Title

The Healthcare Conflict Scale: Development, validation and reliability testing of a tool for use across clinical settings

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Abstract
Despite the wide-spread incidence of conflict and its detrimental impact across a range of healthcare settings, there is no validated tool with which to measure it. This paper describes the international innovation of a tool to measure staff-family conflict in paediatrics, intensive care, emergency, palliative care, and nursing homes. Sixty-two healthcare workers contributed to focus group discussions to refine a draft tool developed from the literature. Subsequently, 101 healthcare workers applied the tool to fictionalised vignettes. The psychometric properties (construct validity, internal consistency, repeatability and reliability) were explored using principal component analysis, Cronbach's alpha, and intra-class correlation (ICC) tests. The initial 17-item tool was reduced to seven items within three factors that explained 70.2% of the total variance in overarching construct. The internal consistency of the final overall scale was good (Cronbach's alpha: 0.750); test-retest reliability of each item was excellent with ICCs ≥0.9. This new, methodologically robust, tool can be used to identify and score conflict, making it a key reference point in healthcare conflict work across clinical specialities. Its development and testing across specialities and across countries means it can be used in a variety of contexts. The tool provides healthcare professionals with a new way to identify and measure conflict, and consequently has the potential to transform healthcare relationships across disciplines and settings.

Introduction

Conflict is a significant concern in healthcare and affects clinicians, families and services across specialities. Research has described the aetiology (Brinkert, 2010), impact (Forbat, Teuten, & Barclay, 2015) and dynamics of healthcare conflict (Kim et al., 2016). Conflict's impact on patient safety and healthcare quality is also recognised (Kim et al., 2017; Rogers & Lingard, 2006). Despite the prevalence of conflict and its detrimental impact on health care relationships, process and outcomes, there is currently no validated tool to measure it. Consequently, clinicians' and researchers' ability to objectively quantify, monitor and report the severity, escalation or impact of conflict management strategies is impaired.

Background

Conflict is a recognised significant and worrying facet of healthcare. It has been defined as a dynamic and multidimensional interaction, whereby two or more people perceive opposition to one another, and where one party's norms and values are opposed by another (Almost, 2006). Conflict can compromise the quality of care being provided to the patient and, at its most extreme, can result in physical violence toward staff (El-Gilany, El-Wehady, & Amr, 2010; Farrell, 1997; Lancman, Mangia, & Muramoto, 2013; Nelson & Cox, 2004), or patients (Goodridge, Johnson, & Thomson, 2008). Conflict arises between a multiplicity of participants including clinicians, administrators/managers, relatives and patients.

Conflict between staff and patients/families has been reported in a wide range of clinical settings, including intensive care (Azoulay et al., 2009; Kopelman, 2006), emergency care (Hinchey & Jackson, 2011), paediatrics (Forbat, Sayer, McNamee, Menson, & Barclay, 2016; Forbat et al., 2015), nursing homes (Vinton, Mazza, & Kim, 1998), acute care (Back & Arnold, 2005), and specialist palliative care (Francois, Lobb, Barclay, & Forbat, 2017; Weissman, 2001; Weissman, Quill, & Arnold, 2010). The triadic dynamics of these specialities leads to considerable potential for conflict, as communication and decision-making often involves three partners (clinician, patient and family member) as the patient often has impaired cognition or decision-making abilities.

Incidence of conflict is a significant concern internationally. Prevalence of staff-patient/relative conflict is high across settings. For example, conflict has been documented in up to 78% of cases in intensive care settings (Breen, Abernethy, Abbott, & Tulksy, 2001). A study in nursing homes identified conflict occurring on 22% of days (Konnert, Speirs, & Mori, 2017).

The nature of conflict in nursing has been described as pertaining to organisational factors (such as poor work environment or role ambiguity), interpersonal factors (poor communication) or individual characteristics (low emotional intelligence) (Almost et al., 2016).

