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Consensus on the content of an instrument to measure person-centred teamwork: An e-Delphi study

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Abstract

Aims and Objectives: To establish consensus on items to be included in an instrument to measure person-centred teamwork in a hospital setting. The objective was to identify the items through a methodological literature review. Refine the items and obtain consensus on the items.

Background: A definition and related attributes of person-centred teamwork have been agreed upon. An instrument is needed to measure and monitor person-centred teamwork in hospital settings.

Design: Consensus, electronic Delphi design.

Methods: Items were identified through a methodological literature review. These items were included in three electronic Delphi rounds. Using purposive and snowball sampling, 16 international experts on person-centred care, teamwork and/or instrument development were invited to participate in three electronic Delphi rounds via Google Forms. Descriptive statistics were used to demonstrate their agreement on the relevance and clarity of each item. Items were included if consensus was 0.75. Content analysis was used to analyse written feedback from experts.

Results: The response rate was 56% ($n = 9/16$). Nine experts participated over an 8-week period to reach consensus on the items to be included in an instrument to measure person-centred teamwork in hospital settings. The experts' responses and suggestions for rephrasing, removing and adding items were incorporated into each round.

Conclusion: A Delphi consensus exercise was completed, and experts reached agreement on 38 items to be included in an instrument that can be used to evaluate person-centred teamwork in hospital settings.

Relevance to clinical practice: We engaged with nine international experts in the academic and clinical field of person-centeredness, teamwork and/or instrument development. An online platform was used to allow the experts to give input into the study. The experts engaged from their own environment with full autonomy and anonymity. Person-centred teamwork, aimed at improving practice is now measurable.

Person-centred teams improve outcomes of patients. Person-centred teamwork was specifically developed to assist low compliance areas in hospitals.

KEYWORDS

consensus, electronic Delphi, instrument development, person-centred teamwork

1 | INTRODUCTION

Research has focused on implementing person-centeredness and teamwork as separate strategies (Dietz et al., 2018; Slater et al., 2015; WHO, 2018). Both strategies have shown benefits for practice. Person-centeredness creates a culture of trust, respect and mutual goals in the working environment (Byrne et al., 2020; Huang et al., 2020; McCormack & McCance, 2017; Sangaleti et al., 2017). For healthcare providers, person-centeredness increases job satisfaction (Nocon et al., 2019; van der Meer et al., 2018; van Diepen et al., 2020; Vassbø et al., 2019), creates a positive psychosocial work environment (Jessup et al., 2020) and increases intent to stay (van Diepen et al., 2020; Willemse et al., 2015). Teamwork creates a sense of belonging among team members, and improves team relationships, job satisfaction, staff retention, staff productivity and quality of care delivered (Kaiser & Westers, 2018; Kendall-Gallagher, 2017; Kim et al., 2022). With good teamwork, patient outcomes are prioritised, which in turn will improve patient satisfaction (Dahlke et al., 2018). Ideally, healthcare providers should strive to practice person-centred teamwork.

Researchers have suggested that there is a need to define 'person-centred teamwork' and identify its measurable elements (DeVellis, 2016). Subsequently, a definition for person-centred teamwork has been suggested and consensus has been reached on its related attributes (Viljoen, 2023). Current practice should be continuously evaluated to ensure the implementation of best practices (Moule et al., 2017). Measurement provides insight into the efficacy of specific strategies. To the best of our knowledge, literature addressing the measurement of person-centred teamwork is lacking.

1.1 | Background

Person-centred teamwork is still a novel area of research. Teamwork is essential for successful person-centeredness as teamwork creates an environment where multidisciplinary teams, patients and communities share in the care process (Li et al., 2018). Measuring and evaluating person-centred teamwork in hospital settings will allow for data-driven best practices and improved quality of care (Atashzadeh-Shoorideh et al., 2022; Moule et al., 2017).

Measurement provides insights into the efficacy of implemented strategies. Accurate instruments are needed for accurate measurement of implemented strategies. A fundamental prerequisite of accurate instruments lies in a clear understanding of the concept. Therefore, the first step in developing an instrument (Hair

> **What does this paper contribute to the wider global community?**
>
> - Person-centred teams improve outcomes for persons receiving care in hospitals.
> - Person-centred teamwork, aimed at improving practice, is now measurable.
> - Improvement plans can specifically assist settings with low compliance.
> - The instrument was developed for use by healthcare workers in hospital settings.

et al., 2019; Siedlecki, 2020) to measure person-centred teamwork was to define the concept and reach consensus on the attributes. The concept and attributes of person-centred teamwork were proposed to be 'person-centred teamwork is a dynamic approach where the team, person(s) delivering care and person(s) receiving care, develop trust, and connectedness to meet the healthcare needs of the person. Underpinned in synergy, inclusivity, and healthful relationships, the members of the team recognize the uniqueness of each individual, allowing mutual flourishing in striving to attain optimal outcomes' (Viljoen, 2023).

While existing instruments measure teamwork, such as those developed by Rosen et al. (2018) and Kang (2019) and person-centred care (Slater et al., 2017), they do not assess the promotion of person-centred teamwork in clinical practice. This study aims to present a consensus on the items developed for measuring the attributes of person-centred teamwork.

2 | METHODS

2.1 | Study design

A consensus design was employed to collaborate with experts, facilitating the sharing of their insights to enhance and to identify elements for inclusion in an instrument to measure person-centred teamwork, as suggested by Nasa et al. (2021) and Fink-Hafner et al. (2019). The Delphi technique is a well-established method to obtain consensus (Heuzenroeder et al., 2022; Niederberger et al., 2021; Shinners et al., 2021). An electronic Delphi (e-Delphi), utilising online platforms to engage with a panel of experts (Berg et al., 2022), was chosen to obtain consensus on the items to be included in a self-report

instrument to measure person-centred teamwork in hospital settings. An international panel of experts was selected to reduce direct confrontation, mitigating potential intimidation. Experts remained blinded to each other's identities, enabling participation without the pressure to conform to dominant opinions (Fink-Hafner et al., 2019; Nasa et al., 2021; Trevelyan & Robinson, 2015). Experts were able to voice their opinions freely, creatively and honestly (Fink-Hafner et al., 2019; Waggoner et al., 2016).

