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Validation Of Safe Nursing Care Questionnaire Among Covid-19 Nurses: In The Context Of Punjab, Pakistan

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ABSTRACT

Background: Unreliable medical care is a leading cause of mortality and disability, especially in poor and middle income countries. Every year, 2.6 million people lose their lives and 134 million are injured as a result of substandard care in hospitals. Safe nursing care is defined an effective, safe, and competent nursing practise must meet the patient's human rights and needs, including respect, comfort, hydration, and nutrition. Safe nursing care assessment in this setting can shed light on nursing practices must be evaluated thoroughly to guarantee their efficacy and lack of unwanted side effects if healthcare is to be delivered safely. A specialized survey is required to evaluate the safe nursing care.

Objective: This research aimed to verify the reliability of the safe nursing care questionnaire (SNCQ) in the setting of Punjab, Pakistan during the pivotal year of Covid-19.

Method: Two hundred and ninety-eight nurses from Services hospital and Fatima Memorial Hospital tertiary care Lahore, Pakistan, participated in a cross-sectional study that employed the lottery method to select participants. Ten professionals in the area reviewed the questionnaire to ensure its validity before it was used to collect the data. SPSS 21.0 was used to do the analysis, and the results are presented in a tabular format.

Result: A whopping 96.3% of the participants were female, and 64.8% held government jobs. Cronbach's alpha was 0.90, and the KMO value for all the sub categories was greater than 0.5. A Statistical analysis revealed a significant correlation between each question with a $p<0.05$. In addition, the total percentage of variation across all five categories was 34.98 percent.

Conclusion: The SNCQ demonstrates to be a suitable instrument for assessing safe nursing care among Pakistani nurses due to its favorable factor structure, robust inter-question correlations, and adherence. This tool is ideally suited for developing nations, as its queries are simple to comprehend and its factor analysis is robust.

Keywords: Validation, Safe Nursing Care, Questionnaire, Nurses, COVID-19

Introduction: The Covid-19 pandemic has presented unprecedented challenges to healthcare systems worldwide, demanding a robust response from healthcare professionals, especially nurses who are at the forefront of patient care (1). In the context of Punjab, Pakistan, where the impact of Covid-19 has been significant, it is crucial to ensure that nurses possess the necessary knowledge, skills, and attitudes to provide safe and effective care to patients affected by the virus (2).

It's undeniable that patient safety in health care has been a topic of attention, research, and debate on a global scale and it has evolved into a major issue that affects the entire world (3). Researchers and theorists have attempted, beginning with Nightingale (2010) and continuing with others, to elucidate basic nursing care and the basic principles of care (4). Tonnessen and colleagues in 2020 defined that an effective, safe, and competent nursing practice must meet the patient's human rights and needs, including respect, comfort, hydration, and nutrition (5).

Unsafe health care causes many deaths and disabilities worldwide, especially in low- and middle-income nations (6). One in 10 high-income hospital patients experience an adverse incident. Hospitals in low- and middle-income nations have 134 million adverse events due to improper care, including 2.6 million deaths annually. The annual social cost of patient damage is estimated at US$1 trillion to 2 trillion (3). This number can be reduced by patient safety. The patient safety is: “A framework of organized activities that creates cultures, processes, procedures, behaviours, technologies and environments in health care that consistently and sustainably lower risks, reduce the occurrence of avoidable harm, make errors less likely and reduce the impact of harm when it does occur”(7).

One vital aspect of ensuring safe nursing care is the development and validation of appropriate assessment tools that accurately measure the competence and performance of nurses in specific areas related to Covid-19 care (8). These tools allow for an objective evaluation of nursing skills, adherence to safety protocols, teamwork, and assessment of patients' physical and psychological needs (9).

The term "assessment of safe care" is relatively new to the nursing literature (10). Safe healthcare delivery depends on meticulous procedures to ensure that nursing practices are effective and have no unintended consequences (11). Patient safety is a comparatively new specialty that emerged in reaction to the rising complexity of healthcare systems and the subsequent rise in hospital-acquired ailments (3). Adjusting elements such as nurse staffing levels, the culture of safety within the firm, and the availability of sufficient personal protective gear can help minimize care issues and increase the quality of nursing care (12). Policy-makers and political and health leaders all around the world have seen the benefits of having a deliberate and integrated approach to patient safety, which addresses the common causes of damage and the measures to preventing it. The culmination of global activism over the past few years was the approval of resolution on "Global action on patient safety" by the Seventy-second World Health Assembly in (2019) (3).

