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Manuscript Title: Development and validation of the MiPrep survey: an instrument assessing patients' perceived preparation for medical interventions including medical imaging, radiotherapy and surgery

Running title: Patient preparation for medical interventions

ABSTRACT

Objective: Adequately preparing patients for medical interventions is an important component of quality healthcare. However, few instruments for assessing patients' preparation exist. We aimed to develop a psychometrically rigorous instrument to assess patients' perceptions of the quality of preparation.

Methods: An instrument to measure patients' preparation for medical interventions (MiPrep) was developed and tested with patients undergoing medical imaging, radiotherapy or surgery. Patients were recruited and asked to complete two surveys. Survey A assessed patient and intervention characteristics. Survey B (post-intervention) contained MiPrep to assess validity (face, content and construct) and reliability (internal consistency and test-retest).

Results: 869 (85%) patients consented to participate and 551 (63%) returned the post-intervention survey. Face and content validity were demonstrated. Exploratory factor analysis identified two survey modules: receipt and adequacy of information (2 domains) and overall appraisal of patient-centred care (1 domain). Reliability was evidenced by adequate internal consistency (Cronbach alphas 0.81-0.89) and item-total correlations above 0.20. However, individual item test-retest reliability requires further confirmation. The final instrument contains 27 items.

Conclusions: The MiPrep instrument has evidence of being a valid and reliable instrument of preparation for medical interventions. Healthcare providers can use the instrument as a quality

assurance tool to identify areas for improvement, and areas of excellence in patients' preparation. Future studies should verify these findings in other populations and examine the divergent and predictive validity of the instrument.

HIGHLIGHTS

- Few comprehensive and psychometrically robust measures of preparation exist; most measures have been developed exclusively for, or tested only with, cancer populations; and there has been limited attention to the assessment of preparation for minimally invasive medical interventions.
- A generic instrument to measure patients' preparation for medical interventions (MiPrep) was developed and has evidence of being a valid and reliable instrument of preparation for medical interventions.
- Given the importance of preparing patients for medical interventions, adequately measuring this component of care will enable areas for improvement to be identified, and healthcare providers can use the MiPrep instrument as a quality assurance tool to identify areas for improvement, and areas of excellence in patients' preparation.

INTRODUCTION

The term ‘medical intervention’ refers to all forms of diagnostic procedures, tests, and treatment [1]. Adequately preparing patients for a medical intervention is an important component of high quality healthcare. All interventions are associated with some level of risk, and many require patients to manage side effects associated with the intervention. Informing patients about the nature, benefits, risks, alternatives and consequences of the intervention [2] is also an ethical and legal imperative [3]. Preparation involves providing the patient with information, education and support to ensure that they are well equipped for the intervention. A number of steps may be involved, including risk communication, decision-making, the provision of procedural information and sensory information [4]; behavioural instruction [5]; and psychosocial aspects, for example, discussion of the patient’s emotions [5, 6]. Best practice preparation improves physical and psychological outcomes, increases patient satisfaction and knowledge, and reduces imaging examination non-attendance [7-11]. However, patients are often unprepared for medical interventions. For example, it has been reported that after agreeing to treatment, many patients are unable to answer basic questions about the interventions they agreed to receive [12].

The measurement of patient perceptions of the quality of healthcare delivery is an important component for health service monitoring, improvement and evaluation [13-15]. Given the importance of preparing patients for medical interventions, adequately measuring this component of care will enable areas for improvement to be identified. It is essential that the instrument meets standard psychometric criteria including: reliability or consistency [16]; validity [16]; acceptability to those who will complete the instrument; and feasibility for those who will administer the instrument [16, 17].

A systematic review [18] identified that few comprehensive and psychometrically robust measures of preparation exist. Only one existing instrument included all of the five commonly recommended preparatory content areas [19]. There has also been limited attention to the assessment of preparation for minimally invasive medical interventions. This is an important gap given that it has been suggested that healthcare providers set aside any preconceptions about minor and major medical interventions when preparing patients, as both may cause distress to patients [20]. Furthermore, most measures have been developed exclusively for, or tested only with, cancer populations. There are also no generic measures designed for use across medical interventions or conditions. A generic measure would be helpful for benchmarking and comparing the quality of patient preparation across populations and services.

Overall aim: To develop a psychometrically rigorous instrument to measure the adequacy of patients' preparation for medical interventions.

