

**Development and Validation of the Needs of Children's Questionnaire to Measure Children's Needs in Hospital**

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**Aim:** To develop and validate the needs of children's questionnaire, a new instrument to measure school aged children's needs in hospital. This study will bridge a significant gap in the literature on the self-reported needs of children in hospital.

**Background:** Child centered care is a philosophy of care where the child is central, forefront and the actor and co-constructor of care delivery and includes the principles of trust, respect, negotiation, information and patience that values the voices, needs and experiences of all children (Carter et al., 2014; Coyne et al., 2016; Foster, 2015). The literature on child centered care and children's healthcare needs have largely been limited to qualitative designs or tools completed by parents or health care professionals (Dickenson et al., 2014; Rasmussen et al., 2017). Over the last five years there has been an increase in the inquiry of child centered care (Shields et al., 2017), development of new child self-report measures (Holder, 2012; Ronan et al., 2014; Unit Developmental and Educational Psychology Institute of Psychology, 2017) and modification of existing tools to include the child's and parents' perspective (Berman et al., 2016; Orcesi et al., 2014; Rieffe et al., 2016). The way staff assess, plan and implement care to meet children's healthcare needs are areas that require further inquiry as these interactions could influence health outcomes more than illness severity or demography (Christian, 2012; Foster et al., 2013; Foster et al., 2016; Shields, 2015; Shields 2016). A questionnaire to evaluate if the quality of care received by children in hospital is in line with what children self-report as important and required is needed to maximise positive healthcare experiences and inform healthcare delivery, policy, research and theory development.

**Design:** This is an instrument development study based on recommendations for developing a reliable and valid questionnaire.

**Method:** The development of the needs of children's questionnaire during February 2014 to April 2017, followed six of the seven stages recommended by Hinkin, Tracey and Enz (1997). This included item generation; content adequacy assessment; questionnaire administration; factor analysis; internal consistency assessment and construct validity (Adcock, 2013; Cronbach, 1951; Hinkin et al., 1997; Kline, 2011; Kumar, 2015; Streiner and Kottner, 2014; Tabachnick and Fidell., 2013). Convergent, discriminant and criterion related validity were not assessed due to the absence of available tools to measure the same or dissimilar construct. Psychometric properties were assessed after 175 school aged children completed the needs of children's questionnaire in four paediatric units over two countries.

**Results:** Stage one, two and three: A meta-synthesis of the literature generated 65 core statements synthesised into five categories (trust, to be trusted, information, support/relationships and resources). Fifteen multidisciplinary paediatric experts and five school aged children critiqued each statement for appropriateness, content and face value which left a 55 item, three point importance scale. Phase four and five: Eighteen school aged children in critical care critiqued the tool which resulted in a 38 statement, 56 item tool with open ended questions. Sixty-nine school aged children in critical care completed the tool which generated a total importance mean score 136.43 (SD 14.17) and Cronbachs Alpha of .890.

Thematic analysis of the open ended responses generated nine themes (coping strategies, getting better, family, environment, treatment, relationships, facilities, food and visitors) and two syntheses (priorities and

choices). The categories were modified to coincide with the thematic analysis and a three point fulfilment Likert scale was added. One hundred and six school aged children in four paediatric areas across two countries completed the tool which resulted in a total importance mean score 134.52 (SD 12.66), fulfilment mean score 121.37 (SD15.88) and Cronbach's Alpha of .910. Phase Six: The Kaiser-Meyer-Olkin measure of sampling adequacy (0.676) and Bartlett's Test of Sphericity were significant ( $P \leq 0.001$ ). Explanatory factor analysis with principal axis analysis and promax rotation yielded an eighteen item, five factor model with a 54% variance. The reliability for each factor: activities (0.74), information (0.58), relationships (0.47), caring (0.41), resources (0.66) and total scale (0.74) were acceptable. Confirmatory factor analysis with the 18 items loaded onto their respective factors yielded  $\chi^2$  as 192.841, root mean square error of approximation 0.056 and incremental fit index of 0.856 indicating the model as satisfactory. The result was judged to represent a reasonable model fit with comparative fit index of 0.849, Akaike information criterion of 320.841 and Tucker Lewis Index of 0.781. The root mean square error of approximation 0.056 approached the established criterion of  $\leq 0.06$  and the chi-square/d.f. of 1.543 ( $\chi^2 = 192.841$ , d.f. = 125,  $P < 0.001$ ) still showed room for improvement. Sample adequacy was confirmed by the Kaiser-Meyer-Olkin test (0.676) and Bartlett's Test of Sphericity ( $\chi^2 = 555.554$ , d.f. = 153,  $P < 0.001$ ).

