

Assessment of Clinical Reasoning Skills among BSc Nursing Students: Script Concordance Test

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Abstract

A quantitative research approach and non-experimental descriptive survey research design was used to assess clinical reasoning skills among BSc nursing students. A structured Script Concordance Test (SCT) was developed; it consisted of 20 case vignettes and each case vignette was followed by 3 questions which was administered to a sample of 150 BSc nursing 4th year mental health nursing students in nursing colleges. Reference panel consisted of 10 experts and based on their responses, final scoring key was formulated. Data was collected by using non-probability convenience sampling technique. Data was tabulated and analysed using descriptive and inferential statistics.

Majority (90.6%) of the students were from 21-22 years, female with mean age 21.46 ± 0.82 years, residing in urban area, staying at hostel and had obtained 60-70 percent marks in their previous year academic performance. Majority (89.3%) of the students had average clinical reasoning skills and 10.6 percent had poor clinical reasoning skills. None of the student had good clinical reasoning skills. No significant association was found between socio demographic variables and clinical reasoning skills of nursing students. Clinical reasoning skills of the students was not adequate for identifying patient issues, diagnoses, implementation, evaluating and modifying care. Script concordance test is a valid, reliable tool for assessing clinical reasoning skills.

Nursing education has emphasised clinical reasoning as an essential skill for more than 50 years. It is an integral component of vital, scientific and formal thinking to 'think like a nurse'. However clinical reasoning development among learners is difficult to assess. Script concordance test (SCT) is a new tool designed to assess clinical reasoning skills in natural as well as in uncertain contexts.

Contemporary approaches to learning and teaching do not often promote the creation of a sufficient degree of clinical reasoning skills. Clinical reasoning is an analytical skill that is an integral aspect of nursing practice. In nursing education it is difficult to test clinical reasoning since there were no reliable criteria developed to accurately assess clinical reasoning skills in nursing students. At the moment, however, the formative and summative assessments of the patient are always a mixture of multiple choices and concise questions that have little influence in assessing the students' clinical reasoning skills. It seems the use of clinical reasoning tests, like script concordance test, may play a significant role in enhancing students' understanding and experiences. SCT has proved to be

one of the most effective evaluation instruments for assessing clinical reasoning over the last two decades.

Objectives

The Study was set out with two objectives.

1. To assess the clinical reasoning skills among BSc nursing students in selected colleges of Nursing, Ludhiana (Punjab).
2. To determine the association of clinical reasoning skills of nursing students with their socio-demographic variables.

Review of Literature

Phan SV et al (2019) conducted a study to explore the feasibility and validation of a SCT to assess pharmacy student clinical competence in a psychiatry elective course. A total number of 13 practicing psychiatric pharmacists were involved in the validation phase and it comprised of 75 questions. Pharmacy student's scores averaged 39.79 ± 5.02 points and psychiatric pharmacist also scores averaged 50.11 ± 4.51 , mean percentage of psychiatric pharmacist 61.2 percent and pharmacy students 77.1 percent simultaneously.

Delavari S et al (2018) carried out a study in assessing final lesson and gynecology exams of undergraduate midwifery students. Firstly, 20 clinical scenarios followed by 3 questions were formulated by

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2 experienced midwives. After that, 15 scenarios were selected by analysing the content validity of the SCT. The test was administered to 55 midwifery students. The internal validity was found to be 0.74.

Damodaran L et al (2017) conducted a study to measure the clinical reasoning skills of BSc nursing students. The mean scores achieved for clinical reasoning was 24.58. Majority (53.33%) students had moderate clinical reasoning and 46.67 percent of students were having poor clinical reasoning. Good clinical reasoning was found to be zero.

Methodology

The study adopted a quantitative research approach and non-experimental descriptive survey research design. A structured SCT was developed, which consisted of 20 case vignettes. This was administered to a sample of 150 BSc nursing final year students studying in nursing colleges. Reference panel consisted of 10 experts and based on their responses final scoring key was formulated. Data was collected by using non-probability convenience sampling technique, tabulated and analysed using descriptive and inferential statistics.

Description of Tool

Part I (A) consisted of socio-demographic profile of subjects. Part I (B) was demographic and Professional Characteristics of Experts.

Part II the Script Concordance Test was developed by Bernard Charlin (1998). According to the script theory, scripts are made up of links between illnesses, clinical features and management options. SCT was based on the principle that the multiple judgments made in these clinical reasoning processes can be probed and their concordance with those of a reference panel of experts can be measured. The test was case-based. Case vignettes, described as short scenarios, always incorporate uncertainty.

SCT Development Procedure

Structured script concordance test was developed by following the format guidelines given by Bernard Charlin and review of literature followed by validation of the structured SCT by the experts from nursing, psychiatry, psychiatric nursing and research. The SCT consisted of 20 case vignettes and 3 questions in each case vignette. Totally, it comprised of 60 questions. SCT scoring involved comparing answers provided by examinees with those of the reference panel of health professionals. The selection criteria of experts was based on their experience ≥ 5 years in their field. Total 10 experts were selected for reference panel (Fig 1).

