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ASSESSMENT OF CRITICAL THINKING DISPOSITIONS OF NURSING STUDENTS IN SOUTHWESTERN NIGERIA

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ABSTRACT

Background: Critical thinking skills in nursing are important, as they are central to providing competent quality care. The need for the development of appropriate critical thinking skills by nursing students is also supported by the standards of practice for nurses as determined by various state nursing boards. Critical thinking dispositions are requisite for thinking critically and for developing sound critical thinking skills. Although in Nigeria, students scores on nursing board examinations and academic tests are above average, feedback from clinical instructors and alumni supervisors suggest that graduates are lacking in these skills as they begin their professional practice.

Purpose: This study investigated the critical thinking dispositions of undergraduate nursing students at various levels of education and to assess their levels of education and on critical thinking dispositions scores.

Materials and Methods: This is a causal-comparative study. Using a convenience and purposive sampling, 509 undergraduate nursing students completed the California Critical Thinking Disposition Inventory Scale (CCTDI).

Findings: The mean and standard deviation of participants age was 19.8 and ± 1.4 respectively. Majority of the students were in their fourth year and third year in the nursing program. Students demonstrated a weak positive overall disposition to critical thinking, with evidence of disposition not increasing significantly overtime. The subgroup means of the 7 trait sub-scores revealed a very homogeneous group with truth-seeking as lowest and inquisitiveness as highest with an overall mean score of 284.52 and SD of ±25.98. Statistically significant differences were found between participants scores for truth-seeking, inquisitiveness, analyticity, confidence in reasoning, and overall CCTDI.

Conclusions: Findings revealed that baccalaureate nursing students on average demonstrated an inclination toward not being open to new ideas and are weak in clarifying or seeking understanding of situation. It is therefore recommended that nursing education should integrate teaching and learning activities that can enhance truth-seeking, ensuring students function as the creators of their own knowledge, and faculty becoming eager to learn how to train critical thinkers, exerting the mental effort needed to apply it.

KEYWORDS: Critical Thinking, Dispositions, Nursing, Students

INTRODUCTION

New graduate nurses of nowadays are increasingly exposed to complex healthcare environments that require the skills to effectively think and reason to provide quality patient care.[1] To adequately prepare nursing students for practice in these environments, the ability to critically think has been included as a learning outcome in curriculum and

accreditation standards published by leading nursing education organizations, such as the American Association of Colleges of Nursing and the National League for Nursing Accrediting Commission.[2] Dispositions toward thinking critically have been portrayed as the unswerving internal inclination to problem solving and decision making achieved by thinking.[3][4] Critical thinking disposition is defined as a personal disposition or habit that results in the making of self controlled decisions in response to problems and choices encountered in personal or professional situations.[5] In other words, the scope of critical thinking can be said to include cognitive skills and affective disposition. Thus, critical thinking disposition is a predisposed attitude one innately possesses in regards to utilizing critical thinking skills. An individual with critical thinking dispositions display a inquiring inquisitiveness, a enthusiastic intellect, a zealous dedication to reason, a hunger for reliable information, and are more apt to use their critical thinking skills than are those who do not have strong critical thinking dispositions. [3][6] Studies have supported a positive association between critical thinking disposition and critical thinking skills. [10][11][12]

While critical thinking has been identified as an important educational outcome of nursing education programs, evidence points to a deficiency of critical thinking skills in new nurses [7][8][9]. The discipline of nursing education in Nigeria has developed from a non-regulated profession in which students depend on their faculty for knowledge without demonstrating the necessary thinking skills required to practice safely in a health profession that is closely overseen by strict accreditation guidelines. Consequently, the nursing training should be transformed from its focus on rote learning in which the curriculum is content saturated rather than encouraging students to expand critical thinking skills needed to analyze and interpret patient problems. Critical thinking research is needed in Nigeria nursing education to attest to the acquisitions of the skills by the nursing students.

