

DEVELOPMENT OF NURSING COMPETENCY SCALE USING A FOUR-ROUND DELPHI PROCESS

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ABSTRACT

The Delphi method is a type of research method used for systematically establishing the consensus of experts using a series of surveys that is beneficial for addressing issues. The technique is reinforced by 'wisdom of crowds' studies demonstrating that, under certain situations, groups may make reasonable decisions. Physicians, nurses, and trainers, among others, have been utilised in Delphi research. The paper's purpose is to address the implementation of the Delphi approach in developing a valid and dependable research design competency-driven Nursing Competency Assessment Scale (NCAS) for Nurses. This study was conducted to get an expert agreement on the different aspects of fundamental nursing abilities that Nurses with more than six months of experience should possess. A considerable investment in hiring, training, and retaining Nurses is allocated; hence, an NCAS competency standard must be developed to organise Nursing Talent. The NCAS produced using the Delphi method is a legitimate and trustworthy scale.

Keywords: Healthcare workforce, Nursing competency; Nursing Competency Assessment Scale (NCAS); Delphi technique; Talent Management

Introduction

India's healthcare business is set to achieve new heights in volume and quality of care. With a population of around 1.2 billion (Census, 2011), India has the most rapidly expanding healthcare industry, providing millions with primary, secondary, and tertiary care. In India, the nursing industry continues to face difficulties in terms of Availability, Distribution, and Retention. India falls behind in health care expenditures, infrastructure availability, and skilled and competent labour force. India has only 0.70 physicians and 1.70 nurses for 1,000 inhabitants (Verma et al., 2016). 2.4 million additional registered nurses are required to fulfil escalating demand. A detailed study and analysis have identified four (4) areas that need attention.

1. Development of Nurses' Human Resources Management System
2. A nursing program focused on skill/competency-based outcomes.
3. Competency-based skill testing for licensing
4. Performance review and management of nurses

Objectives

1. To research and establish a relationship between Talent Management variables and its relationship to competence
2. To validate Competencies for Nursing professionals, and
3. To develop and validate the Competency Scale & Framework for Nursing professionals.

Literature review

Social and healthcare organizations work in a dynamic environment; thus, they must foresee these changes to adapt successfully. The Healthcare Management Institute of Ireland has also made notable accomplishments (Santiago, 2019).

The Royal Dutch Medical Association's Central College for Medical Specialties (CCMS) recently released instructions for upgrading all postgraduate speciality coaching programs. The recommendations offer a clear idea of broad capability domains for all specialities, which should assist professionals in designing training programs (Bleker, 2004). Assessments are vital for instructors, administrators, and nurses to determine the professional ability of nurses and, therefore, their overall gaps in education and development (Hasson & Arnetz, 2008).

Lenburg (1999) created the Competency Outcomes and Performance Assessment (COPA) Model based on considerable work with the New York Regents College of Nursing Program (1973-91) and various other organisations, as well as research connected to them. It was a comprehensive yet targeted paradigm that needed the combination of practice-based objectives, correlated learning techniques, and competency implementation evaluation.

In agreement, Ten and Scheele (2007) say, "One can only realise improvements in global health through the development of an educated workforce to elevate health and care for those with the illness. An increase in the attention on capability-based education will be helpful for the preparation of better health professionals".

As the technical and scientific progression rate quickens, gaining, maintaining, and developing professional competence is one of the most significant difficulties for all healthcare practitioners (Sheets, 1999).

As per the National Council of State Boards of Nursing (NCSBN), continuous competence is a crucial regulatory concern for nursing boards. NCSBN explains that competence means the utilization of knowledge and the interactive, psychomotor, and reasoning abilities expected for the practice position within the framework of public health in order to have terminology relevant to all practitioners at all levels of practice (NCSBN, 1996).

CAC's last resource is a five-step prototype for the respective practitioner, which comprises regular periodical valuation, the formulation of a customized plan, the execution of a personal plan, the recording of all processes, and the demonstration and demonstration evaluation of competence (Vora, 2022).

Significant factors and relationships identified

1. Competence- Competence is a collection of observable traits and abilities that boosts and enhances the effectiveness or execution of a task. (White, 1959).
2. Performance- Job performance is a role's postulated conception or requirements in the workplace. There are two forms of work routine: assignment and contextual. The ability to perform on a given assignment depends on cognitive capacity, whereas performance in a given situation depends on personality (Robertson, 2015).
3. Talent - According to Thorne and Pellant (2006), a gifted person is: "Someone with a greater skill who accomplish tasks with ease and elegance. The individual's chosen proficiency level is then compared to the target level to identify proficiency or skill gaps for each activity and ability. (Meyers, 2013)

Some of the well-known scales that have already been researched: -

1. The Nurse Competency Scale (NCS) is a seventy-three-item scale disseminated into seven categories: (Aydin & Hicdurmaz, 2019).
2. The Six-Dimension (6D) Scale has fifty-two items grouped into six subscales (Schwirian, 1978).
3. Competency Inventory for Registered Nurses (CIRN) is the nursing capability context or tool for Chinese registered nurses, which recognised seven categories (Liua, 2006).
4. The Holistic Nursing Competence scale (HNCS) is a seven-point Likert-type scale established by Takase & Teraoka (2011), with thirty-six items.