METHODS

PHASE 1: Item development

Initial item generation

Review of the literature: The published literature, including current guidelines [1] was assessed to identify factors that may influence patients' preparation for a medical intervention. The needs, concerns, and issues facing patients were identified and the items of existing instruments were reviewed and considered for inclusion if they were commonly identified by patients as being important. From this review, a draft instrument was developed and the following procedures were undertaken with Human Research Ethics Committee approval (H-2012-0022 and 14/09/10/5.03).

For all studies in this manuscript, all measures, conditions, data exclusions, and sample size determinations that relate to the target research question are reported.

Item refinement, face and content validation

Professional input: The 32-item draft instrument was reviewed by an expert panel of behavioural scientists and psychosocial professionals (n=7, six female) who were asked to review each item and provide independent feedback in relation to relevance and completeness. This resulted in the refinement of the wording of some items. However, the experts agreed that all items were relevant.

Patient input: To develop an instrument suitable to a wide range of medical interventions, a purposive sample of patients undergoing common medical interventions including medical imaging, radiotherapy and surgery were recruited to participate in a telephone interview that explored their experiences. This included 33 patients undergoing medical imaging (Angiography, Computed Tomography (CT), Fluoroscopy, Magnetic Resonance Imaging (MRI), Ultrasound, or X-ray); 26 patients undergoing radiotherapy; and five patients who had undergone surgery. Patients in all sub-samples were recruited from outpatient clinics from two hospitals while awaiting their appointment. Participants were adults, able to read and speak English; and considered physically and mentally capable of participating in the study by clinic staff. Participants completed a semi-structured telephone interview within two weeks of recruitment that explored how well they perceived they were informed and prepared for their intervention. Participants were aged from 19 to 84 years (mean age: 60) of which 35 (54.7%) were male. An in-depth qualitative analysis about the preparation experiences of the radiotherapy patient sub-sample is reported in a separate paper [21].

This iterative consultation and input from both patients and healthcare professionals helped to refine and confirm the relevance of the items included in the instrument and resulted in the addition of nine items (total = 41 items).

Pilot testing

To further confirm the content and face validity of the instrument, a separate sample of four medical imaging patients and three radiotherapy patients were recruited to pilot test the instrument using the same eligibility criteria and recruitment methods previously described. These participants were aged from 47 to 79 years (mean age: 67) and five were male. Participants were given a copy of the survey at the time of recruitment to take home and review. They then completed a telephone interview approximately two weeks later. Participants were asked how easy the questionnaire and respone scale was to understand and how comprehensively it covered issues related to preparation for the medical intervention they had received. Item wording and response options were refined based on this feedback. No items were deleted.

Preliminary instrument: Consisted of 41 items measuring the adequacy of patient preparation for medical interventions (MiPrep) across two sections which have different responses scales. The first section (MiPrep-module 1) included 25 items to assess whether patients peceived that they received information on a range of preparatory aspects, such as the provision of risk, procedural, sensory, behavioural and psychosocial information. For this section patients responded to each item via a five-point response scale: ‘yes, more than I wanted’, ‘yes, as much as I wanted’, ‘yes, but less than I wanted’, no, but I wanted some’; and ‘no, but I did not want any’. These response options were chosen to examine both the receipt of and patient-centred adequacy of preparation. The second section (MiPrep-module 2) included 16 items to assess patients’ overall experience, via a five-point likert scale ranging from ‘strongly disagree’ to

'strongly agree'. The final items included are shown in Tables 2a and 2b.

PHASE 2: Assessment of the psychometric properties of the instrument

Using a classical test theory approach, the following psychometric properties of the instrument were investigated in a sample of patients who had undergone medical interventions: reliability (internal consistency and test-retest), validity (construct), acceptability, and feasibility. Pre-established criteria were used to determine whether each of these psychometric properties was achieved (see Statistical Analysis).

Setting and Participants:

A separate sample of patients undergoing a diverse range of elective medical interventions were consecutively recruited (i.e. all accessible and eligible patients were approached) from four sites, including a medical imaging department at one inner regional hospital in New South Wales (NSW), Australia and three radiotherapy departments. Two radiotherapy departments were located in Queensland; one within a private hospital and the other in a separate cancer treatment centre. One radiotherapy department was located in NSW within a hospital that provides public hospital services. Participants were recruited between May 2015 and April 2017 using the same eligibility criteria previously described. Participant recruitment from radiotherapy departments was undertaken as part of a larger study that assessed emotional well-being, health care service utilisation, and perceptions of cancer care.

