The development and validation of the Person-centred Practice Inventory-Student instrument: A Modified Delphi Study

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ABSTRACT

Background: Global health care policy and regulatory requirements indicate that nursing students must be prepared for person-centred practice. Despite this, there is no evidence of a theoretically derived instrument to measure students' perceptions of person-centred practice.

Objectives: To adapt the Person-centred Practice Inventory-Staff instrument for use with healthcare students and to test the adapted instrument.

Design: This study involved a two-phased, modified Delphi Technique. In Phase 1 students' views about items in the Person-centred Practice Inventory-Staff were explored to gain consensus about items for inclusion in an adapted student version. In Phase 2, the psychometric properties of the adapted instrument were tested.

Setting: A UK university.

Participants: Pre-registration nursing students.

Methods: Phase 1 involved an iterative process including three focus groups (*n*=13) followed by Delphi surveys (Round 1: *n*=382; Round 2: *n*=144).Thematic analysis was used to analyse students' comments and consensus percentages were calculated after each Delphi round. Phase 2 involved a survey using the adapted instrument (*n*=532). The measurement model was analysed using confirmatory factor analysis.

Results: The results indicated stability in the measurement model with this sample. Item correlation scores were between 0.22-0.74 with no evidence of collinearity and factor loadings ranged from 0.44-0.86. Fit indices indicated goodness of fit between the observed data and the respective domains in the Person-centred Practice Framework (chi-squared to degrees of freedom ratio of <3, root mean square estimations of approximation 0.06 for all domains and between 0.05-0.07 at 90% confidence interval. Comparative fit index estimates ranged from 0.90-0.97).

Conclusion: This study provides initial validation of the Person-centred Practice Inventory-Student instrument which is offered as a measure of students' perceptions of their person-centred practice. The instrument has utility in assessing the efficacy of curricula in preparing students as person-centred practitioners.

KEYWORDS

Person-centred practice, nursing student, instrument development, Modified Delphi, psychometric.

INTRODUCTION

There is a growing consensus that care is most effective when practitioners practise in a person-centred way (Benner et al., 2010; Frenk et al., 2010). For this reason, person-centred practice has gained recognition in global health care policy (World Health Organization, 2015). These developments have created an impetus for reforms in nursing education and directed attention to the preparation of the future nursing workforce for person-centred practice.

Traditionally, the measurement of person-centred practice in nursing students has focused on either specific dimensions of patient-centred attitudes and/or assessed it indirectly using proxy measures such as caring (Rolfe, 1993; Krupat et al., 2000; McCance et al., 2009). The development and psychometric testing of an instrument informed by the theoretical principles of person-centred practice would help to address these limitations (Edvardsson and Innes, 2010).

BACKGROUND

Internationally, education is portrayed as essential to the progression of person-centred health care (Harding et al., 2015). In the UK, regulatory standards require future nurses to be prepared to provide person-centred care (Nursing and Midwifery Council, 2018). Similarly in the US, patient-centred care is one of six competency domains endorsed by the Quality and

Safety Education for Nurses Institute (Cronenwett et al., 2007). These competencies have informed education practices in other countries (Nygårdh et al., 2017). A range of definitions have been used to denote person-centred practice or affiliated terms (Table 1). Whilst these definitions have conceptual similarities, their interchangeable use without semantic qualification has created challenges in measuring person-centred practice (De Silva, 2014). The development of theoretical models of person-centred practice has however been helpful in providing conceptual clarity which has enabled the measurement of person-centred practice in its own right (Slater et al., 2017).

The International Community of Practice for Person-centred Practice, in its Position Statement on Person-centredness in Health and Social Care curricula, acknowledges the progress that has been made in developing person-centredness in health curricula (McCormack and Dewing, 2019). In order to provide direction to curriculum development teams, the paper sets out key considerations for future research and development. This includes the need for relevant and robust outcome measures.

