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Critical thinking dispositions' level among neophyte nursing students

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A B S T R A C T

Introduction: Critical thinking dispositions (CTD) are valued across the health professions disciplines being essential for decision-making, critical judgment and managing complex health situations. Promoting critical-thinking dispositions in undergraduate nursing students can support the students to utilize critical thinking during challenging patient care and problem-solving situations.

Objective: This study aimed to assess the level of critical thinking disposition among neophyte nursing students in a private nursing college, Islamabad.

Methodology: An analytical cross-sectional study design was adopted. Neophyte students (n=98) of the BSN program participated in the study. Critical Thinking Dispositions Scale (CTDS) of 54 items under seven constructs (Contextual perspective, Perseverance, Reflection, Intellectual integrity/ truth – seeking, Creativity, Open-mindedness and Inquisitiveness) was utilized to assess CTD level. Data was analyzed at descriptive and inferential level using SPSS 23.0 version.

Results: Overall, CTD among neophytes nursing students is at 75% a progressive level. Contextual and inquisitiveness construct of CTDs are at positive CTD level while other constructs are at the progressive level. Students have completed their matriculation from public 55(56.1%) while FSc (Faculty of Science) from private sector 57(58.2%). Mothers of most neophytes 73(74.5%) were housewives and fathers were working in private organization 32(32.7%). There was no statistically significant association between CTD's construct with demographic variables (P-Value, >0.05). FSc marks showed a significant association with overall CTD scores, intellectual and inquisitiveness, while admission entry test scores associate significantly with intellectual construct.

Conclusion: The CTD level of neophyte is at a progressive level which suggest that different teaching and learning strategies could be implemented to improve this level.

Keywords: *Critical thinking, critical thinking disposition, critical thinking dispositions scale, neophyte*

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Introduction

Critical thinking disposition (CTD) is essential for decision-making, critical judgment and managing complex health situations therefore valued across the health profession disciplines. Due to dynamic nature of the clinical environment, nurses should be prepared to be competent, safe and confident, which is possible if CTD is the emphasis in the clinical practice.[1]

The roots of CTD emerge from critical thinking (CT) which is a multidimensional concept and has multiplicity in it that can be viewed in terms of skills, applicability and

accomplishment.[2] Moreover, critical thinking is active and organized intellectual process focusing one's own thinking and keeping others thinking away. Critical thinking is constituted through both dispositions and CT Skills, CT skills developed through the instructions and the dispositions are "habits of mind" so its development requires long-term participation in learning environment.[3] Critical thinking is constructive in evaluating complex situations and implementing appropriate actions and requisite for problem solving and decision-making. Therefore, among the health care professional critical-thinking is more important, because they are directly involved in patient care like nurses, doctors, and physiotherapist.[4] When not enough evidences are available to support practice, nurses need to utilize critical-thinking to deal with practical situations. Hence, critical thinking disposition is essential in health care for decision-making, critical-judgment and managing of complex situations.[2]

Critical-thinking is the foundation of nursing practice and is crucial in the current complex situation.[5] A study conducted in Turkey reported freshmen students mean score 220.07± 17.7 in nursing college.[6] Another study reported the average critical thinking disposition score 194.48±14.20 at the start of the program.[1] Therefore, many health professions, including nurses promote critical thinking. Furthermore, promoting critical-thinking dispositions in undergraduate nursing students can support the students to utilize critical thinking during challenging patient care and problem-solving situations.[7]

In Pakistan, the focus of nursing education is generally rote-learning rather than utilizing critical thinking.[4] Consequently, CTDs are not well developed among Pakistani nursing students. Notwithstanding the dearth of research in Asia on this phenomenon, there is also no evident research in Pakistan regarding assessing critical thinking disposition among neophyte nursing students. It therefore became imperative to conduct research in a Pakistani context, assessing the level of critical thinking dispositions in neophyte nursing students, to utilize the outcome for addressing the CTD-deficiency.

Purpose of the study

The purpose of this study was to assess the levels and association of critical thinking dispositions among neophyte nursing students in a private nursing college, Islamabad.

Research questions

1. What is the critical thinking disposition among neophyte nursing students at a private nursing college?
2. What is the association between critical thinking disposition and demographic variables among neophyte nursing students at a private nursing college?