Recruitment Procedures:

Patients were approached by clinic staff and introduced to a researcher while they were awaiting their appointment. The researcher sought informed consent from eligible patients to participate in the study. Consenting participants were asked to complete two surveys. **Data Collection:**

Consenting participants at site 1 (medical imaging department) were asked to complete *Survey A*, a brief survey prior to their appointment via a touchscreen computer tablet. This survey assessed *demographic characteristics*: sex, date of birth, marital status, highest level of education, employment status, private health insurance status, and concession card status; *medical condition and intervention details:* medical condition (either suspected or confirmed), intervention they were awaiting, reason for the intervention, if this was their first time having the intervention, and a rating of their overall health. Consenting participants were also provided with a pen-and-paper copy of a *post-intervention survey (Survey B)* including the newly developed instrument (MiPrep). At all other sites, due to insufficient time prior to their appointment, participants received a pen-and-paper copy of *Survey A* to complete at home and post back. These participants were then posted *Survey B* one month after recruitment. All participants were requested to complete *Survey B* at home and return it to the researchers using a supplied reply-paid envelope within three weeks. Non-responders received up to two mailed reminders at three weekly intervals.

The first 240 participants who returned their post-intervention survey were additionally asked to complete a second copy of the MiPrep instrument within 7-14 days to assess test-retest reliability.

Statistical Analysis

Analysis was conducted using SAS v9.4 (SAS Institute, Cary, North Carolina USA) and STATA/IC 13 (StataCorp LP, Texas)

Procedures to assess psychometric properties:

Validity

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to check the suitability of the data for EFA. The values of the correlation matrix were

then examined. As item responses were ordinal, polychoric correlations were estimated using pairwise deletion. Items were deemed collinear if the variance inflation factor (VIF) was >5 and/or polychoric correlations >0.8. One item from the pair of collinear items was removed based on highest VIF and/or potential clinical utility.

Construct validity: As this is a new measure an *exploratory factor analysis* (EFA) was conducted to establish construct validity. Iterated principal factors analysis was chosen due to the skewed data [22]. The number of factors to retain in the final model was determined using a mixed method approach [22, 23], including: (i) the Kaiser criterion (or the eigenvalue greater than 1 rule); (ii) assessment of the elbow in scree plot; (iii) and parallel analysis [22]. Multiple EFA tests were conducted based on the findings of these three methods. Promax oblique rotation was used to simplify the factor structures as it was expected that there would be some correlation among factors [23]. The final factor structure was determined based on the following criteria: minimum item loadings of 0.32 [24], no or few item cross-loadings, and no factors with less than three items [23].

Reliability

Internal consistency was assessed using *Cronbach's alpha* coefficients with values between 0.70 [16] - 0.95 [25] considered acceptable. Item-total correlations between 0.20-0.80 were also considered acceptable [26].

Test-retest reliability: As it is an ordinal scale, item test-retest reliability was examined using weighted Kappa [27] with quadratic weighting. Items with a Kappa statistic of > 0.6 were considered acceptable across Time 1 and Time 2 [28]. Domain test-retest reliability between mean scores from Time 1 and Time 2 was examined using Intraclass correlation coefficient (ICC), with ICCs ≥0.7 considered acceptable [16].

Acceptability and Feasibility

The time to complete the instrument, response rate and percentage of missing items were examined as indicators of acceptability and feasibility. A completion time of <20 minutes and low levels of non-responders (<60%) [29] and missing items (<10%) were considered acceptable. Gender was compared between consenters and non-consenters using Fisher's Exact Test.

Sample size

In line with recommendations, a minimum sample of 300 was deemed adequate for factor analysis [30]. A sample of 150 participants allowed the agreement of our instrument with 95% confidence intervals to be estimated with a margin of 0.2 from a true intra-class correlation of 0.7.

Scoring of the modules:

Domain scores were calculated for participants who completed >50% of items, by summing all items in the domain and dividing by the number of non-missing items. The scale for module 1 was reversed so that for both modules higher domain scores represent higher levels of preparation. This straightforward method of scoring was used to allow assessment of the range and distribution of the domain scores of the measure.