Significant relationships observed

Along with the list of constructs mentioned earlier, our literature study supported various inter-variable relationships, whose significance and empirical validations are discussed further.

1. Competence & Competency- Competence emphasizes skill sets, such as leadership, time management, communication, and interpersonal skills, among others (Yadav, 2022).
 2. Talent Management- ASTD Staff (2007) defines managing talent as "a comprehensive method to enhance human capital that allows an organisation to influence overall results by constructing culture, involvement, abilities, and volume through aligned talent procurement, progress, and deployment processes." According to (Stockley, 2007), skill management is a planned effort to hire and develop individuals with the aptitude and skills to satisfy all business demands.
 3. Competency Model: - A competence model is a collection of essential skills and behaviours for optimal work performance. Competence models may be crucial in attaining organisational success when utilised to influence individual work behaviours and professional growth. (Wuim-Pam, 2014).
- According to Stockley (2007), talent management is an intentional and purposeful endeavour to attract, train, and retain personnel with the aptitude and skills to meet a company's current and future expectations. Organisations must develop techniques to strengthen and use employees' critical talent management abilities to achieve strategic competitive advantages and continue in business (Imparato & Harari, 1994).

Competencies are the knowledge, skills, abilities, and behaviours (KSABs) essential for successful work performance and may be measured or observed (Yadav, 2022). Competence is a specified collection of behaviours that gives a systematic framework for identifying, evaluating, and growing employee behaviours.

Competency management positions talent management around competencies. Competence management aims to assist businesses in understanding the skill profiles of each individual, team, and organisation. It begins with identifying the abilities and duties of workers, collecting their evaluations, and assessing the outcomes. The outcomes are then utilised for training and deploying personnel according to their competencies (Andrews, 2011). Consistently identifying competencies helps tie and integrate Talent Management procedures inside a company since competencies serve as a common denominator (Wuim, 2014).

Because of this occurrence, this study was conducted to recognise essential competencies. This study was conducted by utilising a modified version of the Delphi method to determine the necessary aspects of the NCAS content. The study focused on understanding the Nursing environment and related knowledge, skills, attitudes, and personality traits contributing to the competencies.

Research Methodology

The following section outlines the technique used for developing a reliable and valid NCAS competency model.

Delphi Research Approach: The Delphi method consists of multiple rounds from Round 1 through Round 4. In Round 1, the brainstorming step, discussions are monitored between subject matter experts (SME) consisting of doctors, senior nurses, and nurse trainers. Rounds 2 and 3 increase the level of detail and interactions with SMEs. The analysis of the findings concludes Round 4. While the investigator conducts the survey and establishes dates, it is not easy to anticipate whether 24 SMEs will stick to those deadlines. Consequently, a predetermined amount of opportunities is used to modify statements, i.e., endured and monitored (Sekayi & Kennedy, 2017). As shown in Figure 1, details of the steps were involved in each qualitative round of Delphi.

Round 1: - Free-form brainstorming about the Nurse's Role and Responsibilities.

1. Labelling statements using open coding (Strauss, 1987); this stage involved first sorting the data by labelling short text fragments with descriptive terms.
2. This process becomes increasingly analytic as the researcher evaluates how descriptive codes convey meaning.
3. Creation of a list of sentences using the classifications provided by axial coding involving rephrasing individual remarks to form a group answer.
4. Then creating a list of phrases based on the categories offered by axial coding by rephrasing individual comments to construct a group response.

Round 2: - Showing the list of statements to the SMEs

- a. A compilation of narrative comments regarding participant statements: send the collection of reports to each participant via E-mail. Note that all assertions are communicated to all participants, but only a subset of them are provided solutions to each issue. Participants are instructed to leave the remark as it is (if they have no knowledge or nothing to add) or make tiny revisions pertinent to them.
- b. The next step is the investigator's tally of alterations (s). The researcher(s) utilise the statements and any modifications to develop a clear and comprehensive report that maintains or slightly modifies the original meaning.
- c. The researcher created amended and new statements (s).

Round 3: - Presentations of concluding statements to the panel for approval

- a) Send finalised remarks to everyone SMEs for approval via electronic means.
- b) SME endorsement of remarks. To label utterances as highly, moderately, or little approved - these designations would each be accompanied by a narrative explanation to ensure that the significance of all rankings is consistent.

