

# BMJ Open Does value-based healthcare support patient-centred care? A scoping review of the evidence

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## ABSTRACT

**Background** Standardisation of outcome measures is integral to value-based healthcare (VBHC), which may conflict with patient-centred care, focusing on personalisation.

**Objectives** We aimed to provide an overview of measures used to assess the effect of VBHC implementation and to examine to what extent the evidence indicates that VBHC supports patient-centred care.

**Design** A scoping review guided by the Joanna Briggs Institute methodology.

**Sources of evidence** We searched the following databases on 18 February 2021: Cochrane Library, EMBASE, MEDLINE and Web of Science.

**Eligibility criteria** We included empirical papers assessing the effect of the implementation of VBHC, published after introduction of VBHC in 2006.

**Data extraction and synthesis** Two independent reviewers double-screened papers and data were extracted by one reviewer and checked by the other. We classified the study measures used in included papers into six categories: process indicator, cost measure, clinical outcome, patient-reported outcome, patient-reported experience or clinician-reported experience. We then assessed the patient-centredness of the study measures used.

**Results** We included 39 studies using 94 unique study measures. The most frequently used study measures (n=72) were process indicators, cost measures and clinical outcomes, which rarely were patient-centred. The less frequently used (n=20) patient-reported outcome and experience measures often measured a dimension of patient-centred care.

**Conclusion** Our study shows that the evidence on VBHC supporting patient-centred care is limited, exposing a knowledge gap in VBHC research. The most frequently used study measures in VBHC research are not patient-centred. The major focus seems to be on measures of quality of care defined from a provider, institution or payer perspective.

## INTRODUCTION

Growing challenges in healthcare, related to rising costs and unwarranted variation in outcomes, have led to efforts to reform healthcare delivery.<sup>1</sup> In 2006, Porter and Teisberg published their book ‘Redefining

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We used a systematic approach and well-established methodological guidelines.
- ⇒ Our search included value-based healthcare (VBHC) keywords, which might have led to missing relevant literature on topics that are closely related but did not use VBHC keywords.
- ⇒ We did not include papers written in another language than English, which may have led to country bias.
- ⇒ We did not include grey literature; thus we may have missed relevant studies on VBHC initiatives not published in peer-reviewed journals.
- ⇒ We used a deductive approach and erred on the side of non-applicability in our analysis of the patient-centredness of study measures.

Health Care: Creating Value-Based Competition on Results’ describing principles for value-based competition and value-based healthcare (VBHC).<sup>2</sup> They defined value as the achieved health outcomes that matter to patients per currency spent, also referred to as the value equation.<sup>1</sup> Value-based competition should be beneficial for all healthcare stakeholders, including patients, while increasing economic sustainability of healthcare systems.<sup>3</sup> The corresponding healthcare delivery strategy, based on this concept of value, is referred to as VBHC.<sup>2</sup> Porter and Lee formulated six strategic agenda points to achieve a high-value healthcare delivery system: (a) organising care into integrated practice units, (b) measuring outcomes and costs for every patient, (c) move to bundled payments, (d) integrate care across separate facilities, (e) expand excellent services across geography and (e) build an enabling information technology platform.<sup>4</sup>

In VBHC, care is envisioned with patients at the centre and with a focus on outcomes that matter to patients.<sup>3</sup> This focus is in line with another healthcare approach: patient-centred care (PCC). PCC is underpinned by

the concept of patient-centredness. Patient-centredness is conceived of as a multidimensional concept that has been defined in various ways, comprising six dimensions that have consistently been reported over time: (a) sharing power and responsibility, (b) therapeutic alliance, (c) patient as person, (d) biopsychosocial, (e) coordinated care and (f) doctor as person.<sup>5</sup> The concept of patient-centredness has changed the way healthcare is understood and performed, and aimed to change the focus of healthcare delivery from the perspective of policymakers and clinicians to the perspective of patients.<sup>6</sup> Over time, closely aligned concepts have been introduced such as person-centredness and family-centredness, with the same themes as patient-centredness at a conceptual level.<sup>7</sup> In clinical practice, this shift in perspective is reflected in more emphasis on including patient-reported outcome and experience measures (PROMs and PREMs) and shared decision making.<sup>8-10</sup>

