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## Review article

# Interventions to support shared decision-making for women with heavy menstrual bleeding: A systematic review

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## ABSTRACT

This review studies women's preferences for shared decision-making about heavy menstrual bleeding treatment and evaluates interventions that support shared decision-making and their effectiveness. PubMed, Cochrane, Embase, Medline and ClinicalTrials.gov were searched. Three research questions were predefined: 1) What is the range of perspectives gathered in studies that examine women facing a decision related to heavy menstrual bleeding management?; 2) What types of interventions have been developed to support shared decision-making for women experiencing heavy menstrual bleeding?; and 3) In what way might women benefit from interventions that support shared decision-making? All original studies were included if the study population consisted of women experiencing heavy menstrual bleeding. We used the TIDieR (Template for Intervention: Description and Replication) checklist to assess the quality of description and the reproducibility of interventions. Interventions were categorized using Grande et al. guidelines and collated and summarized outcomes measures into three categories: 1) patient-reported outcomes; 2) observer-reported outcomes; and 3) doctor-reported outcomes. Fifteen studies were included. Overall, patients preferred to decide together with their doctor (74%). Women's previsit preference was the strongest predictor for treatment choice in two studies. Information packages did not have a statistically significant effect on treatment choice or satisfaction. However, adding a structured interview or decision aid to increase patient involvement did show a positive effect on treatment choice and results, patient satisfaction and shared decision-making related outcomes.

In conclusion shared decision-making is becoming more important in the care of women with heavy menstrual bleeding. Structured interviews or well-designed (computerized) tools such as decision aids seem to facilitate this process, but there is room for improvement. A shared treatment choice is only possible after careful provision of information, elicitation of patients' preferences and integrating those preferences. Interventions should be designed accordingly.

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## Introduction

Heavy menstrual bleeding affects up to 30% of women in reproductive age and is therefore one of the most common reasons to consult a primary care provider [1–4]. Many treatment options exist, varying from medical therapy to surgery, such as endometrial ablation or hysterectomy [5–7]. Given the multiple choices with each its own risks and benefits, women may easily get caught in this labyrinth of treatment options.

It is therefore pivotal that patients' preferences are included in treatment discussions and decisions. Shared decision making is defined as a collaborative process that allows patients and their providers to make healthcare decisions together, taking into account the best evidence available about risks and benefits as well as the patient's preferences [8]. Prior studies have found that clinicians underestimate patients' need for information and involvement [9,10]. Furthermore, every patient makes her own assessment using personal preferences and values [11–13], which makes it important to know these.

Interventions such as decision aids have been developed to support patients and providers in shared decision-making. They can be used before, during or after the clinical encounter to enable patients to become engaged and informed [14]. The use of decision aids improves patient-provider communication, increases patient knowledge and enables more accurate risk perceptions, eventually resulting in a greater number of decisions consistent with patient values and increased patient engagement [14,15]. The main objective of this review is to provide an overview of current literature on shared decision-making and care for women suffering from heavy menstrual bleeding.

## Materials and methods

We performed a systematic review with a scoping approach, since this aims to thoroughly map the available literature on a particular topic and provide an opportunity to identify key concepts, gaps in the research and types and sources of evidence to inform practice, policymaking and areas for future research [16–18].

According to Arksey and O'Malley's framework for scoping studies [16], the following steps were undertaken: 1) specifying the research question; 2) identifying relevant literature; 3) selecting the literature; 4) charting the data and 5) summarizing and reporting the results.

Both patient preferences of women facing a treatment decision for HMB and interventions that have been developed and evaluated to promote shared decision-making and its outcomes were chosen as point of origin. No initial restrictions on specific

outcomes were predetermined. The following research questions were evaluated: 1) What is the range of perspectives gathered in studies that examine women facing a decision related to heavy menstrual bleeding management? 2) What types of interventions have been developed to support shared decision-making for women experiencing heavy menstrual bleeding? and 3) In what way might women benefit from interventions that support shared decision-making?