Presentation of the Results

- a. The final version of the outcomes would be a list of somewhat strongly approved statements by SMEs.
- b. Developing criteria for conclusions- There are two potential outcomes for this phase. The first alternative is to choose a minimum endorsement percentage for Round 4 statements. Alternatively, use just those statements that all Round 4 presenters strongly support.
- c. A concluding report detailing the selected elements to be included in the Pilot Study. Content validity & Face Validity was carried out after Round 1, Round 2 & Round 3.

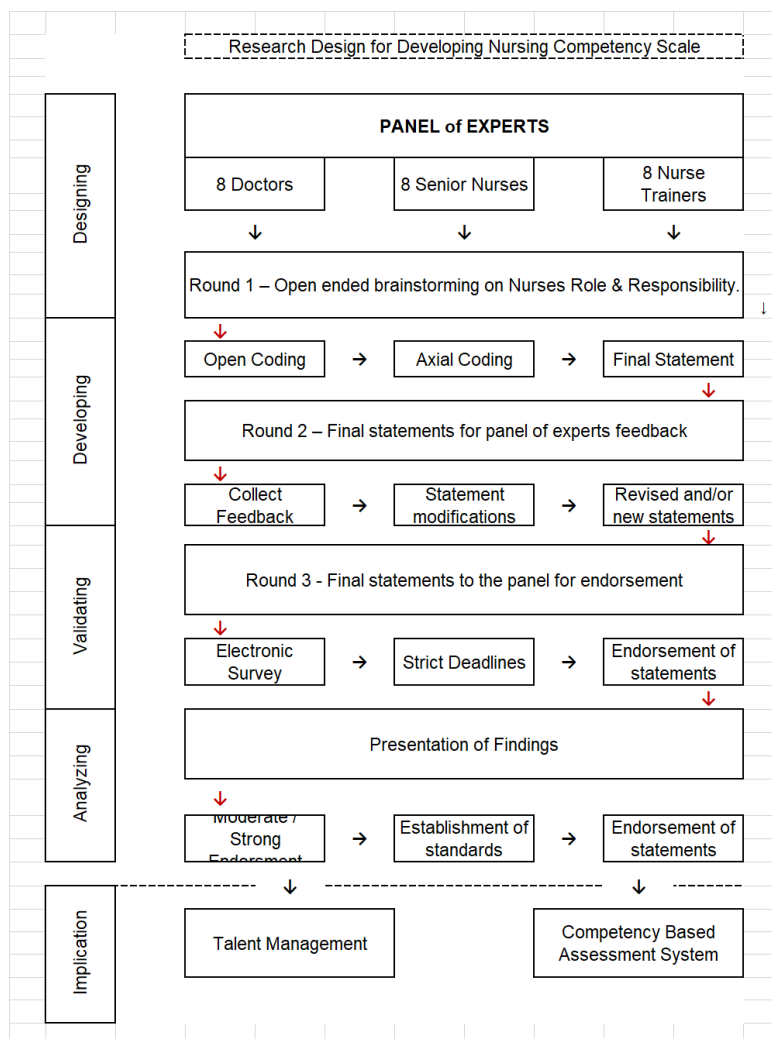


Figure no. 1: Research Design Workflow

Factors affecting Competency & Assessment

Competency is based on a person's behaviour. It tends to find the procedure undertaken to accomplish a particular task or duty. It means that the individual's personality and behavioural attributes are assessed to adjudge the manner of his competency. Competency can be called a combination of competence and an individual's behavioural aspects. It focuses primarily on how a specific task has been performed and not on the standard achieved.

Long-term business success is dependent on a firm's competitive edge. The competitive edge of a firm over similar enterprises in its market or sector enables it to be more profitable or gain a larger market share. A core competency is fundamental to its entire performance and success. A unique skill is any ability that separates an organisation from its rivals. Although a specific skill can be any competency, core or otherwise, a core competency often separates a firm from the rest of the competitors. The particular skills of a corporation can translate these characteristics into a competitive advantage.

Evaluation of Competencies- A competence assessment evaluates a person's abilities concerning their work requirements. In a competence model, these requirements are specified. To be valid, competence models should include just the activities and abilities essential to the role's performance, only some activities the employee performs (which comes from a traditional job task analysis). The evaluation is conducted on the indicated activities and abilities for which a rating is chosen based on how the individual performs the task, which defines their competency. The individual's chosen proficiency level is then compared to the target level to identify proficiency or skill gaps for each activity and ability (Meyers et al., 2013).

As part of its global leadership in nursing, the International Council of Nurses (ICN) produced the ICN Framework of Competencies for Generalist Nurses. Although this framework is intended to be sufficiently global in scope, the role and position of nurses, their educational preparation, occupational, legal, and

governmental status, and working conditions vary significantly around the globe. ICN thus proposes using it as a framework for developing new nursing competencies that meet the demands of the nursing workforce in each nation.

