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Critical Thinking Ability for Respiratory Ward Staff from King Abdulaziz Medical City (KAMC), Riyadh, Kingdom of Saudi Arabia

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Abstract

Worldwide, in the health care field, it is required to have a high critical thinking ability in order to be successful in the current healthcare environment. National Council for Excellence in Critical Thinking defined critical thinking as **"**the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered forms, or generated by, observation, experience, reflection, troubleshooting, reasoning, or communication, as a guide to belief and action.". In respiratory care, respiratory staff must think critically to make good decisions and figure out solutions in intensive situations. Therefore, respiratory therapy ward staff has to acknowledge the importance of reasoning thinking in their job in order to improve it. One of the advantages of thinking critically in respiratory care is to provide high quality respiratory care to patients. Respiratory staff should have the ability to define patient care issues with a high level of accuracy. There is verity of situations that required critical thinking from the respiratory staff including emergency situations, troubleshooting to respiratory care equipment's, patient care, and sharing information regarding certain diseases. In addition, research's evidence showed that the essential of critical thinking is increasing in respiratory care staff since they deal with acutely ill patients, sophisticated equipment and technology, and face complicated ethical questions. Accordingly, measuring critical thinking plays an important role in improving the decision making of individuals at their jobs or training. Consequently, it is important to measure critical thinking ability of respiratory therapy ward staff in order to understand the strength and weakness of them which can easily improve by settings of development plans and goals. However, there is lack of published researches about enhancing respiratory staff critical thinking in Saudi Arabia. Hence, the aim of this study was to see the effect of working in the wards in the respiratory therapy wards staff's critical thinking.

Review of Literature

Critical thinking is a notion that has been developing throughout the past 2500 years. [1] It is known as self-directed thinking that analyzes the way of reaching a result. Critical thinking involves effective communication, decisions making, and figuring out solutions to complex problems. [2] National Council for Excellence in Critical Thinking defined critical thinking as **"**the intellectually disciplined process of actively and skillfully

conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered forms, or generated by, observation, experience, reflection, troubleshooting, reasoning, or communication, as a guide to belief and action.". [3][4][5] Enhancing person's skill of critical thinking can significantly increase the likelihood of a person's success in her/his job. [6][7][8] There are many standards that measure critical thinking ability which include The General Management Aptitude Test (GMAT The SHL Critical Reasoning Test Battery, The Cornell), Critical Thinking Assessment, California Critical Thinking Skills Test (CCTST), Verbal and

. Numerical Critical Reasoning, and Watson Glaser Critical Thinking Appraisal (W-GCTA) These psychometric tests are crucial because they determined an individual's ability of]9][2[thinking. [10] Watson Glaser (W-GCTA), which is the most common standard, is a psychometric test of critical thinking that was developed by Goodwin Watson and Edward Glaser. [11][12] In 2010, a revised version of W-GCTA was established and named W-GCTA ll. [13] W-GCTA test focuses on measuring the depth and quality of critical thinking, yet the speed at which an individual can perform. [14][15] It has two forms; the first one consists of 40 questions in 30 minutes, while the other consists of 80 questions in 60 minutes. Moreover, W GCTA test can be conducted untimed. [16] W-GCTA has five sections which are composed of scenarios and variety of questions that include problems, arguments, and statements. [11] These five sections are assumptions, analyzing arguments, deductions, inferences, and interpreting information. [16] Establishing how an individual can think logically is the reason why these five sections are specially designed. [17] Since W-GCTA is a clear and well-structured test, it is considered as one of the main evaluating tools for measuring critical thinking ability. [14][15] Additionally, a *Mental Measurement Yearbook Review* noted that "Waston-Glaser is distinguished by its voluminous research and validity studies (Geisenger, 1998)". [11]

The study measures critical thinking ability of respiratory therapy ward staff in order to understand the strength and weakness of them which can easily improve by settings of development plans and goals. [11] Measuring critical thinking plays an important role in improving the decision making of individuals at their jobs or training. [12][14][18] As a result, psychometric tests can be used in jobs which require critical thinking such as in health care. [14]

Health care staffs require high level of critical thinking since they diagnose a wide range of symptoms and deal with specific conditions to assess the treatment. [15][17] They do not only make critical assessments prior to treatment, but they must often make urgent and critical decisions since they are deal with real life situation Improving reasoning thinking in health care

providers minimizes repeated errors, wrong decisions, and inaction when reaction is needed.[19][20]

Material and method

A cross-sectional design was used in this study. The study protocol received ethical approval from the Research Council of the King Saud Bin Abdulaziz University-medical School (Saudi Arabia) before the study was conducted. The study took place at King Abdulaziz Medical City (KAMC), Riyadh, Kingdom of Saudi Arabia. It included all respiratory therapy ward staff for a total of 56 staff. The short form of Watson Glaser Critical Thinking Appraisal (WGCTA) was used to measure respiratory therapy staff's critical thinking ability. The test consists of 40 questions of 5 sections related to assumptions, arguments, deductions, inferences, and interpreting information. The participants had to complete the questionnaire within the set time limit of 30 minutes. The collected data was entered in excel and then exported to the Statistical Package for Social Sciences SPSS

(version 22). Tables and figures were used to represent the result. Frequencies and percentages were used to represent categorical variables, whereas mean and SD were used for continuous variables.

Results

The number of staff included in the study was 56. (73.21%) of them responded to our questionnaire. Among them, there were (56.1%) female and (43.9%) male. The age range was between 20 and 50 years. For more information about the staff demographic date see table 1.