Conflict is triggered by differences in opinions regarding appropriate goals of care or treatment options (Abernathy & Tulksy, 1997; Ashwal, Perkin, & Orr, 1992; Breen et al., 2001; Orr, Paris, & Siegler, 1991; Studdert et al., 2003). Culture, race and religion are often cited by staff as factors in conflict, and are used to account for conflict arising from different perspectives on suitable interventions (Abrahamson, Pillemer, Sechrist, & Suitor, 2011; Brierley, Linthicum, & Petros, 2013; Paris, Schreiber, & Moreland, 2007; Verhagen et al., 2009). Notably, conflict occurs where there is disagreement between clinicians and families regarding the benefits and burdens of treatments which might be life-saving but risk being solely burdensome and futile (Forbat et al., 2015; Halpern, 2007; Studdert et al., 2003; Verhagen et al., 2009).

Healthcare staff exposed to conflict of varied origins (such as clinicians- administrators, staff-staff and staff-family) experience workplace stress and burnout (Embriaco, Papazian, Kentish-Barnes, Pochard, & Azoulay, 2007; Haraway & Haraway, 2005). Conflict is also financially costly, for example

through absenteeism (Brinkert, 2010), and opportunity costs of staff time involved in managing conflicts. One recent study estimated staff-family conflict to cost a paediatric hospital over £9,000 (US$11,000) in staff time over a 24 week period in (Forbat, Sayer, et al., 2016).

Consequently, conflict is a significant problem that warrants research and clinical interventions. Although a number of studies have sought to measure conflict, validated tools have rarely been used to document the frequency/severity or impact of conflict between staff and patients/families. To date, work has often been qualitative and descriptive (Breen et al., 2001; Chan, Bakewell, Orlich, & Sherbino, 2014; Farrell, 1997; Forbat et al., 2015). Quantitative studies have used a mixture of bespoke tools, (Burns et al., 2003; Forbat, Sayer, et al., 2016; Vinton et al., 1998) or measured features such as job satisfaction (Ulrich et al., 2006) ethical concerns, (Ulrich et al., 2006) or moral conflict (Butz, Redman, Fry, & Kolodner, 1998) as proximal secondary outcomes. A notable exception is a three-arm bespoke tool developed by Azoulay (2009). Their tool reports (i) perceived characteristics of the parties involved in the conflict, (ii) source of the conflict, (iii) clinical impact and severity of the conflict. Subsequently, the following one-item question was developed and tested by Abernathy and Tulsky (1997), and used in subsequent research: “How much disagreement, including conflicts and negative feelings, has there been between you and (this doctor/this family) regarding (your loved one’s/this patient’s) care?” (Schuster, Hong, Arnold, & White, 2014 pp329). While these approaches have utility in describing scenarios, they do not offer a robust or validated tool which can objectively assess conflicts.

This study aimed to develop and test the construct validity, reliability, and internal consistency of a scale measuring conflict between staff and patients/relatives, for use by healthcare staff. The focus on staff and patients/relatives is warranted since the impact of conflict within this triadic dynamic has been well documented.

Methods

This was a mixed method three-phase study.

- Phase one involved a search and synthesis of the extant literature on conflict.
- Phase two was qualitative, gaining feedback via focus groups on a draft measure to inform revisions and refinements.
- Phase three was quantitative, analysing healthcare staff ratings on eight fictionalised conflict vignettes using the revised scale.

Sample

The sample for phases two and three was drawn from clinical specialities where there are recognised high levels of conflict (Almost, 2006; Breen et al., 2001; Brinkert, 2010; Orr et al., 1991) therefore representing the groups most likely to benefit from the finalised tool and to have been exposed to patient-staff conflict in the workplace. Consequently recruitment drew from:

- Two paediatric services (UK and Australia)
- One emergency department (Australia)
- One intensive care unit (Australia)
- One specialist palliative care service (Australia)
- Four residential nursing homes (Australia)

The sample was recruited from three public hospitals (two in Australia and one in the UK) and four nursing homes (in Australia). The sample sought diversity of role, including nursing, medicine and allied health.

Recruitment proceeded through service managers distributing study information sheets to clinical staff within their setting. Theoretical sampling was applied, whereby managers were asked to invite staff who were likely to have experienced healthcare conflict.

Sample size
In phase two, 5-6 staff per site were sought (Kitzinger, 1995), with the sample size being driven by principles of saturation (Fusch & Ness, 2015). A total sample size of 62 was achieved.