Global Competencies Analysis - A detailed, in-depth global analysis of competencies related to Nursing in the Healthcare domain revealed several idiosyncrasies. The local governance, challenges, culture, laws, and healthcare practices gave way to a set of competencies that had local relevance. As seen in Table 1, there are many more individual core, distinct and generic competencies related to different kinds of Nurses. Still, the focus was to research only "generic" Competencies useful for Nurses with more than six months of experience.

The Final Analysis attempts to study all possible unique, distinct sets of competencies and identify generic ones useful for any Nurse across India.

Data Point 1	Data Point 3	Data Point 6
Interpersonal understanding	Helping	Knowledge
Commitment	Diagnostic functions	Interpersonal relationships
Informational gathering	Managing situations	Collaborate with other professionals
Thoroughness	Therapeutic interventions	Practice ethically
Persuasiveness	Ensuring quality	Expand Professional Capacity
Compassion	Work role	Ensure and deliver high-quality nursing
Comforting		Understand needs
Critical thinking	Data Point 4	Support decision making
Self-control	Data Collection	
Responsiveness	Leadership	
	Communication	
	Legal & ethical practice	Final Analysis
Data Point 2	Professionalism and implementation	Nursing Care
Clinical judgment	Critical Thinking	Interpersonal Relationship
Interpersonal relationships		Critical Thinking
Planned nursing implementation	Data Point 5	Professional Development
Evaluation of care	Ethically oriented practice	Compassion
Care coordination	Professional development	Ethical & Legal
Health promotion	Professional Nursing Practice	
Ethical practice	Leadership and Nursing Management	
Professional development	Professional Development	
Continuous learning	Ethical Nursing Practice	
Risk management	Legal Nursing Practice	
Quality improvement		

Table no.1: Global Competency Analysis Data

The Delphi Technique

One of its creators defined the Delphi methodology as a way of obtaining and improving collective judgments' (Dalkey,1969). The Delphi technique comprises the following essential components:

1. A facilitator is responsible for organising the study of Delphi.
2. The assistant assembles a panel of experts with subject matter knowledge.
3. The helper creates a question set with a set of propositions that are rated for agreement by the experts.
4. Using the questionnaire, the facilitator gets replies from the group participants.
5. The assistant provides anonymous feedback to group members regarding how their comments compare to those of the rest of the panel.
6. The group participants may update their questionnaire replies after obtaining feedback.
7. Statistical criteria are employed to identify consensus based on the convergence of responses over questionnaire rounds. (Jorm, 2015).

Consensus and SMEs

Surowiecki (2004) believes that for a crowd to be intelligent, three requirements must be met:

1. Diverse competencies- A diverse collection of specialists will provide higher-quality choices than a homogenous group.

2. Independence- Experts must be capable of making judgments freely so that others cannot influence them.
3. Decentralisation- Skill is possessed by dispersed, independently working individuals.

In addition to the above three seems 'aggregation', that is, there is a system for organising and pooling the expertise of the crowd.

According to Adler and Ziglio (1996), Delphi panel members must satisfy four characteristics. 1. Possess in-depth expertise and familiarity with the research issue, 2. Are dedicated to including 3. Participation in the research process employing the Delphi method, and 4. practical communication skills.

Determining the size of subject matter expert panels

Choosing the size of a Delphi panel is a topic that needs more specific guidelines. However, larger panels will offer more consistent findings. Consider a 10-person forum in which 80% concurrence is required to obtain a consensus. One person's contribution constitutes 10% of the panel and can substantially influence the recommended items. As sample sizes expand, each individual's responses will have less effect, and the results will become more stable. One study on the quality and security of health care used bootstrap sampling to investigate the stability of response parameter estimates. They observed that 23 experts had the most consistent response characteristics. (Akins et al., 2005).

According to studies, panels with at least twenty members are stable. In selecting the panel size, it is crucial to account for predicted panel attrition between survey rounds.

As part of our panel of subject matter experts, we selected twenty-four (24) individuals: - Eight (8) Doctors, Eight (8) Senior Nurses, and Eight (8) Senior Nurse Trainers.

Developing Questionnaires using Coding

Coding in qualitative research consists of procedures that allow acquired data to be processed, classified, and arranged thematically, giving a platform for building meaning in an ordered manner (Williams et al., 2019).

Qualitative research provides opportunities to locate the origin of a phenomenon, investigate potential causes for its happening, codify what the experience of the occurrence meant for those involved, and determine if the incident created a theoretical framework or conceptual understanding of the phenomenon.

