**TITLE**

Nursing Students' understanding of the Fundamentals of Care: A cross-sectional study in five countries

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## ABSTRACT

### Aim

To explore the accuracy with which nursing students can identify the fundamentals of care.

### Background

A challenge facing nursing is ensuring the fundamentals of care are provided with compassion and in a timely manner. How students perceive the importance of the fundamentals of care may be influenced by the content and delivery of their nursing curriculum. Since the fundamentals of care play a vital role in ensuring patient safety and quality care, it is important to examine how nursing students identify these care needs.

### Design

Cross-sectional descriptive design.

### Methods

A total of 398 nursing students (pre- and post-registration) from universities in Sweden, England, Japan, Canada and Australia participated. The Fundamentals of Care framework guided this study. A questionnaire containing three care scenarios was developed and validated. Study participants identified the fundamentals of care for each of the scenarios. All responses were rated and analyzed using ANOVA.

### Results

The data illustrates certain fundamentals of care were identified more frequently, including communication and education; comfort and elimination, whilst respecting choice, privacy and dignity were less frequently identified. The ability to identify of all the correct care needs was low overall across the pre- and post-registration nursing programs in the five universities. Significant differences in the number of correctly identified care needs between some of the groups were identified.

### Conclusion

Nursing students are not correctly identifying all a patient's fundamental care needs when presented with different care scenarios. Students more frequently identifying physical care needs and less frequently psychosocial and relational needs. The findings suggest educators may need to emphasize and integrate all three dimensions.

**Relevance to clinical practice**

To promote students' ability to identify the integrated nature of the fundamentals of care, practising clinicians and nurse educators need to role model and incorporate all the fundamental care needs for their patients.

**KEYWORDS**

fundamentals of care, nursing curriculum, pre- and post- registration nursing students, care scenarios

**WHAT DOES THIS PAPER CONTRIBUTE TO THE WIDER GLOBAL CLINICAL COMMUNITY?**

- This study provides a unique data set encompassing responses related to the fundamentals of care from pre- and post-registration nursing students in five different countries
- The rate of correct identification of all of the required care needs was low across the different nursing programs in the five universities, suggesting that educators in the different countries may need to emphasize the integrated nature of the fundamentals of care in their curriculum.

## INTRODUCTION

Healthcare is constantly engaged in balancing the need to provide safe and affordable healthcare with a service that respects and protects the individual patient and their family. Nursing has a central role to play in ensuring this safe, affordable and respectful care (Bleich, 2011). However, the challenge facing the nursing profession is ensuring the fundamentals of care or 'basics' of nursing care are carried out in a timely manner, and with care and compassion (Maben, Cornwell, & Sweeney, 2010; Casey, 2013). These fundamental care needs include ensuring appropriate nutrition, hydration, hygiene, sleep and dignity, among others. Failure to ensure these aspects of care are provided leads to wider patient safety issues (Francis, 2013). Inevitably, the way nurses are educated impacts on the way they perceive the importance of these care needs.

## BACKGROUND

The International Council of Nurses (2017) defines nursing as encompassing autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings. Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled and dying people, advocacy, promotion of a safe environment, research and participation in shaping health policy. Henderson defines nursing as assisting the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that they would perform unaided if they had the necessary strength, will or knowledge (Raile Alligod, 2014). There is evidence that the nursing profession has not been able to provide quality basic nursing – or the Fundamentals of Care (FoC) – as consistently or adequately as needed (Kitson, Conroy, Kuluski, Locock, & Lyons, 2013a).

An analysis, categorization and synthesis of selected contents extracted from international seminal nursing education textbooks was undertaken in 2010 (Kitson, Conroy, Wengstrom, Profetto-McGrath, & Robertson-Malt, 2010). This process identified marked variation in the terms and language used to refer to the FoC and substantial differences in the level of guidance for assessment of these needs and any actions that may be required. This diversity in terminology also influences the development of nursing knowledge about the FoC. Without question, the FoC are an integral part of pre-and post-

registration nursing education, however they are often implicit or invisible (Thomas, Jack & Jinks, 2012) and rarely revisited beyond the first year of pre-registration. MacMillan (2016) has highlighted the influence the nursing curriculum, and the manner with which educators and practicing clinicians teach, can have on how nursing students perceive the importance of the FoC.

Nurses must be able to identify the FoC needs of their patients and respond to these accordingly. Identifying the FoC is not straightforward. An ability to identify the FoC must precede any decision by the nurse about how to address the patient's physical, psychosocial or relational needs. Given the issues with care delivery and inconsistencies in descriptors used for the FoC that have been identified above, it is important to assess the ability of nurses to perceive these needs across the nursing education spectrum.

Patient centred care (PCC) has been defined as providing care in the way the patient wants and at the time that the patient wishes (Rathert, Williams, McCaughey, & Ishqaidef, 2015). The concept of PCC also often referred interchangably as person centred care (Feo & Kitson, 2016) is being addressed in a range of healthcare contexts, including outpatient areas, army services, as well as medical homes and for various clinical conditions, including stroke, antenatal and chronic obstructive pulmonary disease (Battle, Uebelacker, & Magee, 2012; Jensen, Vedelo, & Lomborg, 2013; Kitson, Marshall, Bassett, & Zeitz, 2013b; Lewis & Holcomb, 2012; Nickel, Trojan, & Kofahl, 2012). It is evident that the perspective of what constitutes PCC differs between organisations and patients. Patients, although not always explicitly aware of the concept of PCC, value emotional support, care coordination, participation, attention, and comfort (Lorig, 2012; Marshall, Kitson, & Zeitz, 2012, Jangland, Kitson, & Muntlin Athlin, 2016). Organisations, on the other hand, feel that PCC is best achieved through payment reforms, sharing in decision making, cost effective care and the process of care delivery (Rathert et al., 2015; Reed, Conrad, Hernandez, Watts, & Marcus-Smith, 2012). The FoC are a significant part of a patient's perspective of PCC. If these 'basic' care needs are not fulfilled or are not