	Count	Column N%
Gender		
Male	18	43.9%
Female	23	56.1%
Age		
20-30 years	2	4.9%
31-40 years	16	39.0%
41-50 years	13	31.7%
Years of experience		
< 1 year	1	2.4%
1-10 years	1	2.4%
11-20 years	25	61.0%
21-30 years	14	34.1%

Table 1: demographic characteristics

The mean score of staff was evaluated by statistical package for social sciences (SPSS). The frequency of scores on WGCTA-S is shown in figure1. The mean critical thinking score on WGCT-A among the staff was 18.49 with a minimum score of 3 and a maximum score of 25 (table2). Moreover, the frequency of the staff score in each test of WGCT-A is shown in table 3. As a result, the critical thinking ability of the respiratory therapy staff was considered on the average range since their score was 46.225%.

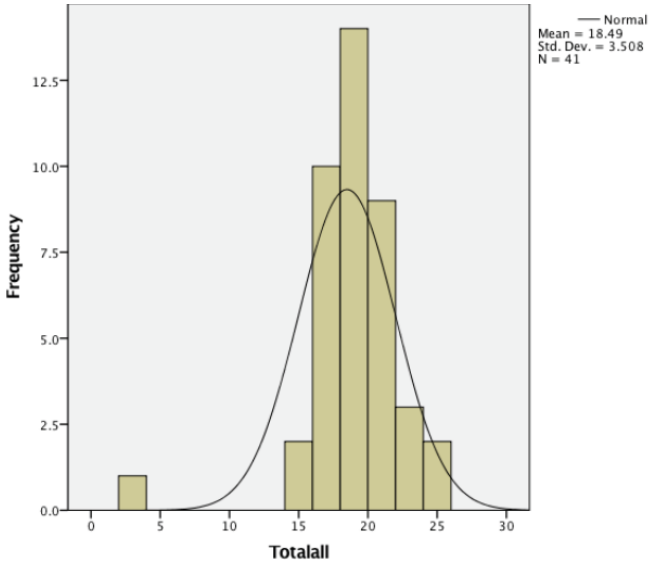

Figure1: Frequencies of the staff scores

Total all	N	minimum	Maximum	Mean	Std. Deviation
Valid N	41	3	25	18.49	3.508

Table2: score of all 5 tests

	n	Minimum	Maximum	Mean	Std. Deviation
TotalQ1	41	0	4	1.85	1.062
TotalQ2	41	0	8	3.76	1.480
TotalQ3	41	0	7	4.44	1.119
TotalQ4	41	0	6	3.12	1.435
TotalQ5	41	0	9	5.32	2.005
Valid N	41				

As shown in figure1, ANOVA test was used to compare the difference between the score and years of experience. The result showed no significant difference among the staff with longeryears of experience. In other words, years of experience did not affect the result.

Discussion

The result of the study showed that the critical thinking ability of respiratory therapy staff working in King Abdulaziz Medical City (KAMC), Riyadh, Kingdom of Saudi Arabia is within the average. Since their job requires high level of critical thinking because they are dealing with real life situations, their critical thinking score was below our prospect. Even though, the respiratory staff with longer years of experience and more exposure to variety of cases there was no significant

difference compared to the staff with shorter years of experience. As long as there is no enough researches in critical thinking among respiratory therapy ward staff, this research result might be associated with two main reasons, which are the test itself and the staff's work. We used the short from of Watson Glaser Critical Thinking Appraisal test (W-GCTA) which consists of 40 questions, even though it still took a long time (approximately 30 to 40 minutes), and the staff have long working hours with short breaks. Although the W-GCTA test has been widely used to measure critical thinking ability (11), it might not be the ideal psychometric test for respiratory therapy ward staff. Additionally, other possible explanations of the staff's average result are either they did not answer the questionnaire fairly, since most of them answered it during their work hours, or because they work in unchallenging environment that result of lacking motivation. Respiratory therapy staff must think in critical way in order to provide optimal care while dealing with different severity of cases. Therefore, in order to improve critical thinking in respiratory therapy ward staff. They must be supported and have a motivating working environment. For instance, there should be trainings, courses, and progress tests to evaluate their levels frequently. Conversely, if the environment was not motivating, these individuals will stay in the same level, and there critical thinking will be less than average. Lastly, we compared our result to two previous studies; one of them was to assess criticalthinking behaviors of respiratory therapists using a quantitative survey research method. Their participant got a high critical thinking score in prioritizing, troubleshooting, and communicating. And lower critical thinking score in Anticipating. The other study was made on respiratory therapy students from King Saud bin Abdulaziz University for Health Sciences to see the effect of problem based learning (PBL) method. The student were categorized into batches, batch 1 (graduate), batch 2 (interns), batch 3 (seniors), batch 4 (juniors). It resulted in an average score.

Study limitations

There was small sample size since the number of respiratory ward staff in the hospital was limited. Also there was no enough time since respiratory therapy staff is busy throughout the day, and the questionnaire takes about 30 to 40 minutes from each person. In addition to challenge of not being able to contact with the night shift staff easily. As well as the data was incomplete since some of the staff refused to participate and was uncooperative. Furthermore, language barrier because the questionnaire was written in English and the staff level is average.

Conclusion

The main score of the respiratory therapy staff in KAMC was average. Additionally, years of experience did not affect the result. To develop staff's critical thinking ability, further research in other hospitals is needed to evaluate the respiratory therapy ward staff's level in critical thinking to compare it with this study results. Also, it is recommended to use a variety of critical thinking ability outcome measures.

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