Coding is a crucial data organisation mechanism in qualitative research. "In qualitative research, a code is often a word or brief phrase that provides a summative, prominent, essence-capturing, and evocative feature to a subset of language-based or visual data." Initially, coding consisted of a three-part progressive structure: First, Second, and Third level coding, driven by the formula "from codes and categories to the theory" (Saldafia, 2009).

The development of theory arises from the open, axial, and selective coding of gathered data, allowing the researcher to create a more profound theoretical interpretation. This kind of coding gives researchers nuanced access to study informants' thoughts, viewpoints, and responses. Coding permits the collection and analysis of informant data relating to "what people do, also how they do it, and finally why they do it" in a study environment. (Charmaz, 2008)."

Notably, the open, axial, and selective coding scheme provides a cyclical and developing data loop in which the researcher interacts, compares data, and applies data reduction and consolidation strategies. As the coding process advances, its dynamic function and nonlinear directionality enable the identification, codification, and interpretation of essential themes in service of a research study's emphasis and contribution to the linked literature. The circular process is both an art and a science, requiring the researcher to repeatedly analyse and reread the acquired data for a hypothesis to grow (Williams et al., 2019).

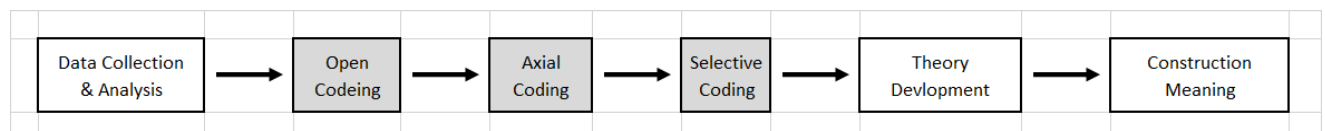


Figure no. 2: Linear Coding Workflow

Open coding is the initial stage of coding. In open coding, the researcher identifies distinct concepts and themes for categorisation.

Axial coding finds its place after open coding at the second level. In contrast to open coding, which focuses on detecting new ideas, axial coding focuses on refining, aligning, and categorising the concepts. With the

conclusion of open coding and the transition to axial coding, obtained data may be filtered, refined, and divided into different thematic groups in preparation for selective coding. Axial coding generates core codes by establishing linkages between open regulations. Principal (core) codes are compiled from the most interconnected (or overlapping) open codes supported by substantial evidence. (Strauss & Corbin, 1998).

The third level of coding is known as Selective coding. It enables the researcher to choose and combine categories of ordered data obtained through axial coding into intelligible sentences. "Selective coding builds upon axial coding at a higher level of abstraction by employing acts that contribute to the construction or formulation of the case's narrative." (Flick, 2009).

Round 1 & Round 2

As seen in Table 1, round 1 and round 2 processes and structure assisted in creating "Open Statements."

Round 1: The first round consisted of unstructured brainstorming about the Nurse's Role and duties. A significant amount of early data is sorted by labelling short text fragments with descriptive terms. It is followed by descriptive codes that make sense when combined.

Round 2 required presenting the statements' list to the SMEs or the team of experts. Their feedback sometimes needed modifications to generate a transparent and encompassing statement that maintained the actual meaning or with slight changes. The final step required the creation of revised and new statements.

The linear coding procedure enabled the development of data loops in which interaction with the team of experts resulted in the emergence of data towards a conclusion, which they then shared again for evaluation.

	Narrative Responses	Open Code	Axial Code	Open Statement
1	Patients need to be properly admitted			
	Admissions into the hospital should follow a proper procedure			
	Some sort of visual assessment needs to happen			
	Nurses need to ask questions to walk in patients on their problems	There is a definitive need for some assessment		
	Nurses need to ask their reasons for their actual hospital visit	Assessment needs to be of actual situation and maybe potential issues	Every patient needs to be assessed before admission.	
	Nurses should be making notes on a piece of paper	The information needs to be tracked and maintained	All data needs to be measured, tracked, documented and recorded.	Admitted patients initial assessment by Nursing professional includes assessment of actual and potential needs & problems. It results in a documented nursing care plan for the patient's record
	Before a patient is admitted he should be asked symptoms	There should be a document of records		
	There should be some plan when a patient comes into the hospital			
There should be a proper documentation of the interaction				
Every interaction with the patient should be tracked and recorded				