Therefore, this study aims to validate the Safe Nursing Care Questionnaire among Covid-19 nurses in the context of Punjab, Pakistan. The findings will contribute to the body of knowledge on safe nursing care during the pandemic and provide valuable insights for improving nursing practice, education, and policy formulation. By ensuring the provision of safe and effective care, nurses can play a pivotal role in combating the Covid-19 crisis and safeguarding public health in Punjab, Pakistan.

Methods: The purpose of this research was to validate the Safe Nursing Care Questionnaire (SNCQ) in the specific context of Punjab, Pakistan, during the critical period of the Covid-19 pandemic. Shalamar Institute of Health Sciences (SIHS) in Lahore, Pakistan has granted approval from its Institutional Review Board (IRB). The research study proposal was accepted and its ethical concerns confirmed by the MAHSA University, Malaysia. A total of 298 nurses were chosen as participants working in two tertiary care hospitals (one public and one private) in Lahore. The study was conducted between December 2022 and March 2023 using a cross-sectional design. In 2017, Rashvand and colleagues developed the Assessment of Safe Nursing Care Questionnaire (ASNCQ) within the Iranian healthcare system (13). The researchers obtained direct permission from the authors and received the questionnaire on August 4, 2022. The questionnaire consists of 32 items divided into four sections: the first section evaluates nurses' individual abilities (16 questions), the second assesses patients' emotional well-being (4 questions), the third assesses patients' physical well-being (7 questions), and the fourth evaluates nurses' collaborative skills (5 questions). Participants responded to each item using a 5-point Likert scale, ranging from "never" (1 point) to "always" (5 points). The data go through analysis using SPSS software, specifically the Windows version 21.0, which was utilized for all statistical computations. The analysis encompassed evaluations at both the item and subscale levels, employing descriptive statistics such as frequencies, means, and standard deviations. Additionally, correlation and factor analysis were employed in the examination.

Results

Table 01: Demographic characteristic of the nurses

Demographic Variables		Frequency (n)	Percent (%)
Gender	Male	11	3.7
	Female	287	96.3
Level of Education	Diploma in nursing	192	64.4
	BSN	67	22.5
	POST RN	39	13.1
Marital Status	Single	70	23.5
	Married	228	76.5
Clinical Experience	<10	153	51.3
	10-20	104	34.9
	>20	41	13.8
Work Place	Public sector	193	64.8
	Private Sector	105	35.2

Analyzed by frequency (n) and percentage (%)

Table 01 details the demographic characteristics of the participants. Overall, 96.3% of the nurses were female and 3.7% were male, the level of education diploma in nursing 64.4% were

diploma in nursing, bachelor in nursing 22.5% and Post RN (02 year degree) were13.1%. 76.5% nurses were married and single nurse's ratio was 23.5%. Furthermore, 51.3% of nurses were having less than 10 years' experience and 34.9% nurses with 10 to 20 years' experience and 13.8% showed more than 20 years' experience. 68.8% nurses working in public health care and 35.2% nurses working in private sector.

Table 2: KMO and Bartlett's Test of the safe Nursing care Questionnaire

Items	KMO	Bartlett's Test of Sphericity		
		Chi-square	df	P-value
Evaluation of nursing skill	0.788	1618.08	78	0.000
Assessing the patients psychological needs	0.785	307.286	10	0.000
Assessing the patients physical	0.880	861.924	15	0.000
Assessing nurses teamwork	0.798	499.450	6	0.000

Analyzed by scale and factor analysis with KMO>0.5, α>0.7 and significance <0.05

Table 2: The analysis reveals the KMO coefficient for the evaluation of nursing skill, which was calculated to be 0.788, and its significance was determined to be 0.000. Similarly, for the assessment of the patient's psychological needs, the KMO coefficient was 0.785, and its significance was also 0.000. Furthermore, the third item, related to assessing the patient's physical needs, yielded a KMO coefficient of 0.880, with a significance level of 0.000. Similarly, the fourth item, assessing nurses' teamwork, obtained a KMO coefficient of 0.798, with a significance level of 0.000, following the same pattern as the previous items.