A range of instruments have been used to measure patient-centredness or person-centred care in nursing students. The Patient Practitioner Orientation Scale (Krupat et al., 2000) consists of eighteen items relating to caring and sharing that measures patient-centred attitudes using a Likert scale. The scale has been used with uni- and multi-disciplinary populations including nursing students (Grilo et al., 2014; Rosewilliam et al., 2019). In addition, the short version Patient-Centredness Multi-Choice Questionnaire (PMQX) (Rolfe, 1993) is a ten-item questionnaire that measures patient-centred attitudes in student nurses. The PMQX focuses on the concepts of empathy, regard and unconditionality based on Roger's approach to humanistic counselling (Rogers, 1961). A mean score of 37.75 (noticeably therapeutic attitude) was reported when tested with 315 nursing students. The PMQX was also used by Jinks et al. (2013); however, psychometric properties were not reported. As caring is a fundamental element of person-centred practice, instruments such as the Caring Dimensions

Inventory (CDI-35) (Watson et al., 2001) have also been used as indicators of person-centred nursing (McCance et al., 2009). Culturally sensitive instruments have also been developed to measure caring among nursing students in specific populations e.g. the Chinese Caring Behaviors Scale (Lin, 2001). This 28-item scale measures the frequency of caring behaviours and its reliability and validity with nursing students has been evaluated (Lin, 2001; Ou and Lin, 2006; Pai et al., 2013). Review of these instruments demonstrates that the measurement of person-centred practice in nursing students has traditionally been through the use of proxy indicators or via scales that focus on a specific dimension of patient-centredness.

The Person-centred Practice Framework (PCPF) (McCormack and McCance, 2020) is an internationally recognised theoretical model that depicts the key domains and constituent constructs of person-centred practice (Figure 1). Closely aligned is the Person-centred Practice Inventory-Staff (PCPI-S) instrument which is a 59-item, self-report measure of health professionals' perceptions of their person-centred practice (Slater et al., 2017). The items in the PCPI-S relate to seventeen constructs across three domains (prerequisites, practice environment and person-centred processes) of the PCPF. Following extensive development with an international panel of experts in person-centred practice (*n*=33), the PCPI-S was tested with a randomly selected sample of registered nurses (*n*=703) across a range of acute hospital settings in Northern Ireland (Slater et al., 2015). When tested with this population the PCPI-S mapped to the PCPF (McCormack and McCance, 2020). The instrument has subsequently been translated and tested internationally providing further validation of its psychometric properties (Bing-Jonsson et al., 2018; Balqis-Ali et al., 2020).

This study describes the adaptation and testing of the PCPI-Student (PCPI-ST) instrument. The PCPI-ST is proffered as a measure of students' perceptions of their person-centred practice which in this study was tested with nursing students. This paper relies on the McCormack and McCance (2017) definition of person-centred practice (Table 1).

METHODS

Aim

The aim of this study was to adapt and validate the PCPI-ST instrument.

Design

The study involved two phases as shown in Figure 2. Permission to carry out the study was obtained from the relevant University Research Ethics Committee (16.3.4/07/16, 18.39(c)/07/18).

PHASE 1

The purpose of phase one was to gain consensus about items to be included in the PCPI-ST. Delphi Technique is a form of consensus methodology to ascertain valid expert opinion and involves repeated rounds of data collection until consensus is reached about an issue (McKenna, 1994). Modified Delphi is a variant of classical Delphi where the first open-ended round is replaced with interview or focus groups (Keeney et al., 2011). As the items in the PCPI-S instrument had been the result of extensive previous Delphi engagement, a modified Delphi approach was considered prudent in this study (Slater et al., 2017). The first round involved focus groups whereby participants had the opportunity to discuss, negotiate and reach consensus about the items being considered (Morgan, 1997).

Sample

Inclusion and exclusion criteria are shown in Table 2. Students who had experience of a person-centred curriculum from year one of a pre-registration, adult, nursing programme, were eligible for inclusion (Table 2). Three focus groups were carried out with a volunteer sample of students from each year group (Year 1 *n*=5, Year 2 *n*= 6, Year 3 *n*=2). These were followed by Delphi surveys until consensus was reached about items for inclusion in the PCPI-ST instrument.