Table no. 2: Coding process towards Open Statement

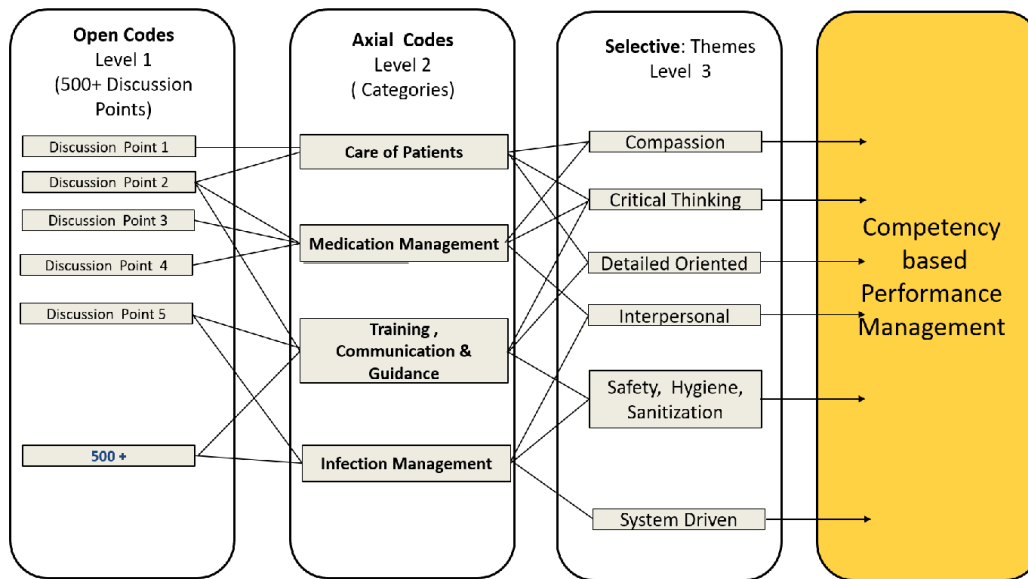


Figure no. 3: Coding Workflow leading to Themes

As seen in Figure 2, as the coding process progresses, its dynamic functionality and nonlinear directivity allow vital themes to be identified, coded, and evaluated in service of the research study's focus and to contribute to the relevant literature. For the theory to advance, evidence and claims were amended, updated, and occasionally deleted by repeated reading and rereading.

Interquartile Range and Quartile Deviation

The interquartile range (IQR) is between the median and the middle 50% of the distribution. It may be calculated by subtracting the third quartile (the median of the upper half) from the first quartile (the median of the lower half).

$IQR = Q3 - Q1$ where:

- IQR - the interquartile range
- Q3 - the third quartile
- Q1 - the 1st quartile

The below-given steps are needed to decide the IQR:

1. Sort the sets of data from smallest up to largest.
2. Determine the values of the third quartile (Q3) and the first quartile (Q1) using the formula for the locator: $C = k(n)/4$. wherein k is, the quartile and n is the number of values (observations). As a rule of thumb, c
 - a. If c is the integer, the quartile value is the mean values at c and c plus 1.
 - b. If c is not the whole number, the quartile value is when c is rounded to the nearest integer.
3. Subtract Q3 and Q1.

Nursing Self Evaluation		Median	Q1	Q3	IQR	QD
		Q3 - Q1 (Q3 - Q1)/2				
1	TQ1	4.5	4	5	1	0.5
2	TQ2	4.5	4	5	1	0.5
3	TQ3	2	2	3	1	0.5
4	TQ4	5	4	5	1	0.5
5	TQ5	5	4	5	1	0.5
6	TQ6	5	4	5	1	0.5
7	TQ7	3	2	3	1	0.5
8	TQ8	4	4	5	1	0.5
9	TQ9	5	4	5	1	0.5
10	TQ10	2	2	3	1	0.5
11	TQ11	4	4	5	1	0.5
12	TQ12	5	4	5	1	0.5
13	TQ13	5	4	5	1	0.5
14	TQ14	3	2	3	1	0.5
15	TQ15	5	4	5	1	0.5
16	TQ16	4	4	5	1	0.5
17	TQ17	2	2	3	1	0.5
18	TQ18	5	4	5	1	0.5
19	TQ19	5	4	5	1	0.5
20	TQ20	3	2	3	1	0.5
21	TQ21	5	4	5	1	0.5
22	TQ22	4.5	4	5	1	0.5
23	TQ23	4.5	4	5	1	0.5
24	TQ24	2	2	3	1	0.5
25	TQ25	5	4	5	1	0.5
26	TQ26	5	4	5	1	0.5
27	TQ27	5	4	5	1	0.5
28	TQ28	2	2	3	1	0.5
29	TQ29	4	4	5	1	0.5
30	TQ30	5	4	5	1	0.5
31	TQ31	4	4	5	1	0.5
32	TQ32	5	4	5	1	0.5
33	TQ33	2	2	3	1	0.5
34	TQ34	5	4	5	1	0.5
35	TQ35	5	4	5	1	0.5
36	TQ36	4.5	4	5	1	0.5
37	TQ37	5	4	5	1	0.5
38	TQ38	4.5	4	5	1	0.5
39	TQ39	3	2	3	1	0.5
40	TQ40	5	4	5	1	0.5
41	TQ41	5	4	5	1	0.5
42	TQ42	4.5	4	5	1	0.5
43	TQ43	3	2	3	1	0.5
44	TQ44	5	4	5	1	0.5
45	TQ45	4.5	4	5	1	0.5
46	TQ46	4	4	5	1	0.5
47	TQ47	4.5	4	5	1	0.5
48	TQ48	2	2	3	1	0.5
49	TQ49	5	4	5	1	0.5
50	TQ50	4	4	5	1	0.5
51	TQ51	4.5	4	5	1	0.5
52	TQ52	2	2	3	1	0.5
53	TQ53	4.5	4	5	1	0.5
54	TQ54	5	4	5	1	0.5
55	TQ55	5	4	5	1	0.5
56	TQ56	2	2	3	1	0.5
57	TQ57	5	4	5	1	0.5
58	TQ58	4	4	5	1	0.5
59	TQ59	5	4	5	1	0.5
60	TQ60	4	4	5	1	0.5
61	TQ61	2	2	3	1	0.5
62	TQ62	5	4	5	1	0.5
63	TQ63	5	4	5	1	0.5
64	TQ64	5	4	5	1	0.5
65	TQ65	4	4	5	1	0.5
66	TQ66	3	2	3	1	0.5
67	TQ67	2	2	3	1	0.5