Various studies in developed countries have examined the relationships between CCTDI scores and selected student characteristics such as age, gender, and grade point average. [13][14][15][16][17] Studies that have examined the correlation between overall CCTDI scores and grade point average (GPA) have produced inconsistent results. Critical thinking acquisition and development has been associated with experience and levels of nursing education. [9][18] Graduate level nursing students scored higher on the overall scale and on each subscale than all levels of undergraduate nursing students. The graduate group's mean was above 40 on the truth-seeking subscale and above 50 on the inquisitiveness subscale placing them in the strongly positive range for this disposition. [18] These results may be due to a self-selection effect; whereby sounder students tend to pursue advanced degree and are more likely to attain high levels on the overall CCTDI. [18]

Some research related to the development of and evaluation of CT skills has occurred in other countries, however, no research on this important topic has been conducted in Nigeria. Although in Nigeria, students scores on nursing board examinations and academic tests are above average, feedback from clinical instructors and alumni supervisors suggest that graduates are lacking in these skills as they begin their professional practice. Therefore, it is important to assess students abilities before planning interventions for improvement. The purpose of this study was to assess undergraduate nursing students critical thinking dispositions using California Critical Thinking Disposition Inventory Scale and also to determine the differences between critical thinking dispositions scores with their level of education.

MATERIALS AND METHODS

This is a casual-comparative quantitative study aimed at assessing the critical thinking dispositions of

undergraduate nursing students in Southwestern Nigeria. A total of 509 participants from four accredited nursing schools were included in this study through a convenience-purposive sampling technique. The California Critical Thinking Disposition Inventory (CCTDI) elicited information about the participants critical thinking disposition scores and the demographic questionnaire to collect data on participants demographic variables. The CCTDI was purchased from Insight assessment after permission was granted to use.

There were seven subscales with 75 items that were answered on a six- point likert scale of agree strongly to disagree strongly. The subscales are truth-seeking, inquisitiveness, open-mindedness, CT confidence, analyticity, systematic city, and cognitive maturity. There are usually between 8-12 questions on each subscale on the CCTDI. Each subscale has 10 as its minimum score and 60 at its maximum score. In each subscale, scores of 30 or less are considered as weakness or opposition; 31-40 scores are interpreted as ambivalence toward that subscale; 41-50 scores show positive inclination towards critical thinking disposition; while scores higher than 50 reveals a high disposition or inclination toward that subscale. [19] Subsequently, all the seven subscales are summed up and graded as follows: 70 points is minimum score and 420 points as maximum.

RESULTS

Table 1: Demographic Variables of Participants

Variables	Students *n*=509	Frequency (%)
Age Range	18 to 22	332 (65.2)
	23 to 27	155 (30.5)
	28 to 32	15 (2.9)
	33 to 37	5 (1.0)
	38 to 42	1 (0.2)
	Above 42	1 (0.2)
Gender	Female	455 (89.4)
	Male	54 (10.6)
School	School A	182 (35.8)
	School B	109 (21.4)
	School C	115 (22.6)
	School D	103 (20.2)
Level or year in the nursing program	1st Year	87 (16.3)
	2nd Year	107 (21.0)
	3rd Year	111 (21.8)
	4th Year	112 (22.0)
	5th Year	96 (18.9)

Table 1 described the demographic variables of participants. 509 participants were involved in this study. 332 (65.2%) were between the ages of 18-22 year, 455 (89.4%) were female, 182 (35.8%) volunteered to participate from a school, and 112(22.0%) participants were in their fourth year program followed by 111 (21.8%) participants in their third year nursing program.