Additionally, e-Delphi proved to be a cost-effective and time-saving strategy (Fink-Hafner et al., 2019; Waggoner et al., 2016). Experts had 2 weeks per round to give feedback (Jünger et al., 2017; Niederberger & Spranger, 2020) and were able to give feedback at their own convenience (Fink-Hafner et al., 2019; Nasa et al., 2021). The e-Delphi process promotes the evolution of ideas as experts learn and adapt their feedback in the context of the group based on feedback and changes made in subsequent rounds (Fink-Hafner et al., 2019; Jünger et al., 2017; Niederberger & Spranger, 2020; Ogbeifun et al., 2016). Each expert responded individually, with no distractions (Fink-Hafner et al., 2019; Nasa et al., 2021). The e-Delphi gave the researchers control over responses, allowing them to collate and swiftly incorporate suggestions to initiate the next round. The e-Delphi method facilitates the process of achieving consensus to assess concepts (Shinners et al., 2021; Taylor, 2020) and has been increasingly used in healthcare research. The use of the

CREDES Guidelines to guide and ensure rigour of the method was done see the supporting document (CREDES guideline).

2.2 | Preparing for e-Delphi

A methodological literature review was conducted to identify the pool of items to be included in the e-Delphi rounds. In June 2022, a librarian assisted in developing a Boolean search string, encompassing variations and combinations of the keywords 'person-centeredness', 'teamwork' and 'interprofessional' and 'instruments'. We chose a 10-year time frame to account for the evolving nature of healthcare practice, person-centeredness and teamwork research, making newer studies more relevant to the study's aim. The search was conducted on EBSCO-host, Web of Science and Scopus. In total, 89 records from peer-reviewed journals were identified and exported to Rayyan, a web tool designed to expedite screening and study identification (McKeown & Mir, 2021; Ngo et al., 2020). Following automatic deduplication ($n = 4$), the remaining records ($n = 85$) were independently reviewed by two researchers (AV and TH). First, the titles and abstracts were reviewed for inclusion. We included articles that focused on person-centeredness and/or teamwork or interprofessional collaboration and referred to a tool, instrument, survey or questionnaire. Following review, the
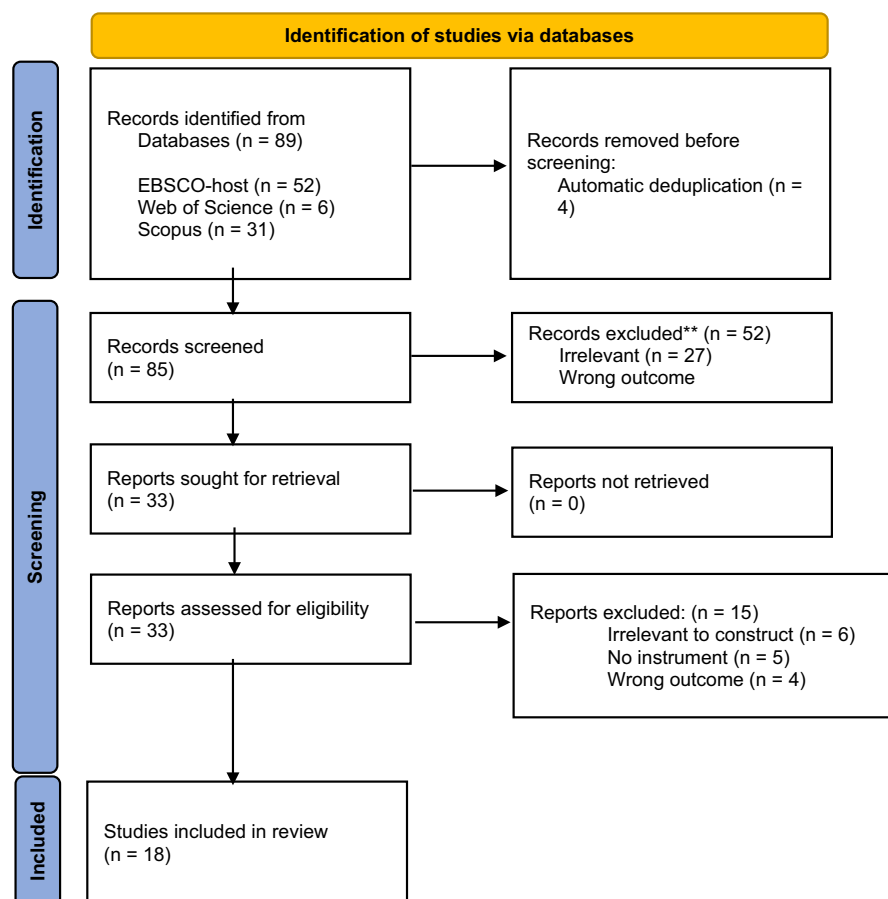

FIGURE 1 Process of literature selection to identify items to be included in the e-Delphi study. [Colour figure can be viewed at wileyonlinelibrary.com]

researchers discussed conflicts and decided on whether to include the article or not. A total of 33 records were included (Figure 1), and full texts were retrieved. The two researchers (AV and TH) screened the full text articles. A total of 18 studies were included for review.

The articles were screened for references to other potentially useful articles, but none were identified. Nine instruments were identified, and their items were compiled, resulting in a pool of 129 items. Similar items were removed, and during online discussions, the remaining items were mapped to the four constructs of person-centred teamwork. This item review and alignment process was repeated five times during online discussions involving all authors. Once the item reduction was deemed complete, some items were rephrased, and sentences were constructed to align with the new instrument during three online discussions (AV and TH). A final online discussion focused on the 58 items selected, and consensus was reached to include a pool of 43 items, which informed Round 1 of the e-Delphi (Figure 2).

2.3 | Participants

Consensus on the ideal number of participants for an expert panel has not been established (Beiderbeck et al., 2021). An expert was defined as an individual with knowledge and expertise in the specific area (Nasa et al., 2021), which, in this case, was person-centeredness, teamwork or instrument development. The lead author identified experts using purposive and snowball sampling. The inclusion criteria were as follows: (1) English speaking, with a specific interest in (2) person-centeredness and/or teamwork and/or instrument development; (3) evidenced by publications on person-centeredness and/or teamwork in peer-reviewed journals; and/or (4) clinical and/or academic expertise in the field of person-centeredness and/or teamwork. An international panel was sought, aiming to collect diverse knowledge from experts with experience in various settings,

thus enhancing applicability. While some studies suggest that expert panels should comprise more than eight participants (Avella, 2016; Nasa et al., 2021), other studies recommend panels of 10–18 participants (Santana et al., 2018). Nine experts participated in this study (Table 1).