RESULTS

Of 1436 patients approached, 1028 were eligible, of which 869 (85%) consented to take part in this study and 551 patients returned the post-intervention questionnaire (63% completion rate). Demographic characteristics of the study sample are reported in Table 1. Participants were aged 19–92 years and undergoing a variety of medical interventions. There was no significant

difference in gender between consenters and non-consenters. Of the 240 participants sent a second copy of the questionnaire for test-retest purposes, 181 (75%) returned a completed copy.

[Insert Table 1]

Construct Validity

Due to the different structure of item responses, two EFAs were conducted, one module for each response type. The KMO measure was 0.91 for module 1 and 0.88 for module 2. Bartlett's test was statistically significant for both modules (both p=0.000), indicating the sample was appropriate for EFA.

MiPrep-module 1 EFA:

Eight items were deemed collinear based on the pre-specified criteria, resulting in the removal of four items. The EFA was conducted on 520 observations according to the smallest n for pairwise correlations. Based on participant responses indicating lack of variation (item 7 - see acceptability and feasibility section below), one other item was excluded from the model. The Kaiser's criteria suggested a two-factor structure while the scree plot and parallel analysis both suggested a three-factor structure. However, after rotations, the third factor interpretation relied on only two items. Two and four factor structures were explored, and a two-factor structure was chosen as it produced a reasonable structure and met the interpretability criteria (all final items had a factor loading of 0.32 or greater, few cross-loadings, and no factor had less than three items). The factors were labelled 1) pre-intervention information (5 items) and 2) intervention information (13 items). (Table 2a).

MiPrep-module 2:

No items had a VIF >5, however, seven items had polychoric correlations >0.8. Therefore, four items were removed. The EFA was conducted on 530 observations according the smallest number for pairwise correlations. Two items with poor test-retest reliability and one item with participant responses indicating lack of variation, in addition to poor test-retest reliability, (see below) were not included in this analysis. The Kaiser's criteria suggested a one-factor structure, and the scree plot and parallel analysis both suggested a two-factor structure. After rotation of one and two factor structures, a one-factor structure was deemed most appropriate as all final items appeared related from a content perspective, had a factor loading of 0.32 or greater, and the factor had at least three items. Nine items were used for all further analyses. The module/factor was labelled overall appraisal of patient-centred care (Table 2b).

Internal Consistency

All factors illustrated high internal consistency with Cronbach's alpha values ranging from 0.81 to 0.89 (see Table 3) and all corrected item-total correlations were above 0.20 (see Tables 2a and 2b). For each item, the Cronbach's alpha if the item was deleted from the subscale is also presented (Tables 2a and 2b).

[Insert Table 2a]

[Insert Table 2b]

Test-Retest Reliability

Of the 181 test-retest surveys returned, 27 were excluded due to the return interval between the two surveys exceeding 21 days. The mean time between time 1 and time 2 surveys was 10 days

(SD = 4.1 days). Five items had weighted kappa coefficients >0.60, meeting the criteria for acceptable item test-retest reliability. Twenty-two items had moderate test-retest reliability (kappa coefficients 0.41-0.60) and two items had fair test-retest reliability (kappa coefficients 0.21-0.40). Any item for which the kappa coefficient was ≤0.30 was examined and considered for removal, based on potential clinical relevance. This resulted in the removal of two items, leaving all final items with acceptable to moderate test-retest reliability. At the domain level, two of the three ICCs were less than the acceptable criteria of 0.7. Tables 2a and 2b present the test-retest reliability of each item included in the final model, whilst table 3 presents test-retest reliability at the domain level.

[Insert table 3]

Acceptability and Feasibility

A response rate of 63% is considered acceptable [29, 31, 32]. The mean time taken to complete the instrument was 10 minutes (range: 2 to 60 minutes) and no item had more than 10% missing values (range: 2.7% to 7.4%). There was no item for which over 80% of participants utilised only one of the response options. However, item 40 (healthcare providers were friendly and approachable) was not included in the final model due to a high number of participants being scored as adequately prepared, indicating a lack of variation; in addition to poor test-retest reliability. Item 7 (estimated cost of the procedure) was also excluded due to a large number of responses indicating item irrelevance, in addition to poor test-retest reliability. Descriptive statistics for each item are shown in tables 2a and 2b and for the domain level in table 3.