We searched electronic databases (Pubmed, Cochrane, Embase, Medline and ClinicalTrials.gov) from inception until April 2015. A combination of search terms related to shared decision-making and heavy menstrual bleeding were used and included search terms like 'Hypermenorrhoea', 'Metrorrhagia', 'Menorrhagia', 'Intermenstrual bleeding', 'Dysfunctional uterine bleeding'. In addition, reference lists of all primary and review articles were hand searched. We did not search grey literature (Box 1).

Inclusion criteria were: 1) study population consisting of women experiencing heavy menstrual bleeding; 2) the study answering one of our stated research questions; 3) consisting of original data and 4) written in English. We accepted all study design containing original data and excluded citations if a full text paper was not available. Two researchers (DZ, JB) independently screened titles and abstracts of citations identified. Reference lists of papers included, were screened. Disagreements about inclusion were discussed, with support of a third researcher (JA). After screening abstracts, further selection was done by reading full texts.

A data extraction form was created before selecting the studies, based on our research questions. The forms were used to summarize all results and to seek for commonalities between different studies. For research question 1 we extracted patient preferences on: 1) role doctor, 2) information provision, 3) degree of involvement in decision-making and 4) general data such as age, educational level, social status, type of clinical problem. For research questions 2 and 3 we focused on the intervention that was described: 1) timing of intervention 2) classification according to Grande et al. guidelines [19] and 3) appraisal using TIDieR (Template for Intervention Description and Replication) checklist [20]. For research question 3 we added the investigated effect and different outcome measures. Interpretation of results was done by the first two authors (DZ, JB) and was then discussed together with the other two authors until consensus was reached. (JA, BN)

The data extracted for research question 1 were qualitative data, which we summarized. For research questions 2 and 3 we gave a short description of the intervention and allocated each intervention to one of three categories, using Grande et al. guidelines [19]. These guidelines are used to classify the level of patient engagement methods and assess their feasibility in real

### Box 1. Syntax of Search Terms for Heavy Menstrual Bleeding and Shared Decision-Making

#### Heavy menstrual bleeding

Intermenstrual Bleeding\*[title/abstract] OR Dysfunctional Uterine Bleeding\*[title/abstract] OR Dysfunctional Bleeding\*[title/abstract] OR Bleeding Between Periods[title/abstract] OR Breakthrough Bleeding\*[title/abstract] OR Intermenstrual Bleeding\*[ot] OR Dysfunctional Uterine Bleeding\*[ot] OR Bleeding Between Periods[ot] OR Breakthrough Bleeding\*[ot] OR Dysfunctional Uterine Bleeding\*[ot] OR Intermenstrual Bleeding\*[title/abstract] OR Dysfunctional Uterine Bleeding\*[title/abstract] OR Bleeding Between Periods[title/abstract] OR Breakthrough Bleeding\*[title/abstract] OR Intermenstrual Bleeding\*[ot] OR Dysfunctional Uterine Bleeding\*[ot] OR Bleeding Between Periods[ot] OR Breakthrough Bleeding\*[ot] OR Hypermenorrhoea[ot] OR Hypermenorrhoea[ot] OR Metrorrhagia[ot] OR Metrorrhagia[title/abstract] OR Hypermenorrhoea[title/abstract] OR Hypermenorrhoea[title/abstract] OR "Metrorrhagia"[Mesh] OR menorrhagia[ot] OR "menorrhagia"[MeSH Terms] OR menorrhagia[title/abstract].

#### Shared decision making

shared[ot] AND decision making[ot] OR shared[title/abstract] AND decision making[title/abstract] OR "Decision Support Techniques"[Mesh] OR "Decision Making"[Mesh].

world settings: (1) Passive information provision; (2) Information and activation; (3) information and activation and collaboration. Outcome measures were divided into: (1) patient reported outcomes, (2) observer reported outcomes and (3) doctor reported outcomes. Overall, because of the wide variety of interventions and outcomes used, a *meta-analysis* of results was not performed.