2.4 | Ethical considerations

The study was approved by the Faculty of Health Sciences Research Ethics Committee, University of Pretoria (11/2022). All the experts were emailed written information about the study, the benefits of the study and their right to withdraw. Written consent to participate was obtained from each expert before data collection.

TABLE 1 Demographic information of the experts (*n* = 9).

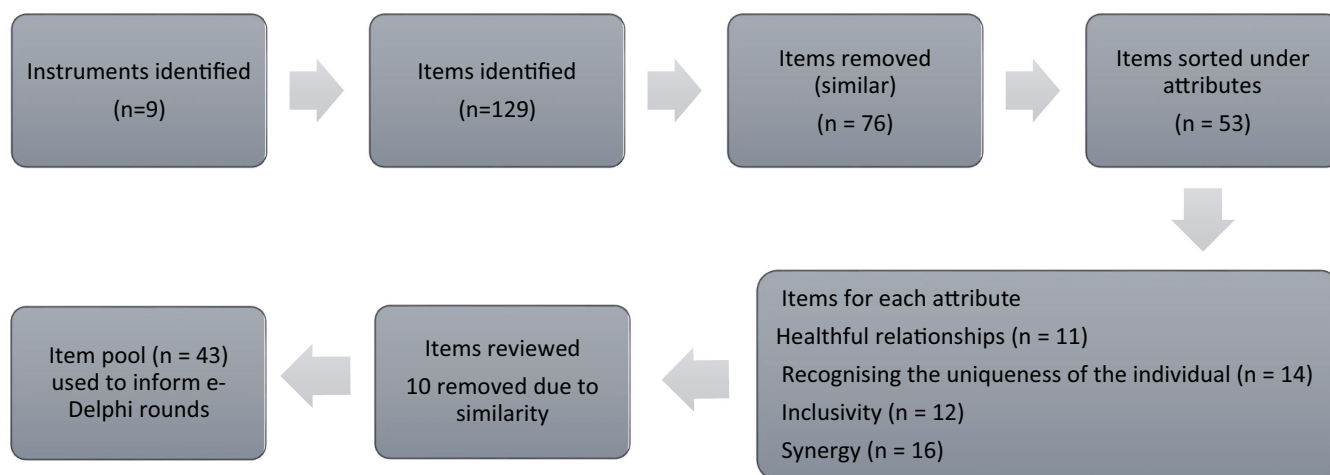| Items	Count (%)
High income countries	
Australia	
Social worker	1 (11)
Nurse	1 (11)
England	
Nurse	1 (11)
Ireland	
Nurse	3 (33)
Psychologist	1 (11)
Sweden	
Nurse	1 (11)
Upper-middle income countries	
South Africa	
Nurse	1 (11)

FIGURE 2 Summary of item identification and reduction. [Colour figure can be viewed at wileyonlinelibrary.com]

2.5 | Communication with the panel

Sixteen experts were invited to participate. Each expert received an information leaflet informing them about the study, an informed consent document and a demographic information survey. The experts were e-mailed individually to ensure anonymity and confidentiality. Once the experts expressed an interest in participating and returned the signed informed consent form and completed the demographic information survey, Round 1 was initiated.

2.6 | Data collection

The four attributes and related items (*n*=43) were populated on a Google Form (Table 3). Before initiating the e-Delphi rounds, the Google Form was piloted. The online form was sent to one academic and two postgraduate students to obtain feedback regarding the clarity of instructions and ease of completing the form and to estimate the time needed for completion. No corrections were needed, and the Google Form was used in Round 1.

2.6.1 | Round 1

The experts received a Google Form including the definition of the concept of 'person-centred teamwork' and four attributes. For each attribute, the related items identified during the preparation phase were provided (Table 3). The experts rated the relevance of each item using a 4-point Likert scale: (1) strongly agree, (2) agree, (3) disagree and (4) strongly disagree. The experts were asked to rephrase the wording of the items, if necessary, in the space provided. Responses were analysed in Excel. Once the data analysis was completed, the results were used to inform Round 2 (Belton et al., 2019).

2.6.2 | Round 2

Experts received the feedback from Round 1 (Fink-Hafner et al., 2019; Ogbeifun et al., 2016), which included a table with the original attributes and items, the level of consensus for each item, and the changes that were implemented. Experts received a new link

to the updated Google Form that included only the items that did not achieve consensus as well as the rephrased items. The experts were asked to indicate the level of relevance and were given an opportunity to change the wording of the items if necessary. Data were analysed in Excel and used to inform Round 3.

2.6.3 | Round 3

The items were emailed in a word document to the experts for final inputs.

2.7 | Data analysis

Data analysis occurred simultaneously with data collection (Heuzenroeder et al., 2022). The quantitative data were analysed using descriptive statistics, which helped to determine the level of consensus (Trevelyan & Robinson, 2015). The level of consensus can be set at a minimum of 70% (I-CVI > 0.7) or more, as suggested in the literature (Belton et al., 2019; Heuzenroeder et al., 2022). We agreed that the level of consensus should be ≥75% (I-CVI > 0.75), as suggested by Niederberger et al. (2021). We calculated the level of consensus by summing the Likert scores for 'disagree' and 'fully disagree' and 'agree' and 'fully agree' (Veugelers et al., 2020). Qualitative analysis focused on the experts' written comments for each item (Förster & von der Gracht, 2014). Content analysis was used to analyse the data and then adapt the items accordingly, indicating the clarity of each item (Veugelers et al., 2020). Two independent coders (AV and TH) analysed the data to avoid bias.

3 | RESULTS

3.1 | Actual time frame

Three e-Delphi rounds were performed, which is consistent with recommendations made by Jünger et al. (2017) and Niederberger and Spranger (2020). The e-Delphi rounds were conducted over a 7-week period. Round 1 started on 25 October 2022, and Round 3 was completed on 8 December 2022.

TABLE 2 Overall consensus per attribute during Rounds 1 and 2.

Attribute	Round 1		Round 2	
	Number of items	I-CVI	Number of items	I-CVI
Healthful relations	8	0.59	9	0.90
Recognising the uniqueness of the individual	13	0.71	9	0.82
Inclusivity	9	0.77	6	0.96
Synergy	13	0.77	14	0.82

Abbreviation: I-CVI, Item-level Content Validity Index.