DISCUSSION

The MiPrep instrument was developed to measure patients' perceptions of the adequacy of their preparation for a medical intervention. Evidence for the reliability and validity of the MiPrep instrument is demonstrated from both the qualitative and quantitative evaluation of the psychometric properties of this instrument. The final instrument includes two modules. The first module assesses whether patients received information on a range of preparatory aspects, and consists of two domains. The second module covers patients' overall appraisal of patient-centred care, and consists of one domain. Use of the instrument may assist healthcare providers to efficiently examine the quality of preparation provided to their patients, including the identification of preparatory aspects that could be improved and the patient-centeredness of the preparation provided.

Each domain had evidence of acceptable internal consistency indicating that the items are homogeneous and measure a single underlying construct. In relation to reproducibility, only five items met our criteria for item test-retest. However, despite this, all final items had acceptable to moderate test-retest reliability. Whilst the ICCs for mean domain scores also did not meet our acceptability criteria, again, all domains had moderate to substantial agreement. Whilst there are no consistent guidelines for the timeframe between survey administrations [33], a timeframe of 7-14 days is commonly applied to measures that ask people to report on current symptoms (e.g. quality of life). Whereas, this instrument asks patients to recall something that may have occurred up to 3 weeks ago. It may be that we needed to conduct the initial post-intervention survey closer to the time of the medical intervention. However, given that the MiPrep instrument was designed to assess the state of patients' preparation, rather than predict outcomes, the internal structure

rather than temporal stability is the most crucial aspect of reliability [16], and is well evidenced for this instrument.

Evidence for the potential responsiveness of this instrument is demonstrated as for each item, all response options were utilized and none had 80% or more of responses within one response category. This indicates that item responses have room to move to detect change. In addition, acceptability and feasibility were demonstrated with acceptable response and missing value rates, and completion time. These aspects are important as they increase the utility of the instrument.

Whilst the exploratory factor analysis demonstrates the construct validity of this instrument, other indicators of construct validity, including known groups and divergent validity were unable to be assessed in this study due to limited research in this area. In particular, as there is no standardized taxonomy [18] and limited confirmed conceptual structures in the area of patient preparation it was difficult to develop a-priori hypotheses. Whilst there are a number of other concepts relevant to patient preparation, such as patient-centred care [34], shared decision-making [35-37], satisfaction [13], and information needs [38]; these studies and instruments were not specifically focused on patient preparation, and thus do not provide a comprehensive assessment of this construct [18]. It is recommended that future research further investigate the conceptual structure of this measure and how it may relate to different subgroups, once adequate evidence relating to these constructs are developed. As there is no gold standard instrument that measures patient preparation, criterion validity, including concurrent and predictive validity were also unable to be assessed. This instrument was designed to be applied to a range of medical interventions, thereby overcoming a limitation of the few existing instruments examining preparation [18]. During the assessment of psychometric properties, 14 items were removed for various reasons, including

responses from patients indicating item irrelevance or lack of variation, as well as poor psychometric performance. While we were not able to receive feedback from patients during this final process of item selection, we did not take a purely data driven approach to item reduction, as we utilised expert review to determine whether items were conceptually or clinically relevant prior to removal. Furthermore, we followed recommended procedures for the assessment of reliability and validity including EFA, when determining the final structure of the two modules [16, 22, 23, 25, 26]. Now that the factor structure has been determined, further testing is suggested to establish other psychometric properties. Furthermore, future research including improving test-retest reliability, using item response theory to inspect the instrument and verifying the findings in other populations is encouraged.

Clinical implications

Healthcare providers can use the MiPrep instrument as a quality assurance tool to identify areas that could potentially be improved, and areas of excellence in patients' preparation for medical interventions. For example, services can use the instrument to ensure they provide adequate material to patients; and for continuous quality improvement, as an indicator that they are adequately preparing patients, which may support the service to achieve accreditation in relation to service quality. There is a high potential for use of this instrument to be used to improve patient care. The anticipated benefits to patient care are improved patient preparation, including increased knowledge and satisfaction, and decreased distress [8, 39].

Limitations

Recruitment from medical imaging, radiotherapy and surgery populations may limit the ability to generalise these findings to a broader population of medical interventions. However, MiPrep was

developed to be a generic instrument suitable for a range of medical interventions. Furthermore, the instrument could be used as a core set of items supplemented with additional intervention-specific items if required. It is recommended that further research be conducted to assess whether MiPrep is appropriate for use in other populations.

CONCLUSIONS

The MiPrep instrument has evidence of being a valid and reliable measure of patient perceptions of preparation for medical interventions. To provide further support for the psychometric properties of the MiPrep instrument, these findings should be verified in other populations. Additionally, individual item test-retest reliability, confirmatory factor analysis, divergent validity and predictive validity require examination in future research. Use of MiPrep may assist healthcare providers to improve patients' experiences with care.