In phase three, 15-20 individuals per speciality were sought. Gorsuch (1983) and Hatcher (1994) recommend a minimum subject to item ratio of 5:1 in exploratory factor analysis, noting that higher ratios are preferred. Gorsuch recommended a sample size of at least 100, with no sample being less than 100 even though the number of variables is less than 20. In this study, the ratio 5:1 was selected aiming for a minimum sample size of 100 participants. A sample size of 101 was achieved.

Data collection procedure
In phase 1, papers reporting patient/family and staff conflict within healthcare were collated in a pragmatic search of core databases (PubMed, CINAHL and PsychInfo). A thematic and conceptual synthesis was conducted by the investigators of this extant literature to identify commonalities of the aetiology, components and consequences of conflict. Recurring themes were then framed as statements describing conflict in the initial 36-item version of the tool.

In phase two, focus group participants discussed the 36-item draft conflict checklist. Feedback was sought on the strengths and weaknesses of the candidate items, and cognitive testing of the questions was conducted (Alaimo, Olson, & Frongillo, 1999). Probes included: are there any items which are repetitive or could be combined? When you read the word 'disruptive' what does that evoke for you, is there a more precise word that works better? The measure was revised based on this focus group feedback, combining, clarifying or separating out items, to produce a 17-item tool.

In phase three, the 17-item version of the tool was then tested at each site. Participants were asked to individually read and score each vignette using the revised conflict measure. Scoring was conducted on a ten-point Likert scale, with higher scores indicating greater conflict.

Vignettes (all of which are available from the corresponding author) included the following, which could be applied to a range of practice contexts:

> *A patient's condition deteriorates rapidly over night. The night staff feel that the patient is likely to die very soon, and was 'giving up the ghost'. When the day-shift came on duty they disagree and the night team feel undermined. The day-shift advises the family to assume their relative will live at least another few weeks. The family are distressed at the term 'giving up the ghost', as well as the mixed messages they are receiving. They say they're going to the media as the public needs to know what staff are saying about patients.*

Vignettes were developed from the authors' prior research on staff-family conflict, and from the extant literature, to ensure all core evidenced causes/consequences were covered. The vignettes were honed following discussion with clinical staff at conflict management training sessions by one of the co-authors (SB). Consequently the themes of the vignettes reflect the evidence base regarding core triggers and consequences of healthcare conflict. All vignettes were written to apply across patient groups (that is, they did not reflect patient age or treatment types) to allow respondents across disciplines to identify with the conflict scenario. The vignettes sought to be powerful and descriptive, yet strike a neutral tone to avoid assigning blame or demonising either staff or families, but while clearly denoting the antagonism of conflict scenarios. This neutrality is also strategic in

constructing conflict as having features which may be open to change, rather than reflecting fixed oppositional stances.

Basic demographic details of participants were collected using a bespoke tool.

Data analysis

In phase two, the qualitative focus group data were audio-recorded, transcribed and subjected to thematic analysis (Braun & Clarke, 2013). Though this iterative and inductive analysis key themes were identified, alongside items which were extraneous, useful or required changes. Analysis sought to establish face-validity of the tool's candidate items, via discussion and consensus of the relevance of each item for respondents' work.

The analysis in phase 3 sought to establish the internal consistency, reliability, repeatability, and construct validity of the tool. Internal consistency, which is a measure of reliability of the overall scale, was evaluated using Cronbach's alpha test. The value of this coefficient depends on both the number of the items forming the scale and the degree to which the items measure the same concept (de Vet, Mokkink, Mosmuller, & Terwee, 2017; Vaske, Beaman, & Sponarski, 2017). The more the number of included items, the higher the alpha; the less relevant the items, the lower the alpha (Vaske et al., 2017). By convention, a Cronbach's alpha of 0.65 or more is considered acceptable or adequate for a scale in social science studies (Green, Lissitz, & Mulaik, 1977; Vaske et al., 2017). The correlation of each item with the overall scale was tested by the item-test correlation coefficient, with items with item-test correlation coefficients of less than 0.4 being removed as these were deemed less relevant (or less measuring the same concept). In the current analysis less relevant items were removed, aiming to reach a Cronbach's alpha of 0.8 or more for the overall scale with the retained items.

