in decision making are also supported by other research of decision making more generally [17-22].

An equivalent decision aid intervention, as reported here, directly grounded in a study of patient experiences and underpinned by cognitive and social learning theory, has not been published as far as we know [22]. Other obesity treatment materials tend to approach the intervention as a more simple exercise of information organisation in isolation from the social context of the decision [44]. Hence these other materials do not apparently take account of the psycho-social background to the decision difficulty. More broadly the decision aid literature leans to cognitive processing as the active ingredients in helping decision making [21,22]. This may be less justifiable where the social context of decision making is at least a substantial part of the decision making difficulty. The reservations identified about implementation in our study are consistent with other research [21,43-47]. Practicing clinicians find decision aids difficult to prioritise and to integrate within practice and can be sceptical about their value.

### Study limitations

The limitations arise from the study context, the convenience sampling and small sample size of later stages, and potential response biases. Major reorganisation and perceptions of acute resource pressures in NHS primary care at the time of the study should be noted. These are not untypical pressures but they may have influenced the views of clinicians in considering a new intervention. The preliminary sample was diverse and reasonably representative of the local adult population, particularly those likely to be eligible for referral to weight management support. The distribution of participant ages indicate findings may generalise best to middle aged patients. The later samples involved more women than men but no major differences of views were expressed by gender. The degree of a normative positive response bias in the patient data is difficult to judge. Patients were able to respond anonymously and were encouraged to provide constructive criticism on the developing decision aid.

## Conclusions and Further Research

Overall it is appropriate to view the study findings as necessarily preliminary but still useful towards the development of a decision aid intervention. The decision aid booklet, with its cognitive and social learning active ingredients, was liked by patients. It was readily introduced to patients by a nurse assistant at the time of establishing current BMI and could be completed with a more qualified clinician in a consultation focused on risk assessment and referral choices. The decision aid was acceptable to clinicians whose reservations about time pressures and readability were unfounded. It required little training to prepare clinicians to employ the decision aid even within a culture of typically mixed beliefs about obesity. There are cautious grounds for believing it may improve attendance. It would appear then that the intervention is acceptable and feasible and worth taking forward to an outcome evaluation.

Appropriate outcome measures by which to evaluate the decision aid was a hot topic within the study advisory group. The study had initially been oriented to developing a protocol to measure weight change and other biomedical markers as primary outcomes. The development work was not designed for robust calculations of sample sizes but it did suggest that an evaluation based on such outcomes would require a large, and therefore costly, trial. This would be hard to justify particularly in the context of the general reluctance to implement decision aids anyway. Attendance is a more feasible outcome. However, as the study progressed, patient advisors and the research team became more interested in the potential of the intervention with respect to relationship and rapport issues. Further work will seek funding to pursue these issues within a clinical evaluation study.

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