We used the TIDieR checklist to assess the quality of description and the reproducibility of the interventions [20]. The TIDieR checklist is a 12-item checklist and is provided online (<http://www.equator-network.org/wp-content/uploads/2014/03/TIDieR-Checklist-PDF.pdf>). Using this checklist we assessed key features of the intervention described including duration, dose or intensity, mode of delivery, essential processes and monitoring. Two authors (DZ, JB) independently assessed all articles. They discussed full TIDieR checklists and any discrepancies were discussed with a third senior author (JA). She was consulted mostly when little information was present on, for instance, how the intervention was delivered (when and how). Most discrepancies were because of differences in the accuracy of description between some studies, for example in Kennedy et al. and Protheroe et al. [29,30,33,34].

## Results

The literature search yielded 174 citations and after checking for duplicates, 27 items were removed. After screening the titles and abstracts, a further 123 studies were excluded. Ten additional papers were excluded after reading the full texts because they did not specifically investigate the patient's preference, they did not describe a relevant shared decision-making tool ( $n=9$ ) or used original data ( $n=1$ ). One paper was included after checking reference lists. In total, 15 full-text articles were included, of which five related to research question 1 and 10 studies answered both research questions 2 and 3. Fig. 1 shows the study selection with a PRISMA flowchart.

*Research question 1: what is the range of perspectives gathered in studies that examine women facing a decision related to HMB management?*

All five articles related to research question 1 were cross-sectional studies using questionnaires to elicit patient-related aspects important for decision-making. Three studies used a structured questionnaire [21,24,25]. One of them added an interview to it [24], one was a prospective multicenter study [22] and one a cross-sectional survey [23]. Patients were women experiencing heavy menstrual bleeding or being treated for it. The number of patients varied from 104 [21] to 474 women [22]. Three studies examined factors associated with treatment preferences of women with heavy menstrual bleeding [21–23]. One study focussed on how informed consent about procedures should be applied to decisions between various surgical procedures such as abdominal or vaginal hysterectomy [24]. Another study asked doctors about their estimated patients' preferences regarding treatment [25].

Of all women, 17–34% said that they were given too little information about the advantages and the disadvantages of hysterectomy and other treatment options [21,24]. 74% of patients preferred to decide together with their doctor, whereas 4% wanted their doctor to decide and 2% preferred to work out their options alone [21]. Women's pre-visit preference was the strongest predictor for treatment choice in two studies [22,23]. Hysterectomy and conservative treatment were favoured equally often. In a multivariate analysis hysterectomy preference was associated with a completed family, menstrual pain, irregular periods, more visits to a private gynecologist and older women. Women who preferred conservative treatment were younger [23], had less severe symptoms [25] higher education [23,25] and had more regular periods [23] and less menstrual and pelvic pain [23]. The treatment plan was in line with pre-visit preference in 72% of the women