The repeatability or the test-re-test reliability of each included item was further tested by the Intra-Class Correlation (ICC) coefficient with values of 0.70 or more deemed acceptable reliability (de Vet et al., 2017). In this analysis, only items with excellent reliability were retained to form the final scale (i.e., ICC or 0.90 or more). The intra-class correlation was conducted using a two-way random-effects model.

A principal component analysis (PCA) with varimax rotation (Rencher, 2002) was then used to explore the underlying construct in the assessment tool with the remaining items. Varimax rotation, which is a statistical method that maximises the sum of the variances of the squared loadings, is an orthogonal option that assumes that the items tested are not highly correlated. Using a parsimonious approach in the selection of items and domains reflecting the underlying construct, the following conditions were utilised to achieve the best fitting construct: 1) eigenvalues greater than 1.0, 2) the percentage of total variance explained by each factor, and 3) factor loadings cut off of 0.6 or more. Loadings can range from -1 to 1 with those close to -1 or 1 indicating that the factor strongly affects the variable. Bartlett's test of Sphericity and Kaiser-Meyer-Olkin (KMO) test were used to test the overall significance of all correlations within the correlation matrix of the final set of selected items. Bartlett's test, in which p value must be less than 0.05, shows the validity and suitability of the information collected to address the underlying concept (i.e., conflict) in developed scale. KMO test investigates sampling adequacy, with values of more than 0.6 to indicate an adequate sample (Kaiser, 1974).

Ethical considerations

Ethical approval was gained from [names and references to be added after peer review]. All participants provided informed consent.

Results

Phase 1 resulted in a 30 item tool being generated, which covered the following five areas repeatedly reported in the literature:

1. *Breakdown in communication* (Almost, 2006; Almost et al., 2016; Azoulay et al., 2009; Back & Arnold, 2005; Breen et al., 2001; Brinkert, 2006, 2010; Choong et al., 2010; Fassier & Azoulay, 2010; Forbat, Sayer, et al., 2016; Forbat et al., 2015; Janvier, 2009; Klein, 2009; Kopelman, 2006; McDougall, Notini, & Phillips, 2015; Meller & Barclay, 2011; Rentmeester, 2013; Studdert et al., 2003; Twiss, 2006; Vinton et al., 1998; Weissman, 2001; Weissman et al., 2010)
2. *Disagreements about goals of care* (Back & Arnold, 2005; Breen et al., 2001; Brinkert, 2010; Burns et al., 2003; Butz et al., 1998; Choong et al., 2010; Fassier & Azoulay, 2010; Forbat, Sayer, et al., 2016; Forbat et al., 2015; Kaufman, 2011; Kopelman, 2006; McDougall et al., 2015; Paris et al., 2007; Weissman, 2001; Weissman et al., 2010)
3. *Family mistrust of physicians and the healthcare system* (Almost, 2006; Almost et al., 2016; Back & Arnold, 2005; Butz et al., 1998; Forbat, Sayer, et al., 2016; Forbat et al., 2015; Meller & Barclay, 2011; Rentmeester, 2013; Vinton et al., 1998)
4. *Religious and cultural differences affecting treatment goals* (Breen et al., 2001; Brierley et al., 2013; Choong et al., 2010; Fassier & Azoulay, 2010; Johnstone, 2012; McDougall et al., 2015; Studdert et al., 2003; Twiss, 2006; Weissman, 2001; Weissman et al., 2010)
5. *Futility and choice of treatment/s* (Back & Arnold, 2005; Breen et al., 2001; Brinkert, 2006, 2010; Burns et al., 2003; Forbat, Sayer, et al., 2016; Forbat et al., 2015; Klein, 2009; Kopelman, 2006; McDougall et al., 2015; Paris et al., 2007; Pope & Waldman; Studdert et al., 2003; Weissman, 2001; Weissman et al., 2010).

A conceptual model was developed of these areas, as shown in Figure 1. The three elements of communication, causes and consequences are interlinked, looping recursively with the breakdown in communication as both a cause and consequence of conflict.

Insert figure 1 about here

Sixty-two people participated in phase two, and 106 in phase three, of whom five had missing responses, leaving 101 individuals for the final analysis. Table 1 outlines the characteristics of the participants in each round. In line with employment patterns, the sample was predominantly female, with comparable participation across specialities.