Data collection

Focus groups were facilitated in the university by the lead researcher. During focus groups, participants' views about the demographic questions and items in the PCPI-S were explored. A notetaker attended all focus groups, made supplementary field notes and completed the Steven's Framework proforma (Stevens, 1996). The proforma provides a list of key considerations in conducting focus groups such as group dynamics, levels of participation, facilitation etc. The proforma should be completed by a non-participant observer who provides an independent assessment of contextual factors that would not otherwise be evident from transcripts. The independent observer confirmed that participants actively engaged and volunteered opinions that were sometimes competing. There was no evidence of dominant participant(s) in any of the focus groups and no obvious bias in facilitation.

The second stage of the Modified Delphi consisted of online surveys using the PCPI-ST tool drafted from the focus group feedback. Surveys were administered using Qualtrics® software. Participants were invited to rate on a five-point Likert scale, their level of agreement about whether each item should be included in the PCPI-ST instrument. Delphi rounds were carried out until consensus was achieved. There are varying opinions in the literature as to what level of agreement constitutes consensus in Delphi surveys. Some studies suggest that consensus is achieved if there is agreement by 50-60% of participants, while others cite levels of 70% or greater (Keeney et al., 2011). It is recommended that the definition of consensus and threshold level should be specified before data collection. In this study it was agreed that consensus would be achieved for any items where the collective response across the strongly agree and agree Likert bandings combined, was 70% or above.

The focus in the second survey was to consider those items that had not achieved consensus in the first round. Participants were sent an individualised email inviting them to participate. The email included their responses and the mean group responses across each Likert banding, to each of the items that did not achieve consensus in the previous round. Students

were asked to consider their previous response and the group response to each item and with this in mind, to rate each item again. There was also the option to provide a narrative comment for each response. McKenna (1994) indicated that this process provides an opportunity for the 'systematic emergence of a concurrence of judgment/ opinion' (p.122).

Data analysis

Focus groups were audio-recorded and transcribed by an independent transcriber. The researchers verified the accuracy of the transcriptions. Participants' comments for each year group were summarised against each item in the PCPI-S. Responses were then collated and listed as verbatim extracts. Following analysis by year group, responses at cohort level were collated in a matrix under three categories:

- items that were understood
- items where students suggested a change in the wording to aid understanding, and
- items that students did not understand.

The matrix was reviewed by a team of academics including those who developed the original PCPI-S. Focus group findings informed decision-making about the items to be included in the PCPI-ST instrument that was used in the Delphi surveys.

Delphi survey data were exported from Qualtrics® Survey Software to IBM® SPSS® Statistics (v23). Data were analysed using descriptive statistics to produce mean percentage responses across the Likert bandings for each item. The mean percentage responses across the strongly agree and agree bandings were combined to determine if consensus had been achieved.

Results

Participants' recommended that two items from the PCPI-S were not relevant to students and should not be included in the student instrument. The items were:

- I participate in organisation-wide decision-making forums that impact on practice.

- My organisation recognises and rewards success.

In addition, changes were suggested to the wording of 23 items, sixteen of which were reworded accordingly. For the other seven items, suggested changes were not upheld. This was because either the change was so subtle that it was considered negligible or was not in keeping with the aligned construct within the Person-centred Practice Framework (McCormack and McCance, 2020). For example, participants suggested that item 16 of the PCPI-S 'I actively seek feedback from others about my practice' should be revised to 'I actively seek feedback from my practice supervisor about my practice'. Adopting the revision would have excluded feedback from people other than the practice supervisor e.g. service user feedback. The original wording of the item was therefore unchanged. A summary of the wording suggested by participants and the wording used in each item in the final PCPI-ST instrument is shown in Table 3. Overall 41 items from the PCPI-S were included in the PCPI-ST instrument without revision and 16 items were reworded. The findings from the focus groups led to the creation of a 57-item PCPI-ST instrument that was used in the online Delphi surveys.