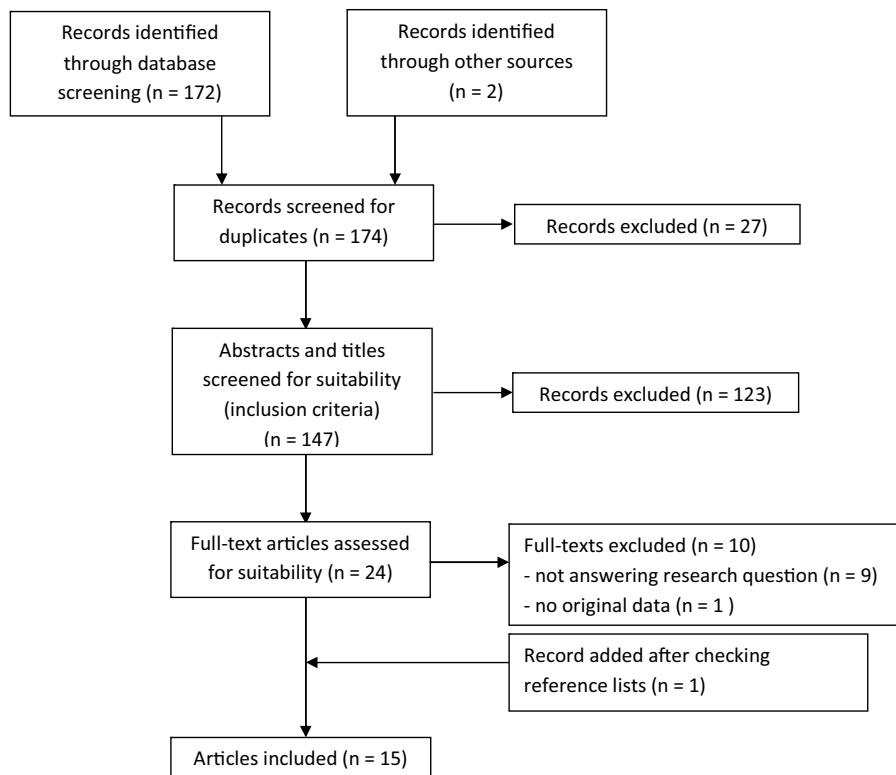


Fig. 1. PRISMA flow diagram.

**Table 1**  
Study characteristics and results of RQ2 and RQ3.

First author Year Country	Intervention	Classification intervention <sup>a</sup>	Design	Study population	Setting	Outcomes	Results – Effects on outcome measures
Fender 1999 UK	Educational package	Passive information provision	RCT	100 practices 348 GP's	Primary care Multicenter	Referral rates Treatment choice	Referral rates (I vs. C) Choice for tranexamic acid (I vs. C) 20% vs 29% OR 0,6 (95% CI 0,4 – 1,0) 57% vs 35% OR 2,4 (95% CI 1,6 – 3,5)
Kennedy <sup>†</sup> 2002; 2003 UK	Decision aids: 1. Information pack (booklet and video) (= intervention group) 2. Information pack AND Structured interview (= interview group) Information booklet	Information and activation	Three arm RCT	894 women with menorrhagia 28 gynaecologists	Gynecology outpatient department Multicenter	Treatment choice Satisfaction	Treatment choice for hysterectomy: (Interview vs. C vs. I) Satisfaction with: (Interview vs. C vs. I) – Participation in treatment decision making – Treatment results Treatment chosen I: 18% vs. C: 8% <sup>‡</sup> Oral medication I: 21% vs. C: 29% § Minor surgery and hormonal IUD I: 4% vs. C: 11% <sup>‡</sup>
Vuorma <sup>‡</sup> 2003; 2004 Finland	Information booklet	Passive information provision	RCT Cohort study	Women with menorrhagia RCT: n = 363 Cohort study n = 206	Gynecology outpatient department Multicenter	Treatment choice	SDM training: OPTION score RC training: OPTION score RC + SDM training: OPTION score First RC then SDM training: OPTION score ↑ 12.9 (95% CI 10 – 15.8) <sup>‡</sup> ↑ 10.6 (95% CI 7.9 – 13.3) <sup>‡</sup> ↓ 10.6 (95% CI –15.1 – 6.1) <sup>‡</sup> ↑ 7.7 (95% CI 3.4 – 12.0) <sup>‡</sup>
Elwyn 2004 UK	1. Training SDM skills 2. Training risk communication aids 3. Both	Information and activation	RCT	747 patients with mixed conditions (atrial fibrillation, prostatism, menorrhagia, menopausal symptoms)	Primary care 20 GP's	OPTION score (audio recordings)	COMRADE score (audio recordings) SDM training: COMRADE risk communication: COMRADE satisfaction: RC training: (no significant differences) COMRADE risk communication: COMRADE satisfaction with communication: Results only in research clinic (more time) COMRADE confidence in decision: COMRADE expectation to adhere to chosen treatment: Reduction of re-treatment within 1 year (I vs. C) 12.5 versus 25.0% Adjusted difference 50% (P > 0.05)
Edwards 2004 UK	1. Training SDM skills 2. Training risk communication aids 3. Both	Information and activation	RCT	747 patients with mixed conditions (atrial fibrillation, prostatism, menorrhagia, menopausal symptoms)	Primary care 20 GPs	COMRADE score (audio recordings)	↑ 0.9 (95% CI –0.9 – 2.3) ↓ 0.6 (95% CI 2.7 – –1.5) ↑ 0.7 (95% CI –0.9 – 2.3) ↑ 1.0 (95% CI –1.1 – 3.1) ↑ 2.1 (95% CI 0.7 – 3.5) <sup>‡</sup> ↑ 0.7 (95% CI 0.04 – 1.4) <sup>‡</sup>
Van der Wilt 2005 NL	Blood loss chart	Information and activation	Prospect-ive observa-tional study	Women with menorrhagia Intervention: n = 16 Control: n = 95	Gynecology outpatient department+ Single center	Re-treatment	Decisional conflict Menorrhagia specific scale score Knowledge Decisional Conflict Scale (DCS): I: 27.6 vs. C: 9.5 Menorrhagia specific scale score: I: 59.3 vs. C: 50.9 Knowledge: I: 59.7 vs. C: 48.8
Protheroe <sup>‡</sup> 2007, 2007 UK	The Clinical Guidance Tree (Computerized decision aid)	Information and activation	RCT Interview study	Women with menorrhagia RCT: n = 149 Interview: n = 18	Primary care 19 GP practices	Decisional conflict Menorrhagia specific scale score Knowledge	Adjusted difference: 16.6 (95% CI 11.6 – 21.5) <sup>‡</sup> Adjusted difference 10.9% (95% CI 0.9 – 21.0) <sup>‡</sup> Adjusted difference 9.3% (95% CI 1.9 – 16.6) <sup>‡</sup>