At first sight, VBHC and PCC, both focusing on what matters to patients, seem complementary and show overlap in their philosophies and practices. However, there also seem to be tensions between a value-based and patient-centred approach. Standardised outcome sets, often developed by the International Consortium of Health Care Outcome Measurement (ICHOM) in co-design with patients, are integral to VBHC initiatives.<sup>11</sup> Such standardised measures and pre-set definitions of success may facilitate outcome comparison and performance assessment at group level, but may not always reflect what matters to an individual patient, even if co-designed with patients.<sup>12</sup> It is unclear to what extent the VBHC framework and its implementation in clinical practice take into account the dimensions of PCC.<sup>13</sup> Prior research on VBHC suggests a lack of focus on outcomes that matter to patients, in favour of a focus on clinical outcomes and process indicators.<sup>13-16</sup> This could indicate a lack of a patient-centredness when implementing VBHC, which raises the question to what extent VBHC implementation supports PCC.

Therefore, the aim of this study was to provide an overview of measures used to assess the effect of VBHC implementation and to examine to what extent the evidence indicates that VBHC supports PCC.

## METHODS

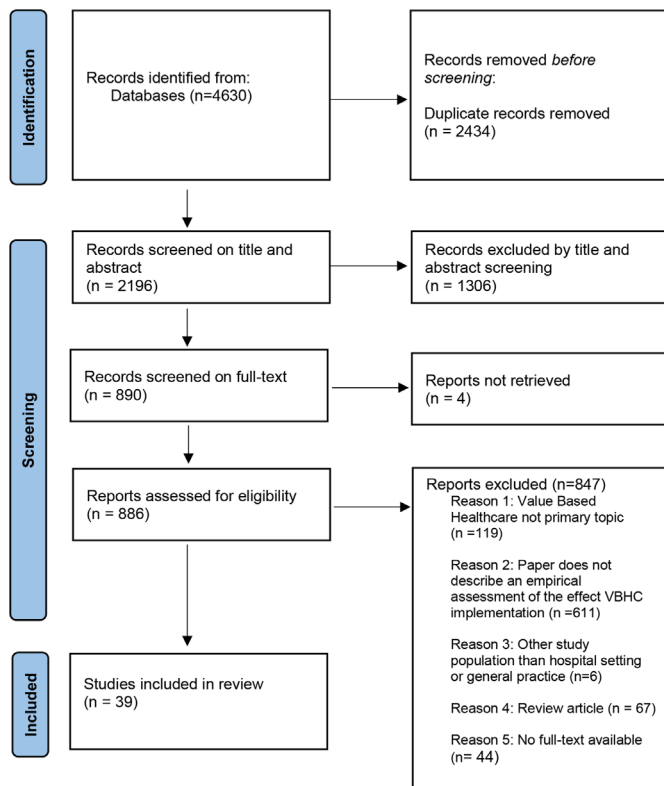
This scoping review is guided by the Joanna Briggs Institute's methodology for scoping reviews.<sup>17</sup> We also followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for the reporting of scoping reviews. This scoping review is registered on Open Science Framework.<sup>18</sup> We assembled a search in collaboration with a librarian, using the identified Medical Subject Heading (MeSH) terms and keywords: ("Value-Based Health Insurance"[MeSH] OR "value based care"[tw] OR "value based healthcare"[tw] OR "value based health care"[tw] OR "valuebased care"[tw] OR "valuebased healthcare"[tw] OR "valuebased health care"[tw] OR "value-based

care"[tw] OR "value-based healthcare"[tw] OR "value-based health care"[tw] OR "VBHC"[tw]). We searched the following databases in collaboration with a specialised librarian: Cochrane Library, EMBASE, MEDLINE and Web of Science (online supplemental appendix 1). We searched the databases from 2006 onwards, because our focus was on VBHC delivery as introduced in 2006,<sup>2</sup> and up until 18 February 2021. Based on the notion of the use of value-based payment as a separate keyword by authors, we performed an additional search in MEDLINE in May 2021, focused on value-based payment: ("value based payment\*" [tw] OR "value-based payment\*" [tw] OR "valuebased payment\*" [tw]).

After removal of duplicates, papers were uploaded in the web application Rayyan QCRI, through which reviewers decided on inclusion and compared their selection. Two reviewers (MK and DJvS or EV) independently screened all titles and abstracts for eligibility. Disagreements between reviewers were resolved by discussion or after consultation with a third reviewer (AMS). The full texts of the remaining articles were screened following the same steps.