After identifying the value of the median, interquartile range (IQR), and quartile deviation (QD), the following analytical approach is applied. The assertions whose; -

Consensus level is high (when QD is less than or equal to 0.5), and Those whose importance value is high (median value of 4 or higher) are picked, and the others are discarded.

Overall, sixty-five (67) statements were created through the Round 1 through Round 3 process and data was analyzed via the round 4 analysis & these statements were removed: 3,7,10,14,17,20,24,28, 33,39,43,48,52,56,61, 66 & 67. As the final outcome Fifty (50) statements were selected which will then proceed for pilot testing.

Table no. 3: Nursing statements for Self-Evaluation

Performance		Median	Q1	Q3	IQR	QD
1	PTQ1	4.5	4	5	1	0.5
2	PTQ2	4.5	4	5	1	0.5
3	PTQ3	2	2	3	1	0.5
4	PTQ4	5	4	5	1	0.5
5	PTQ5	5	4	5	1	0.5
6	PTQ6	5	4	5	1	0.5
7	PTQ7	3	2	3	1	0.5
8	PTQ8	4	4	5	1	0.5
9	PTQ9	5	4	5	1	0.5
10	PTQ10	2	2	3	1	0.5
11	PTQ11	4	4	5	1	0.5
12	PTQ12	5	4	5	1	0.5
13	PTQ13	5	4	5	1	0.5
14	PTQ14	3	2	3	1	0.5
15	PTQ15	5	4	5	1	0.5
16	PTQ16	4	4	5	1	0.5
17	PTQ17	2	2	3	1	0.5
18	PTQ18	5	4	5	1	0.5
19	PTQ19	5	4	5	1	0.5
20	PTQ20	3	2	3	1	0.5
21	PTQ21	5	4	5	1	0.5
22	PTQ22	4.5	4	5	1	0.5
23	PTQ23	5	4	5	1	0.5
24	PTQ24	4	4	5	1	0.5

Table no. 4: Performance Statements for Managers

The succeeding analytical procedure is implemented following the identification of the value of the median, interquartile range (IQR), and quartile deviation (Q.D.). The candidates whose consensus value is high (where quartile deviation (Q.D.) is lesser than or equal to 0.5) and whose importance level is high (where the median value is at least 4) are picked, while the other candidates are discarded.

Competencies		Statistical Measures				
		Median	Q1	Q3	IQR	QD
1	PC1	2.5	2	3	1	0.5
2	PC2	2	2	3	1	0.5
3	PC3	2	2	3	1	0.5
4	PC4	5	4	5	1	0.5
5	PC5	5	4	5	1	0.5
6	PC6	2	2	3	1	0.5
7	PC7	3	2	3	1	0.5
8	PC8	2	2	3	1	0.5
9	PC9	5	4	5	1	0.5
10	PC10	5	4	5	1	0.5
11	PC11	2	2	3	1	0.5
12	PC12	2	2	3	1	0.5
13	PC13	5	4	5	1	0.5
14	PC14	3	2	3	1	0.5
15	PC15	2	2	3	1	0.5
16	PC16	3	2	3	1	0.5
17	PC17	5	4	5	1	0.5
18	PC18	2	2	3	1	0.5

Table no. 5: Global Competency Analysis Data

Overall, the researchers created twenty-four (24) statements through the Round 1 through Round 3 process, and they analysed data via the round 4 analysis & they removed these statements: - 3,7,10,14,17 & 20. Eighteen (18) statements were selected as the final outcome, which will proceed for pilot testing. The succeeding analytical procedure is implemented following the identification of the median value, interquartile range (IQR), and quartile deviation (Q.D.). The capabilities of which; -The consensus degree is high if the quartile deviation (Q.D.) is lesser than or equal to 0.5 and the median deviation (M.D.) is less than or equal to 0.5.