3.2 | Response rate

Sixteen experts were invited, of whom nine (56%) participated in all three rounds. The experts did not indicate reasons for not participating. All the participants had an academic background, and their demographic information is summarised in Table 1.

3.3 | Round 1

The experts responded to 43 items related to the four attributes of person-centred teamwork (Table 3). Each of the four attributes had a different leading question. In Round 1, the leading questions were adjusted to one leading question for all four attributes: 'In the healthcare setting where I work…'. The overall consensus for each item is presented in Table 2.

Table 3 summarises the results of each item. The 10 items that obtained consensus (≥0.75 I-CVI), were not included in Round 2. The experts identified five items that were similar in nature and suggested that these items be dropped. Seventeen items were rephrased according to the input given by experts. One new item was generated.

3.4 | Round 2

Eighteen items were included in the Google Form for expert review. It was agreed that 14 items were relevant and clear. The experts suggested that one of the items be split into two items. Four items were dropped because a consensus was not obtained. A word document including all items (I-CVI ≥ 0.75) and suggested changes were emailed to experts for final feedback.

3.5 | Round 3

Round 3 included 38 items. The panel was asked to give final inputs. All items were accepted.

4 | DISCUSSION

In this study, we describe the e-Delphi process, including nine international experts, to reach consensus on the items to be included in an instrument to measure person-centred teamwork in medical settings. The experts were tasked with obtaining consensus on the relevance and clarity of items identified during a methodological literature search. The items were related to each of the four attributes of person-centred teamwork (Viljoen, 2023). This research can be used to develop a practical tool to measure person-centred teamwork in clinical settings, which will ultimately improve patient outcomes and satisfaction. Figure 3 is a summary of the process used to obtain the items for the instrument.

During Round 1, the items were grouped under the four attributes of person-centred teamwork, each having an introduction question for the subsequent items. The experts suggested using a single introduction question that applied to all the attributes, namely, 'in the healthcare setting where I work…'. This approach directs respondents in the expected direction (Khai Quang et al., 2022) and enhances comprehension (DeVellis, 2016; Heuzenroeder et al., 2022; Streiner et al., 2015).

The first attribute, healthful relationships, pertains to the relationships among the healthcare team, patients and significant others. Person-centred teamwork interactions aim to maintain healthful relationships. Team members in healthful relationships are sympathetically present, show human kindness and compassion towards each other, try to understand each other's viewpoint and value each other (Byrne et al., 2020; McCance & McCormack, 2016; Wilkinson & Reed, 2008). This attribute included eight items. The experts agreed that seven items needed to be rephrased. One item (item 8) was split into two items. Nine items were forwarded to Round 2 and confirmed as being relevant and clear.

The second attribute, recognising the uniqueness of the individual, acknowledges that each person is a unique human being with their own ideas and needs (Byrne et al., 2020). Person-centred teams should acknowledge that patients are experts in their own lives (Louw et al., 2017; Waters & Buchanan, 2017). When person-centred teamwork is practised, healthcare providers and patients have an opportunity to participate and make shared decisions (McCance & McCormack, 2016). This attribute included 13 items. One item was regarded as relevant (I-CVI 0.77) and clear (I-CVI 0.88) after Round 1. Nine items needed revision. Items were rephrased to align with the wording of the definition of person-centred teamwork. The definition refers to 'person receiving care' and 'person giving care' (Viljoen, 2023). The items were thus rephrased to use the exact wording; for example, the item 'Family members are encouraged to ask questions about the care received by their loved one' was rephrased to 'With the person receiving care's approval, their significant others are encouraged to actively engage in the care received'. Three items were removed, because they overlapped with other items. The process formed part of item reduction to ensure that the instrument was not overburdened with items (Bull et al., 2022) and to reduce redundancy. Five items were included in Round 2. Four items obtained consensus. One item was removed as its level of consensus decreased from 0.66 to 0.44. The nine items that were regarded as relevant and clear in Rounds 1 and 2 were resent for confirmation in Round 3. All items were confirmed for inclusion in the instrument.

The third attribute, inclusivity, incorporates communication, task interdependency, information sharing and shared responsibility. Inclusivity indicates a level of task interdependence, necessitating excellent communication and interaction among the team (Fong et al., 2018; Franklin et al., 2015; Rydenfält et al., 2019). Teams also share responsibility, which relieves the burden on individual team members. The inclusivity attribute had nine items. During Round

TABLE 3 Item-level Content Validity Index (I-CVI) scores for each item in Rounds 1 and 2.

Item number	Item	Round 1			Round 2		
		Relevance I-CVI	Clarity I-CVI	Consensus decision	Relevance I-CVI	Clarity I-CVI	Consensus decision
Attribute 1: Healthful relations							
1	Positive role modelling for the development of effective relationships within the healthcare team	0.33	0.33	R2			
	I experience positive role modelling for the development of healthful relationships within the healthcare team				1.0	0.77	A
2	Team leader is sensitive to the needs of the healthcare team members	0.66	0.77	R2			
	The team leader is sensitive to the needs of all team members				0.88	0.77	A
3	Communication between healthcare team members is done in a respectful manner	0.66	0.66	R2			
	Communication (verbal and non-verbal) between team members occurs in a respectful manner				1.0	1.0	A
4	Individual healthcare team members seek to resolve issues when their goals for the person they care for are conflicting	0.33	0.44	D			
	Team members work collaboratively to agree on goals				1.0	0.77	A
	Team members work collaboratively to resolve conflicts through shared decision-making				1.0	0.77	A
5	Healthcare team members listen to persons receiving care to identify needs	0.77	0.66	R2			
	Healthcare team members listen to persons receiving care to identify needs, hopes and desires				0.77	1.0	A
6	Healthcare team members are fully focussed on the person they care for	0.66	0.66	R2			
	The healthcare team is focused on their commitment to deliver individualised holistic care				0.88	1.0	A
7	Recognition is given to each healthcare team member for their contribution	0.77	0.66	R2			
	Each team member's contribution is acknowledged and valued				0.77	1.0	A
8	Consensus are reached when an issue arises where all the healthcare team members do not agree	0.55	0.55	R2			
	The healthcare team is able to reach consensus on areas of disagreement				0.88	1.0	A
Attribute 2: Recognising the uniqueness of the individual							
1	Healthcare team members are encouraged to discuss what is important to them	0.77	0.66	R2			
	Team members are encouraged to discuss what is important to them, as part of the team				1.0	1.0	A
2	Patients are encouraged to voice their needs	0.88	0.55	D			
3	Healthcare team members try to understand each other's perspective	0.77	0.66	R2			
	Team members actively try to understand each other's perspectives				0.77	1.0	A