Table 3: Factor analysis and internal consistency results

Dimensions and items	1	2	3	4	5	$\bar{x}$	S.D
Evaluation of nursing skill							
1. As a nurse I double check nursing interventions for example insulin doses.	0.663					4.62	0.730
2. I act based on work descriptions, which usually provide to me at my work place.	0.678			0.408		4.68	0.683
3. I do act according to safety hospital protocols that are available, such as correct injection instructions.	0.547					4.66	0.587
4. I maintain competencies based on my current knowledge and expertise while performing nursing interventions.	0.739					4.73	0.603

5. I focus on clinical procedures in part of patient safety reducing the impact of busy and crowded ward.	0.590			0.516		4.64	0.622
6. I do the nursing rounds at the bedside during duty.	0.696					4.73	0.577
7. I perform nursing interventions without direct supervision.	0.579			0.495		4.42	0.926
8. I provide an environment conducive to the safe provision of Covid-19 patient care.	0.721					4.65	0.700
9. I do monitor the safety of care provided by other healthcare team members as appropriate.	0.727					4.69	0.617
10. I arrange meetings of the health care team to focus on further improving patient safety.	0.608		0.540			4.60	0.737
11. I do report near-miss patient safety incidents to appropriate personnel, based on the organization's policies and procedures.	0.707		0.464			4.64	0.784
12. I attend organizational programmes related to patient safety		0.910				4.21	1.00
13. I revise nursing interventions based on the evaluation of the patients' outcomes.		0.914				4.37	0.883
Assessing the patients psychological needs							
14. I express sympathy with Covid-19 the patient.	0.702					4.63	0.633
15. "I introduce healthcare professionals to the Covid-19 patient on arrival (if the patient is conscious, and not in the immediate need of stabilization).	0.818					4.68	0.673
16. I greet the Covid-19 patient while entering the patient's room (introducing oneself using a different word depending on whether the person he/ she is addressing is older or younger than the nurse).	0.608					4.65	0.639
17. I respond to patient's inquiries.	0.632					4.68	0.652

18. I check the Covid-19 patient for basic physical needs such as nutrition, excretion, pain.	0.743					4.75	0.592
Assessing the patients physical							
19. I teach safety tips (for example, lifting the bed rails) to the patient.	0.694					4.74	0.543
20. I create a safe environment for the infection control.	0.848					4.79	0.489
21. I monitor fluid balance in a timely manner.	0.800					4.81	0.432
22. I provide privacy during nursing procedures.	0.833					4.83	0.489
23. I ensure all prescribed medicines administered correctly.	0.730					4.80	0.525
24. I monitor vital signs in a timely manner.	0.826					4.84	0.440
Assessing nurses teamwork							
25. I work consistently with other members of the care team as a coordinated team member.	0.808					4.59	0.711
26. I communicate important information to other healthcare team members in a timely manner.	0.826					4.62	0.730
27. I seek assistance from other nurses when its' required.	0.872					4.68	.683
28. I report safety incidents to appropriate personnel, based on the organization's policies.	0.809					4.66	.587
% of Variance	34.9	11.97	7.8	5.45	3.93		
Cumulative %	34.98	46.96	54.77	60.23	64.16		
Cronbach's Alpha	0.906						

Component factor analysis with , mean (X) and standard deviation (S.D)

Table 03: Displays the means and standard deviations for each item. Out of the 28 items, under the factor one "evaluation of nursing skills" there are 13 items 'As a nurse I double check nursing interventions for example insulin doses' (Item-1=mean 4.62). 'I act based on work descriptions, which usually provide to me at my work place' (Item-2=mean 4.62). 'I do act according to safety hospital protocols that are available, such as correct injection instructions' (Item-3=mean 4.66). 'I maintain competencies based on my current knowledge and expertise while performing nursing interventions' (Item-4 =mean 4.73). 'I focus on clinical procedures in