Papers were eligible for inclusion if they described a quantitative or mixed methods empirical study on the implementation of VBHC. Quantitative designs included experimental or quasi-experimental study designs, that is, randomised or non-randomised controlled trials, controlled or uncontrolled pre-post studies, interrupted time series or observational cohort or case-control studies. Case studies were also eligible. Systematic, scoping or narrative reviews and meta-analyses were not considered eligible. Papers were also excluded from our review if they were written in another language than English or if they did not describe an empirical study assessing the effect of the implementation of VBHC, or VBHC elements in a hospital setting or general practice.

Two reviewers read each paper and one (EV or GB) extracted the relevant information, which was checked by a second reviewer (MK) concerning: study design, study population, VBHC element(s) studied, reported effects (concerning VBHC element(s)), and, if applicable, dimension(s) of patient-centredness concerned. We classified study measures into six categories: process indicator, cost measure, clinical outcome, PROM, PREM or clinician-reported experience measure. Then, for each study measure(s) per category and by study, we assessed whether the study measures could be categorised as patient-centred. When considering a questionnaire (PROM or PREM), we looked at item level to assess if the measure could be categorised as patient-centred; one item or more would qualify to consider a study measure to be patient-centred. This categorisation by patient-centredness was based on the following criteria: the author(s) or the patients involved in the conduct of the study explicitly referred to the study measure as being patient-centred, or we considered it to fall within one of the six dimensions of patient-centredness as identified by Langberg *et al.*<sup>5</sup> Two reviewers made an assessment (EV or



**Figure 1** Flowchart of record selection. VBHC, value-based healthcare.

GB and MK) and in case of discrepancies, one reviewer (MK) made a final decision based on discussions with senior researchers (AHP, WJWB and AMS).

### Patient and public involvement

Patients and the public were not involved in the design and conduct of this study.

## RESULTS

### Characteristics of the included studies

Our search yielded 2196 papers, of which 890 passed title/abstract screening. Full-text screening resulted in the inclusion of 39 papers, all describing a unique study (figure 1).<sup>19–57</sup> Of these papers, 29 studies had been performed in the USA, 5 in the Netherlands, 3 in the UK, 1 in China and 1 in Italy (online supplemental table 1).

The studies included samples from different patient populations and mostly from specialty care, such as orthopaedic care (n=11) or internal medicine (oncology, endocrinology, vascular medicine, cardiology) (n=14). Most studies used an observational or semi-experimental design: cohort study (n=15), pre-test/post-test studies (n=6), case studies (n=6), a difference-in-difference analysis (n=4), case-control studies (n=2), natural experiments (n=2), cross-sectional studies (n=1), mixed methods studies (n=1), regression discontinuity design (n=1) or interrupted time series (n=1). The VBHC elements investigated in the studies included the following: ‘Move to bundled payment’ (n=20), ‘Organisation of care in

integrated practice units’ (n=14), ‘Measuring outcomes and costs for every patient’ (n=7), ‘Integrate care delivery across separate facilities’ (n=2) and ‘Building an enabling information technology platform’ (n=3). No empirical studies on the VBHC element ‘Expand excellent services across geography’ were seen (online supplemental table 1).

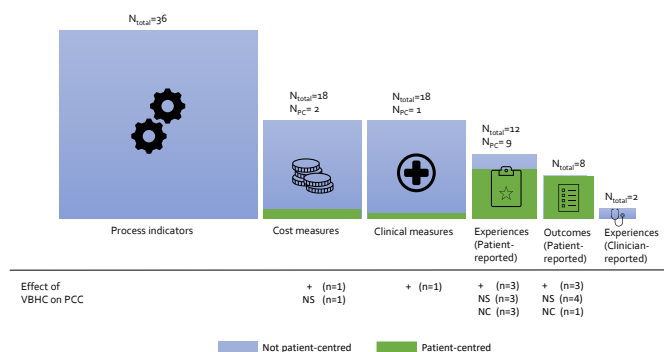
### Categorisation of study measures

We identified 94 unique study measures. We identified process indicators (n=36), cost measures (n=18), clinical outcomes (n=18), PROMs (n=8), PREMs (n=12) and clinician-reported experience measures (n=2) (online supplemental table 2).