TABLE 3 (Continued)

Item number	Item	Round 1 Relevance I-CVI	Round 1 Clarity I-CVI	Round 1 Consensus decision	Round 2 Relevance I-CVI	Round 2 Clarity I-CVI	Round 2 Consensus decision
4	Family members are encouraged to ask questions about the care received by their loved one	0.77	0.88	R2	0.77	1.0	A
	With the person receiving care's approval, their significant others are encouraged to actively engaged in the care received	0.77	0.88	A			
5	I feel acknowledged as a member within the healthcare team	0.66	0.33	R2	0.44	0.22	D
6	Team leaders facilitate participation within the healthcare team	0.44	0.33	R2			
7	Team leaders actively facilitate participation of each team member and/or person(s) experiencing care related to outcomes within the healthcare team	0.55	0.33	R2	0.77	0.66	A
	Healthcare team members are encouraged to suggest ideas related to the care plan of the person receiving care	0.77	0.55	D			
8	Team members collaborate in agreeing solutions for individualised care plans	0.66	0.66	R2	0.77	0.77	A
	Each healthcare team member has the freedom to be themselves within the team	0.77	0.88	R2	0.77	0.88	A
9	Each team member has the freedom to be authentic within the team's values	0.66	0.44	R2	0.77	1.0	A
	Opportunities are created to share ideas within the healthcare team	0.66	0.44	D			
10	Care plans are discussed among the healthcare team and family members	0.77	0.66	R2			
	Care plans are discussed between the healthcare team, significant others and person receiving care	0.66	0.55	R2	0.88	0.77	A
11	Decision-making process includes the persons receiving care	0.77	0.88	R2			
	Where the person receiving care has capacity, s/he is involved in decision-making processes	0.77	1.0	A			
12	Decision-making process includes the family members	0.66	0.44	R2			
	Decision-making process includes the person receiving care's significant others, where appropriate	0.66	0.55	D			
13	I actively participate in healthcare team meetings to inform my decision-making	0.66	0.44	D			
Attribute 3: Inclusivity							
1	Reflection on experiences is encouraged within the healthcare team	0.77	0.66	R2	0.77	1.0	A
2	Team members are encouraged to reflect on their practice within the team	0.66	0.55	R2	1.0	0.77	A
	Language used to communicate is understood by the person receiving care			R2			
	When working with a person receiving care, language that they understand is used	0.88	0.88	A			
3	Inputs from the person receiving care are valued by members of the healthcare team	0.77	1.0	A			
4	Healthcare team members are encouraged to ask for help without being judged			A			
5	Care plan is discussed with the person receiving care	0.66	0.55	R2			
	The care plans and alternatives are discussed with the person receiving care			D	0.88	0.66	D

(Continues)

TABLE 3 (Continued)

Item number	Item	Round 1			Round 2		
		Relevance I-CVI	Clarity I-CVI	Consensus decision	Relevance I-CVI	Clarity I-CVI	Consensus decision
6	Each team member's contribution is valued	0.77	0.88	A			
7	Family members contribute to the discussion about the care plan of their loved ones	0.66	0.55	D			
8	Each healthcare team member's knowledge regarding the care is taken into consideration	0.66	0.55	R2			
	Each team member's knowledge, skill and expertise are respected and valued				1.0	0.88	A
9	Each healthcare team member's input is sought in clinical decision-making	0.88	0.77	D			
Attribute 4: Synergy							
1	Reached consensus on their shared values and beliefs	0.77	0.77	R2			
	Team members have developed shared values and beliefs				0.77	1.0	A
2	Support healthcare team members to develop their practice through reflecting on realisation of team's values and beliefs	0.66	0.55	R2			
	Facilitated reflection is used to develop practice according to agreed evidence				0.88	0.88	A
3	Celebrate the healthcare team's achievements	0.88	0.88	A			
4	There is trust among the team members	0.88	1.0	A			
5	Conflict between healthcare team members is managed without affecting care provided	0.77	1.0	R2			
	Conflict within the team is managed by the team without affecting care provided				0.77	1.0	A
6	Healthcare team members discuss care plans	0.66	0.77	R2			
	Healthcare team members discuss care plans to ensure consistency of practice				0.88	0.66	A
7	Conflict is managed between healthcare team members without affecting team cohesion	0.77	0.88	A			
8	Practices inconsistent with the healthcare team's shared values and beliefs are challenged	0.88	1.0	A			
9	Healthcare team members collaborate to provide best care	0.88	0.77	R2			
	Healthcare team members collaborate to provide best practice				0.88	1.0	A
10	I am respected within the team	0.88	0.77	A			
11	There is an effort to support and help each team member	0.88	1.0	A			
12	Care of person receiving care is well organised	0.88	0.44	R2			
	Care of the person receiving care is effectively organised and communicated				0.88	1.0	A
13	Healthcare team members work hand-in-hand	0.33	0.33	R2			
	Healthcare team members work collaboratively by promoting interdependency within the team				0.66	0.44	D
14	Team effectiveness is evaluated by the team and service users	0.88	0.55	NI			
	Team effectiveness is evaluated by the team				1.0	1.0	A
	Team effectiveness is evaluated by the person(s)receiving care				1.0	1.0	A

FIGURE 3 Summary of item process per round in the e-Delphi to identify elements to be included in an instrument to measure person-centred teamwork in medical settings.