part of patient safety reducing the impact of busy and crowded ward' (Item-5=mean 4.64). 'I do the nursing rounds at the bedside during duty' (Item-6=mean 4.73). 'I perform nursing interventions without direct supervision' (Item-7=mean 4.42). 'I provide an environment conducive to the safe provision of Covid-19 patient care' (Item-8=mean 4.65). 'I do monitor the safety of care provided by other healthcare team members as appropriate' (Item-9=mean 4.69). 'I arrange meetings of the health care team to focus on further improving patient safety' (Item-10=mean 4.60). 'I do report near-miss patient safety incidents to appropriate personnel, based on the organization's policies and procedures' (Item-11=mean 4.64). 'I attend organizational programmes related to patient safety' (Item-12=mean 4.21). 'I revise nursing interventions based on the evaluation of the patients' outcomes' Item-13=mean 4.37).

Factor two, labeled as "assessing the patient's psychological needs," comprised five (05) items. 'I express sympathy with Covid-19 the patient' (Item-14=mean 4.63). 'I introduce healthcare professionals to the Covid-19 patient on arrival (if the patient is conscious, and not in the immediate need of stabilization)' (Item-15=mean 4.68). 'I greet the Covid-19 patient while entering the patient's room (introducing oneself using a different word depending on whether the person he/ she is addressing is older or younger than the nurse)'. (Item-16=mean 4.65). 'I respond to patient's inquiries' (Item-17=mean 4.68). 'I check the Covid-19 patient for basic physical needs such as nutrition, excretion, pain' (Item-18=mean 4.75).

Factor three (03), named "assessing the patient's physical needs," consisted of six (06) items. 'I teach safety tips (for example, lifting the bed rails) to the patient' (Item-19=mean 4.74). 'I create a safe environment for the infection control' (Item-20= mean 4.79). 'I monitor fluid balance in a timely manner' (Item-21=mean 4.81). 'I provide privacy during nursing procedures' (Item-22=mean 4.83). 'I ensure all prescribed medicines administered correctly' (Item-23=mean 4.80). 'I monitor vital signs in a timely manner' (Item-24=mean 4.84).

Factor four (04), referred to as "assessing nurses' teamwork," included four (04) items. 'I work consistently with other members of the care team as a coordinated team member' (Item-25= mean 4.59). 'I communicate important information to other healthcare team members in a timely manner' (Item-26=mean 4.62). 'I seek assistance from other nurses when its' required' (Item-27=mean 4.68). 'I report safety incidents to appropriate personnel, based on the organization's policies' (Item-28=mean 4.66).

The lowest mean was observed for 'I attend organizational programs related to patient safety' (item 12, mean = 4.21), and 'I revise nursing interventions based on the evaluation of the patients' outcomes' (item 13, mean = 4.37). The variance percentages for each category were 34.9%, 11.97%, 7.8%, 5.45%, and 3.93%. The cumulative percentages for each category were 34.98%, 46.96%, 54.77%, 60.23%, and 64.16%. The reliability of the safe nursing care instrument was assessed using Cronbach's alpha, resulting in an excellent value of 0.90.

Table 4. Cronbach's Alpha of the safe Nursing care Questionnaire sub dimensions

S.No	Dimensions	Items No	$\bar{x}$	S.D	Cronbach's Alpha
01	Evaluation of nursing skill	13	59.6	5.53	0.833
02	Assessing the patients psychological needs	5	23.4	2.23	0.742
03	Assessing the patients physical	6	28.8	2.29	0.874

04	Assessing nurses teamwork	4	18.5	2.16	0.846
Reliability analysis with a mean (X) and Standard deviation (S.D)					

Table No 4: The internal consistency as estimated by Cronbach's alpha, demonstrated Individual factor Cronbach's alpha values for each construct are presented in Table 04. The first factor, which evaluated nursing skills, exhibited high level of internal consistency by Cronbach's alpha of (α = 0.833). Factor two, assessing the patient's psychological needs, demonstrated a Cronbach's alpha of (α = 0.742), which was deemed acceptable at a minimum. Factor three, which assessed the patient's physical needs, exhibited a high level Cronbach's alpha of (α = 0.874). Lastly, factor four, evaluating nurses' teamwork, showed high level Cronbach's alpha of (α = 0.846).