The process indicators often concerned length of hospital stay (n=11), number of patients undergoing a (surgical) procedure (n=9), hospital readmissions (n=6), utilisation of emergency department services (n=5) and number of hospitalisations (n=4). Clinical outcomes differed and related to the patient population under study, for example, mortality rates (n=9), blood pressure control (n=6), perioperative or postoperative complications (n=6) and glycated hemoglobin (n=4). Cost measures were often expressed as total or average cost (n=9) or as cost benefit/savings (n=9). Two studies also assessed out-of-pocket costs or patient spending. PROMs included domains related to health-related quality of life, or disease-specific domains, for example, relating to diabetes (Diabetes Distress Scale) or orthopaedics (Oxford Hip Score). Six studies used PREMs focusing both on patient experience and satisfaction, specifically using the Consumer Assessment of Healthcare Providers and Systems survey (n=1), the Clinician and Group Consumer Assessment of Healthcare Providers and Systems survey (n=1), the Hospital Consumer Assessment of Healthcare Providers and Systems survey (n=2) and the Home Health Consumer Assessment of Healthcare Providers and Systems survey (n=1); one study used a self-developed survey. Two studies solely focused on patient satisfaction using a telephone poll (satisfaction graded from 1 to 10) or a non-specified third-party survey. Five studies solely focused on patient experience of which one study used the Patient Assessment of Chronic Illness Care (PACIC) survey to assess care coordination. Three studies focused on patient experience regarding the use of PROMs in clinical care using self-developed surveys (n=3). One study did not specify which patient experience measure was used. Clinician-reported experience measures concerned experiences with value-based payment programmes or the utility of PROMs in clinical care, assessed with self-developed surveys (n=2).

### Study measures concerning patient-centredness

In 16 of 39 papers, we categorised 20 unique measures as patient-centred. In 3 of these 16 studies, the authors related one or more measures to patient-centredness, in the 13 other studies, we identified one or more measures that related to dimensions of patient-centredness



**Figure 2** Number of study measures concerning patient centeredness by type of study measure (total\_n=94). +, Significant positive association between VBHC element and patient-centred study measure; NC, not clear, association between VBHC element and patient-centred study measure not tested; NPC, number of patient-centred study measures; NS, non-significant association between VBHC element and patient-centred study measure; PCC, patient-centred care; VBHC, value-based healthcare.

according to Langberg *et al*<sup>5</sup> (online supplemental table 2). Overall, we categorised the following types of measures to patient-centredness: PROMs (n=8), PREMs (n=9), cost measures (n=2) and one clinical outcome: AM-PAC-Mobility, a clinician-rated measure of patient's abilities to complete basic tasks (n=1) (figure 2). The PROMs concerned generic quality of life questionnaires, such as the EuroQol 5-Dimension, or disease-specific questionnaires, such as the Diabetes Distress Scale. The PREMs concerned multiple surveys from the Centers of Medicare & Medicaid Services such as the Hospital Consumer Assessment of Healthcare Providers and Systems, the PACIC, and four self-developed questionnaires of which three focused on the experience with PROM implementation. The cost measures concerned out-of-pocket costs or patient spending. Overall, we identified the following dimensions of patient-centredness of Langberg *et al*, to be reflected in one or more measures: 'Patient as Person' (n=10), 'Biopsychosocial' (n=7), 'Sharing Power' (n=6), 'Therapeutic Alliance' (n=6) and 'Coordinated care' (n=2). We did not identify a measure related to 'Doctor as person'.

All PROMs concerned the 'Patient as Person' dimension, due to their aim to measure how individuals experience their illness and functioning. In some instances, PROMs related to the 'Biopsychosocial' dimension, given their focus on psychosocial well-being (n=4). PREMs related to different dimensions of patient-centredness, depending on which aspects of the patient experience were measured: 'Sharing Power' (n=6), 'Therapeutic Alliance' (n=6), 'Patient as Person' (n=2), 'Coordinated care' (n=2) or 'Biopsychosocial' (n=1). For example, the PACIC survey, intended to measure patient assessment of care coordination, was related to the dimension 'Coordinated care'.

One clinical outcome, the AM-PAC-Mobility, was categorised as patient-centred by authors of the concerning paper: a clinician-rated measure of patient's abilities to complete basic tasks. We did not see this measure to fit into one of the dimensions of patient-centredness. We related two patient-level cost measures to the biopsychosocial dimension of patient-centredness: out-of-pocket and patient spending (online supplemental table 2).