Feedback received in phase 2 focused on items which were important, redundant or unclear. Across all recruitment settings, participants indicated that the statements held face validity for capturing core elements of conflict between staff and families/patients. All participants requested a much shorter tool.

*** insert table 1 about here***

Scale reliability co-efficient (Cronbach's alpha) for the starting 17-item tool was 0.784. Item-test correlation coefficients of less than 0.4 led to the removal of four less relevant items which in turn increased Cronbach's alpha to 0.796. The remaining 13 items were moderately to highly correlated with the overall scale, with item-test correlation coefficients ranging from 0.43 to 0.63, as shown in Table 2.

Subsequently, intra-class correlations (ICC) were conducted to measure consistency and absolute agreement among all study participants, within each item on the tool across the eight vignettes. Two

individual items that had ICC values of 0.738 and 0.780, respectively were removed leaving 11 items with excellent levels of reliability (ICC above 0.9 in all).

insert Table 2 about here

Sampling adequacy was measured and supported by Kaiser-Meyer-Olkin and Bartlett's tests, at 0.70 with a statistically significant test of Sphericity (chi-square statistic = 1076.8, p value < 0.001). A scree plot identified three potential factors with eigenvalues of 1.0 or more (Figure 2).

Insert Figure 2 about here

Figure 2: Scree plot of eigenvalues following principal Component Analysis of tool that included 11 items

The PCA, using a varimax rotation, was conducted separately for each vignette and for all vignettes together. Table 3 illustrates the 17-item list and which were retained or dropped during this analysis. Of the 11 items, 4 items were removed because of cross-loadings, leaving seven final items that identified three factors explaining 70.2% of the total variance (Table 4). The three identified factors could be named under the following themes:

(i) mistrust of motivations (families perceiving that decisions are not in their relative's best interest, leading to both parties wishing to avoid each other),
(ii) threatening language/actions (obscene language /physical aggression, language which is bleak or discouraging about the patient).
(iii) contradictory communications.

insert table 3 and 4 about here

Table 5 describes the items included under each identified factor together with the factor loadings which were all positive.

insert table 5 about here

The final seven-item tool called the Healthcare Conflict Measure is shown in Figure 3.

insert Figure 3 about here

Discussion

In this paper we have reported the innovation and construct validation of a tool to measure conflict between staff and patients/families in healthcare settings. The validation was conducted in five disciplines recognised to have high levels of conflict. The purpose of the scale is to provide a new way to quantify conflict between staff and patients/relatives, enabling for the first time an evidence-based method of tracking conflict. Identifying and measuring conflict will help teams to determine the urgency and type of action required in order to de-escalate it. With international data identifying conflict as a significant concern across specialities, this tool offers for the first time, the ability to measure, track and report it. As a brief seven-item tool, which can be completed in less than two minutes, it can be readily used in fast-paced clinical environments such as emergency departments and intensive care. The tool is conceptually taut and clearly linked to the substantive literature on conflict.

The analyses in this study have shown that the seven-item scale has construct validity which indicates that it measures conflict as it purports to be doing. The included items also have excellent repeatability as shown by the high intra-class correlation coefficients.

This tool offers clinicians an accessible method of recording, reporting and tracking conflict and is purposefully designed for staff to complete. While recognising that conflict between staff and

patients/relatives is necessarily multi-party and complex, our default position is that responsibility for monitoring and managing conflict is the responsibility of staff employed to provide an optimal service to patients. The nature of healthcare renders patients and their relatives less powerful than the clinicians (Foucault, 2006). The emphasis on staff completion and responsibility for subsequently managing conflict acknowledges the paradox that (i) the tool validates clinicians' own perceptions of the situation thereby legitimising their power, and (ii) that the power imbalance may at times be altered by displays of aggression by patients/families. Conflict management often requires both parties to focus on a mutually acceptable goal (Augsburger, 1992), yet such resolution frequently remains in the purview of medical hierarchies, or other powerful entities such as the judicial system (Morreim, 2014).

Other tools could helpfully be developed to focus on other conflict dynamics, such as staff-staff, or clinician-administrator. The current tool was designed to focus on the documented clinical urgency of staff-family conflict, and hence is sensitive and specify to that dynamic. Staff and families are likely to identify and score the same conflict differently, due to perceptual differences in what constitutes conflict (Schuster et al., 2014), which underlines the specificity of this tool for staff use.