The response rates for the first Delphi survey by year group are shown in Table 4 (Year 1 - 57%, Year 2- 71%, Year 3- 82%). The level of consensus for each item was determined for each year group and at cohort level. After the first Delphi survey, consensus was achieved among year 3 participants for all 57-items in the PCPI-ST. For year 1 participants, consensus was not achieved in 4 items, i.e. item 17 (58.4%), item 24 (43.8%), item 31 (57.7%), item 33 (66.9%). For year 2 participants, consensus was not achieved in 5 items, i.e. items 13 (68.9%), item 14 (64.8%), item 17 (51.6%), item 24 (52.4%), item 31 (58.2%). When the data from all year groups were merged, there were 3 items where a consensus of 70% or more was not achieved across the combined agree / strongly agree responses. These were:

- Item 17 (65.4%) ‘I challenge others when their practice is inconsistent with person-centred values and beliefs’
- Item 24 (59.67%) ‘My opinion is sought in clinical decision-making (e.g. ward rounds, case conferences, discharge planning)’
- Item 31 (66.7%) ‘I am encouraged and supported to lead developments in practice e.g. research, quality improvement, practice development initiatives’.

A second Delphi Round was set up to provide an opportunity for first and second year students to re-evaluate their responses to these items. Response rates for the second Delphi survey (Year 1 - 65%, Year 2 - 54%), and levels of consensus for each of the three items, are shown in Table 5. The results confirm that consensus was achieved for the remaining three items to be included in the PCPI-ST.

The qualitative comments from the second Delphi survey were collated. The merits of iterative Delphi rounds were acknowledged so that participants could critically review their responses. Participants commented that although some items may be challenging, they considered that these may be achievable at later stages of the course. It was also noted that completing the PCPI-ST instrument was a valuable learning activity as it raised awareness about the elements of person-centred practice and facilitated reflection on learning.

PHASE 2

Phase two involved a survey with a cohort of pre-registration nursing students using the PCPI-ST developed in phase one. The psychometric properties of the instrument were tested using confirmatory factor analysis.

Instrument

The PCPI-ST is a 57-item instrument that measures students’ perceptions of their person-centred practice in the context of their practice learning experiences. The instrument includes

three subscales that relate to domains within the PCPF (McCormack and McCance, 2020) namely: the prerequisites of the student (18 items), the practice learning environment (23 items) and the person-centred processes (16 items) (Table 6). Each item is rated using a 5-point Likert scale with responses scored as follows: strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5). No items involve reverse scoring. Total scores range from 57 to 285 with domain scores of: prerequisites 18-90, practice learning environment 23-115, and care processes 16-80.

Sample

In confirmatory factor analysis the adequacy of the sample is determined by a minimum number of 200 participants, a sample size to variable ratio of greater than 10 or sample size to model parameters ratio of at least 5 (Streiner and Kottner, 2014). In order to satisfy all of these parameters, it was determined that a sample size of >370 participants was required.

Data collection

Online and hard copies of the PCPI-ST and participant information sheet were distributed to 641 nursing students. Survey responses were collated via Qualtrics®. Two email reminders were issued after one and two weeks respectively and the survey closed after three weeks.

Data analysis

Data were analysed via SPSS® AMOS 25 using confirmatory factor analysis with maximum likelihood extraction. Correlations examined the relationships between the items within each domain to check for collinearity. Goodness of fit indices were evaluated to determine the fit between the observed data and the model (Alavi et al., 2020). Given the large sample size (>200), the ratio between the chi-square fit statistic and the degrees of freedom (x^2 /df) was reported (Wheaton et al., 1977), together with RMSEA, RMSEA 90% confidence interval and CFI. Due to limitations in AMOS for handling large numbers of items (> than 50 items), items

relating to the three domains of the PCPF (McCormack and McCance, 2020) were examined separately and results reported accordingly.

Results

From the population of 641 students, 561 questionnaires were returned (100 in hard copy and 461 completed on-line). Twenty-nine questionnaires were incomplete and excluded giving an effective response rate of 82.9% (*n*=532) which satisfied the a priori parameters for sampling adequacy.

By gender, 7.1% (*n*=38) of participants were male, 92.7% (*n*=493) were female. The majority of respondents were aged 21-29 years (60%), 18.6% were under 21, 15% aged 30-39, 6.2% over 40 years old. One student chose the 'prefer not to say' response to the gender and age demographic questions. Almost two-thirds of respondents (65.4%) had previous caring experience.