Formula for final scoring key

Score = number of experts selected that answer/
modal value for the answer

Score was assigned to each response based on how many of the experts on the reference panel chose that response. A maximum score of 1 was given for the response chosen by most of the experts. Other responses were given partial score, depending on the fraction of experts selected them. Responses not selected by experts scored zero.

Method of Administration

Validity of tool: SCT was given to experts from the field of Nursing and Psychiatry for content validity. The experts' suggestions and corrections were incorporated and tool was modified and finalised.

Reliability of tool: The reliability was checked by Cronbach's alpha. Reliability of the structured SCT was 0.77.

Ethical considerations: Written permission was taken from (a) ethical committee of DMCH Ludhiana, Punjab and (b) principal of CON, DMCH and CON, CMC, Ludhiana, Punjab. Written informed consent from the subjects was taken.

Plan of Data Analysis

Calculations were carried out with the help of Microsoft Excel and SPSS version 16. The various statistical measures used for analysis were frequency and percentage distribution, mean, standard deviation, t test and ANOVA test, Cronbach's alpha.

Results

Table 1 show that majority (89.3%) of the students had average clinical reasoning skills followed by poor clinical reasoning skills (10.6%) and none of the student had good clinical reasoning skills. The mean clinical reasoning skills score was 25.4 ± 3.86 . Though the mean score of average clinical reasoning skills (26.23) was highest as compared to mean score of poor clinical reasoning skills (19.37) but the mean percent (96.8) of poor clinical reasoning skills was highest followed by mean percent (65.6) of average clinical reasoning skills.

None of the socio-demographic variable had statistically significant association with clinical reasoning skills. Hence, it can be concluded that socio-demographic profile of students had no association with their clinical reasoning skills as findings were found to be statistically non-significant.

Discussion

The present study revealed that majority (89.3%) of the students had average clinical reasoning skills followed by 10.6 percent with poor clinical reasoning skills; none of the student had good clinical reasoning skills. The mean clinical reasoning skills score was 25.4 ± 3.86 . Similar findings were reported by Damodaran et al (2015) suggesting that students have moderate and poor clinical reasoning skills (53.33%

Table 1: Format of script concordance test (Bernard Charlin, 1998)

I	II	III
If you are thinking of	And then you find	The option would become
It contained a relevant diagnostic or management options	This part presented a new clinical finding, such as a physical sign, a pre-existing condition, an imaging study or a laboratory test result	This part contained a five-point rating scale that captured examinees decision i.e. -2 -1 0 +1 +2

and 46.67% respectively. None of the students were having good clinical reasoning skills. Mean score obtained for clinical reasoning skills was 24.58.

The present study revealed that the socio-demographic variables had no association with their clinical reasoning skills as findings were found to be statistically non-significant. Postma TC, White J (2017) in a study on socio-demographic and academic correlates of clinical reasoning in a dental school in South Africa, reported that socio-demographics has no correlation with the clinical reasoning in dental students.

Recommendation

Similar study can be conducted with (a) larger sample size to validate and generalise its findings and (b) larger panel of experts to generalise its findings.

Nursing implication

- The findings can be shared with nursing professionals and other health professionals so that they can assess the level of clinical reasoning skills among staff nurses.
- Clinical reasoning skills help the students to understand and state the rationale of everything that is done in the clinical setting.
- Improvement in the patient outcome.
- Script concordance test should be associated with other methods like case studies, OSCE, MCQ to have a global evaluation of clinical competence.
- Nursing students can be assessed periodically during their posting in particular area in the hospital by mimicking the same clinical scenario.
- Clinical reasoning skills influence the decision making and problem-solving abilities of nursing administration.

Conclusion

Besides practice and attitude, nursing profession involves a good decision-making

capacity for the clinical problems faced by the nurses on a routine basis. Therefore, clinical reasoning skills are an important competency in the nursing field that affects the quality and safety of the service providers especially nursing students and nurses. There is

no other reliable tool through which one can assess the clinical reasoning skills of students. SCT is employed in nursing profession to assess the clinical competence of students. It permits testing on real clinical scenario. The study concluded that majority of the students had average clinical reasoning skills followed by poor clinical reasoning skills and no student had good clinical reasoning skills. Socio-demographic profile of the students had no association with their clinical reasoning skills as findings were statistically non-significant. Clinical reasoning skills of the students was not adequate for identifying patient issues, diagnoses, implementation, evaluating

Table 2: Frequency, percentage, mean and SD distribution of nursing students according to their clinical reasoning skills (N=150)

Clinical reasoning skills	Score	f (%)	Mean $\pm$ SD	Mean%
Good	41-60	-	-	-
Average	21-40	134 (89.3)	26.23 $\pm$ 3.35	65.6
Poor	1-20	16 (10.7)	19.37 $\pm$ 1.33	96.8

Mean clinical reasoning skills score 25.4 $\pm$ 3.86, Maximum score= 60, Minimum score= 1

Table 3: Association of clinical reasoning skills with sociodemographic profile of nursing students (N=150)