Round 1
- **43 items**
- 10 items (≥ I-CVI 0.75)
- 6 items dropped
- 1 new item added

Round 2
- **28 items**
- 26 items (I-ICVI 0.75)
- 4 items removed
- 2 new items added

Round 3
- **38 items**
- 38 items (≥ I-CVI 0.75)
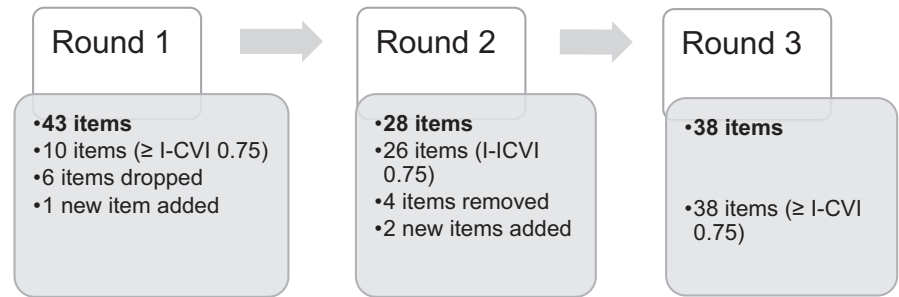
1, three items were confirmed to be relevant and clear. Four items needed rephrasing. Two items were removed because they were deemed to overlap with items in other attributes. Four items were included in Round 2, of which three (items 1, 2 and 8) were regarded as relevant and clear. All three items obtained consensus. One item overlapped with another item, and even though it had consensus, it was removed to avoid redundancy (DeVellis, 2016; Heuzenroeder et al., 2022; Streiner et al., 2015). Six items were deemed relevant and clear in Rounds 1 and 2 and were sent for final confirmation in Round 3. Consensus was reached to include all six items in the instrument.

The fourth attribute, synergy, refers to the combined efforts of a team leading to improved patient outcomes (Franklin et al., 2015). Synergy describes how collaboration, conflict management and cohesiveness contribute to teamwork. The synergy attribute included 13 items. Six items were regarded as relevant and clear. Seven items needed rephrasing. One item was added as per expert suggestion, 'team effectiveness is evaluated including feedback from the service user, which could be an additional item' (participant 4). In Round 2, eight items were deemed relevant and clear and were thus included. The experts suggested that item 14 should be split into two different items, 'I would split this question...one question for team effectiveness evaluated by team and one question team effectiveness evaluated by service user...' (participant 5). One item was dropped because experts could not agree on the relevance and clarity of the item. A total of 14 items were sent for confirmation in Round 3.

A total of 38 items were distributed during Round 3 to confirm their relevance and clarity. All items were accepted.

4.1 | Limitations

The use of the e-Delphi technique may be seen as a limitation due to the lack of formal guidance in the process. However, the CREDES reporting guidelines were used to address this concern (Fink-Hafner et al., 2019; McPherson et al., 2018; Nasa et al., 2021; Niederberger & Spranger, 2020). The CREDES reporting guidelines ensure rigorous application of the Delphi technique for the development of best practices. The e-Delphi method has limitations regarding the ability to clarify misunderstandings with experts since it was electronically

conducted. Our panel of experts included only nine international experts, which may be regarded as small; however, Shinners et al. (2021) caution against overrepresentation.

5 | CONCLUSIONS

We developed an instrument to measure person-centred teamwork in clinical settings, aiming to improve practice outcomes. Based on a consensus definition of person-centred teamwork and the related attributes, 43 items were generated from existing instruments identified in the literature. In three e-Delphi rounds, nine experts reached a consensus on the relevance and clarity of 38 items to be included in the final instrument for measuring person-centred teamwork in hospital settings. The nine experts participated in all three rounds. Future research should evaluate the instrument's validity and reliability, and a person-centred teamwork initiative should be implemented, monitored and evaluated in clinical practice. The evaluation of person-centred teamwork has the potential to identify strengths and weaknesses in clinical settings, which can be used to inform interventions to improve patient care.

CONFLICT OF INTEREST STATEMENT
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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REFERENCES

Atashzadeh-Shoorideh, F., Parvizy, S., Hosseini, M., Raziani, Y., & Mohammadipour, F. (2022). Developing and validating the nursing presence scale for hospitalized patients. *BMC Nursing, 21*(1), 138. https://doi.org/10.1186/s12912-022-00896-0

Avella, J. R. (2016). Delphi panels: Research design, procedures, advantages, and challenges. *International Journal of Doctoral Studies, 11*, 305–321. https://doi.org/10.28945/3561

Beiderbeck, D., Frevel, N., von der Gracht, H. A., Schmidt, S. L., & Schweitzer, V. M. (2021). Preparing, conducting, and analyzing Delphi surveys: Cross-disciplinary practices, new directions, and advancements. *MethodsX, 8*, 101401. https://doi.org/10.1016/j.mex.2021.101401

Belton, I., MacDonald, A., Wright, G., & Hamlin, I. (2019). Improving the practical application of the Delphi method in group-based judgment: A six-step prescription for a well-founded and defensible process. *Technological Forecasting and Social Change, 147*, 72–82. https://doi.org/10.1016/j.techfore.2019.07.002

Berg, K., Isaksen, J., Wallace, S. J., Cruice, M., Simmons-Mackie, N., & Worrall, L. (2022). Establishing consensus on a definition of aphasia: An e-Delphi study of international aphasia researchers. *Aphasiology, 36*(4), 385–400. https://doi.org/10.1080/02687038.2020.1852003

Bull, C., Crilly, J., Latimer, S., & Gillespie, B. M. (2022). Establishing the content validity of a new emergency department patient-reported experience measure (ED PREM): A Delphi study. *BMC Emergency Medicine, 22*(1), 1–10. https://doi.org/10.1186/s12873-022-00617-5

Byrne, A. L., Baldwin, A., & Harvey, C. (2020). Whose centre is it anyway? Defining person-centred care in nursing: An integrative review. *PLoS One, 15*(3), e0229923. https://doi.org/10.1371/journal.pone.0229923

Dahlke, S., Stahlke, S., & Coatsworth-Puspoky, R. (2018). Influence of teamwork on health care workers' perceptions about care delivery and job satisfaction. *Journal of Gerontological Nursing, 44*(4), 37–44. https://doi.org/10.3928/00989134-20180111-01

DeVellis, R. F. (2016). *Scale development theory and applications* (4th ed.). SAGE.