preferring hysterectomy and in 74% of those preferring a conservative option [22]. Coulter et al. found that general practitioners (GPs) estimated the patient's preference correctly in only 34% of patients [25].

The factors with the strongest independent relationship with referral were the GPs prediction of likely treatment, the patient's preference, GPs perception on the patient's preference, the number of previous surgical operations, the patient's age, and the GPs sex [25]. It has to be mentioned that the latter results came from a study that was performed in patients under the exclusive care of their GP.

*Research question 2: what tools or interventions have been developed to support shared decision-making for women experiencing heavy menstrual bleeding?*

Ten papers described an intervention such as a decision aid supporting shared decision-making.

Nine studies were randomized controlled trials (RCTs) [26–34] and one was a prospective observational study combined with a retrospective review of literature [35]. These studies varied from very small numbers (n=16) [35] to large groups of patients (n=894) [29,30]. There was a large variation of study populations and types of interventions among these studies. Two studies evaluated training in shared decision-making and risk communication provided to GPs [26,27]. Five studies evaluated the effect of different information packages like an information booklet or video [28–32]. Protheroe et al. [33,34] evaluated the effect of a computerized decision aid in primary care. Van der Wilt et al. [35], examined the use of a blood loss chart in a gynecology outpatient clinic. In eight studies the patient population consisted exclusively of women with heavy menstrual bleeding. Elwyn et al. and Edwards et al. evaluated a mixed population that included patients with atrial fibrillation, prostatism, heavy menstrual bleeding and menopausal symptoms [26,27]. Furthermore, study settings varied: five studies evaluated shared decision-making in primary care [26–28,33,34] and five other reported on shared decision-making interventions in gynecology outpatient departments in hospitals [29–32,35]. Patients were allocated to a certain treatment based on their Menorrhagia Severity Index (MSI). Characteristics are shown in Table 1.

