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Academic performance and nursing aptitude: A correlation

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ABSTRACT

A tool on Aptitude Towards Nursing (NAT) was developed by the researcher based on focus group discussions, and review of literature. Tool was validated by seven experts in the areas of Medical Education, Nursing and Clinical psychology. and suggestions were incorporated. 180 MCQ item NAT was condensed to 87 items based on the findings of item analysis. The internal consistency reliability (α) of the scale was 0.877 (n=894) and the test retest reliability was 0.814. Pilot study among 47 first year B. Sc. Nursing students revealed NAT was a predictor of academic success.

Health care sector today is in the lookout for competent, qualified health care manpower, which can withstand the pressures of times, at work and meet the demand of quality care. Nurses are no exception for the same. Nurses being the frontline players in health care, the managements are extremely cautious in selection of nurses. On the other hand, disease burden is rising in India. Nurses being the cost effective manpower, can contribute significantly to improve the national health indicators. Keeping in mind the national goals, quality of health care serices and the trends in health care human resource management, the nation needs to take steps to screen the entrants to health care professions especially nurses. There is an obvious need for a tool to screen the potential nurses for their nursing abilities. [1, 2]

Admissions to professional and technical courses, in India or abroad, depend on assessment of aptitude. One of the Indian researchers developed a tool to assess the nursing aptitude however, as the tool was not tested on admission to the course, the validity of the tool would need further exploration. Currently nursing educational institutions in India, admit students for B. Sc. Nursing course, based on the criteria of physical fitness and 45% marks obtained in Physics, Chemistry, Biology and English (PCBE) subjects of Pre University Examination. Thus this systematic enquiry is planned with an aim to develop a tool to assess the nursing aptitude and evaluate its properties. [3, 4]

Methods:

Based on review of literature 5-8, and the focus group discussions held for the purpose of development of items, it was decided to frame the items as MCQ (Multiple Choice Questions) and a total of 180 items, thirty each in six subscales namely communication; science; spelling grammar, and vocabulary; perception, numeric and reasoning were developed. The tools were validated by seven experts (one from medical education, two psychologists, and four from nursing) and the modifications suggested were incorporated.

Items depicting caring, compassion were included in the subscale communication ability. A section on self rated assessment of personal qualities was included in the background proforma. The study was approved by the Institutional Ethics Committee. Informed consent were obtined from administrators of colleges of nursing and participants.

The scale was pretested on three days (2 subscales/day) among 78 first year B. Sc. nursing students of a selected University in Karnataka, in a large hall (group administration) with a seating arrangement of 3 ft distance between students. Based on the expert suggestion and findings of item analysis, the tool was condensed to 87 items. The condensed tool was subjected to pretesting among nursing students of another university in Karnataka (n=94) and the time taken for completion of the tool by 75% of the participants was monitored (75 minutes).

As there was no considerable variation except for 3 items in the perception subscale, the 87 item tool was subjected to assessment of internal consistency without modification. The sample size was estimated as 1:10 (item: sample). The tool was in English, was assessed for readability and clarity of items. It was decided not to translate the tool to local languages, as English is the medium of instruction in the selected nursing course.

Of the 34 colleges of Nursing (Of the total of 538 colleges in Karnataka in 2011), which consented and permitted 25 were selected by random sampling (chit method). Among these, 20 colleges had admissions in Aug - Sept of 2013, which accounted for a total of 894 students. The tool was administered as described above and a total of 75 minutes were given to complete NAT, after obtaining the informed consent. Use of calculators and mobile phones were not permitted. Wherever student strength was more than 50, one assistant (trained) was employed. The reliability (α) of the tool was found to be 0.877 Reliability of subscales is presented in Table 1. One of the observations during the data collection was that students were least interested to fill the numeric aptitude subscale.

Table 1: Reliability of subscales (N=891)

Subscales	α	Subscale	α
Communication	0.64	Perception	0.595
Science aptitude	0.68	Reasoning	0.515
Spelling & vocabulary	0.55	Numeric	0.627

To assess the psychometric properties of the tool on a pilot project, the aptitude scores were compared with mean percentage scores of PCBE and Nursing Foundation course (The PCBE scores of 2nd year PUC of students were obtained from their original marks cards submitted to college office. Nursing Foundation scores were obtained from the class coordinators.

Results:

1. Participant characteristics: Refer to Table 2

2. Description of nursing aptitude scores: Refer to Table 3 and Fig 1. The categorization of scores in Fig 1 is in accordance with the description of marks in graduate nursing examination in India wherein a candidate has to obtain 50% in aggregate to pass, ≥75% is distinction, 50<65% is second class and 65%<75% is first class.