delivered in a way that maintains dignity and allows for the patient's participation and comfort, then the goal of PCC is unachievable. The Fundamentals of Care Framework (Kitson et al., 2013a) is based on the research, theoretical, practical and clinical experience and expertise of the members of the International Learning Collaborative (ILC). The ILC consists of healthcare clinicians, academics and leaders, dedicated to transforming the delivery of the FoC across the world. The focus of the Framework is on enabling the patient and the nurse to confidently and competently assess, plan, implement and evaluate the FoC. The Framework relies upon the ability of the nurse to connect with the patient, and through that connection be able to meet, or help the patient themselves meet, their FoC needs. This is the foundation of effective nursing care and is achieved through the alignment of three dimensions: establishing a therapeutic relationship with the patient; being able to integrate the patient's physical, psychosocial and relational care needs; and ensuring that the wider health system or context is committed and responsive to these central responsibilities. This Framework has been used by ILC members and external researchers to explore the FoC from a range of perspectives including what has been identified by nurses and patients as influencing nurses' delivery of the FoC (Jangland, Teodorsson, Molander, & Muntlin Athlin 2017; Conroy, 2017). The FoC are defined in the Framework and include physical elements such as keeping the patient clean and comfortable, psychosocial elements such as keeping the patient involved and dignified, and relational elements such as the nurse being compassionate and respectful.

This study was conducted by a team of researchers from five countries from within the ILC. The ILC acknowledges that despite significant improvements in delivering more compassionate PCC, health systems continue to face challenges in meeting the basic needs of many patients due to a range of complex factors. These include an ageing global population, an exponential increase in chronic illness and lifestyle-related illnesses (such as obesity and addiction disorders), as well as reorganisation and demands for efficiency in healthcare organisations.

This study focuses on nursing education related to the FoC and investigates pre and post registration nurses' ability to recognise the FoC needs of patients and appropriately identify whose responsibility it is to address these needs. The purpose of this paper was to explore the **accuracy** with which nursing students can identify the FoC that are relevant to three different care scenarios. This paper addressed two research questions:

1. Which FoC are correctly identified by participants when presented different care scenarios?

2. How does a participant's ability to correctly identify the FoC correspond to their level of study?

## METHODS

### Design

A cross-sectional, descriptive study design was used. This design allows researchers to examine or measure a phenomenon and any possibly related factors in at a specific point in time (Boushey & Bruemmer, 2008). A cross-sectional, descriptive design was useful in this study because of two reasons. First, it provided an opportunity to gather baseline data, via a questionnaire, about nursing students' ability to correctly identify the fundamental care needs for patients in various care situations. Second, this study design provided an opportunity to examine these nursing students using international lens, with the involvement of five different nursing schools from around the world.

### Participants

This study was conducted in five universities in different countries (Sweden, England, Japan, Canada and Australia). All pre-registration and post-registration nursing students enrolled in nursing programs in these five participating universities were invited to take part in the study. Pre-registration students

are those studying a nursing programme at either undergraduate or postgraduate level but are 'pre-licence' whilst post-registration nursing students already hold the licence in their country to practice as a qualified nurse and who are undertaking further study. All pre-registration nursing students had received education on the FoC (or basic nursing care) prior to being invited to participate. There were no inclusion or exclusion criteria based on demographic variables (e.g., age, gender, education level). However, the five sites differed in terms of their nursing programs and curricula (see Table 1 for details). Some sites had a 3-year pre-registration nursing program, others had a 4-year pre-registration nursing program, with other sites having a pre-registration Master's program with curricula resembling some pre-registration baccalaureate nursing programs. Some sites also had post-graduate programs.

**Questionnaire**

**Scenario development**

The research team developed three care scenarios in which the situations of three individuals with various health challenges were described (see Figure 1). In brief, the scenarios referred to a man seeking care for acute abdominal pain in an emergency department; a woman who had experienced a stroke and is in a rehabilitation unit; and a teenager seeking care at a health clinic for her poor eating habits. When developing the care scenarios, the research team took special care to ensure that the scenarios represented a variety of care contexts and would be understood by nursing students of all levels. The team also ensured that the context of these scenarios was relevant to participants from all five study sites.

**Scenario Validation**

To ensure the care scenarios were valid, a content validity process was performed using a Content Validity Index (CVI). To do this, five experts, representing different countries (Australia [n=1], Denmark [n=1], United Kingdom [n=1] and Sweden [n=2]) were invited. The experts were selected based on their clinical practice experience and research involving the FoC. Each expert was sent a package that included background information about the study and target population, reviewer instructions, and the three care scenarios with a list of the the different FoC (in English). This list was based on the Fundamentals of Care Framework (Kitson et al., 2013a). Experts rated the relevance of each FoC to each care scenario by using a rating scale (i.e., 1=not relevant, 2=somewhat relevant, 3=quite relevant, and 4=highly relevant).

In accordance with this method, for each potential FoC, the *item CVI* (I-CVI) was computed as the number of experts rating 3 or 4, divided by the number of total experts. This provided the proportion of experts who were in agreement about relevance of a certain FoC to a particular care scenario. The ideal I-CVI was considered to be .78 or higher (Polit & Beck, 2017). Only items that had an I-CVI of .78 or more were included in the ideal response list for each care scenario. The correct FoC for each scenario according to the content validity results are presented in Figure 1.

The questionnaire (including the three scenarios) was first developed in English and was then translated into Swedish and Japanese for the Universities located in these countries where English is not the primary language. The instruction to students were: *Please read the care scenarios. Then, identify the care needs for each scenario. List your responses in free text.*

**Data collection**

Data were collected between February 2016 and January 2017. Times for data collection were different at each site because of the variation in the start and end time of an academic term or semester at each university. The questionnaire was distributed either electronically (Australia, Canada and the United Kingdom) or by paper in a classroom setting (Sweden and Japan). The intent of using an electronic version was to avoid using class time for data collection. The two sites who used the paper version collected data outside of class time. The data were collected by the researchers and research assistants at each site. It took less than 30 minutes for participants to complete the questionnaire.

The three sites using an electronic version of the study questionnaire, each used a university-based surveying software (SurveyMonkey (AUS), FluidSurveys (CAN), and Qualtrics (UK)). After the questionnaire was prepared, a link to the questionnaire was sent to all potential participants for participants. The paper-based questionnaires were used by Sweden and Japan because of a low response rate they received in an earlier attempt to collect data electronically. Paper-based data was collected by organizing a room at the university where potential participants came and took part in the study or via distribution of the questionnaire at the end of classroom seminars.