Methodology

A quantitative research approach was adopted to conduct this research.[8] Analytical cross-sectional study design was used for this study.[9] The study was conducted at a Private College of Nursing, Islamabad during March to September 2020. The study population included neophyte students of the Bachelor of Science in nursing (BSN) program; this refers to year-1 students who were enrolled in the BSN Program. Universal sampling technique was employed in the current study.[10] Thus, finally 98 participants were recruited. All the students enrolled in the first semester of BSN program were invited to participate in the study.

Instrument

First section of the tool included demographic characteristics of the study namely gender, age, educational status and parent occupation of the student. Cordially, section two contained critical thinking dispositions; permission to use the tool was taken. Importantly, to minimize the barrier in assessment, CTDs scale is developed in Pakistani context; it is available in English as well as Urdu languages. This CTDs scale is beneficial because it can provide better understanding of the items in local context. The CTDs scale comprised of 54-items under seven constructs including contextual perspective (5-items) denotes taking into account the complete picture of the situation in hand and its actual circumstances prior to making any decision; perseverance (7-items) means an individual's level of self-control and willpower to remain persistent, determined and firm to serve the purpose; reflection (7-items) is an individual's' insight awareness to evaluate, critique and correct own behaviors and actions; intellectual integrity/ truth-seeking (9-items) is an ability to be consistent being logical, rational, straight forward, moral, truthful, self-disciplined,

and reliable while dealing with others and/or any situation; creativity (7-items) is an individuals' talent to do new things and thinking of innovative ideas; open-mindedness (10-items) means aptitude to give space to accept others' point of view and customs; and inquisitiveness (9-items) is considered as the eagerness to explore the depth and breadth of the hidden knowledge to comprehend the truth.[11] Responses of the items were measured on 5-point Likert scale from 1-5 (1-strongly disagree, 2-disagree, 3-somewhat agree, 4-agree, 5-strongly agree). From the 54-items, 42-items were positive and 12-items were negative. The negative items were marked inversely on the scale 1-5 (1-strongly agree, 2-agree, 3-somewhat agree, 4-disagree, 5-strongly disagree).

The CTD scale scores were divided in three levels: Positive, progressive and negative. Following were the category of level of Critical Thinking Disposition Scale (CTDS) used to calculate CTD cut off score in Table 1.

Table 1: Criteria of CTD Categories

Sr.	Level of CTD	Cut- off score	Percentage
1	Positive CTD level	216 – 270	80 – 100%
2	Progressive CTD Level	135 – 216	50 – 79.99%
3	Negative CTD Level	<135	<50%

The sub scales scores range from minimum to maximum: Contextual Perspective (5–25), Perseverance (7-35), Reflection (7-35), Intellectual integrity/ truth - seeking (9-45), Creativity (7-35), Open-mindedness (10-50) and Inquisitiveness (9-45). Each subscale cut off score was: 80-100% positive CTD level, 50-79.99% progressive CTD Level and less than 50% negative CTD Level.

Pilot Testing

Pilot-testing was conducted on 10% of the sample size that is nine students. The average time to complete the questionnaire was 20-minutes. Since the tool was in English and Urdu (national language) there was no linguistic or other problem identified in the pilot study. The Cronbach's alpha was measured at 0.847 which is favourable.[12]

Data collection

Data collection process was initiated after the approval of Institutional Review Board and Ethics Committee. Approval from institutional head was also taken. In order to maintain the principle of anonymity, a program secretary, who was trained for the data collection approached students after their class schedule to explain them about the purpose and other aspects of research concerning informed consent. Students were informed that their participation was voluntarily and have the right to withdraw from the study without giving a reason. Data collector generated the serial code and the primary researcher was kept blind regarding students' identity. Students were provided with the participants information sheet, consent form and data collection tool. Students were requested to return the forms after two days. Lastly, the data collector handed the data to primary researcher for the analysis.

Statistics

Data was analyzed using Statistical Package for Social Sciences SPSS (Version 23.0). Data was entered and assessed for inconsistencies. Descriptive statistics like mean, standard deviation were applied and frequency was calculated for demographic and CTD variables wherever applicable. Inferential statistics like chi-square or Fisher exact test was applied to measure the association between demographic variables and CTD variables.