Table 2: Participant characteristics (n=894)

Characteristics	f
Gender: Male Female	 21 873

State of Origin: Karnataka Kerala Others	 60 723 111
Religion: (Missing data : 2) Hindu Christian Muslim Others	 161 684 17 30
Residence: (Missing data: 23) Rural Urban	 654 217
Nursing was the first choice(Missing data: 9) Yes No	 685 200
Choice of Nursing: Missing data:09) Job opportunity Own interest Interest to be in medical field Interest to help others Parents pressure Influence from nurses in the family Others	 221 166 212 219 10 11 46

Table 3: Description of nursing aptitude scores N=894

Scales		Min	Max	Mean	SD
dimension0	Communication	1	15	8.14	2.951
	Science	0	15	7.37	3.109
	Spelling and Vocabulary	1	15	7.51	2.463
	Perception	0	12	6.51	1.936
	Reasoning	0	14	5.68	2.497
	Numeric	0	15	6.93	2.890
	Aptitude towards Nursing	12	77	42.1	11.65

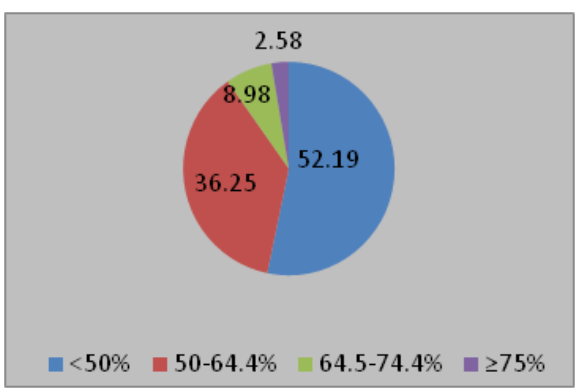

Figure 1: Percentage distribution of obtained Nursing Aptitude scores

3. Description of nursing aptitude, PCBE and nursing foundation scores: The PCBE scors were converted into percentages as the maximum score per subject varied between participants belonging to different state pre university boards of India. Refer to table 4.

Table 4: Description of Nursing aptitude, PCBE and nursing foundation scores

	N	Range of scores		Mean	SD
		Possible	Obtained		
NAT	47	0-87	19-70	55.56	12.52
Nursing Foundation	47	0-75	13-68	34.31	11.91
PCBE (%)	47	0-100	53.2-89.4	71.3	9.94

4. Comparison of mean nursing aptitude and nursing foundations scores.

Table 5: Comparison of percentage scores of nursing aptitude and nursing foundation among those who passed and failed in nursing foundation examination

Nursing Foundation scores	N	Aptitude Scores		t (df)	P
		Mean	SD		
<50%	31	45.4	10.00	2.769 (45)	0.008
≥50%	16	54.1	10.52		

Table 5 shows significant difference was found in the nursing aptitude scores of students who failed and passed in nursing foundation course. Table 6, reveals that NAT is a predictor of academic success (OR 5.056, CI at 95% = 0.976 – 26.177), however this finding needs to be verified on a larger sample.

Table 6: Odds ratio of nursing aptitude and nursing foundation scores

Nursing Foundation Scores	NAT Scores <50%	≥50%	χ2 (df)	Odds Ratio
<50%	13	18	4.206 (1)	5.056
≥50%	02	14		

5. Comparison of PCBE and nursing foundation scores: Table 7 reveals that there was no significant difference in the PCBE percentage scores of those who failed and passed in nursing foundation examination.

Table 7: Comparison of percentage scores of PCBE and nursing foundation among those who passed and failed in nursing foundation examination

Nursing Foundation Scores	N	PCBE Percentage Mean	SD	t (df)	p
<50%	31	69.51	9.78	1.744 (45)	0.088
≥50%	16	74.73	9.63		

Discussion:

The syllabus of a nursing course is uniform throughout India and so are the expectations from nurses nationwide. India requires competent nursing manpower to cater to the diverse health needs of public. The findings of this study reveal that a genuine thought need to be given to the current eligibility criteria of B. Sc. Nursing program in India.

There are reports of poor quality nursing care in and out of India.[9-11] The participant characteristics of this study reveal that, only 19.4% chose nursing with interest to help others, which could be one of the factors influencing poor quality of nursing care. Objectives of the graduate nursing programme reveal that nursing curriculum has the potential to mould a student during the training period into an effective nurse, thus there is a scope to test the influence of training on nursing potential.

It is observed that failure rates in the first year of nursing, is comparatively higher in most of the nursing institutions in Karnataka, and the students comparatively seem to be performing better in the subsequent years of the course. The successful completion of the course is a prerequisite for licensure in India. From the perspective of shortage of nurses in India (1 nurse to 1205 population 12), it would be wise to introduce nursing aptitude test in India as it can predict the academic success.

Introducing nursing aptitude test would not threaten nursing admissions as feared by many nursing administrators instead it would enable to identify those, whose abilities need to be improved. Such candidates may be enrolled for a short term programme and upon demonstrating desirable competency in the identified ability one may be promoted to seek entry to the

graduate nursing programme.

The tool provides considerable assurance on its property of validity. The predictive validity of tool should be further tested on a larger sample. However nursing being a service oriented career, the aptitude scores need to be further tested against clinical performance measures. The effect of nursing training on aptitude scores can also be assessed by comparing the pre and post test aptitude scores.

Conclusion:

The preliminary findings reveal that nursing aptitude tool is a valid measure to predict nursing potential. There is a need to attract competent nursing manpower to cater to the diverse needs of the population both sick and the well, both in private and public health care sectors.

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