Examination of the correlations between constructs showed consistently positive and statistically significant relationships. Correlation scores ranged from 0.217 - 0.742 with no evidence of collinearity, justifying the inclusion of all 57 items in the adapted instrument. With a sample of >250, factor loadings of >0.35 per item are considered to demonstrate good fit with the underpinning theoretical framework (Hair et al., 2010). Confirmatory factor analysis showed the loading of items across factors were all greater than 0.35 with results ranging from 0.439 to 0.863 (Table 7). Fit indices and acceptable value citations are shown in Table 8. These values provide evidence of acceptable goodness of fit between items and their respective domains in the theoretical model.

DISCUSSION

A range of instruments have been used to measure person-centred practice in healthcare students. Despite their relevance as proxy indicators of person-centred practice, such

measures have been considered limited in that they are not theoretically derived from a model of person-centred practice (Edvardsson and Innes, 2010; Harding et al., 2015; Louw et al., 2020).

The findings of this study demonstrate that for this sample, the PCPI-ST instrument was a valid, empirical measurement of pre-registration nursing students' perceptions of their person-centred practice. Significantly, the instrument offers a robust measurement model in that it is theoretically derived and demonstrates goodness-of-fit with the PCPF (McCormack and McCance, 2020).

Internationally, the preparation of healthcare professionals for person-centred practice has gained traction (Cronenwett et al., 2007; Nygårdh et al., 2017; NMC, 2018). In addition, regulatory standards for education have made explicit reference to the need for the future workforce to practise using a person-centred approach (NMC, 2018). Given this context, the PCPI-ST instrument will have broad applicability in determining the efficacy of curricula in preparing person-centred practitioners. This will be of interest to professional regulators, commissioners of education, workforce planning teams and practice providers. The instrument will also be of specific relevance to educators and curriculum development team in gaining insights into aspects of person-centred practice that challenge students thereby highlighting areas for curriculum review and development. The PCPI-ST instrument may be used in monitoring students preparedness for person-centred practice either as a single or repeated measure over the course of their programme up to the point of registration. It will also provide evidence of student learning at individual and cohort level and development of students' perceptions' over time. The international application of the PCPI-ST as a standardised instrument for the measurement of person-centred practice in student healthcare professionals will also facilitate the collection of data sets across countries with the potential to strengthen the evidence base of the effectiveness of curricula in developing students to practise in a person-centred way.

The PCPF (McCormack and McCance, 2020) recognises the relevance and applicability of person-centred practice across all health and social care professionals and healthcare systems. The PCPI-ST has relevance to the wider community of pre-registration healthcare students. Whilst the development and testing of the PCPI-ST instrument has to date been with nursing students of one UK university, additional testing with other pre-registration student populations would provide further validation of its reproducibility and utility.

Limitations

The authors acknowledge a number of limitations to this study. Firstly, in the development of the adapted tool, there was a small sample of participants in the year three focus group (*n*=2). This may have been due to the timing of the focus group which was held in the university during a busy consolidation period, at the end of their programme. However the high response rates across all year groups to the subsequent Delphi surveys, subsequently provided the opportunity to seek opinion at cohort level.

Secondly, the instrument has been developed and tested with nursing students at one university. Further testing is needed to provide additional statistical evidence of the instrument's reliability and validity.

CONCLUSIONS

The PCPI-ST is an instrument designed to measure students' perceptions of their person-centred practice. Unlike previous scales that have measured person-centredness by proxy, the PCPI-ST instrument is theoretically derived from the Person-centred Practice Framework (McCormack and McCance, 2020) and therefore provides a more robust measurement model. The PCPI-ST has been tested with nursing students at one university and the findings provide confirmation of fit with the underpinning theoretical model for this sample population.

The PCPI-ST will be of use in determining the efficacy of curricula both in terms of their theoretical and practice learning components, in preparing healthcare students for person-centred practice. Whilst this paper has focused on the testing of the instrument with nursing students, given the relevance of person-centred practice to all health care professionals, additional testing with students from other disciplines is warranted.

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