Results

Data was thus collected from (n=98) participants, who were neophyte (se mester-1) BSN nursing students. Majority of the participants (50) had age between 15-20 years. Most were females (68.4%). Concerning educational background, 55 students completed their matriculation from the public and 57 completed their FSc from the private school system. Regarding occupation status 3/4th of the students' mothers were housewives and 32 of the fathers worked in private organizations. The average FSc marks of students were 67.6 ±9.9 whereas the entry test score was 70.7 ±5.4. Further details of demographic variables are presented in Table 2.

Table 2: Demographics

Variables		Frequency (%)
Age	15–20 years	50 (51.0)
	21–25 years	48 (49.0)
Gender	Male	31 (31.6)
	Female	67 (68.4)
Matric	Public	55 (56.1)
	Private	43 (43.9)
FSc	Public	41 (41.8)
	Private	57 (58.2)
Mother's occupation	Housewife	73 (74.5)
	Nurse	10 (10.2)
	Teacher	11 (11.2)
	Other	4 (4.1)
Father's occupation	Government	14 (14.3)
	Private	32 (32.7)
	Labourer	22 (22.5)
	Business	22 (22.5)
	Not working	8 (8.2)

The overall average critical thinking dispositions score was at 75%. Majority of the students had CTD at a progressive level. Out of seven constructs three constructs do not have negative level of CTD. Contextual (68) and inquisitiveness (64) constructs score revealed that participants had positive CTD. Highest numbers of students (91) were in progressive construct of open-mindedness. Furthermore, the average score of CTD constructs was between 20.4 to 37.0 with variation ranged ±1.8 to ±3.7. For detailed information of critical thinking disposition and its constructs refer to figure 1, table 3.

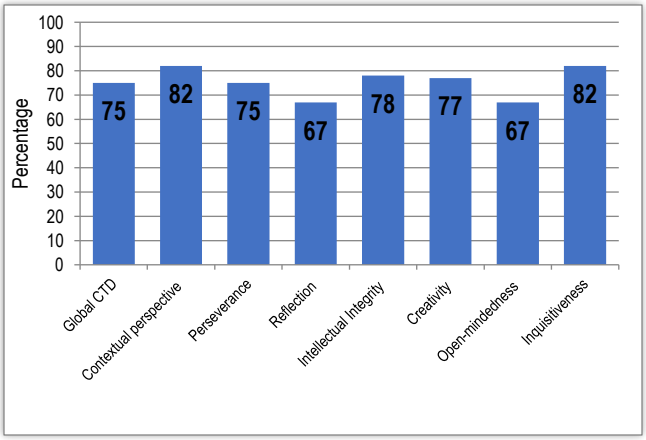

Figure 1: Percentages (levels) for global and constructs of CTD.

CTD constructs and demographic variables

Overall, there was no statistically significant difference of CTDs constructs among the demographic variables (P-Value, <0.05). In addition, all the subscales/constructs of CTDs were positive. The age was strongly associated with contextual CTD.

Table 3: CTD Score and its Constructs

Constructs of Critical Thinking Dispositions	Contextual CTD Levels		
	Negative	Progressive	Positive
	(≤49.99%)	(50-79.99%)	(80-100%)
	f(%)	f(%)	f(%)
Overall CTD	-	83 (84.7)	15 (15.3)
Contextual	-	30 (30.6)	68 (69.4)
Perseverance	-	60 (61.2)	38 (38.8)
Reflection	3 (3.1)	80 (81.6)	15 (15.3)
Intellectual Integrity	1 (1.0)	51 (52.0)	47 (48.0)
Creativity	1 (1.0)	54 (55.1)	43 (43.9)
Open-mindedness	2 (2.0)	91 (92.9)	5 (5.1)
Inquisitiveness	-	34 (34.7)	64 (65.3)

Contextual

High numbers of students (38) between ages 15-20 years are found in positive contextual CTD level. Majority of the students with matric from public sector school and FSc from private sector school are in positive level of contextual CTD.

Perseverance

Thirty students between ages 15-20 years are found in progressive perseverance CTD level. The female students are at progressive perseverance CTD score (46) as compared to male students (14), though male were less in number. Students who have completed their matric schooling from public and FSc from the private schools are progressive level. Furthermore, in term of mother and father occupation perseverance CTD scores are at progressive level.