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Table 1

Demographic and disease characteristics of the final sample of participants who had undergone a medical intervention (N=551)

PATIENT CHARACTERISTICS		**Mean (range)**
Age:	Years	61 (19, 92)
		n (%)
Sex:	Male	262 (47.7)
	Female	287 (52.3)
Marital Status:	Single, never married	59 (11.0)
	Married or living with partner	347 (64.5)
	Separated or divorced, or widowed	132 (24.5)
Education:	Secondary school or lower	333 (66.3)
	Trade or vocational training (e.g. TAFE or college)	113 (22.5)
	Tertiary	56 (11.2)
	Other	10 (2.0)
Working status:	Working (full or part time)	167 (31.0)
	Not working (home duties, unemployed, retired, disability pension, other)	372 (69.0)
Private Health Insurance:	Yes	263 (48.7)
	No	277 (51.3)
Concession Card[†]:	Yes	347 (64.1)
	No	194 (35.9)

Medical intervention:	Radiotherapy	197 (36.1)
	MRI	134 (24.5)
	CT	61 (11.2)
	Ultrasound	49 (9.0)
	X-ray	33 (6.0)
	Fluoroscopy	33 (6.0)
	Angiography	16 (2.9)
	Selected more than one modality	12 (2.2)
	Other (including "Did not know")	11 (2.0)
Prior experience of the intervention:	Yes	233 (42.9)
	No	308 (56.7)
	Unsure	2 (0.4)
Reason for the intervention:	To find the cause of a problem or symptoms, for an undiagnosed condition	105 (19.4)
	To confirm a doctor's diagnosis	51 (9.4)
	To determine the course, or receive treatment for a diagnosed condition	274 (50.7)
	To check or follow-up on a previous treatment or diagnosed condition	109 (20.2)
Medical condition (either suspected or confirmed),	Musculoskeletal (e.g. osteoarthritis, bone fracture)	64 (11.8)
	Neoplasm (malignant, benign, unspecified or uncertain)	296 (54.6)
	Circulatory (e.g. chest pain, aneurism, stroke)	48 (8.9)

categorised by body system:	Digestive (e.g. colitis, oesophagitis, liver disease)	37 (6.8)
	Other body system (nervous, endocrine, or genitourinary)	42 (7.8)
	Other condition (e.g. general symptoms (e.g. headache); infection; pregnancy)	26 (4.8)
	Don't know	29 (5.5)

*****Observations within each variable may not add to total sample size due to missing values

† An Australian government issued card that enables access to health services and medicines at a reduced cost.

Table 2a. Factor loadings, internal consistency and item test-retest reliability for the 18 items of the MiPrep instrument - *Module 1 (Information needs)*, determined using responses from participants who had undergone medical interventions (N=551)

Factor/item description	**Factor loadings**	**Corrected item-total correlations** (item-rest correlation)	**Cronbach's alpha if item deleted from subscale**	**Test-retest reliability**	**Mean** (SD)	**Median** (range: 1-5 for all items)
Factor 1: Pre-intervention information						
My condition or disease	0.82	0.54	0.79	0.45	3.71 (0.87)	4.00 (4.00, 4.00)
The expected benefits of the procedure	0.71	0.56	0.78	0.45	3.70 (0.83)	4.00 (4.00, 4.00)
The risks, potential side-effects or complications of the procedure	0.48	0.61	0.76	0.56	3.50 (1.10)	4.00 (3.00, 4.00)
Whether there were other options to this procedure available to me	0.60	0.62	0.77	0.42	2.93 (1.38)	4.00 (1.00, 4.00)
The likely consequences of not having this procedure	0.82	0.70	0.73	0.49	3.17 (1.30)	4.00 (2.00, 4.00)
Factor 2: Intervention information						

