DEVELOPING A COMPUTER AIDED EVALUATION TOOL TO MEASURE THE QUANTITY OF NURSING CARE, BASED ON NURSING DIAGNOSIS, FOR UNDERGRADUATE NURSING CADETS

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ABSTRACT

In order to find out the indicators for quality, it is necessary to define a scale, which permits us to measure the outcome of health care in relationship to the hospital activities. A descriptive survey method developmental in nature was undertaken on a purposive sample of 100 Nursing Cadets, working in the Medical-Surgical Wards. The Nursing Process Approach Model was used with the objectives of first reviewing the existing system of evaluation of nursing care rendered, then a computerized evaluation tool was designed and developed in Foxpro 2.5 programming language and its effectiveness was tested on the student sample. Findings suggested that 57.14% of the faculty members felt that there was no standardized tool to measure the quality of the nursing care rendered in the wards. 64.29% stated the absence of set criteria for measuring quality. While 89% of the students expressed that the computerized tool directed them to render basic nursing care in a systematic manner, 70% of them expressed that competent, accountable and compassionate nursing care could be rendered using the tool. It also gave impartial evaluation of the quality of nursing care rendered based on nursing diagnosis ($p < 0.01$). Results could serve as an initiative for ongoing research on information feedback system as well as recording action taken to keep performance in line with the standards of patient care.

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KEY WORDS : Computerized tool; Nursing diagnosis; Nursing Process Approach Model.

Introduction

The quality of health care services is of great and continuing concern to government, financiers, professionals and patients. The responsibilities of medical, nursing and allied professionals in this respect are clearly recognized. Quality assessments are usually made according to their perspective and held against their standards [1]. Nursing has come a long way since the time of Florence Nightingale but so has everything else. Clinical nursing information was born scarcely a quarter of a century ago [2].

Faye Abdellah states that measurable qualities have not been established for effective patient care. Valid and reliable criteria that are also measurable are needed to evaluate and promote patient progress [3].

Designing and development of individualized and professional nursing care plans to enable nurses to make more accurate assessment of outcome in terms of patient goals, is being highlighted everywhere in the world. Not only is this a valuable tool for learners and qualified staff alike, it will provide invaluable data on which ward based research can be undertaken. The Nursing Process Approach Model consisted of implementation of appropriate nursing care based on nursing

diagnosis and achieving net outcome which reflects the quality of nursing care. This study was undertaken for the effectiveness of the computerized tool to evaluate the quality of nursing care.

Material and Methods

The study was conducted in a large service hospital of Armed Forces. The study population included all the faculty members and 100 undergraduate nursing cadets of a nursing teaching institute. The Nursing Process Approach Model was used to develop the computerized evaluation tool to measure the quality of nursing care. The tool based on 14 selected (using % scoring system) nursing diagnosis was programmed with the help of Foxpro 2.5 programming language using PC-AT 386.

A structured opinionaire was prepared to know the effectiveness of the computerized tool. Item analysis was done to test the validity of the questionnaire and reliability was established using a Test-Retest Method after 15 days with the same participants and the same tool (Co-relation coefficient $r=0.98$ and 95% coefficient incidences interval $0.95 < r < 0.99$).

The evaluation tool consisted of three parts :

- Part I consisting of nursing history and assessment database
- Part II enlisting the 14 selected nursing diagnosis
- Part III consisting of nursing intervention checklist.

A pilot study was conducted and minor modifications made wherever necessary prior to programming the tool keeping in mind that the tool served as an objective evaluator of nursing care rendered.

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Adequate theory and practical instructions were given to the sample population before assigning patients to the students in the ward and rendering nursing care. Constant monitoring was done and scoring of quality of nursing care rendered was done with the help of an observation checklist by the non-participant observer.

The students thereafter were oriented to the computerized tool to perform data entry and evaluate themselves on the quality of nursing care rendered by themselves in the ward. The tool was user-friendly and it took time ranging between 20-45 minutes for the whole process. There is ample scope in the tool developed for patients' data or to add/modify recommended nursing intervention according to the latest advancements made in the medical or nursing science. 'Z' test was the statistical method employed to test the effectiveness of the tool developed.

Results

42.86% of the faculty members used the observation method and interviewing of the students and patients to assess the quality of care rendered. While only 14.29% of the teachers used the observation checklist for assessing the quality of care rendered to patients, 57.14% of them expressed that an evaluation tool to measure quality of care rendered was absent. 64.29% of the teachers felt that the problem solving approach can be used to implement quality nursing care. 71.43% of the faculty members expressed that the present nursing care plans needed modification, if quality care is to be rendered. 64.9% of the faculty members opined that set criteria of care against which quality of care could be measured was not present. 100% of them opined that accountability, coordination and comprehensiveness should be the essential elements in any tool developed to measure quality of nursing care.

Testing the effectiveness of the computerized tool revealed that the tool is both process and outcome oriented ($p < 0.01$) (Table-1). 70% of the students felt that the computerized tool directs them in a systematic manner to render quality nursing care ($p < 0.01$). 49% of the students strongly agreed upon the fact that the tool motivated them to think in a problem-solving manner ($P < 0.01$). Majority of the students expressed that the tool helped them perform independent nursing actions necessary for providing quality nursing care (Table-2). More than 70% of the students opined that the tool could be included in the nursing schools and colleges as well as it could be used in the hospital setup with some minor modifications. However, 17% of them were not sure as to its use in the hospital setup. 60% of the students felt that the tool is practical oriented ($p < 0.01$). 90% of the students expressed that the computerized tool enhances the services rendered to the patients. More than 60% of the students significantly felt that the tool motivates the involvement of patient/relations in the patient's own care. More than 70% of the students felt that the tool enables them to develop practical nursing skill and it also directs them to evaluate the outcome of care given. More than 80% of the students significantly expressed that the tool increases accountability towards patient care ($p < 0.01$). More than 70% of the students felt that the tool gives an impartial evaluation of care rendered. More than 50% of the students opined that the tool was lengthy and time consuming despite the fact that 90% of them had taken only 15 minutes in the initial data entry and coming to an evaluation of care. Free responses (Table-3) from the students indicated that the tool could be included in the first year nursing curriculum (78%).