Discussion: The Covid-19 pandemic has placed an unprecedented burden on healthcare systems worldwide, particularly on nurses who are at the forefront of patient care. Ensuring the safety of nursing care is crucial for both patients and healthcare providers, especially during a public health crisis like Covid-19. In Punjab, Pakistan, where the pandemic has had a significant impact, validating a questionnaire to assess safe nursing care among Covid-19 nurses becomes essential (14). This discussion aims to explore the validation process of the Safe Nursing Care Questionnaire in the specific context of Punjab, Pakistan.

The validation process involves several stages to ensure the reliability and validity of the questionnaire (15). Initially, a thorough review of existing literature on safe nursing care and questionnaire development was conducted. Based on the literature review, a preliminary version of the questionnaire was developed, considering the specific challenges and context of Covid-19 nursing care in Punjab.

In our research, the Safe Nursing Care Questionnaire (SNCQ) demonstrated satisfactory internal consistency, which is a measure of dependability. We found that each item in the questionnaire had a strong correlation with the total score, indicating that all the items were consistent and measured the same construct of overall case assessment. This finding aligns with the study conducted by Ishtiaq Ahmed and Sundas Ishtiaq, who emphasized the significance of reliability and validity in evaluating the measuring methodology used for data collection in research. Reliability and validity are essential aspects that researchers must consider when assessing the effectiveness of any measurement tool (16). This instrument's items were modified by the EFA based on the four extracted domains, and both their validity and reliability were assessed. The EFA revealed that the SNCQ's four-factor structure explained 34.98% of the overall observed variance. As a result, the SNCQ met the initial psychometric requirements for content validity; construct validity, internal consistency reliability. Compared to other instruments, this instrument's components are unique (17)

Safe Nursing Practice’s Competency (SNPC) evaluates how well nurses deliver safe care to patients. Previous instruments have been developed to assess patient safety, but none have specifically addressed the evaluation of safe nursing care among nurses during Covid-19 in Punjab, Pakistan. By measuring how often nurses employ their safety knowledge in practice, the SNCQ can help enhance patient safety in healthcare facilities. Low scores on a particular instrument item, for instance, can suggest that the nurse in question requires additional training in order to provide nursing care that is free from potential danger.

In addition, clinical nursing staff and nurse supervisors can employ the SNCQ to recognize their own and their workforce's strengths, as well as areas where support is required for colleagues to deliver safe nursing care (12). Individual professional development programmes can then be implemented to further enhance each nurse's capacity to provide safe nursing care.

To determine if the sample was representative enough for the EFA, The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were utilized. Using Eigenvalues greater than one and a scree diagram, the number of factors was determined. Equal to or larger than 0.4, factor loadings were deemed appropriate (18). The analysis of our study reveals the KMO coefficient for the evaluation of nursing skill, which was calculated to be 0.788, similarly, for the assessment of the patient's psychological needs, was 0.785. Furthermore, the third item, related to assessing the patient's physical needs, 0.880. Similarly, the fourth item, assessing nurses' teamwork, obtained a KMO coefficient of 0.798.

Qowiyyuridho and colleague proposed three characteristics as attributes of reliability: homogeneity, stability, and equivalence (19). A Cronbach's alpha coefficient of 0.90 during the evaluation of the SNCQ internal consistency was judged as excellent. Coefficients of reliability fall in the range from 0.00 to 1.00, with larger values suggesting greater reliability (20). In our study the reliability of the safe nursing care instrument was assessed using Cronbach's alpha, resulting in an excellent value of 0.90.

Conclusion: The validation of the Safe Nursing Care Questionnaire among Covid-19 nurses in Punjab, Pakistan, was crucial to ensure the measurement tool accurately captures the dimensions of safe nursing care in this specific context. By following a rigorous validation process, including content validity, pilot testing, reliability testing, and construct validity analysis, the questionnaire was refined and deemed suitable for use in future research and practice. The SNCQ is a useful instrument among Pakistani nurses to evaluate safe nursing care especially because of its favorable factor structure, excellent inter-question correlations, and adherence. This distinguishes the trial from others of its kind and provides evidence of its efficacy. This Validated instrument can help healthcare organizations and policymakers to identify areas of improvement and develop targeted interventions to ensure the provision of safe nursing care during Covid-19 and beyond.

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