### Reported effects of VBHC implementation

In 4 of the 16 studies using a patient-centred measure, the effect of VBHC implementation was only reported in a descriptive manner. In 12 studies, statistical testing was performed on at least one patient-centred measure (online supplemental table 2).

Of these 12 studies, six showed a significant positive association between VBHC and a measure. Bernstein *et al* showed that the implementation of PROMs for use in clinical practice led to a significant improvement in patient experience, matching the 'Therapeutic alliance' dimension of patient-centredness.<sup>23</sup>

Bao *et al* showed that the implementation of a value-based payment programme led to a significant improvement in PROMs, fitting the 'Patient as person' and 'Biopsychosocial' dimensions of patient-centredness.<sup>21</sup> Miao *et al* showed that the implementation of a value-based payment programme led to a significant decrease in out-of-pocket expenditure, also matching with the 'Biopsychosocial' dimension of patient-centredness.<sup>47</sup> Johnson *et al* showed that the implementation of a bundled payment programme led to a small significant improvement in clinician ratings of patient mobility, that did not sustain over time, and was not accompanied with a difference in patient-reported functional recovery.<sup>41</sup>

Further, Fortmann *et al* showed that the implementation of a care team integration programme led to a significant improvement in diabetes-specific PROMs related to 'Patient as person' and 'Sharing Power' and to an improvement in patient experience, fitting 'Coordinated care' dimension of patient-centredness.<sup>35</sup> Lastly, van Veghel *et al* showed that regional integration of care led to a significant increase in patient experience and satisfaction on items related to the 'Sharing power' and 'Therapeutic alliance' dimensions of patient-centredness.<sup>56</sup>

In the other six studies, statistical testing showed no significant associations. These studies investigated: (a) the effect of implementation of a healthcare monitor (PROMs dashboard) on patient experience, (b) the effect of implementation of a standardised care pathway on patient experience and satisfaction, (c) the effect of implementation of a standardised multidisciplinary care pathway on orthopaedic and general PROMs, (d) the effect of implementation of a value-based purchasing programme on patient experience and satisfaction, (e) the effect of implementation of a value-based purchasing programme on patient experience and satisfaction and (f) the effect of implementation of coordinated care

pathway and routine PROMs measurement on patient spending.<sup>30 33 36 49 53 54</sup>

In four studies using a patient-centred measure, no statistical analysis was performed.<sup>26 28 37 55</sup>

## DISCUSSION

Our study shows limited evidence of VBHC supporting PCC, exposing a knowledge gap in VBHC research. In studies investigating the implementation of VBHC, the most frequently used study measures are process indicators, cost measures and clinical outcomes. These rarely are patient-centred. Currently, only six studies provide evidence of VBHC supporting PCC, mostly using PROMs and PREMs as study measures.

A previous review on VBHC implementation by van Staalduinen *et al* showed implementation strategies rarely to be described or evaluated, which may explain the limited amount of evidence on VBHC in general.<sup>58</sup> Vijverberg *et al* showed in their review on the nature of VBHC research, that a considerable number of papers describing VBHC initiatives could not be categorised in Porters' value agenda, possibly indicating a need for guidelines on how to implement VBHC.<sup>59</sup>

Zanotto *et al* showed a lack of focus on outcomes that matter to patients in VBHC initiatives performing routine outcome measurements.<sup>14</sup> The loss of focus on what matters to patients in the translation from the VBHC framework to implementation could also point to a need for guidance and comprehensive strategies to keep focus on patient-centredness when implementing VBHC. Building on findings from earlier reviews, we have showed that there seems not only to be a lack of focus on what matters to patients in VBHC implementation, but also in the evaluation of VBHC initiatives.

A prior systematic review showed the importance of considering the health professionals' perspective<sup>60</sup> in the transition to VBHC systems, and we hypothesise that the perspective of citizens may also be relevant, but felt this to be outside the scope of our review, focusing on patient-centredness.