Table 2: Participants Scores on CCTDI

Variables	Min (*n* = 509)	Max	Mean	SD
Truth-seeking	13	51	29.95	6.514
Open-mindedness	25	54	37.35	5.008
Inquisitiveness	27	60	48.94	5.195
Analyticity	26	59	44.76	5.328

Table 2: Contd.,

Systematicity	20	60	42.04	5.591
Confidence in reasoning	19	60	45.30	5.985
Maturity of judgment	19	58	37.32	7.339
CCTDI Overall	**219**	**372**	**284.52**	**25.982**

Table 2 above describes the minimum, maximum, mean, and standard deviation of participants scores on the seven subscales of CCTDI. The total score for truth seeking ranges from 13 to 51 with *SD* = ±6.514, open mindedness from 25 to 54 with *SD* = ±5.008, inquisitiveness from 27 to 60 with *SD* = ±5.195, analyticity range from 26 to 59 with *SD* = ±5.328, systematic city from 20 to 60 with *SD* = ±5.591, confidence in reasoning from 19 to 60 with *SD* = ±5.985, maturity of judgment from 19 to 58 with *SD* = ±7.339 and CCTDI overall from 219 to 372 with *SD* = ±25.982. A score between 70 to 203 indicates a low critical thinking disposition, 210 to 280 indicates a weak or inconsistent disposition, score between 281 to 350 indicates positive critical thinking disposition while 351 to 420 score indicates high critical thinking disposition. As shown in Table 2, the baccalaureate nursing students had relatively low scores in open mindedness and maturity of judgment, which were higher than their scores in truth- seeking but lower than their scores in systematic City, analyticity, confidence in reasoning and inquisitiveness which is the highest. The mean score of 284.5 indicates a weak positive inclination to think critically.

Table 3: Difference between the CCTDI Scores of Second Year and Third Year Nursing Students

CCTDI Scales	Group 2nd Year (*n*= 107) 3rd Year (*n*= 111)	M	SD	t (p Value)
Truth-seeking	2nd Year	30.73	6.223	1.864 (0.064)
	3rd Year	29.07	6.872	
Open-mindedness	2nd Year	37.64	4.961	0.308 (0.758)
	3rd Year	37.43	5.211	
Inquisitiveness	2nd Year	48.26	5.827	-0.065(0.948)
	3rd Year	48.32	6.366	
Analyticity	2nd Year	44.10	5.638	-1.196(0.233)
	3rd Year	45.03	5.767	
Systematicity	2nd Year	42.07	5.038	0.261(0.795)
	3rd Year	41.87	5.775	
Confidence in reasoning	2nd Year	44.52	6.436	-1.064(0.289)
	3rd Year	45.40	5.669	
Maturity of judgment	2nd Year	37.42	6.325	0.601 (0.548)
	3rd Year	36.84	7.875	
CCTDI Overall	2nd Year	284.47	25.802	0.211(0.833)
	3rd Year	283.70	27.575	

Of the 218 respondents, 107 (49.1%) were second year nursing students and 111 (50.9%) were third year nursing students. The mean of CCTDI overall was 284.47 for second year nursing students and 283.70 for third year nursing students. According to Table 3, third year baccalaureate nursing students scored higher than the second year baccalaureate nursing students in inquisitiveness subscale, analyticity subscale and confidence in reasoning subscale. However second year baccalaureate nursing students scored higher than third year baccalaureate nursing students in truth seeking subscale, open mindedness, systematicity, maturity of judgment as well as CCTDI overall.

A *t* test measuring the difference between the total critical thinking dispositions composite scores and subscales scores of second year nursing students and third year students indicated no statistically significant difference for

Truth seeking, $t(216) = 1.864$, $p > 0.05$, Open mindedness, $t(216) = 0.308$, $p > 0.05$, Inquisitiveness, $t(216) = -0.065$, $p > 0.05$, Analyticity, $t(216) = -1.196$, $p > 0.05$, Systematicity, $t(216) = 0.261$, $p > 0.05$, Confidence in reasoning, $t(216) = -1.064$, $p > 0.05$, Maturity of judgment, $t(216) = 0.601$, $p > 0.05$ and CCTDI overall, $t(216) = 0.211$, $p > 0.05$. However, even though 200 level nursing students scored slightly higher for inquisitiveness, analyticity and confidence in reasoning, a *t* test revealed no significant statistical difference for this construct, $t(216) = -0.065$, $t(216) = -1.196$, $p > 0.05$ and $t(216) = -1.064$, $p > 0.05$ respectively.