Dietz, A. S., Salas, E., Pronovost, P. J., Jentsch, F., Wyskiel, R., Mendez-Tellez, P. A., Dwyer, C., & Rosen, M. A. (2018). Evaluation of a measurement system to assess ICU team performance. *Critical Care Medicine, 46*(12), 1898–1905. https://doi.org/10.1097/CCM.0000000000003431

Fink-Hafner, D., Dagen, T., Doušak, M., Novak, M., & Hafner-Fink, M. (2019). Delphi method: Strengths and weaknesses. *Advances in Methodology and Statistics, 16*(2), 1–19. https://doi.org/10.51936/fcfm6982

Fong, P. S. W., Men, C., Luo, J., & Jia, R. (2018). Knowledge hiding and team creativity: The contingent role of task interdependence. *Management Decision, 56*(2), 329–343. https://doi.org/10.1108/MD-11-2016-0778

Förster, B., & von der Gracht, H. (2014). Assessing Delphi panel composition for strategic foresight—A comparison of panels based on company-internal and external participants. *Technological Forecasting and Social Change, 84*, 215–229. https://doi.org/10.1016/j.techfore.2013.07.012

Franklin, C. M., Bernhardt, J. M., Lopez, R. P., Long-Middleton, E. R., & Davis, S. (2015). Interprofessional teamwork and collaboration between community health workers and healthcare teams: An integrative review. *Health Services Research and Managerial Epidemiology, 2*, 2333392815573312. https://doi.org/10.1177/2333392815573312

Hair, J. F., Gabriel, L. D. S., da Silva, D., & Braga Junior, S. (2019). Development and validation of attitudes measurement scales: Fundamental and practical aspects. *RAUSP Management Journal, 54*(4), 490–507. https://doi.org/10.1108/RAUSP-05-2019-0098

Heuzenroeder, L., Ibrahim, F., Khadka, J., Woodman, R., & Kitson, A. (2022). A Delphi study to identify content for a new questionnaire based on the 10 Principles of dignity in Care. *Journal of Clinical Nursing, 31*(13–14), 1960–1971. https://doi.org/10.1111/jocn.15462

Huang, C. Y., Weng, R. H., Wu, T. C., Hsu, C. T., Hung, C. H., & Tsai, Y. C. (2020). The impact of person-centred care on job productivity, job satisfaction and organisational commitment among employees in long-term care facilities. *Journal of Clinical Nursing, 29*(15–16), 2967–2978. https://doi.org/10.1111/jocn.15342

Jessup, R., Putrik, P., Buchbinder, R., Nezon, J., Rischin, K., Cyril, S., Shepperd, S., & O'Connor, D. A. (2020). Identifying alternative models of healthcare service delivery to inform health system improvement: Scoping review of systematic reviews. *BMJ Open, 10*(3), e036112. https://doi.org/10.1136/bmjopen-2019-036112

Jünger, S., Payne, S. A., Brine, J., Radbruch, L., & Brearley, S. G. (2017). Guidance on Conducting and REporting DElphi studies (CREDES) in palliative care: Recommendations based on a methodological systematic review. *Palliative Medicine, 31*(8), 684–706. https://doi.org/10.1177/0269216317690685

Kaiser, J. A., & Westers, J. B. (2018). Nursing teamwork in a health system: A multisite study. *Journal of Nursing Management, 26*(5), 555–562. https://doi.org/10.1111/jonm.12582

Kang, H. (2019). *Systematic overview of reviews of instruments that evaluate teamwork in healthcare.* https://ir.lib.uwo.ca/etd/6384

Kendall-Gallagher, D., Reeves, S., Alexanian, J. A., & Kitto, S. (2017). A nursing perspective of interprofessional work in critical care: Findings from a secondary analysis. *Journal of Critical Care, 38*, 20–26. https://doi.org/10.1016/j.jcrc.2016.10.007

Khai Quang, D. A. O., Vibulphol, J., & Komin, O. (2022). *Expected barriers in providing geriatric dental care in Thailand: Questionnaire validation study.* The 19th International Scientific Conference of Dental Faculty Consortium of Thailand (DFCT 2022) At: Chiangrai, Thailand.

Kim, H. S., Kim, M., & Koo, D. (2022). From teamwork to psychological well-being and job performance: The role of CSR in the workplace. *International Journal of Contemporary Hospitality Management, 34*(10), 3764–3789. https://doi.org/10.1108/IJCHM-11-2021-1426

Li, J., Talari, P., Kelly, A., Latham, B., Dotson, S., Manning, K., Thornsberry, L., Swartz, C., & Williams, M. V. (2018). Interprofessional Teamwork Innovation Model (ITIM) to promote communication and patient-centred, coordinated care. *BMJ Quality and Safety, 27*(9), 700–709. https://doi.org/10.1136/bmjqs-2017-007369

Louw, J. M., Marcus, T. S., & Hugo, J. F. M. (2017). Patient- or person-centred practice in medicine? A review of concepts. *African Journal of Primary Health Care and Family Medicine, 9*(1), 1–7. https://doi.org/10.4102/phcfm.v9i1.1455

McCance, T., & McCormack, B. (2016). The person-centred practice framework. In B. McCormack & T. McCance (Eds.), *Person-centred practice in nursing and health care: Theory and practice.* John Wiley & Sons.

McCormack, B., & McCance, T. V. (2017). *Person-centred practice in nursing and health care: Theory and practice* (2nd ed.). Wiley and Blackwell Publishing.

McKeown, S., & Mir, Z. M. (2021). Considerations for conducting systematic reviews: Evaluating the performance of different methods for de-duplicating references. *Systematic Reviews, 10*(1), 38. https://doi.org/10.1186/s13643-021-01583-y

McPherson, S., Reese, C., & Wendler, M. C. (2018). Methodology update: Delphi studies. *Nursing Research, 67*(5), 404–410. https://doi.org/10.1097/NNR.0000000000000297

Moule, P., Armoogum, J., Douglass, E., & Taylor, J. (2017). Evaluation and its importance for nursing practice. *Nursing Standard, 35*, 31–63.

Nasa, P., Jain, R., & Juneja, D. (2021). Delphi methodology in healthcare research: How to decide its appropriateness. *World Journal of*

Methodology, *11*(4), 116–129. https://doi.org/10.5662/wjm.v11.i4.116

Ngo, E., Truong, M. B. T., & Nordeng, H. (2020). Use of decision support tools to empower pregnant women: Systematic review. *Journal of Medical Internet Research*, *22*(9), e19436. https://doi.org/10.2196/19436

Niederberger, M., Köberich, S., & Members of the DeWiss Network. (2021). Coming to consensus: The Delphi technique. *European Journal of Cardiovascular Nursing*, *20*(7), 692–695. https://doi.org/10.1093/eurjcn/zvab059

Niederberger, M., & Spranger, J. (2020). Delphi technique in health sciences: A map. *Frontiers in Public Health*, *8*, 457. https://doi.org/10.3389/fpubh.2020.00457

Nocon, R. S., Fairchild, P. C., Gao, Y., Gunter, K. E., Lee, S. M., Quinn, M., Huang, E. S., & Chin, M. H. (2019). Provider and staff morale, job satisfaction, and burnout over a 4-year medical home intervention. *Journal of General Internal Medicine*, *34*(6), 952–959. https://doi.org/10.1007/s11606-019-04893-z

Ogbeifun, E., Agwa-Ejon, J., Mbohwa, C., & Pretorius, J. H. (2016). The Delphi technique: A credible research methodology. Proceedings of the 2016 international conference on industrial engineering and operations management, Kuala Lumpur, Malaysia.