Reflection

Forty-three students between ages 21-25 years are found in progressive reflection CTD level. The gender is strongly associated with reflection CTD levels. Female students are at progressive reflection CTD score (53) as compared to male students (27). Majority of students with

matric from public sector school and FSc from private sector school are in progressive level of reflection CTD. Furthermore, in term of mother and father occupation reflection CTD scores are at progressive level.

Intellectual-Integrity/Truth Seeking

The age was strongly associated with intellectual integrity CTD. Twenty-nine students between ages 21-25 years are found in progressive intellectual integrity CTD level. Female students showed positive intellectual integrity CTD score (37) as compared to male students (14). Majorly the students with matric from public sector school and FSc from private sector school are at progressive level of reflection CTD.

Creativity

The age was strongly associated with creativity CTD as well as its level. Thirty-three between ages 15-20 years are found in progressive creativity CTD level. Female students are more at the progressive creativity CTD scores (37) as compared to male students (17). The majority of the students with matric from public sector school and FSc from private sector school are at progressive level of creativity CTD. There is strong association between father occupation and creativity CTD score.

Inquisitiveness

Thirty-five students (35) age between 15-20 years are found in positive inquisitiveness CTD level. Female students have positive inquisitiveness CTD scores (40) as compared to male students (24). The majority of the students with matric from public sector school and FSc from private sector school are at positive level of inquisitiveness CTD.

Open – Mindedness

Majority of the students (47) age between 15-20 years are found at progressive open- mindedness CTD level. On the basis of gender, female students have positive open-mindedness CTD scores (62) as compared to male students (29). There is strong association between schooling backgrounds of matric with open-mindedness in Table 4.

The results indicated that the performance of students in FSc and BSN entry test was significantly associated with intellectual construct of CTD. While other CTD constructs including contextual perspective, perseverance, reflection, creativity, open-mindedness and inquisitiveness showed weaker association. The inter construct association of reflection was significantly associated with contextual and perseverance. The association of intellectual construct with contextual, perseverance and reflection constructs was significant. Students' score in open-mindedness was statistically significant associated with scores in contextual, intellectual and creativity constructs. The inquisitiveness was the only construct that has significant relationship with all the CTD constructs; contextual, perseverance, reflection, intellectual, creativity, open-mindedness, and inquisitiveness. The correlation scores indicated that overall CTD score was intermediately associated with the entire constructs of the CT in Table 5.

Table 4: Association of CTD constructs with demographic variables

Demographic Variables		Contextual		Perseverance		Reflection		Intellectual		Creativity		Inquisitiveness		Open mindedness	
		Mean ± SD	Sig.	Mean ± SD	Sig.	Mean ± SD	Sig.	Mean ± SD	Sig.	Mean ± SD	Sig.	Mean ± SD	Sig.	Mean ± SD	Sig.
Age	15–20 years	20.7 ±1.6	.050	26.1±3.2	.967	24.2±3.9	.079	35.9±3.8	.052	26.3±3.1	.056	37.3±3.3	.348	33.3±3.6	.771
	21–25 years	20.0 ±1.9		26.1±2.9		22.9±3.1		34.5±3.2		27.6±3.5		36.6±3.5		33.5±3.9	
Sex	Male	20.4 ±1.6	.940	26.4±2.9	.574	23.3±3.6	.599	35.4±4.0	.758	26.9±3.7	.862	37.0±3.0	.918	33.7±3.4	.588
	Female	20.4 ±1.9		26.0±3.1		23.7±3.6		35.2±3.4		27.0±3.2		36.9±3.6		33.3±3.9	
Matric	Public	20.4 ±1.7	.812	26.2±2.5	.804	23.2±3.7	.169	35.2±3.6	.775	27.2±3.4	.395	37.0±3.6	.959	34.1±3.1	.034
	Private	20.3 ±1.9		26.0±3.6		24.2±3.4		35.4±3.6		26.6±3.3		37.0±3.2		32.5±4.3	
FSc	Public	20.5 ±1.9	.596	26.2±2.8	.759	23.4±3.9	.702	35.2±3.8	.979	26.7±3.4	.979	36.8±3.6	.628	33.6±3.8	.732
	Private	20.3 ±1.8		26.1±3.2		23.7±3.3		35.3±3.4		27.2±3.4		37.1±3.3		33.3±3.7	
Mother occupation	House wife	20.6 ±1.7	.295	26.6±2.8	.077	24.0±3.5	.105	35.6±3.4	.199	27.2±3.4	.392	37.2±3.6	.789	33.8±3.6	.249
	Nurse	19.5 ±2.4		24.9±3.2		22.4±3.3		34.8±3.9		26.7±3.6		36.5±2.9		30.9±4.7	
	Teacher	19.9 ±2.0		25.0±3.5		23.3±4.1		33.0±3.6		25.5±3.3		36.6±3.1		32.7±2.8	
	Other	21.0 ±0.8		23.7±1.9		20.3±2.1		35.5±4.4		27.3±3.1		35.5±3.3		34.3±3.0	
Father occupation	Govt.	20.3 ±2.0	.925	26.3±2.3	.142	22.3±3.5	.182	36.4±3.3	.180	27.9±3.6	.045	37.4±3.4	.540	32.6±2.9	.112
	Private	20.5 ±1.8		26.9±3.1		24.0±3.9		35.1±3.6		25.4±3.4		36.8±2.8		32.6±4.1	
	Laborer	20.1 ±1.5		25.0±2.8		23.8±2.9		33.7±3.4		27.9±3.1		37.6±3.5		33.3±3.4	
	Business	20.5 ±1.5		25.8±3.0		23.2±3.6		36.1±3.5		27.5±2.9		36.9±4.1		34.3±3.7	
	Not working	20.5 ±2.0		26.4±4.0		24.5±4.1		35.9±4.0		27.5±3.5		35.5±4.0		36.0±2.9	