The TIDieR checklist [20] was used to assess the quality of description and the reproducibility of the interventions. Much difference was observed in report of intervention. For example, Kennedy et al. [29,30] and Protheroe et al. [33,34] provided a detailed description of the interventions, whereas others lacked describing some essential parts. The majority of studies described the intervention moderately. Five studies did not describe adequately who provided the intervention (number 5 on TIDieR checklist: 'for each category of intervention provider, describe their expertise, background and training'). Only one study described 'Modifications' (number 10: 'if the intervention was modified during the course of the study, describe changes'). Six studies scored ten points out of twelve. The TIDieR scores are presented in Table 2.

The interventions had various degrees of patient involvement. We used Grande et al.'s [19] classification to classify the level of patient engagement methods and assess their feasibility: (1) passive information provision, (2) information and activation, (3) information and activation and collaboration. In the studies included in this review we categorized the interventions evaluated in Vuorma et al. [31,32] and Fender et al. [28] as 'passive information provision'. All other studies described interventions that were considered as 'informative and activating' [26,27,29,30,33–35]. None of the interventions evaluated were

assigned to the third category with the highest level of patient engagement.

Passive information provision intervention studies evaluated the addition of information booklets or patient leaflets in consultations. Vuorma et al. [31,32] evaluated the effect of an information booklet about HMB and treatment options on distribution of treatment modalities, knowledge about treatment options, satisfaction with communication and anxiety. Patients received this booklet by email before their appointment. The aim was to encourage women to consider different aspects of treatment and what outcomes they wanted. Fender et al. [28] evaluated an educational package for general practitioners (GP's) studying its influence on the management of heavy menstrual bleeding. The aim was to increase the appropriate choice of non-hormonal treatment and reduce referral rates from primary to secondary care. All GP's participating in the study received an educational meeting with the research team. This meeting included a visual presentation of evidence of literature, a printed referenced summary, a flow chart for management of heavy menstrual bleeding and a follow-up visit after six months [28].

Kennedy et al. [29,30] evaluated the effect of an information booklet and information video with and without a structured preference elicitation interview. The information booklet and video included women's preferences in deciding on treatment, described heavy menstrual bleeding and its causes, investigations, treatment options and benefits and risks of surgery. Before consultation, a trained research nurse conducted a structured

**Table 2**

Template for Intervention Description and Replication scores of included studies research questions 2 and 3.

TIDieR <sup>*</sup> Article	1	2	3	4	5	6	7	8	9	10	11	12	Total (max 12)
Elwyn 2004	+	+	+	+	+	+	+	+	-	?	+	+	10
Edwards 2004†	-	+	+	+	+	-	-	+	-	?	+	+	7
Kennedy 2002	+	+	-	+	-	+	+	+	-	?	+	+	8
Kennedy 2003‡	+	+	+	+	+	+	+	+	-	-	+	+	10
Protheroe 2007, 2007§	+	+	+	+	+	+	+	+	-	?	+	+	10
Van der Wilt 2005	+	+	+	-	+	+	?	-	?	?	+	-	7
Vuorma 2003, 2004§	+	+	+	+	-	+	+	+	-	?	+	+	10
Fender 1999	+	+	+	-	-	+	+	+	-	?	+	+	8

TIDieR, Template for Intervention Description and Replication.

\*: TIDieR checklist: 1: Brief name 2: Why, rationale 3: What, materials 4: What, procedures 5: Who provided 6: How, modes of delivery 7: Where, locations intervention 8: When and how much, number of times and over what period of time 9: Tailoring to individual patient 10: Modifications 11: How well, planned 12: How well, actual.

†: Articles from Edwards en Elwyn are strongly related. Study population and methods are the same.

‡: Articles from Kennedy 2002 and 2003 are strongly related. Study population and methods are the same.

§: Two separate articles from Protheroe and Vuorma assessed together, because of referral to each other.