Socio-demographic variables	N	Mean score $\pm$ SD of clinical reasoning skills	F/t value	p value	df
Age (in years)					
21-22	136	25.6 $\pm$ 3.93	0.70	0.48	148
23-24	14	24.8 $\pm$ 3.16			
Gender					
Male	16	25.05 $\pm$ 4.60	0.47	0.635	148
Female	134	25.54 $\pm$ 3.78			
Habitat					
Urban	93	25.13 $\pm$ 3.98	1.46	0.146	148
Rural	57	26.07 $\pm$ 3.64			
Place of stay					
Hostel	103	25.8 $\pm$ 3.94	2.174	0.117	149
Home	35	24.32 $\pm$ 3.68			
Paying guest	12	26.20 $\pm$ 3.30			
Previous year academic performance					
> 80%	0	0	1.16	0.31	149
70 - 80%	55	26.11 $\pm$ 3.95			
60 - 70%	92	25.14 $\pm$ 3.85			
50 - 60%	3	24.67 $\pm$ 0.75			

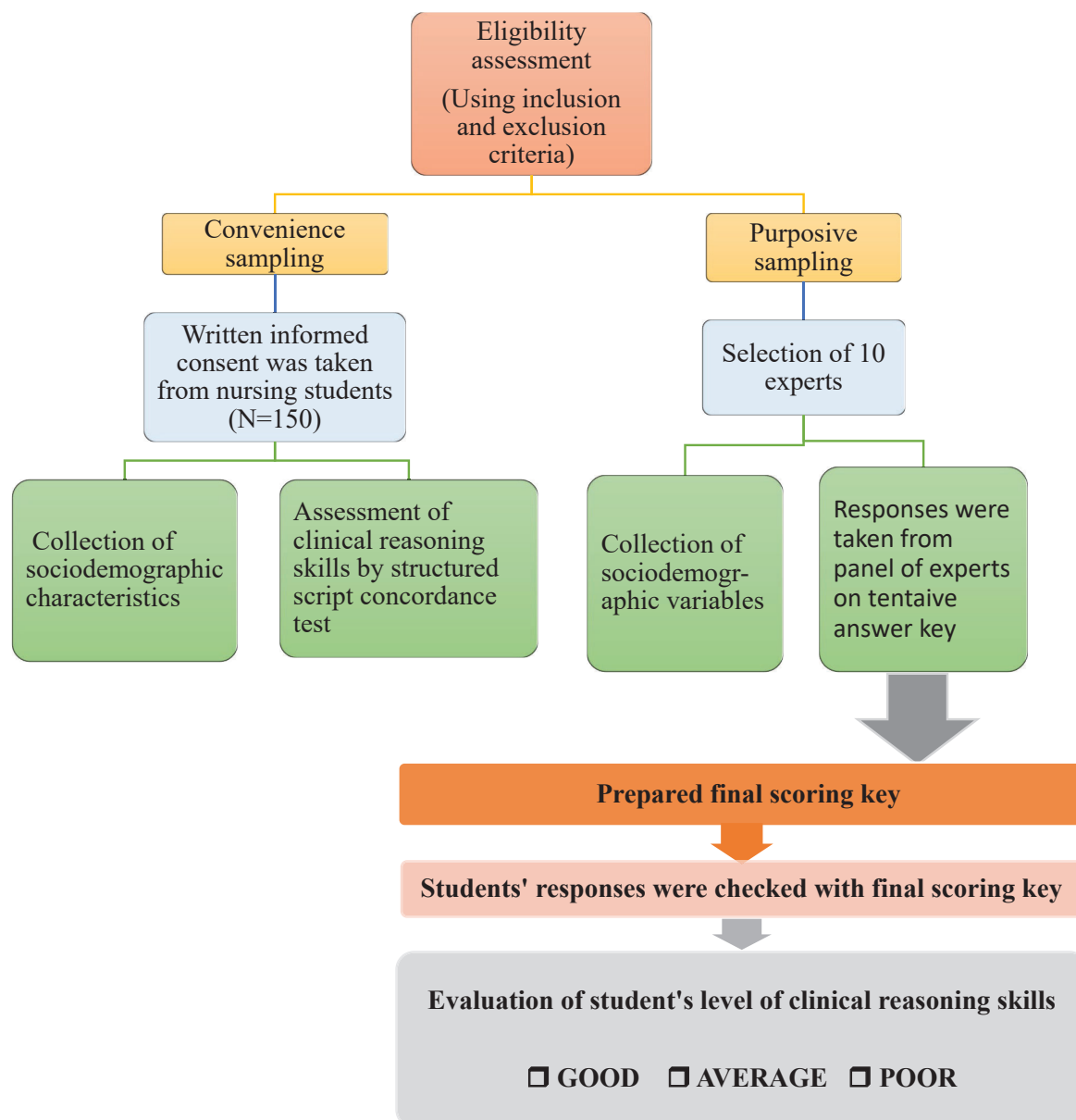


Fig 1: Administration & evaluation of SCT.

and modifying care. SCT is a valid, reliable tool for assessing clinical reasoning skills.

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