Table 5: Pearson's Correlation of FSc Marks and Entry Test with Constructs of CTD

		FSc Marks	Entry Test Marks	Contextual	Perseverance	Reflection	Intellectual Integrity	Creativity	Open mindedness	Inquisitiveness
Entry Test Marks	Pearson's R	0.530*								
	p value	0.001								
Contextual	Pearson's R	0.189	0.165							
	p value	0.063	0.105							
Perseverance	Pearson's R	0.089	0.091	0.140						
	p value	0.387	0.377	0.169						
Reflection	Pearson's R	0.109	0.092	0.341*	0.445*					
	p value	0.289	0.373	0.001	0.001					
Intellectual Integrity	Pearson's R	0.242*	0.223*	0.230*	0.316*	0.333*				
	p value	0.017	0.028	0.023	0.002	0.001				
Creativity	Pearson's R	-0.024	-0.064	0.035	0.125	0.017	0.080			
	p value	0.812	0.534	0.733	0.219	0.871	0.431			
Open mindedness	Pearson's R	0.090	0.062	0.331*	0.185	0.132	0.289*	0.273*		
	p value	0.382	0.544	0.001	0.069	0.197	0.004	0.007		
Inquisitiveness	Pearson's R	0.232*	0.171	0.282*	0.263*	0.250*	0.342*	0.361*	0.262*	
	p value	0.022	0.095	0.005	0.009	0.013	0.001	0.000	0.009	
Overall CTD Score	Pearson's R	0.218*	0.172	0.492*	0.598*	0.606*	0.646*	0.480*	0.613*	0.676*
	p value	0.032	0.092	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Discussion

Critical thinking attitudes of nursing students were predominantly at the progressive level. These findings are consistent with international studies conducted in Korea at the being of educational programs.[13] Whereas another international study reported lower level of CTDs.[1] These findings have eminence that critical thinking disposition is at positive level in the start of their professional career, perhaps due to their curiousness and eagerness towards new knowledge, the other underpinning. Conversely, students who show low level of CTDs might have difficulty adjusting with the knowledge imparted to them or maybe they were less exposed to the problem solving and decision making.

The current study did not find the association of age with CTDs. Whereas a Korean study reported a positive relationship between age and the CTD.[13] The contextual differences in the educational system may have contributed to the CTD development among the Korean students. The previous studies have shown a variety of discrepancy regarding link of gender with CTDs which continue with the findings of current study reporting no association. This fact is further supported by no statistical significant difference of CTDs among male and female nursing students.[14] However, CTDs scores of female students were higher in current study aligning with a Brazil

study on undergraduate nursing students of year one, two and three has recognized that female exhibits positive in dispositions analyticity and maturity.[15] This fact may be a result of higher number of female samples in these studies.