Data collected included the educational program the participant was enrolled in, their year of study, current nursing experience, and the free text responses identifying the care needs in each scenario.

**Data Analysis**

Data were organized at each site in password-protected spreadsheet documents. For analysis purposes, all data were entered into SPSS at one of the participating sites. The researchers rated the participants free text responses and determined which of the FoC participants were referring to. The rating was

based on the ideal response list that resulted from the content validity phase of the study. The rating process was guided by the definitions of the FoC elements presented by Kitson et al., (2013a).

To ensure there was reliability in how the data was being analyzed, two researchers at each university site independently rated participants' responses by using the ideal response list generated by content experts. Inter-rater reliability was measured to test the agreement between raters. To do this, the Intra-Class Coefficient (ICC) was computed. Descriptive statistics were calculated for all correct FoC generated by participants. Analysis of variance (ANOVA) was used to analyse the differences among group means (total correct FoC). However, the ANOVA cannot indicate which specific pairs of group means showed the differences and which pairs did not. To determine this, the Tukey Post-Hoc Multiple Comparison Test was used. The significant level was set to be 5% for the analysis.

**Ethical Considerations**

Ethical approval for this study was received from all five sites: the Regional Ethical Review Board, Uppsala (No 2015/529); Human Research Ethics Committee, University of Adelaide (No. H-2016-082); the University Research Ethics Committee, Oxford Brookes University; the Hyogo University of Health Sciences Ethical Review Committee (No. 15034); and the Research Ethics Board, Thompson Rivers University (No. 101105). Enrolment in the study was voluntary and anonymous as participants were not required to indicate any identifiable information on the study questionnaire. All participants had the right to refuse participation at any time. Since an anonymous survey approach was used, no signed consent form with identifiable information was requested. The first page of the survey included a written statement about the research and the student's right to refuse participation by either not continuing to fill out the data collection forms by hand or closing the survey browser if attempting it electronically. If the students chose to progress through the survey, consent was implied.

## RESULTS

### Sample characteristics

Across the five participating universities, a total number of 398 students participated in the study (see Figure 2). While Japan and Sweden had the most number of participants (n=147 and n=118 respectively), Australia had 67 participants and the UK and Canada had a lower number of participants (n=36 and n=30 respectively). Nursing students from all levels and years of study participated in the study. The first scenario (Reza) was completed by 398 students and the second scenario (Katarina) was completed by 384 students, while the third scenario (Cindy) was completed by 383 students.

Analysis of students' nursing care experience showed that the majority of the students (n = 237, 59.5%) had no previous experience of nursing; 29 students (7.3%) had experience as care or nurse assistant, 30 students (7.5%) had 1-3 years' experience as RN, 39 students (9.8%) had 4-6 year's experience as RN and 63 students (15.8%) had more than 6 year's experience as RN.

### Inter-Rater Reliability

The results of the rating of each participant's answers in the three scenarios (correct responses) showed a high degree of inter-rater reliability (excellent to very good agreement) between the researchers at each site. The Intraclass Correlation Coefficient (ICC) was 0.887 ($p < 0.001$) in Scenario 1; 0.920 ($p < 0.001$) in Scenario 2 and 0.904 ($p < 0.001$) in Scenario 3. This showed a high level of agreement between the raters who independently rated all the study data.

**Frequencies of Fundamentals of Care Detected by Participants**

Within each scenario, there were a number of correct FoC needs that were more frequently identified by the students. In scenario 1 (Reza) *communication and education* was most frequently identified (n = 338, 85%), while *dignity* was only identified by 20 students (5%). In scenario 2 (Katarina) *mobility* was identified by 290 students (76%) and her need for *communication and education* was identified by 291 students (76%). Less frequently identified needs in the scenario with Katarina were *respecting choice* (n = 22; 6%) and *privacy* (n = 32; 8%). In scenario 3 (Cindy) *communication and education* was frequently identified (n = 211; 55%), together with *eating and drinking* (n = 247; 64%), while *privacy* (n = 3; 1%) and *respecting choice* (n = 21; 5%) were less frequently identified. The frequency (all participants combined) of the correctly identified FoC needs for each scenario is presented and illustrated in web diagrams in Figure 3.

**Differences in the Fundamentals of Care identified by students according to their level of study**

Some significant differences in the correct number of identified FoC between the different groups of nursing students were detected across the care scenarios. The results of the ANOVA showed that there was difference in group means in Scenario 1 ($p < 0.001$), Scenario 2 ($p < 0.001$), and Scenario 3 ($p < 0.001$). The means, standard deviations and the differences are presented in Table 2.

*For scenario 1 (Reza)* the mean number of correctly identified FoC varied between 2.42 to 3.56 out of 5 between the different groups of nursing students. A significant difference in the mean number of identified FoC was seen between the post-registration nursing students in the Clinical Nurse Specialist program (CNS) and the pre-registration nursing students in year 2 and year 3. The students in year 2 and 3, detected an average of 2.42 (SD 1.01) and 2.43 (SD 1.7) FoC respectively, compared to a mean of correctly detected FoC of 3.08 (SD 1.41; $p = 0.002$ and

$p = 0.003$) for CNS students.

*For scenario 2 (Katarina)* the mean number of correctly identified FoC varied between 2.49 to 4.33 out of 9 between the different groups of students. Table 2 shows that the pre-registration nursing students in year 3 and 4 identified a significantly higher number of FoC compared to the students in year 2. The students in year 2 detected an average of 2.49 (SD 1.19) FoC, compared to a mean of correctly identified FoC of 3.08 (SD 1.29; $p = 0.046$) in year 3, and 3.76 (SD 1.42; $p < 0.001$) in year 4 respectively. A significant difference ($p= 0.024$) in the number of correctly identified FoC was also seen between the students in the Master of Nursing Science program in year 1 (Masters Yr 1) and the students in the CNS programs. The CNS students detected an average of 2.76 (SD 1.56) FoC, compared to a mean of correctly identified FoC of 4.33 (SD 1.94) for first-year Master's students. A significant difference ($p = 0.003$) in the students' ability to identify the correct FoC was also seen between the Master's student in year 1 (post-registration students) and the pre-registration nursing students in year 2. The Master's students had a higher mean score (above) of correctly identified FoC compared to the pre-registration students in year 2.