Those with a median value of 4 or above and a high priority level get picked, while the rest get dismissed. Overall, the researchers selected eighteen (18) competencies through the Round 1 to Round 3 process, and they analysed data via the round 4 analysis & these competencies got removed: - 1,2,3,6,7,8,11,12,14,15,16 & 18. Six (6) competencies got selected as the final outcome, which will proceed for pilot testing.

Results and Discussion

Table1. Results of the Delphi Study: Indicators with High Ratings for Importance and Consensus Ratings

Calculating Interquartile Range (IQR) and Quartile Deviation (Q.D.): These items received a quartile deviation (Q.D.) score of less than or equal to 0.5 and a median value of 4 or above. Following the determination of the median value, interquartile range, and quartile deviation, the following analytical technique categorises things based on the levels of consensus and importance. This study contains three levels of agreement (high, medium, and no contract) and two degrees of significance (very high and low). To assess the degree of consensus, which is high (if the quartile deviation is less than or equal to 0.5), medium (if the quartile deviation is between 0.5 and 1), and no consensus (if the quartile deviation is greater than 1); and the very high importance level (when the median value is at least 4) and low importance level (in which the median value is less than 3.5). This study included aspects with a high degree of relevance and consensus to develop competence and assessment criteria for nurses.

Interpretation: - For a question (Test Item) to be acceptable, the consensus level has to be high as calculated by Quartile Deviation (Q.D.), which should be < or = 0.5. Also, the "Importance level" has to be very high in which the median value should be > or = 4.

Limitations of the Study

Twenty-four professionals, including physicians, senior nurses, and trainers, were selected for this study to serve on the Delphi panel. Though their collective experience is vast, the complexity and vastness of the medical field make the outcomes and actionable items limited in scope. The outcomes of this investigation cannot be generalised among all healthcare domains.

The process of four rounds, the time required for each round, and the long time between consecutive rounds elongate the entire activity. Due to the twelve (12) month period of the information gathering sessions, surveys, and subsequent analysis, the focus of the medical professionals needs to be more balanced.

There was a 20% loss of the original team due to transfers, retirements, and general movement for personal and professional reasons. This loss reduces the deliverables' momentum and quality but was/is unavoidable.

Conclusion

This document covers the research technique used to construct the first version of the Nursing Competence Assessment Scale (NCAS) for healthcare through creating the instrument for the Delphi research procedure. It consists of competence assertions, such as the primary category, competency markers, abilities and competencies. Document analysis, exploratory interviews, Behavior Event Intervention (BEI), and a literature review were performed. Based on the challenging and time-consuming procedure of rounds 1 through 4, the early draft of competency statements is modified. The validity of the NCAS competency standard drafts and measuring items is determined using the Delphi approach. The instrument generated from the outcomes of the Delphi technique study is also evaluated, and healthcare industry professionals validate its contents and face validity. Due to the rigour of the Delphi technique's research method, the resulting study output is valid and trustworthy. This article includes a comprehensive explanation of all aspects, including the recruitment of an expert panel, the production of Delphi questions, and the data analysis techniques used to establish the types of essential nursing competencies that Nurses must possess.

The Delphi technique captures qualitative data efficiently and rapidly from a diverse sample of participants, unrestricted by geography or resources. The researchers may use Google Survey, SurveyMonkey, or other document-sharing technologies to collect and arrange the data obtained throughout each cycle.

Coding helps researchers to discover, organise, and construct theory in qualitative research. Enabling investigators to engage themselves in the data, open, axial, and selective coding play crucial roles in attaining the research objectives of a study. Every stage of the coding technique combines the emerging themes gathered during data collection and progressively refines the components, resulting in the formulation of theory and significance.

In healthcare, using the Delphi method is frequent to answer problems that may not be practicable or practical to answer using alternative approaches. These include instances in which experimental or epidemiologic data are unavailable, the data are inadequate or not immediately pertinent to the topic at hand, the data are substantial but difficult to conclude from, or a concord of values is required. Delphi and other methods of consensus support the approaches of evidence-based medicine. In addition, various pieces of evidence, from individual experiences to organised assessments of epidemiological and probing investigations, can inform expert consensus. The credibility of the expert's evidence is contingent on the sources of knowledge at their disposal. Even when expertise is poor, the literature on the 'wisdom of the people confirmed the validity of group consensual judgments under specific situations. In researching mental health, the Delphi method offers a systematic approach to satisfying these requirements that may be widely adopted.

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