Conclusion: This is the first questionnaire that provides a means to measure the importance and fulfilment school aged children place on different concepts/items in hospital and to date indicates good usability and utility. Future testing and validation is needed to evaluate if the new instrument is suitable in other paediatric areas and countries.

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**References:**

Acock, A. (2013). Discovering structural equation modeling using Stata. *Stata Press books*.

Berman, A., Liu, B., Ullman, S., Jadback, I. & Engstrom, K. (2016). Children's quality of life based on the KIDSCREEN-27: Child self-report, parent ratings and child-parent agreement in a Swedish random population sample. *PLOS ONE*, 11,e0150545.

Carter, B., Bray, L., Dickinson, A., Edwards, M. & Ford, K. (2014). *Child-centred nursing: Promoting critical thinking*, Thousand Oaks, California, Sage Publications Inc.

Christian, B. (2012). Improving the lives of children and their families - Integrating clinical research into everyday pediatric nursing practice. *Journal of Pediatric Nursing*, 27, 594-597.

Coyne, I., Hallstrom, I. & Soderback, M. (2016). Reframing the focus from a family centred to a child centred care approach for children's healthcare. *Journal of Child Health Care*, 1-9.

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16.

Dickinson, A., Wrapson, W. & Water, T. (2014). Children's voices in public hospital healthcare delivery: Intention as opposed to practice. *The New Zealand Medical Journal*, 127, 24-31.

Foster, M., Whitehead, L., Maybee, P. & Cullens, V. (2013). The staff's, parents' and hospitalized child's perception and experiences of family centred care within a paediatric critical care setting: A meta-synthesis of qualitative research. *Journal of Family Nursing*, July 24Epub.

Foster, M. (2015). A new model: The family and child centered care model. *Nursing Praxis in New Zealand*, 31, 4-6.

Foster, M., Whitehead, L., & Maybee, P. (2016). The parents', hospitalized child's, and health care providers' perceptions and experiences of family centered care within a pediatric critical care setting: A synthesis of quantitative research. *Journal of Family Nursing*, 22, 6-73.

Hinkin, T., Tracey, J. & Enz, C. (1997). Scale construction: Developing reliable and valid measurement instruments.

Holder, M. (2012). *Happiness in children: Measurement, correlates and enhancement of positive subjective well-being*, New York, Springer.

Kline, R. (2011). *Principles and practice of structural equation modeling*, Guilford Publications.

Kumar, A. (2015). Review of the steps for development of quantitative research tools. *Advanced Practice Nurse*, 1.

Orcesi, S., Ariaudo, G. & Mercuri, E. (2014). A new self-report quality of life questionnaire for children with neuromuscular disorders: Presentation of the instrument, rationale for its development, and some preliminary results. *Journal of Child Psychology*, 29.

Rasmussen, S., Water, T. & Dickenson, A. (2017). Children's perspectives in family-centred hospital care. *Contemporary Nurse*, 1-11.

Rieffe, C., Broekhof, E., Kouwenberg, M., Faber, J., Tsutsui, M. & Guroglu, B. (2016). Disentangling proactive and reactive aggression in children using self-report. *European Journal of Developmental Psychology*, 13, 439-451.

Ronan, G., Dreer, L., Maurelli, K., Ronan, D. & Gerhart, J. (2014). *Practitioner's guide to empirically supported measures of anger, aggression and violence*, Switzerland, Springer International Publishing.

Shields, L. (2015). What is "Family-Centred Care"? *European Journal for Person Centered Healthcare*, 3, 139-144.

Shields, L. (2016). Family-centred care: the 'captive mother' revisited. *Journal of the Royal Society of Medicine*, 109, 137-140.