Rosen, M. A., DiazGranados, D., Dietz, A. S., Benishek, L. E., Thompson, D., Pronovost, P. J., & Weaver, S. J. (2018). Teamwork in healthcare: Key discoveries enabling safer, high-quality care. *American Psychologist*, *73*(4), 433–450. https://doi.org/10.1037/amp0000298

Rydenfält, C., Borell, J., & Erlingsdottir, G. (2019). What do doctors mean when they talk about teamwork? Possible implications for interprofessional care. *Journal of Interprofessional Care*, *33*(6), 714–723. https://doi.org/10.1080/13561820.2018.1538943

Sangaleti, C., Schveitzer, M. C., Peduzzi, M., Zoboli, E. L. C. P., & Soares, C. B. (2017). Experiences and shared meaning of teamwork and interprofessional collaboration among health care professionals in primary health care settings: A systematic review. *JBI Database of Systematic Reviews and Implementation Reports*, *15*(11), 2723–2788. https://doi.org/10.11124/JBISRIR-2016-003016

Santana, M. J., Manalili, K., Jolley, R. J., Zelinsky, S., Quan, H., & Lu, M. (2018). How to practice person-centred care: A conceptual framework. *Health Expectations*, *21*(2), 429–440. https://doi.org/10.1111/hex.12640

Shinners, L., Aggar, C., Grace, S., & Smith, S. (2021). Exploring healthcare professionals' perceptions of artificial intelligence: Validating a questionnaire using the e-Delphi method. *Digital Health*, *7*, 205520762110034. https://doi.org/10.1177/20552076211003433

Siedlecki, S. L. (2020). Understanding descriptive research designs and methods. *Clinical Nurse Specialist CNS*, *34*(1), 8–12. https://doi.org/10.1097/NUR.0000000000000493

Slater, P., McCance, T., & McCormack, B. (2017). The development and testing of the person-centred practice inventory–staff (PCPI-S). *International Journal for Quality in Health Care*, *29*(4), 541–547. https://doi.org/10.1093/intqhc/mzx066

Slater, P. F., McCance, T., & McCormack, B. (2015). Exploring person-centred practice with acute hospital settings. *International Practice Development Journal*, *5*(09), 1–8. https://doi.org/10.19043/ipdj.5SP.011

Streiner, D. L., Norman, G. R., & Cairney, J. (2015). *Health measurement scales: A practical guide to their development and use* (5th ed.). Oxford University Press.

Taylor, E. (2020). We agree, don't we? The Delphi method for health environments research. *HERD*, *13*(1), 11–23. https://doi.org/10.1177/1937586719887709

Trevelyan, E. G., & Robinson, P. N. (2015). Delphi methodology in health research: How to do it? *European Journal of Integrative Medicine*, *7*(4), 423–428. https://doi.org/10.1016/j.eujim.2015.07.002

van der Meer, L., Nieboer, A. P., Finkenflügel, H., & Cramm, J. M. (2018). The importance of person-centred care and co-creation of care for the well-being and job satisfaction of professionals working with people with intellectual disabilities. *Scandinavian Journal of Caring Sciences*, *32*(1), 76–81. https://doi.org/10.1111/scs.12431

van Diepen, C., Fors, A., Ekman, I., & Hensing, G. (2020). Association between person-centred care and healthcare providers' job satisfaction and work-related health: A scoping review. *BMJ Open*, *10*(12), e042658. https://doi.org/10.1136/bmjopen-2020-042658

Vassbø, T. K., Kirkevold, M., Edvardsson, D., Sjögren, K., Lood, Q., Sandman, P. O., & Bergland, Å. (2019). Associations between job satisfaction, person-centredness, and ethically difficult situations in nursing homes—A cross-sectional study. *Journal of Advanced Nursing*, *75*(5), 979–988. https://doi.org/10.1111/jan.13890

Veugelers, R., Gaakeer, M. I., Patka, P., & Huijsman, R. (2020). Improving design choices in Delphi studies in medicine: The case of an exemplary physician multi-round panel study with 100% response. *BMC Medical Research Methodology*, *20*, 1–15.

Viljoen, A. (2022). *Conducting and REporting DElphi Studies (CREDES) guideline (Supporting document 1)*.

Viljoen, A. (2023). *Development of an instrument to measure person-centred teamwork in hospital nursing units*. [PhD thesis]. University of Pretoria.

Waggoner, J., Carline, J. D., & Durning, S. J. (2016). Is there a consensus on consensus methodology? Descriptions and recommendations for future consensus research. *Academic Medicine*, *91*(5), 663–668. https://doi.org/10.1097/ACM.0000000000001092

Waters, R. A., & Buchanan, A. (2017). An exploration of person-centred concepts in human services: A thematic analysis of the literature. *Health Policy*, *121*(10), 1031–1039. https://doi.org/10.1016/j.healthpol.2017.09.003

Wilkinson, S., & Reed, R. (2008). International practice. In S. Wilkinson & R. Reed (Eds.), *Property development* (pp. 356–378). Routledge.

Willemse, B. M., De Jonge, J., Smit, D., Visser, Q., Depla, M. F., & Pot, A. M. (2015). Staff's person-centredness in dementia care in relation to job characteristics and job-related well-being: A cross-sectional survey in nursing homes. *Journal of Advanced Nursing*, *71*(2), 404–416. https://doi.org/10.1111/jan.12505

World Health Organization (WHO). (2018). *Continuity and coordination of care: A practice brief to support implementation of the WHO framework on integrated people-centred health services*. https://apps.who.int/iris/bitstream/handle/10665/274628/9789241514033-eng.pdf