*For scenario 3 (Cindy)* the correct number of FoC was 8, and the mean number of correctly identified FoC varied between 1.55 and 2.61 across the different groups of nursing students. In this scenario, significant differences ($p = 0.004$) in the mean number of detected FoC were seen between the pre-registration nursing students in year 4 and year 2, where the students in year 2 identified an average of 1.73 (SD 1.30) FoC correctly, compared to a mean of correctly detected FoC of 2.60 (SD 1.13) in year 4. The data also shows that pre-registration students in both year 3 and 4 detected a significantly higher number of correct FoC compared to post-registration nursing students in CNS programs (mean 1.55; SD 1.30; $p = 0.020$ and $p < 0.001$) in this scenario.

## DISCUSSION

The aim of this study was to explore the accuracy with which nursing students identified the FoC in three different care scenarios and to assess the ability of nurses to perceive these needs across the nursing education spectrum. The findings show that students are not consistently identifying all the fundamental care needs of the patient when presented with different care scenarios. Certain fundamentals of care were identified more frequently including communication and education, comfort (including pain) and elimination, whilst respecting choice, privacy and dignity were less frequently identified by the students. The number of correctly identified care needs was low across all the different pre-registration and post-graduation nursing programs in the five universities. Some significant differences in the number of care needs correctly identified by the different nursing education levels were detected.

In the current healthcare climate which is focused on PCC, a surprising finding was that `*respecting choice'* was infrequently identified among students. The basis of PCC is the establishment of a mutually beneficial nurse-patient relationship, including the patient being listened to, treated with dignity and being an active partner in setting goals (McCormack & McCance, 2017). In scenario 2 with Katarina, who following a stroke had difficulties expressing her needs verbally, but was motivated to participate in rehabilitation, only 6% of the students identified respecting choice as a FoC need. Nurses have a crucial role in promoting patient involvement, including respecting the patient's choice, and nursing education needs to ensure that students have the skills to enter into a caring relationship and view themselves as the facilitator of patient-centred fundamental care (Feo & Kitson, 2016). The findings indicate that educators may need to review their nursing curriculum and how the education is delivered to ensure that PCC is embedded and instill this core value of care in each nursing student (McLean, 2012). To support competence development educators need to not only focus on students' theoretical knowledge and practical skills, but also on students' *'way of understanding'* their role (Marton & Booth, 1997; Sandberg, 2000). A person's way of understanding

a phenomenon (eg. PCC) is expressed in what a person says and how they act in a situation. For a person to develop new competence (and understand the need to interact and act in a new way), the way of understanding needs to be challenged and interrupted. This could be supported by using group discussions based on patient stories and clinical supervision, during clinical courses where practicing nurses must be good role models, as well as students' self evaluations and their own learning plans based on the objectives in the curriculum. We emphasize that the transition into the nursing role during education could be supported by using the FoC framework as the theoretical lens for theoretical and clinical courses. Use of the FoC framework will ensure that physical, psychological, social and relational dimensions of the FoC are integrated into learning and are demonstrated in clinical practice. Students need to embrace the patient's perspective in all its complexity using a holistic approach. With this focus during their education, future nurses will be more prepared to deliver PCC and efficiently address patients' fundamental care needs (Feo & Kitson, 2016; Jangland, Larsson, & Gunningberg, 2011). This could, in turn, assist them in developing the competence and capacity needed to work in today's complex healthcare environments. Not only this, they will also be prepared to influence and encourage others in this direction.

Privacy and dignity were also infrequently identified across the three patient scenarios. This could be interpreted in several ways. If students evaluated the scenarios from the perspective of the individual patient's apparent condition or diagnosis, then they may have focussed on the FoC they thought were specifically relevant to that condition. In doing so, they could have presumed that the broader care needs such as privacy and dignity did not require specific identification. However, there may also be some confusion about what constitutes a FoC. The fundamentals of nursing have been identified elsewhere as psychomotor skills nurses perform and are focussed towards universal precautions, vital signs, managing intravenous therapy, administration of medication administration, and patient hygiene (McNett, 2012). Additionally, nursing has a long history of nursing models, some of which may have contributed to the view that FoC are focussed on physical activity. For example, the definition of nursing by Henderson (Raile Alligod, 2014), locates nursing as carrying out for the

individual, sick or well, those activities they cannot do for themselves. Concepts such as privacy and dignity may not be identified as a nursing activity as they are not as visible and tangible as, say for example, helping a person to wash. If this is the perspective followed in the curriculum for the individual students, it could be a contributing factor. The relational elements of care, including dignity, are under increasing scrutiny due to reported deficiencies in this area of nursing care (Blomberg, Griffiths, Wengstrom, May, & Bridges, 2016). Recent research has also indicated some nursing students feel dignity could be given greater prominence in their nursing curriculum (Munoz, Macaden, Kyle, & Webster, 2017). A critical review of pre-and post-registration nursing curriculum may be required to ensure these relational elements of nursing care are made more explicit to students

In all sites, clinical practice is an essential part of the education programs for both pre- and post registration nursing students. If a task-oriented approach is valued in the organization during the clinical practice placement this may influence the nursing student to act in the same way, despite any focus on PCC in theoretical courses. Educators have an important role to supervise students, especially those acting as clinical supervisors during the student's clinical practice. In this way, the lectures promoting PCC will not be isolated to within theoretical courses. Rather, they will be a philosophy that influences the entire nursing curriculum.

There were some correct FoC that were more frequently identified by the respondents in the scenarios. FoC such as *Safety, prevention and medication*, and *Comfort (including pain management)* have a broad scope. When rating the responses, it became clear that many and various care needs could be attributed to these FoC. Using scenario 1 as an example, if a participant identified a care need as a falls risk assessment, this would be rated as *Safety, prevention and medication*. However, if the participant identified a care need that could be considered less appropriate, such as administering sedatives to the patient, this could have been interpreted as part of the medication component of this FoC. The inclusion of medication in this interpretation may not actually reflect a care need. Rather, it

could be considered as a (re)action in response to a patient's condition. Prescribing medication is not within the remit of every nurse, and not all recipients of care require medication administration, so considering it as a FoC may require reconsideration.