Written information about the procedure	0.41	0.49	0.89	0.61	3.15 (1.32)	4.00 (2.00, 4.00)
Information about the procedure in more than one format (e.g. verbally and as a brochure, DVD or recommended website etc.)	0.51	0.61	0.88	0.58	2.93 (1.38)	4.00 (1.00, 4.00)
Information about how other patients had experienced a similar procedure	0.47	0.48	0.89	0.59	2.12 (1.33)	1.00 (1.00, 4.00)
What needs to happen before the procedure (e.g. skin markings, special diet, anaesthesia, etc.)	0.67	0.57	0.88	0.54	3.56 (1.10)	4.00 (4.00, 4.00)
What the procedure involves (e.g. what would happen during the procedure)	0.75	0.63	0.88	0.63	3.61 (1.00)	4.00 (4.00, 4.00)
What the equipment that would be used for the procedure looks like and how it works	0.80	0.66	0.88	0.58	3.27 (1.27)	4.00 (2.00, 4.00)
Strategies to help me manage any anxiety or stress before or during the procedure (e.g. listening to music etc.)	0.80	0.61	0.88	0.52	3.07 (1.33)	4.00 (2.00, 4.00)

What sensations I might experience during the procedure (e.g. what I might feel or hear)	0.92	0.65	0.88	0.56	3.42 (1.15)	4.00 (3.00, 4.00)
How long it would take to recover from the procedure	0.83	0.73	0.88	0.68	3.29 (1.23)	4.00 (2.00, 4.00)
When and how I would find out the results of the procedure	0.42	0.32	0.89	0.56	3.56 (0.90)	4.00 (3.00, 4.00)
If follow-up appointments or further procedures were needed	0.57	0.49	0.89	0.49	3.46 (1.09)	4.00 (3.00, 4.00)
How to manage any side-effects (e.g. fatigue or pain) if they occur	0.82	0.73	0.88	0.72	3.13 (1.28)	4.00 (2.00, 4.00)
Who to contact for further information or advice	0.71	0.65	0.88	0.57	3.24 (1.22)	4.00 (2.00, 4.00)

Table 2b. Factor loadings, internal consistency and item test-retest reliability for the 9 items of the MiPrep instrument - *Module 2 (Overall appraisal of patient-centred care)*, determined using responses from participants who had undergone medical interventions (N=551)

Factor/item description	**Factor loadings**	**Corrected item-total correlations** (item-rest correlation)	**Cronbach's alpha if item deleted from subscale**	**Test-retest reliability**	**Mean** (SD)	**Median (Q1, Q3)** (range: 1-5 for all items)
Asked me how much information I wanted about this procedure	0.70	0.63	0.87	0.42	3.37 (1.07)	4.00 (3.00, 4.00)
Encouraged me to discuss any fears or anxiety I had about the procedure	0.83	0.73	0.86	0.50	3.63 (1.03)	4.00 (3.00, 4.00)
Explained to me that I could choose whether or not to have the procedure	0.77	0.68	0.86	0.47	3.51 (1.09)	4.00 (3.00, 4.00)
Provided me with information about practical issues (e.g. parking or transport available to me)	0.65	0.57	0.88	0.51	3.66 (1.12)	4.00 (3.00, 4.00)
Asked me whether I wanted to have a support person (e.g. family, carer or close friend) with me	0.70	0.65	0.87	0.56	3.37 (1.11)	4.00 (2.00, 4.00)
I was given information about the procedure that I could easily understand	0.79	0.63	0.87	0.49	4.00 (0.82)	4.00 (4.00, 4.00)

The decision to have this procedure was made with respect to my values and preferences	0.80	0.67	0.87	0.58	3.94 (0.80)	4.00 (4.00, 4.00)
I was well prepared for this procedure	0.74	0.61	0.87	0.64	3.97 (0.89)	4.00 (4.00, 4.00)
I received enough emotional support from my health care providers (e.g. care or assistance to help me cope with my feelings)	0.64	0.54	0.88	0.58	4.04 (0.91)	4.00 (4.00, 4.00)

Table 3. Domain-related statistics (mean score, median score, Cronbach's alpha and test-retest reliability) for the MiPrep instrument, determined using responses from participants who had undergone medical interventions (N=551)

	No. of items	Number of participants answering >50% of items	Mean score (S.D)	Median score (Q1, Q3)	Cronbach's alpha	Test-retest reliability
Module 1: Information needs						
Pre-intervention information	5 (max score 25)	533	16.99 (4.24)	19.00 (14.00, 20.00)	0.81	0.60
Intervention information	13 (max score 65)	535	41.89 (10.41).	44.00 (36.00, 50.00)	0.89	0.82
Module 2: Overall appraisal of patient-centred care	9 (max score 45)	535	33.51 (6.35)	34.00 (29.00, 37.00)	0.88	0.67