The tool's significance is in offering for the first time, a robust, rigorously designed tool, which can document conflict levels, and be used prospectively to monitor the severity of such conflict. Consequently, it can also be used as an outcome measure of interventions to de-escalate conflicts, in both routine practice and research. We suggest that clinical teams use the tool as a regular component of their daily handovers, prompting staff to reflect on whether conflict has been identified and to be alert to its early warning signs. Conflicts identified early (for example, scored as 1 or 2) and managed proactively are less likely to escalate. Use of the tool in daily handovers also provides the means to monitor escalation and to use appropriate conflict resolution strategies to manage it. The tool is therefore a device which can be used to track conflict when implementing conflict management frameworks (Forbat & Barclay, 2018) and evidence change prospectively as staff adopt different tactics to manage the situation. Measurement is the first step toward managing conflict, and use of the tool invokes a call to action. We envisage the tool being used in conjunction with conflict management strategies, such as teaching on de-escalation (Forbat, Simmons, Sayer, Davies, & Barclay) emotional regulation (Marziali, Mackenzie, & Tchernikov, 2015) or mediation (Marshall & Robson, 2005; Meller & Barclay, 2011).

Although the tool measures conflict, it cannot accurately differentiate between low, medium and high conflict situations. While higher scores of the scale indicate worse conflict, more research is needed to validate the levels of conflict severity.

The tool would benefit from further validation, in particular focusing on the scoring and weighting of items. Such development could lead to item seven in the tool ("The patient and/or family has been aggressive, or has made physical or verbal threats (e.g. to harm staff or report to newspapers/ministers)") as more heavily weighted, reflecting its relative importance in identifying high-level conflict. Further testing and development of the tool would also benefit from drawing on a sample from mental health, social care or other multidisciplinary settings, with high levels of conflict, impacting on care provision and staff burnout. Involving patients and relatives in further testing of the tool would also increase its validity and utility. By increasing health professionals' understanding of what causes conflict from a patient/family perspective, decisions about how to manage particular types of conflict are likely to be more appropriate and finely-tuned.

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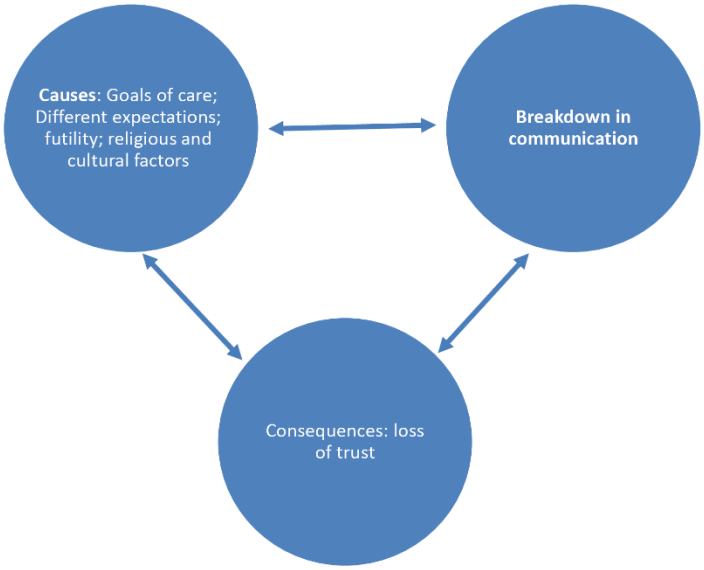

Figure 1: Conceptual model of healthcare conflict

Figure 2:

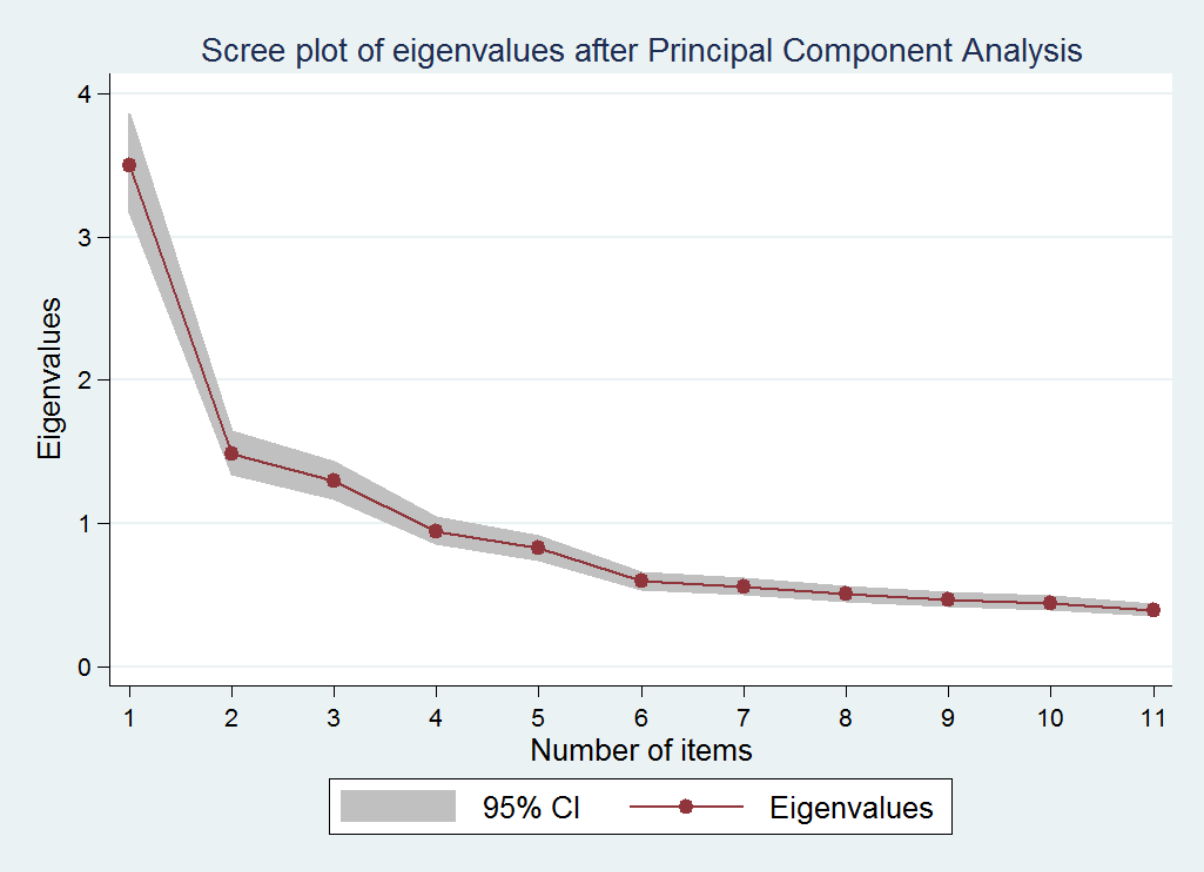

Figure 3: Final version of the Health Care Conflict Measure

Healthcare Conflict Measure

	Please rate the following statements about the case Please score from 1-10 for each item. (1= Strongly disagree; 10 = Strongly agree)	**Score**
1	The patient and/or family say that the standard of care does not meet their expectations, e.g. symptoms not being optimally controlled.	
2	The family perceive that resources are limiting the standard of care.	
3	The patient and/or family do not trust clinical expertise and/or the healthcare system.	
4	The patient and/or family say they are receiving contradictory or unclear advice from different members of the clinical team on the patient's prognosis or treatment.	
5	The patient and/or family or clinical team try to avoid contact with each other.	
6	The language used by members of the clinical team to describe the patient or medical situation has been perceived as insensitive or offensive by the patient and/or family.	
7	The patient and/or family has been aggressive, or has made physical or verbal threats (e.g. to harm staff or report to newspapers/ministers).	