When participants indicated the care needs, the raters had to interpret them in from a FoC framework which we discovered had a limited emphasis on emotional and psychosocial aspects. Data analysis by the research team revealed that the FoC '*Comfort (including pain management)'* was too broad to specifically reflect what students were referring to. For example, it was not possible to identify whether students selecting *'Comfort'* were referring to physical or emotional comfort or both. In scenario 3, the care needs were predominately emotional and psychosocial. In future iterations of the survey it is recommended that the FoC descriptors that were developed by Kitson et al., (2013a) be revised. We suggest extrapolating '*Comfort* (including pain management)' into two codes: Physical comfort including pain management, and Emotional support. This would allow an assessment of the students' ability to distinguish between emotional and physical comfort needs. Similarly, we suggest changing Safety, prevention and medication to Safety and prevention of harm to better reflect FoC needs. These suggestions have been reflected in the work of Feo et al, (2017) who have recently published a revised explanation for how fundamental care is conceptualised and defined as well as updated descriptions for each fundamental of care.

During the design of this study, discussion took place on the nature of the sample and the pros and cons of including both pre-registration and post-registration nursing students. The decision was made to include both pre-registration and post-registration nursing students because firstly the study sites involved had both sets of nursing students and therefore access to both groups was straightforward. Secondly, we considered that it would be of value to see if we could ascertain any measurable differences between pre and post registration nursing students in the frequency of the correct FoC they identified in the scenarios provided.

This decision proved useful in that the data has been able to give some differences between pre and post registration nursing students although it has also left a number of unanswered questions. The data from pre-registration nursing students shows an expected result in that it is possible to see progression from year 2 to year 3 and 4 in the frequency by which the students are able to correctly identify the FoC in each scenario. For example, in scenario 3 we see an increase in mean of correct responses from 1.73 in Year 2, 2.16 in Year 3 and 2.60 in Year 4. However, the mean of the correctly identified care needs was low for all three groups since the number of correct FoC in the scenario was 8 items. This same picture, with a low rate of identification of the correct FoC was detected across all scenarios. The data on post-registration students shows a mixed picture across the care scenarios. In scenario 1 where the FoC had a more physical focus (safety, prevention and medication, elimination and pain management), post-registration nursing students in the CNS programs correctly identified the FoC more frequently compared to pre-registration students in year 2 and 3. However, a surprising finding was noted in scenario 3, where other FoC had more relevance (dignity, privacy, respecting choice), which shows that pre-registration students in year 2 and 4 detected a significantly higher number of correct FoC compared to the post-registration nursing students in the CNS programs.

We believe that these findings may indicate that although qualified nurses develop and further refine their physical clinical skills, there may be a lack of further role development in terms of addressing these other FoC when working in practice. One interesting group to follow up would have been the post-registration nursing students in the Masters of Nursing Science program (Year 1) who more frequently identified the correct FoC in scenario 2. It would have been interesting to see if they had any specialist education or practice experience in the care of patients with stroke, leading to a more sophisticated appreciation of the FoC needs of this category of patients. However, this finding needs to be considered with caution due to the small group of participants included in this group. On a positive note, the pre-registration nursing students in year 4 detected a higher number of correct FoC compared to the students in year 2 both in scenario 2 and 3, indicating a progress in learning.

However, as pointed out earlier, the numbers of correctly identified FoC are low across all three scenarios and many of the patients' needs are not being identified by students close to graduation.

Another positive finding was *Communication* and *Education* was identified frequently in all scenarios as a FoC. This may be indicative that nursing curricula are doing a good job at ensuring nurses see their role as good communicators and educators. It is well documented in the literature that both are fundamental to good patient care (Beta, 2014; Bramhall, 2014).

**Strengths and Limitations**

This international research provides a description of at what point of their career path nurses can identify the FoC. The outcomes from this research may be used to revise nursing curricula to ensure the FoC are embedded appropriately. One strength of this study is the unique data set encompassing responses from pre-and post-registration nursing students in five different countries. This data set will be subjected to further analysis. There are many other factors to be explored such as the language used by the students to describe the FoC needs and the allocation by the students of the responsibility for each care need. It was beyond the scope of this paper to report this data.

Another strength of the study was using a content validity process for the care scenarios (Polit & Beck 2017). To obtain content validity in the scenarios five academic experts, selected based on their clinical practice experience and research involving the FoC, rated the relevance of each item per category and scenario. One limitation of this was that the experts were from Europe and Australia only, and did not represent all the countries and cultures involved in this study. However, the findings show that the scenarios were understood by nursing students across all five countries and cultures and confirmed that the scenarios are applicable to nursing students at pre- and post-registration level. The students were asked to identify the patient's care needs and respond in free text. We considered that

free text responses would more correctly reflect the student's ability to identify the patient's care needs compared to presenting them with a predetermined list of the FoC needs for each scenario and let the students choose. It could be suggested the rating of free text responses could include variations in interpretations. However, the process of inter-rater reliability was thoroughly carried out, with two people on each site independently rating each participant's answers based on the expert list. The results of this process also showed a high degree of reliability between the raters. A potential weakness in the methods is the scenarios did not cover all FoC needs included in the template, as respiration, temperature control and expressing sexuality were not included (Kitson et al., 2013a). Our primary goal was not to include all the care needs, but instead construct scenarios where various health challenges were described that could be understood by nursing students of all levels, and also be relevant to participants from the five countries.

There are several limitations of this research. A more complete range of demographics (e.g. age, gender) as opposed to the 'level of study' would have helped inform the differences noted in the data and this is something we would address in any future study undertaken. The influence of diverse nursing curricula and differences in how nursing education is delivered were not explored and could have impacted the study results. For example, some sites used problem-based learning pedagogy while other did not. Pre-registration programs could be delivered over three or four years. Hence, a third year student in a 3-year nursing program could respond differently to a third year student in a 4-year nursing program. Furthermore, some degree programs had to be grouped together based on the type of curriculum that was being covered in these degrees (e.g., a pre-registration Master of Clinical Nursing had an overlap with the baccalaureate nursing curriculum). Extensive discussion between the researchers, each of whom consulted with the program coordinators at their site, enabled participants from similar programs to be combined. Another potential limitation is the low number of participants in several groups that may impact on the finding for this group. The PhD participants were not included in the ANOVA and the Tukey Post-Hoc Multiple Comparison Test due to low number of participants in this group.