Table 4: Difference between the CCTDI Scores of Third Year and Fourth Year Nursing Students

CCTDI Scale	Group 3rd Year (*n*= 111) 4th Year (*n* = 112)	M	SD	t(p Value)
Truth-seeking	3rd Year	29.07	6.872	-0.728(0.467)
	4th Year	29.74	6.843	
Open-mindedness	3rd Year	37.43	5.211	1.075 (0.284)
	4th Year	36.68	5.265	
Inquisitiveness	3rd Year	48.32	6.366	2.367 (0.019)
	4th Year	46.33	6.158	
Analyticity	3rd Year	45.03	5.767	1.622 (0.106)
	4th Year	43.84	5.156	
Systematicity	3rd Year	41.87	5.775	0.959 (0.339)
	4th Year	41.13	5.748	
Confidence in reasoning	3rd Year	45.40	5.669	2.046 (0.042)
	4th Year	43.83	5.762	
Maturity of judgment	3rd Year	36.84	7.875	0.033 (0.974)
	4th Year	36.80	7.842	
CCTDI Overall	3rd Year	283.70	27.575	1.586 (0.114)
	4th Year	278.02	25.948	

Of the respondents, 111 (49.8%) were third year nursing students and 112 (50.2%) were fourth year nursing students. The mean of CCTDI overall was 283.70 for third year nursing students and 278.02 for fourth year nursing students. As shown in Table 4, third year nursing students scored higher than fourth year nursing students in open mindedness subscale, inquisitiveness, analyticity, confidence in reasoning and CCTDI overall. However both had relatively equal scores in truth seeking subscale, systematicity subscale and maturity of judgment subscale. A *t* test measuring the difference between the total critical thinking dispositions composite scores and subscales scores of third year nursing students and fourth year students indicated no statistically significant difference for Truth seeking, $t(221) = -0.728$, $p > 0.05$, Open mindedness, $t(221) = 1.075$, $p > 0.05$, Analyticity, $t(221) = 1.622$, $p > 0.05$, Systematicity, $t(221) = 0.959$, $p > 0.05$, Maturity of judgment, $t(221) = 0.033$, $p > 0.05$ and CCTDI overall, $t(221) = 1.586$, $p > 0.05$ while there is statistical significant difference for Inquisitiveness, $t(221) = 2.367$, $p < 0.05$ and Confidence in reasoning, $t(221) = 2.046$, $p < 0.05$. *t* test reflected a significant statistical differences between third and fourth year nursing students, $t(221) = 2.367$, $p < 0.05$ and $t(221) = 2.046$, $p < 0.05$ respectively. Thus, there is no significant difference between the total critical thinking dispositions composite scores and 5composite scores of third year nursing students and fourth year students.

Table 5: Difference between the CCTDI Scores of Fourth Year and Fifth Year Nursing Students

CCTDI Scale	Group 4th Year (*n*= 112) 5th Year (*n*= 96)	M	SD	t(p Wave)
Truth-seeking	4th Year	29.74	6.843	-1.965 (0.051)
	5th Year	31.51	6.018	

Table 5: Contd.,

Open-mindedness	4th Year	36.68	5.265	-0.871 (0.385)
	5th Year	37.29	4.810	
Inquisitiveness	4th Year	46.33	6.158	-0.714 (0.088)
	5th Year	47.71	5.307	
Analyticity	4th Year	43.84	5.156	-1.481 (0.140)
	5th Year	44.84	4.524	
Systematicity	4th Year	41.13	5.748	-1.960(0.051)
	5th Year	42.69	5.641	
Confidence in reasoning	4th Year	43.83	5.762	-3.097 (0.002)
	5th Year	46.31	5.763	
Maturity of judgment	4th Year	36.80	7.842	-1.206 (0.229)
	5th Year	38.04	6.801	
CCTDI Overall	4th Year	278.02	25.948	-2.783 (0.006)
	5th Year	287.99	25.534	