Table 1: Participant characteristics

	Phase 2 (n=62)		**Phase 3** (n=101)	
	n	**%**	**n**	**%**
Sex				
Female	51	82	83	82.2
Male	11	18	18	17.8
Age category				
25 years or less	10	16	13	12.9
26 – 40 years	31	50	45	44.5
41 years or more	21	34	43	42.6
Job title				
Nurse	37	59.7	74	73.3
Assistant in Nursing	10	16	11	10.9
Allied Health	4	6	4	4.0
Doctor	5	8	2	2.0
Other	5	8	10	9.9
Maximum conflicts experienced				
0	3	4.8	4	4.0
1 – 5	31	50	57	56.4
6 – 10	11	18	19	18.8
11 – 20	9	14.5	7	6.9
21 or more	8	12.9	14	13.9
Maximum years in specialty				
Less than 1 year	6	9.7	13	12.9
1 – 5	15	24.2	31	30.7
6 – 10	17	27.4	21	20.8
11 – 20	12	19.3	17	16.8
21 years or more	12	19.3	19	18.8
Speciality				
Paediatrics UK	9	14.5	14	13.9
Paediatrics Australia	9	14.5	16	15.8
Nursing homes	23	37	21	20.8
Intensive care	6	9.7	17	16.8
Emergency department	10	16	16	15.8
Specialist palliative care	5	8	17	16.8

Table 2: Intra-class correlation (ICC) coefficients, 95% confidence intervals of items

Item number	Average ICC	95% confidence interval
Item1	0.966	0.921 – 0.992
Item2	0.974	0.941 – 0.994
Item4	0.972	0.937 – 0.993
Item5	0.977	0.946 – 0.994
Item6	0.928	0.838 – 0.982
Item7	0.738	0.477 – 0.931
Item10	0.904	0.787 – 0.976
Item11	0.780	0.535 – 0.943
Item12	0.988	0.972 – 0.997
Item13	0.979	0.953 – 0.995
Item14	0.974	0.940 – 0.994
Item15	0.981	0.970 – 0.998
Item16	0.924	0.830 – 0.981

Table 3: ***17-item scale used in Phase 3***

Item	Statement	Retained	Dropped
1	The patient and/or family say that the standard of care does not meet their expectations, e.g. symptoms not being optimally controlled.	X	
2	The family perceive that resources are limiting the standard of care.	X	
3	The patient and/or family and clinicians do not agree on goals of therapy, treatment decisions or care plan.		X
4	The family has a history of disagreement with staff.		X
5	The patient/family scrutinise healthcare practices and decisions (for example, micromanagement and record-keeping).		X
6	The patient and/or family perceive or have experienced genuine errors in the treatment or management of the patient, currently or in the past.		X
7	There are multiple decision makers within the patient's family who don't agree with each other.		X
8	Family and staff have differing understandings of the current clinical situation, treatment processes and prognosis.		X
9	Religious or cultural beliefs of patient/family are perceived to be informing decision-making more than clinical information.		X
10	The patient and/or family do not trust medical expertise and/or the healthcare system.	X	
11	The clinicians fear legal or malpractice proceedings if treatment is withheld or withdrawn.		X
12	The patient and/or family say they are receiving contradictory or unclear advice from different members of the clinical team on the patient's prognosis or treatment.	X	
13	The patient and/or family or clinical team try to avoid contact with each other.	X	
14	The language used by members of the clinical team to describe the patient or medical situation has been perceived as insensitive or offensive by the patient and/or family.	X	
15	The relationship between some members of the clinical team and the patient and/or family is difficult or uncooperative.		X
16	The patient and/or family has been aggressive, or has made physical or verbal threats (e.g. to harm staff or report to newspapers/ministers).	X	
17	The patient and/or family are affected by alcohol, drugs, mental health issues or significant emotional distress.		X

Table 4: Eigenvalues and variance explained for factors identified from the PFA

Factor number	Theme of identified factor	Eigenvalue	Percent explaining of total variance (individual)	Percent explaining of total variance (cumulative)
1	Mistrust of motivations	2.41	34.4	34.4
2	Threatening language or actions	1.35	19.3	53.7
3	Contradictory communication	1.15	16.5	70.2

Table 5: Factor loadings of included items in the final scale

Item description	Factor 1	Factor 2	Factor 3
A belief that the standard of care is compromised	0.68		
A belief that service resources are limiting care	0.74		
Family loss of trust in the care system	0.60		
Avoidance of each other by clinicians or family	0.68		
Insensitive or offensive language		0.62	
Verbal or physical aggression		0.64	
Contradictory, inconsistent or unclear communication from the clinical team			0.76