The influence of the different cultures in the five countries and its potential impact on participant responses was not explored and could have been an important factor as differences in the perceived filial responsibilities between cultures may have impacted on the correct identification of FoC needs. In addition, social aspects related to clinical training were not explored (e.g., types of placements students have had, students' past experience with complex care situations). While these are important factors to explore when examining differences between groups, they were beyond the scope of this cross-sectional descriptive study. However, these factors would be worth investigating in future educational research of this kind.

The distribution of the questionnaire either electronically or by paper in a classroom setting may have influenced the student responses. Those in the classroom setting may have felt obliged to participate but equally would have been provided protected time to complete the questionnaire. Those sent an email link to an online questionnaire to complete it on their own time, may have chosen not to respond or could have rushed through it. One drawback for online questionnaires was that some participants had incomplete questionnaires which they did not re-attempt or complete because of the anonymous nature of the online questionnaires which lacked a function to allow a participant to save and complete a questionnaire at a later time.

## CONCLUSION

Nursing students are not correctly identifying all the fundamental care needs for the patient when presented with different care scenarios. As the students more frequently identify physical needs and less frequently identify psychosocial and relational needs the finding suggest that educators may need to emphasize and integrate all three dimensions of care across the nursing education spectrum. Given the importance of respecting choice, privacy and dignity as part of ensuring PCC, efforts are required to enhance this content in nursing education globally. Our own learning has an international team has

also been of value. Working together on this study has helped develop a shared understanding and a clearer definition for the FoC.

## RELEVANCE TO PRACTICE

Nursing students spend a considerable amount of their 'learning' in clinical practice yet they fail to develop the ability to consistently identify all the FoC needs of patients. Practising nurses need to be good role models by identifying and addressing all the FoC needs of their patients including those that are less tangible such as respecting choice, privacy and dignity. Working together as nurse educators and practising nurses will promote the student nurse's ability to correctly identify and subsequently address all the FoC needs of their patients.

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| **Table 1: Overview of Nursing Programs at Participating Sites** | | | | | | |
|---|---|---|---|---|---|---|
| Country | Pre-registration programs<br>*Usual duration of study* | | Post registration programs<br>*Usual duration of study* | | | |
| Australia | Bachelor of Nursing<br>*3 years full time* | Master of Clinical Nursing<br>*2 years full time* | Bachelor of Nursing (Post Registration)<br>*2 years half time* | Graduate Diploma<br>*2 years half time* | Master of Nursing Science<br>*4 years half time* | PhD<br>*3 years full time or 6 years half time* |
| Japan | Bachelor of Nursing<br>*4 years full time* | | Master of Nursing Science<br>*2 years full time* | | | |
| United Kingdom | Bachelor of Science (Hons) Nursing<br>*3 years full time* | Master of Science Nursing<br>*3 years full time* | | Graduate Certificate (multiple specialties)<br>*1 year half time* | Master of Science<br>*1 year full time, 2 - 5 years part time* | PhD<br>*3 years full time or 6 years half time* |
| Canada | Bachelor of Science in Nursing<br>*4 years full time* | | | | | |
| Sweden | Bachelor of Clinical Nursing<br>*3 years full time* | | | | Clinical Nurse Specialist **(CNS)** program. Master of Caring Sciences<br>*1 yr full time or 2 yrs half time* | |

**Table 2: Mean values and standard deviations (SD) in number of detected Fundamentals of Care (FoC) in the three care scenarios and differences of correct detected FoC in the different groups of students**

| | BN-Yr1/ MCN-Yr1 | BN-Yr2 | BN-Yr3/ MCN-Yr2 | BN-Yr4 | CNS | Masters-Yr1 | Masters-Yr2 | PhD-Yr1 or Yr-2[†] | Total |
|---|---|---|---|---|---|---|---|---|---|
| ***Scenario #1 Reza (Total correct FoC =5)*** | | | | | | | | | |
| # of respondents | 39 | 102 | 105 | 41 | 85 | 9 | 15 | 2 | 398 |
| Mean correct FoC (SD) | 2.49 (1.02) | 2.42 (1.01) | 2.43 (1.07) | 2.89 (1.10) | 3.08 (1.41) | 3.56 (0.68) | 2.90 (0.81) | 3.50 (0.71) | 2.67 (1.16) |
| | ***Group Mean Differences (P-value)**** | | | | | | | | |
| BN-Yr1/MCN-Yr1 | - | 1.000 | 1.000 | 0.747 | 0.121 | 0.168 | 0.929 | - | - |
| BN-Yr2 | | - | 1.000 | 0.306 | **0.002** | 0.072 | 0.775 | - | - |
| BN-Yr3/MCN-Yr2 | | | - | 0.347 | **0.003** | 0.080 | 0.804 | - | - |
| BN-Yr4 | | | | - | 0.988 | 0.744 | 1.000 | - | - |
| CNS | | | | | - | 0.926 | 0.999 | - | - |
| Masters-Yr1 | | | | | | - | 0.864 | - | - |
| Masters-Yr2 | | | | | | | - | - | - |
| ***Scenario #2 Katarina (total correct FoC =9)*** | | | | | | | | | |
| # of respondents | 34 | 100 | 103 | 41 | 82 | 9 | 13 | 2 | 384§ |
| Mean correct FoC (SD) | 2.82 (1.36) | 2.49 (1.19) | 3.08 (1.29) | 3.76 (1.42) | 2.76 (1.56) | 4.33 (1.94) | 2.89 (0.94) | 2.50 (3.54) | 2.93 (1.42) |
| | ***Group Mean Differences (P-value)**** | | | | | | | | |
| BN-Yr1/MCN-Yr1 | - | 0.922 | 0.982 | 0.066 | 1.000 | 0.065 | 1.000 | - | - |
| BN-Yr2 | | - | **0.046** | **<0.001** | 0.894 | **0.003** | 0.977 | - | - |
| BN-Yr3/MCN-Yr2 | | | - | 0.127 | 0.753 | 0.141 | 1.000 | - | - |
| BN-Yr4 | | | | - | **0.004** | 0.945 | 0.476 | - | - |
| CNS | | | | | - | **0.024** | 1.000 | - | - |
| Masters-Yr1 | | | | | | - | 0.219 | - | - |
| Masters-Yr2 | | | | | | | - | - | - |
| ***Scenario #3 Cindy (total correct FoC = 8)*** | | | | | | | | | |
| # of respondents | 35 | 98 | 103 | 41 | 81 | 9 | 14 | 2 | 383§ |
| Mean correct FoC (SD) | 2.11 (1.22) | 1.73 (1.30) | 2.16 (1.09) | 2.60 (1.13) | 1.55 (1.30) | 2.61 (1.52) | 2.18 (1.03) | 2.25 (1.06) | 1.97 (1.25) |
| | ***Group Mean Differences (P-value)**** | | | | | | | | |
| BN-Yr1/MCN-Yr1 | - | 0.747 | 1.000 | 0.671 | 0.300 | 0.958 | 1.000 | - | - |
| BN-Yr2 | | - | 0.208 | **0.004** | 0.976 | 0.431 | 0.902 | - | - |
| BN-Yr3/MCN-Yr2 | | | - | 0.506 | **0.020** | 0.961 | 1.000 | - | - |
| BN-Yr4 | | | | - | **<0.001** | 1.000 | 0.954 | - | - |
| CNS | | | | | - | 0.206 | 0.630 | - | - |
| Masters-Yr1 | | | | | | - | 0.991 | - | - |
| Masters-Yr | | | | | | | - | - | - |