Of the respondents, 112 (53.8%) were fourth year nursing students and 96 (46.2%) were fifth year nursing students. The mean of CCTDI overall was 278.02 for fourth year nursing students and 287.99 for fifth year nursing students. As shown in Table 5, fifth year nursing students scored higher than fourth year nursing students in truth seeking, confidence in reasoning, maturity of judgment and as well as CCTDI overall while both had relatively equal scores for open mindedness, inquisitiveness, analyticity and systematicity. The *t* test measuring the difference between the total critical thinking dispositions composite scores and subscales scores of fourth year nursing students and fifth year students indicated no statistically significant difference for Truth seeking, $t(206) = -1.965$, $p > 0.05$, Open mindedness, $t(206) = -0.871$, $p > 0.05$, Inquisitiveness, $t(206) = -1.714$, $p > 0.05$ Analyticity, $t(206) = -1.481$, $p > 0.05$, Systematicity, $t(206) = -1.960$, $p > 0.05$ and Maturity of judgment, $t(206) = -1.206$, $p > 0.05$ while there is statistical significant difference for Confidence in reasoning, $t(206) = -3.097$, $p < 0.05$ and CCTDI overall, $t(206) = -2.783$, $p < 0.05$. As shown, fifth year nursing students scored higher than fourth year nursing students for Truth seeking, Confidence in reasoning, Maturity of judgment and CCTDI overall while both had a relative scores in Open mindedness, Inquisitiveness, Analyticity and Systematicity.

DISCUSSIONS

509 undergraduate nursing students from four accredited nursing programs participated in this study. Results from the critical thinking disposition profile for the students showed that nursing students have overall low positive dispositions. However, students also demonstrated weakness in truth-seeking. The result revealed that scores on the composite subscales ranged from 13 to 60. Thus, there are some students that attained a score above 50 suggesting that some students consistently demonstrate critical thinking disposition when faced with difficult situation while some do not consistently demonstrate the dispositions to think critically. Truth-seeking had the lowest mean score at 29.95, minimum score of 13 and maximum score of 51, suggesting that the majority of the students dispositions to eagerly seek out the best information in any given context is weak.

Although, the students demonstrated an overall ambivalent or inconsistent to low positive critical thinking disposition, the means for truth-seeking, open-mindedness, and maturity in judgment subscales are within the ambivalent range. These results suggest that baccalaureate nursing students, on average, demonstrate an inclination toward not being open to new ideas and are weak in clarifying or seeking understanding of situation. Students with weak truth-seeking disposition have the tendency not to examine situation beyond what is presented. Nursing students with weak truth-seeking

disposition may find it difficult to ask their patients hard questions related to their health status. Such students in the classroom environment will not ask their teachers questions related to information presented. The results from the study are consistent with the results of other studies in which critical thinking dispositions of nursing students are assessed using CCTDI. [8][9][18][20][21]

The lowest groups mean in the CCTDI results for second year and third year nursing students was truth-seeking. Second year students truth-seeking scores ranged from 16 to 47 with a mean score of 30.73 indicating that second year students truth-seeking score is weak. Third year students truth-seeking scores ranged from 13 to 51, mean score of 29.07 demonstrating a low score. The minimum CCTDI overall scores for second year student was 222 and maximum of 357 with a mean of 284. 47 while third year students scores ranged from 219 to 348 with a mean of 283.70. Overall, there were no statistical significant differences between the composite scores and subscale scores between the second year and third year nursing students. Previous research studies [3] [8] [9] suggest that most CCTDI test takers score lowest on the critical thinking disposition of truth-seeking. This might be because the students are not accustomed to examining and questioning their beliefs.