Discussion

Quality of care is most important to the nurses who are actually dealing with the patients. It is not simply an academic issue, as it has been suggested in the past.

TABLE 1

Showing students view regarding tool being process and outcome oriented

Batch	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Total
First Yr.	6 (50)	3 (25)	2 (16.66)	1 (8.33)	-	12
Second Yr.	15 (51.7)	13 (44.8)	-	1 (3.44)	-	29
Third Yr.	8 (27)	21 (72.4)	-	-	-	29
Fourth Yr.	26 (86.6)	4 (13.3)	-	-	-	30
	55	41	2	2	-	100

Figures in parentheses are percentage.

TABLE 2

Showing students opinion regarding the tool as a help to learn independent nursing actions

Batch	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Total
First Yr.	8 (66.6)	3 (25)	1 (8.3)	-	-	12
Second Yr.	13 (44.8)	11 (37.9)	5 (17.2)	-	-	29
Third Yr.	18 (62.0)	8 (27.6)	3 (10.3)	-	-	29
Fourth Yr.	18 (60)	10 (33.3)	2 (6.66)	-	-	30
	57	32	11	-	-	100

Figures in parentheses are percentage

TABLE 3

Showing opinion of the students regarding the computerised tool to evaluate nursing care

Opinion (Free response)	Batches of the students				Total (100)
	I (n=12)	II (n=29)	III (n=29)	IV (n=30)	
Tool should be included in the first year of nursing curriculum	8 (66.6)	20 (68.9)	20 (68.9)	30 (100)	78
Useful for improvement of quality care	6 (50)	20 (68.9)	16 (55.1)	18 (60)	60
Tool is systematic and teaches standardized nursing care for the fourteen basic nursing diagnoses	7 (58.3)	12 (41.37)	21 (72.4)	24 (80)	64

Figures in parentheses are percentage.

According to Kitsons and Kendell (1986) standards can be subdivided into 'Criteria' or discrete items of practice which are observable and measurable [5]. Evaluation of nursing care is a complex task, because it is extremely difficult to separate the unique contri-

butions of nurses to clients from the overlapping functions of the other health team members including behavioural aspects, the activities unique to nursing must be identified and the results of nursing interventions evaluated.

Quality of nursing care as such was not being assessed in its truest sense as no single evaluation tool was present. 57.14% have expressed the absence of any standardized tool as various methods used were observation method, checking of written nursing care plans for which the students had ample scope to the best of their capability, using text books, sometimes even without rendering nursing care, etc. Though the nursing care plans used the nursing process approach method, the laid down standards of care, based on nursing diagnosis was not integrated into it. The computerized evaluation tool having such an in-built system of nursing care based on nursing diagnosis is the only solution for lending accountability to the nursing technology and identifying the unique role of a nurse in the clinical setting.

71.43% of the respondents opined that patient satisfaction of nursing care received and observation of needs of patients being met are very important facts in order to evaluate the actual nursing care rendered to the patient. The nursing 'process' is basically the application of the scientific method in clinical nursing practice, comparable to processes used in medicine, management, research and has variety of professional and scientific disciplines [6].

64.29% of the faculty expressed that there was no tool at present which could direct the student to make critical judgement regarding the nursing diagnosis based on nursing database as the existing tool did not outline the course of action to be undertaken for a particular nursing diagnosis.

The view of 100% of the faculty agreeing upon the need for accountability, coordination between health team members and comprehensiveness of nursing care could be attributed to the fact that evaluation of nursing care involves creativity, self assessment and peer review. It depends upon the motivation of the leader in acting and involving others and in offering constructive criticism. Patients have become aware of their needs and demand quality services in return for the money spent. Therefore, accountability has become one of the major issues in nursing laws. About 85.71% of the faculty members felt that autonomy is an asset to quality of nursing care.

The nursing process approach is well understood by the students and is a part of the nursing curriculum. Hence, the computerized tool has been seen by them as process and outcome oriented, for it not only provides the nursing action checklist, but also guides them to know from their client the effectiveness of care they have rendered.

The facilities for monitoring outcomes from a computerized care plan will allow compilation of meaningful statistics which provide an efficient means of answering questions and prompting appropriate action. Furthermore, computerized tool will empower nurses by providing them with opportunities to have a very direct and incredible influence on how nursing resources are used to benefit patients and by enabling them to justify their use of those resources [7].

To sum up, this study shows significant acceptance of the computerized evaluation tool as human observation and evaluation exhibits bias and subjectivity. Patient care will become more consistent. The care planning module is seen as a useful starting point in which multi-disciplinary care plans can be developed at a local level [8]. Teaching-learning activity will become more meaningful as this tool acts as a self-learning guide for the student for history-taking and physical assessment of patients. This computerized tool will not only help in facilitating nursing diagnosis, selecting nursing care intervention, effective decision making skills, improving nursing care quality but also evaluating the nursing care.

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