?: Information is not (sufficiently) reported.

interview to elicit their preferences.

Protheroe et al. [33,34], compared the addition of a computerized decision aid ('The Clinical Guidance Tree') to written information alone. The Clinical Guidance Tree provided the most appropriate treatment options using a decision analysis based on evidence-based information and the patient's personal preferences.

Two studies [26,27] carried out an RCT in which they evaluated the effect of shared decision-making skills training and risk communication training of GPs in mixed patient groups (atrial fibrillation, prostatism, heavy menstrual bleeding or menopausal

symptoms). Participating doctors received training in shared decision-making skills or the use of risk communication aids, using simulated patients [26].

Van der Wilt et al. [35] evaluated the use of a blood loss chart as an aid in treatment selection. They hypothesized that it might help to estimate blood loss and might facilitate shared decision-making. The card consisted of a diary and was used to register the severity of menstrual blood loss during a cycle.

*Research question 3: In what way might women benefit from interventions that support shared decision-making?*

All ten articles evaluated the effectiveness of interventions supporting shared decision-making. We have collated and summarized outcomes measures into three categories: 1) patient-reported outcomes [28–35] 2) observer-reported outcomes [26–28] 3) doctor-reported outcomes. Fender et al. used both patient reported outcome measures i.e. treatment choice, and observer reported outcomes i.e. referral rates.[28] None of the studies used doctor-reported outcome measures.

Kennedy et al. [29,30] Vuorma et al. [31,32] and Fender et al. [28] reported on patients' treatment choice and the level of satisfaction with involvement in decision-making, decisional conflict and knowledge. Kennedy et al. concluded that the addition of an interview to clarify values and elicit preferences had a significant effect on women's treatment choice. Hysterectomy rates were lower in the intervention group. Providing women with information alone did not affect treatment choices [29,30]. Vuorma et al. found that additional information led to an increase in specific treatment decisions, like oral medication and to a decrease in minor surgery and IUD [31,32]. Fender et al. stated that an educational package led to a decrease of referral for heavy menstrual bleeding and an increase of treatment with appropriate non-hormonal drugs [28].

Van der Wilt et al. found that the use of a blood loss chart is feasible because of the lower probability of renewed treatment within 1 year. However, this result was not statistically significant [35].

Protheroe et al. stated that a computerized decision aid is more effective than written information alone in reducing decisional conflict in women with heavy menstrual bleeding in primary care. They also concluded that the computerized decision aid increased knowledge about treatment options. The interview study revealed that women with less formal education reported more benefit from the intervention [33,34].

Two RCTs evaluating training GPs in shared decision-making and risk communication used specific observer reported measures i.e. OPTION (Observing PaTient InvOlvement) score and COMRADE (Combined Outcome Measure for Risk communication And treatment Decision making Effectiveness) score respectively to score the level of patient involvement in decision-making observed in these recordings. They showed that clinicians were able to acquire the skills to implement shared decision-making competences [26,27]. What's more, they were able to use risk communication aids and significantly increased their involvement

of patients in decision-making. OPTION score increased after both shared decision-making training and risk communication training, the difference between shared decision-making and risk communication training being non-significant. Risk communication training followed by shared decision-making training appeared to be the most effective order. There was no statistically significant effect on patient based outcomes; however, a slight increase of the COMRADE-score was observed. Adding more time to the consultation led to a significant increase of the COMRADE-score, as did COMRADE expectation to adhere to chosen treatment.

## Comment

This review showed that women experiencing heavy menstrual bleeding prefer sharing decisions with their health care providers. Different types of interventions to support shared decision-making in heavy menstrual bleeding care have been developed, such as information booklets, videos, a web-based decision aid and a shared decision-making and risk communication-training programme. Overall, it was found that information packages, such as a booklet (i.e. 'passive information provision'), did not have a statistically significant or clinically relevant effect on treatment choice, health outcome or patient satisfaction. In contrast, adding a structured interview or a (computerized) decision aid showed a positive effect on treatment choice, patient satisfaction and reduction of decisional conflict.