* P-values based on Tukey Multiple Comparison Post-Hoc Test

† PhD participants not included in ANOVA and Tukey Multiple Comparison Post-Hoc Test due to low number of participants in this group.

§ Where numbers in group do not add up to total number of respondents there is internal drop-out

**Pre-registration programs:** Bachelor of Nursing Year 1 – Year 4 (BN-Yr1 – Yr4); Master of Clinical Nursing Year 1 – Year 2 (MCN - Yr 1 – Yr 2)

**Post-registration programs:** Clinical Nurse Specialist (CNS); Masters of Nursing Science Year 1 and Year 2 (Masters Yr1 and Yr2); PhD Year 1 - Year 2 (PhD Yr1 - Yr 2)

## Scenario 1
## Reza

Reza is an 85 year old Iranian man who was admitted to a busy Emergency Department 4 hours ago with abdominal pain for investigation. A family member accompanies him. He has been fasting since he arrived and he has not been to the toilet since he was admitted. He is now becoming restless and has been trying to get out of bed by climbing over the bedrails. He speaks Persian only.

**Correct FoC**
according to content validity results
1, 2, 5, 9, 10

## Scenario 2
## Katarina

Katarina is a 42 year old woman who suffered a stroke ten days ago. She has right-sided weakness and it is difficult for her to express her needs verbally (aphasia). Due to her weakness, she requires two people to assist with standing and can do a step transfer from bed to chair. She is able to eat and drink safely, but is embarrassed by her facial weakness which is causing her to dribble when drinking fluids. She is increasingly frustrated by her communication difficulties but is extremely motivated to participate in her rehabilitation.

**Correct FoC**
according to content validity results
1, 2, 4, 6, 9,
10, 11, 12, 13

## Scenario 3
## Cindy

Cindy is a 13-year-old teenager who is performing poorly in her studies. Her mother brought Cindy to the Health Clinic because Cindy has lost 10 kg in the last four months due to her poor eating habits. Cindy is afraid that if she eats, she will become obese. Cindy tells the nurse that she is only trying to stay fit and do what all of her friends are doing. Since Cindy's boyfriend is always talking about slim girls on TV, Cindy wants to become slimmer. To achieve this goal, Cindy has started to skip breakfast and lunch. Cindy also tells the nurse that she has difficulty sleeping due to hunger, and that she eats some popcorn and chocolates every time her hunger gets out of control.

**Correct FoC**
according to content validity results
1, 2, 4, 8,
9, 10, 11, 12

Fundamentals of Care (FoC) template*

| | | | |
|---|---|---|---|
| 1 | Safety, prevention and medication | 8 | Rest and sleep |
| 2 | Communication and education | 9 | Comfort (including pain management) |
| 3 | Respiration | 10 | Dignity |
| 4 | Eating and drinking | 11 | Privacy |
| 5 | Elimination | 12 | Respecting choice |
| 6 | Personal cleansing and dressing | 13 | Mobility |
| 7 | Temperature control | 14 | Expressing sexuality |

Figure 1. The three care scenarios included in the survey. The students were asked to identify the care needs of each patient. The correct responses (FoC needs) according to the content validity results are shown using the numbers from the Fundamentals of Care template. The template is derived from Kitson *et* al., (2013a).