Truth-seeking mean scores were similar for the third year students (29.07), ranging from 13 to 51 and fourth year students (29.74), ranging from 15 to 48. Thus, both groups are demonstrated low inclination to use truth-seeking in developing critical thinking skills. These results suggest that the students may be experiencing difficulty in seeking out information. They may be afraid to ask questions because of the fear of being misunderstood, therefore, the traits to seek out information in a given context is weak. The low scores across the 2 years also show that they are not improving in this area, and one could speculate that they are not being taught to question and seek out for information. However, the fifth year nursing students attained a mean score of 31.51 on truth-seeking. This result indicates that fifth year nursing students are ambivalent toward truth-seeking, suggesting that fifth year nursing students may be more accepting of others view and be open to new information. This result is similar to the findings of Stewart and Dempsey [13] whereby there was increase in all subscales of the CCTDI from sophomore to senior year but the increase was not statistically significant.

Furthermore, the results revealed that critical thinking disposition scores and subscale scores are not dependent on levels in nursing program. This result is differed from Shin, Lee and Duk [9] in which the CCTDI scores improved as the students progressed over four years of college. It was observed from the study that more than half of the mean subscale scores for all student groups reached the 40 score described as the standard subscale score to indicate strong critical thinking disposition. This result does not substantiate weak intellectual capacity but rather a different emphasis and importance placed on the teaching and learning process as well as the model of education. Overall, the present study supports that the participants have weak or inconsistent ability to use CT skills based on their overall scores on the CCTDI, however, their low scores in truth-seeking and open-mindedness subscales may create a major setback in developing strong inclination to use critical thinking skills. Even though the student and faculty groups had weak and moderate scores on their total CCTDI, factors identified that can contribute to these findings include the past educational experience and cultural environment. Thus, the researchers concluded that past educational experience and cultural environment had a significant influence on African students ability to utilize critical thinking skills.

CONCLUSIONS, RECOMMENDATIONS AND NURSING IMPLICATION

The findings of this study offer a foundational discussion about the critical thinking dispositions of baccalaureate

nursing students and nursing faculty in Nigeria. Critical thinking remains complex and can be developed through practice, education, openness, and willingness.[22] Based upon this study, the baccalaureate-nursing students possess weak or inconsistent disposition to think. Results from the critical thinking profile for baccalaureate nursing students showed that nursing students have overall positive dispositions to think critically. However, the students also demonstrated weakness in truth-seeking. These results suggest that the students may be experiencing difficulty in seeking out information.

They may be afraid to ask questions because of the fear of being misunderstood, therefore, the traits to seek out information in a given context is weak. Nursing students in Nigeria, like many other students in healthcare professions need to develop the thinking skills needed to meet the demands of the complexity of caring for their client in a clinical situation. Therefore, the goal of the nursing programs is to incorporate advance and creative teaching and learning process that would promote the development of critical thinking through classroom and clinical experiences. The subscales of truth-seeking and open-mindedness resulted in an overall ambivalence suggesting that better importance should be placed on teacher-student interaction to develop these two aspects of critical thinking disposition.

The findings have implications for nursing curriculum development and understanding various teaching and learning strategies. Nursing faculty should integrate activities that can enhance truth-seeking. This can be achieved by encouraging students to question personal biases and opinions that differ from others. [23] Moreover, classroom experience should include reflection and discussion that will promote interaction. Rhetorical questions should be used to engender more discussions. [24] In addition, faculty should self examine themselves. Faculty should challenge their prior biases that may differ from opinions of others and assist students in the decision making process, thus truth-seeking is encouraged. Faculty should shift from judgmental to supportive reactions to learners.

Further research needs to explore the instruments for measuring critical thinking dispositions that might be more culturally sensitive for use with Nigerian students. Such research should utilize a longitudinal approach to identifying the differences in critical thinking dispositions among students. If longitudinal study cannot be afforded, this study should be replicated using a bigger sample size. Students are the creators of their own knowledge and the educators become facilitator of learning and meaningful learning occurs through reflection. Considering this premise, it would be interesting to examine whether there is a relationship between critical thinking dispositions and the teaching methods used in Nigeria.

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