None of the interventions incorporated all three elements of shared decision-making (i.e. information, activation and collaboration), which is believed to hold the greatest promise in supporting shared decision-making [19]. Adding a 'collaborative nature' to an intervention can augment the process of patients and providers working together to share information, leading to better conversations [19]. Some examples of such tools are issue cards [36], Option Grids [37], mand decision boxes [38]. These are typically used during the encounter to compare preference-sensitive treatment options based on research evidence. Further information on these specific tools can be found in Box 2.

One interesting finding of our review is that after the implementation of shared decision-making interventions, referrals to secondary care decreased [28] and the hysterectomy rate dropped [29,30]. This is in line with a recent review stating that patients tend to choose less invasive treatment options when shared decision-making principles are applied [41]. Although this should not be the primary incentive to embrace shared decision-making, it might encourage doctors to get into shared decision-making. In countries without a broad-based primary care system, like the US, shared decision-making will also be very useful and will contribute to patient's satisfaction. Although some incentives will differ among care systems, like higher financial benefits for invasive treatment, the general overview will be in favor of better implementation of shared decision-making. Healthcare insurances would ideally reimburse some of the doctor's investments in time and equipment, since this review indicates that the addition of more time to the consultation led to a significant increase in the COMRADE-score, indicating that risk communication improves

### Box 2. Examples of Online Resources for SDM Tools

- <http://Optiongrid.org/>
- <http://decisionaid.ohri.ca/>
- <http://shareddecisions.mayoclinic.org/>
- <http://patient.info/decision-aids/>

and patients have more confidence in the decision taken. Furthermore, it could be that costs overall will decrease after further implementation of shared decision-making [41].

This review also included two studies that evaluated a training programme for GPs showing a significant effect in favor of the shared decision-making process, yet too small to be clinically relevant. Applying shared decision-making training for providers, including nurses, GPs and gynecologists, is believed to enhance shared decision-making in clinical practice by increasing awareness and skills, and by removing some of the barriers [39]. Barriers reported are time constraints or clinicians' beliefs that shared decision-making is difficult or not applicable to every patient or clinical situation [40]. The facilitators most often reported were provider motivation and positive impact on patient outcomes, which is in accordance with our results [40]. The International Patient Decision Aid Standards (IPDAS) Collaboration stipulates that the development of a patient decision aid should follow a systematic process and should involve consultation with patients and clinicians. This would also increase the reproducibility. However, due to the lack of evidence, practical guidance is not very clear yet [36]. Aside from training providers, it might be worthwhile to 'train' patients as well.

Our review has some limitations. Using the TIDieR checklist we found large differences in the way authors reported the intervention, which was most often inadequate. We therefore recommend that researchers should describe the intervention thoroughly and systematically to increase reproducibility in future trials or facilitate clinicians who want to adopt it in their clinical practice. Another limitation is that in two studies mixed patient groups were analysed [26,27]. Furthermore, one study was based on only 16 patients in the intervention group [35]. Patients were allocated to a certain treatment based on their Menorrhagia Severity Index (MSI), although four out of 16 patients preferred and received a different treatment. Consequently, the conclusions of this study should be taken with a certain amount of caution. Finally, the data was very heterogeneous, and we were thus not able to perform a meta-analysis.

In conclusion, our review showed that shared decision-making is very important in daily practice as it leads to better decisions, enhances patient satisfaction and might lead to less-invasive therapies. Women prefer sharing decisions with their providers, but providing only a booklet is not enough to support this. Especially in heavy menstrual bleeding, where causes are mostly benign and the impact on the quality of life is sometimes severe, a shared treatment choice is only possible after careful information provision, elicitation of patients' preferences and integrating both. Decision aids and shared decision-making interventions could benefit this process.

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The authors did not report any potential conflicts of interest.

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