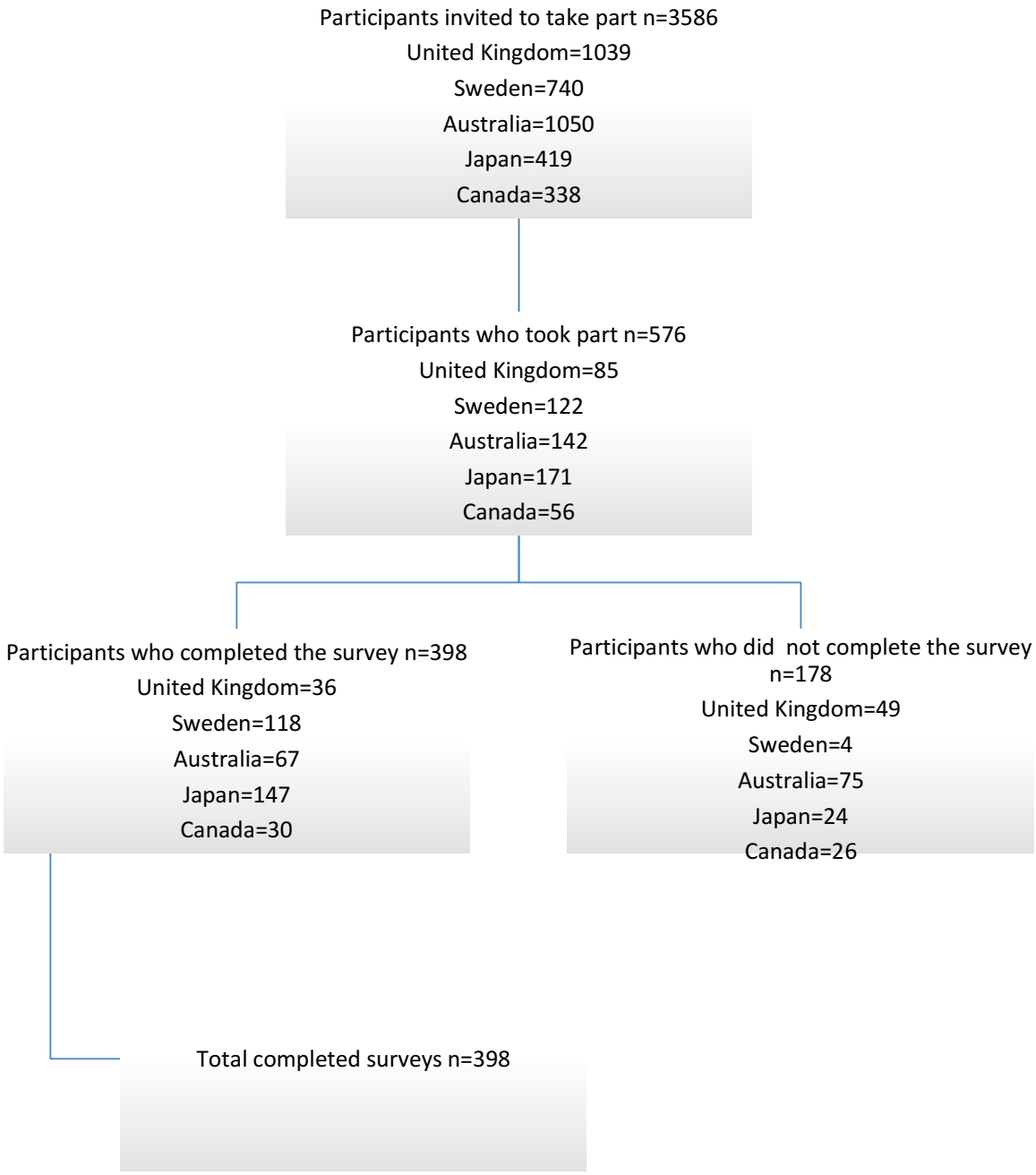
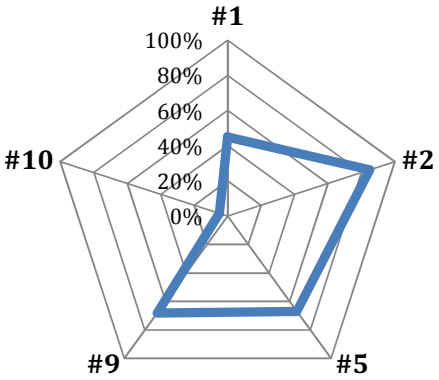
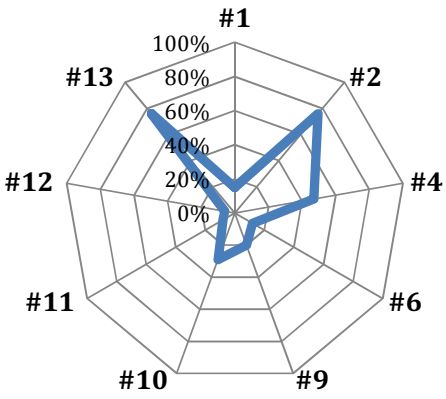



Figure 2. Flowchart of the students through each stage of the study

| **Scenario 1 Reza**<br>**Correct FoC (n=5)** | **All participants**<br>**n = 398**<br>**n** | **%** |
|---|---|---|
| #1 Safety, prevention and medication | 178 | 45% |
| #2 Communication and education | 338 | 85% |
| #5 Elimination | 266 | 67% |
| #9 Comfort (including pain management) | 269 | 68% |
| #10 Dignity | 20 | 5% |




| **Scenario 2 Katarina**<br>**Correct FoC (n=9)** | **All participants**<br>**n = 384**<br>**n** | **%** |
|---|---|---|
| #1 Safety, prevention and medication | 59 | 15 % |
| #2 Communication and education | 291 | 76% |
| #4 Eating and drinking | 182 | 47% |
| #6 Personal cleansing and dressing | 45 | 12% |
| #9 Comfort (including pain management) | 79 | 20% |
| #10 Dignity | 110 | 29% |
| #11 Privacy | 32 | 8% |
| #12 Respecting choice | 22 | 6% |
| #13 Mobility | 290 | 76% |



| **Scenario 3 Cindy**<br>**Correct FoC (n=8)** | **All participants**<br>**n = 383**<br>**n** | **%** |
|---|---|---|
| #1 Safety, prevention and medication | 45 | 12% |
| #2 Communication and education | 211 | 55% |
| #4 Eating and drinking | 247 | 64% |
| #8 Rest and sleep | 44 | 11% |
| #9 Comfort (including pain management) | 135 | 35% |
| #10 Dignity | 112 | 29% |
| #11 Privacy | 3 | 1% |
| #12 Respecting choice | 21 | 5% |

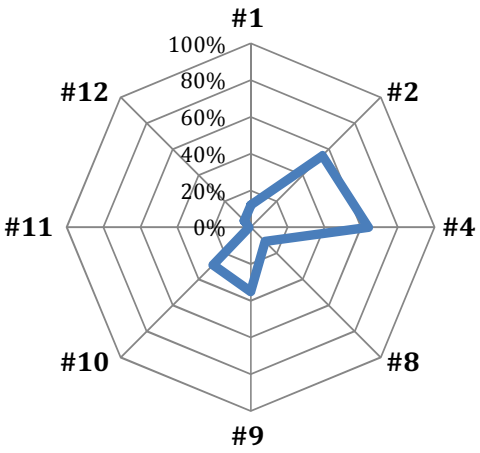



Figure 3. Frequency (%) of detected Fundamentals of Care in the three care scenarios presented in tables and illustrated with a web diagram.