The effect of students' previous education on CTDs is also debated in the literature. Aligning with an international study[16] no association was found in the current study. Critical thinking improves when students are engaged with active teaching and learning strategies.[17] However, despite of the research supporting that the benefits of utilizing different teaching learning strategies, nursing teachers are still utilizing traditional teaching learning strategies.[18]

Parenting role is considered important for the cognitive and behavioral development of the student. The present study found positive association between the mother's occupation and the CTDs. In Pakistani society, fathers predominantly play the role of bread winner whilst mothers assume a homemaker role. Therefore, mothers spend more time with the children which help them to develop critical thinking through motherly lens. Mothers rearing that is emotional warmth and understanding facilitate the development of CTDs.[19] Current study also found that students who have had high scores in their previous education performed better in the entrance test examination of nursing. Further there was moderate correlation between previous education and entrance test. Those who consistently scored higher also scored higher in the intellectual construct of CTDs. While high performance was associated with maturity and engagement in another study.[20] Perhaps internal consistencies of CTD construct affects each other. Therefore, high performing students could use different aspects of CTD to perform better.

The constructs of CTDs were evaluated to enlighten the depth of critical thinking among the nursing students. The systematicity construct was at progressive and positively associated with the FSc performance of the students. The contextual perspective was at the positive level and strongly associated with the age. As the age increase the exposure and experience also increase which leads to increase in contextual perspective of CTD. Among the seven subscales, intellectual integrity reported second highest score in this study and positively associated with gender, previous schooling type and age.

The intellectual integrity score was high of female and the students who studied previously from private schooling system. Further, the younger student intellectual integrity was high. Comparatively female comprises most of the study participants therefore results may have inclined toward them. The competition among the private schools to attract students stimulate them to use active teaching and learning strategies and providing them resources for the learning which help them to develop higher intellectual integrity. High score among younger age group in current study is contrary to other study.[1] The curiosity attribute to seek more information among younger may have contributed to the higher intellectual integrity. Regarding creativity construct of CTDs, the female students scored higher consistent with a Turkish study.[21] Same pattern was evident in reflection construct. Perhaps, female face more challenges during their upbringing. Majority of students in the current study scored higher in open-mindedness construct which consistent with study conducted in Istanbul.[1] These findings could be due to students being in their initial career, having a strong desire to learn, which propels them to accept others' views. In the current research an illuminated construct of CTD was inquisitiveness, and findings are consistent with international studies.[1,7,22] Female gender and those who studied FSc from private institution showed more inquisitiveness and the possible reason might be that they were exposed to innovative pedagogical strategies. The other reason could be their motivation towards learning increase inquisitiveness.

Strengths and limitations

The baseline data of critical thinking dispositions and its association with different demographic variables of neophyte was gathered in the Pakistani context. A follow-up longitudinal cohort and interventional studies could be conducted to develop CTDs among nursing and health profession disciplines. The tool used for data collection was developed in a Pakistani context and it was bilingual. The study was conducted on students from a private nursing institute, so the study findings are contextual, but could compare with private nursing colleges in Pakistan.

Recommendation

Institutions who envision their students a critical thinker should incorporate teaching, learning and assessment strategies potential to develop CTDs. Teachers are driving forces for this purpose. They should be prepared to impart and role-model CTDs. Longitudinal cohort and interventional studies may be conducted to evaluate the type of teaching, learning and assessment strategies would develop critical thinking dispositions. CT can be taught and developed in nursing students through various teaching, learning and assessment strategies.[23]

Conclusion

This study revealed the baseline data of nursing students' critical thinking dispositions which is at a progressive level. The CTD scores were higher for contextual perspective and inquisitiveness whereas lower in reflection and open-mindedness. Few students showed the negative critical thinking dispositions concerning reflection, intellectual integrity, creativity and open-mindedness therefore require educational strategies for improvement and possibility of interventional studies in the future. Of importance, the study highlighted significant association with previous education marks with CTD. Further, the intermediate correlation between the CTDs' constructs warrant, when one construct improves others would also improve producing a ripple effect. It is also believed that the findings can be used as guide to develop policy pertinent to CTD.

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