VBHC has been designed as a solution to multiple challenges in healthcare, relating to both rising healthcare costs and unwarranted variation in quality of care. We observed that a considerable number of studies that have investigated the effect of VBHC implementation use measures of cost or of efficiency, such as reduced hospital length of stay or use of CT scans, typically reflecting the provider, institution or payer perspective. Improving processes, costs and clinical outcomes may be beneficial to both healthcare professionals, payers and patients, and may even support the achievement of outcomes that matter to patients. However, VBHC efforts cannot automatically be interpreted as contributing to patient-centred care. This can only be defined as such when the input of patients has been considered through co-design or by using patient-centred measures. None of the authors in the included studies explicitly described patient

involvement when selecting study measures. Less than half (16/39) of the included studies use patient-centred study measures to evaluate VBHC implementation. In order to improve value for patients, a focus is needed on outcomes that matter to patients, and to understand what matters to patients, a patient-centred approach is needed. Thus, in order to truly improve patient value, efforts should be made to align a value-based and a patient-centred approach. More knowledge on how VBHC implementation affects patient-centred care delivery could support healthcare systems to achieve this alignment and improve outcomes that matter to patients.

Patient-centredness is a multidimensional concept, which is typically not measured with a single instrument.<sup>61</sup> This may hamper research on the impact of VBHC on patient-centredness. However, patient-reported outcome and experiences can be used as study measures to assess the effect of the implementation of VBHC on dimensions of patient-centredness. For example, a study used a PREM to understand the effect of using individual PROM data in clinical consultations from the perspective of the patient.<sup>23</sup> Including patient-reported measures assessing dimensions of patient-centredness has the potential to show the effect of VBHC on patients' health and/or their experience with healthcare. Furthermore, the included studies used patient experience measures that combined items exploring patient experience and levels of satisfaction. Patient satisfaction items assess to what extent expectations of an individual are fulfilled, but do not give insight into their actual experience with healthcare (services), meaning this also does not indicate how patient-centred care is. Although high satisfaction might often correlate with high patient-centredness, these concepts cannot be used interchangeably.<sup>62</sup>

Further, the involvement of patients in developing sets of patient-centred study measures or in the design of individual studies can be improved,<sup>63</sup> and their involvement may advance the understanding of researchers regarding which specific study measures are important to the patient population concerned. Involving patients in initiatives such as the ICHOM show how outcome sets can be designed with multiple stakeholders involved, including patients.<sup>11</sup> These outcome sets are intended for use in clinical practice, yet ICHOMs' methodology of outcome set development can be used to develop sets of patient-centred study measures as well.

To our knowledge, this is the first scoping review on the inclusion of study measures relating to patient-centredness in empirical studies investigating VBHC implementation. We have used a systematic approach and have followed well-established methodological guidelines. There are nevertheless limitations to our study. First, our search using VBHC keywords might have led to missing relevant literature on topics that are closely related but did not use VBHC keywords. This may, for example, be the case for papers on accountable care organisations or integrated practice units. Second, our search did not include grey literature, which might have led to missing relevant studies



on practical VBHC initiatives not published in peer-reviewed journals. Also, we only included papers written in English, leading us to exclude papers for example in Swedish, although Sweden is known as a frontrunner in VBHC implementation, and may thus have led to country bias. Our analysis of patient-centredness may have been limited by our deductive approach, using the dimensions of patient-centredness as identified by Langberg *et al.* These dimensions have been informed by a large body of evidence but may still overlook dimensions that are relevant to patients. Therefore, patient-relevant topics might have been missed. To improve reliability between the two reviewers, we only categorised study measures as patient-centred if the authors' description clearly reflected patient-centredness dimensions as identified by Langberg *et al.* In case of doubt, we chose to not categorise the study measure as patient-centred, thus we might have under-reported the relation between study measures and patient-centredness.

## CONCLUSION

There is limited evidence that VBHC implementation supports PCC, exposing a knowledge gap in VBHC research. Studies describing VBHC implementation often do not use study measures related to patient-centredness. The focus seems to be on measures concerning quality of care defined not from a patient, but a provider, institution or payer perspective. Including patient-reported measures (PROMs and PREMs) is a first step towards assessing VBHC implementation from a patient-centred perspective. Further, patient involvement in the study design and selection of study measures could provide a better understanding of which specific study measures matter to the patient population concerned. A better understanding of how VBHC affects patient-centredness is expected to lead to a better alignment between VBHC and PCC. In turn, this would ultimately lead to outcomes that truly matter to patients, in a sustainable way for healthcare systems.

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**Contributors** MK, AHP, DJvS, WJWB and AMS designed the study. MK and DJvS performed the literature search. MK and DJvS screened the papers on eligibility and performed data extraction. MK drafted the first version of the manuscript. All authors were involved in drafting a final version of the manuscript. MK is the guarantor for this work.

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**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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