Shields, L., Feeg, V., Paraszczuk, A., & Al-Motleq, M. (2017). International FCC-CCC nursing thought leaders symposium: Dialogue on family centred care or child centred care generating the evidence and ethics. 28<sup>th</sup> International Nursing Research Congress, Sigma Theta Tau International, Honor Society of Nursing: 28<sup>th</sup> International Nursing Research Congress, 27-31 July 2017 Dublin, Ireland.

Smith, J., Shields, L., Neill, S. & Darbyshire, P. (2017). Losing the child's voice and 'the captive mother': An inevitable legacy of family centred care? *Evidence Based Nursing*, 20, 67-69.

Streiner, D. & Kottner, J. (2014). Recommendations for reporting the results of studies of instrument and scale development and testing. *Journal of Advanced Nursing*, 70, 1970-1979.

Tabachnick, B. & Fidell, L. (2013). *Using multivariate statistics*, Boston, MA, USA, Pearson Education.

Unit Developmental and Educational Psychology Institute of Psychology, L. U. (2017). *Focus on emotions* [Online]. Available: <https://www.focusonemotions.nl/index.php> [Accessed 12th November, 2017].

### **Abstract Summary:**

The activity will illustrate the steps required to develop, validate and psychometrically test a new tool, the needs of children's questionnaire, as generated by the self-reported experiences of school aged children in hospital.

### **Content Outline:**

#### Introduction

- A. Present state of the science on tools used with children in research in line with child centred care
- B. The development and validation of the needs of children's questionnaire

#### II. Body

- A. Development process of the needs of children's questionnaire

- 1. Stages of data collection

- a. *Adults, experts and children*

- b. *Recruitment, data collection, item generation, settings, analyses used*

- 2. Characteristics of the child centred care

- a. Child centered care is a philosophy of care where the child is central, forefront and the actor and co-creator of care delivery and includes the principles of trust, respect, negotiation, information and patience that values the voices, needs and experiences of all children.

- b. To evaluate if the quality of care received by children in hospital is in line with what children self-report as important and required.

- B. Psychometric reliability and validity of the needs children's questionnaire

- 1. Statistical tests used

- a. *Internal consistency*

- b. *Construct validity*

- C. Meaning of the results

- 1. Clinical, theory, education and research implications

- a. *Limitations, strengths, gaps*

*b. Dissemination of results to government, institutions and organisations*

2. Build on child centred care concepts and tool development from an international perspective

*a. Collaborative research, networking*

*b. Connect, engage, learn, grow, advance and elevate*

### III. Conclusion

A. Present state of child centred care and tools

B. The new 18 item tool shows strong validity and reliability

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**Professional Experience:** Dr Mandie Jane Foster is a lecturer and research scholar at the School of Nursing and Midwifery, Edith Cowan University, Perth, Western Australia. Over the past twenty seven years she has integrated a clinical role, academic position and higher degree (PhD) including innovative translational research (postdoctoral fellowship and research fellow) into her nursing career. She has coordinated and designed interactive blended paediatric undergraduate and postgraduate curricula and presented at international, national and local conferences, tutored and mentored postgraduate, graduate and undergraduate students within various universities and hospital settings within developed and developing countries. Her area of expertise is paediatric clinical nursing, education and research and her desire is to build knowledge and research capacity on improving child health outcomes that is translational to policy development, education and practice from a global perspective.

**Author Summary:** Dr Mandie Jane Foster is a lecturer and research scholar at the School of Nursing and Midwifery, Edith Cowan University, Perth, Western Australia. Over the past twenty seven years she has integrated a clinical role, academic position and higher degree including innovative translational research into her nursing career. Her desire is to build knowledge and research capacity on improving child health outcomes that is translational to policy development, education and practice from a global perspective.

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**Professional Experience:** Professor Whitehead is currently Professor of Nursing and Midwifery, Edith Cowan University. Prior to this she was Honorary Professor of Nursing Research, University of Otago.

**Author Summary:** Professor Lisa Whitehead's research experience over the past 22 years has centered on improving patient outcomes, with a focus on the primary health care setting. Professor Whitehead has been awarded over \$5m in research funding. Professor Whitehead has collaborated on over 25 research

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