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RESEARCH ARTICLE

STUDENT OPINION ABOUT SCRIPT CONCORDANCE TEST, JEDDAH, KSA

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Abstract

Background: Medical students undergo rigorous medical training to acquire appropriate skills in areas of clinical reasoning and professional skills, among others. The Script Concordance Test(SCT) was developed in Canada to assess the clinical reasoning skills of students to ensure that they have the necessary knowledge and skills to execute functions effectively in clinical environments characterized by uncertainty.

Methodology: The current study was conducted to assess the opinions of Saudi health students regarding the SCT. In the study, a cross-sectional study with online questionnaires used to survey and collect data from study participants. The quantitative method of data analysis used yielded essential outcomes.

Result: The study found that female students had more knowledge about the test than male students. Likewise, KSA students were more knowledgeable than non-KSA students. Among the KSA students, participants from KAU had more knowledge about the test than students from other universities.MORE IS NEEDEDWITH FIGURESAND SIGNIFICANCE

Conclusion: Overall, postgraduate students showed more knowledge about the test than undergraduate students. The test was generally accepted, but knowledge about it could be enhanced further among the students.

Introduction:-

Medical students go through the initial training to gain medical skills. The goal is achieved if the students master three crucial areas, namely; clinical reasoning, theoretical knowledge, as well as professional skills(Subra et al., 2017). It is noteworthy that students acquire clinical skills along with professional skills are during postgraduate training, involving practical training.

Formative assessment is critical for the acquisition of medical knowledge. In particular, the assessment helps to learn by permitting students to identify their weaknesses along with strengths and help to improve learning(Subra et al., 2017). Consequently, it is vital to assess medicalstudents' core competencies in their specialtyareas during clinical practice sessions. The assessment can be used to harmonize practice with learning, particularly in medical practice. Significantly, different countries use different tests to evaluate the clinical skills of the students.

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Clinicians mobilize organized knowledge networks known as scripts, which they use in processing information and moving toward achieving solutions to clinical problems. The networks of knowledge are attained during clinical training and polished with every clinical encounter (Fournier, Demeester&Charlin, 2008). Importantly, the networks are particularly adapted to the tasks that clinicians usually perform. Scripts comprise of links between illnesses, clinical features as well as management choices. Health professionals rely on hypotheses and related knowledge networks to progress toward solutions (Fournier et al., 2008). The professionals continually use options and scripts to make judgments on the effects of every new piece of information on the option or hypothesis.

The script concordance test (SCT) developed in Canada more than 17 years ago has been used in the assessment of the clinical reasoning of students. The tool reveals the level that the judgment of candidates maps to the reference panel for the specialty being assessed in cases of clinical uncertainty. Indeed, the tool offers a standardized assessment of the reasoning process that is applied to clinical cases without appropriate clinical definitions and has helped differentiate students as well as experts in relevant disciplines. Therefore, the SCT is used to assess the capacity of students to reason when exposed to complex problems that require not just the application of knowledge. Essentially, any divergence between the response of the student and expert's helps to identify the areas that the student may require more training.

The SCT offers students various uncertain clinical situations. After the introduction of the scenario, an additional three pieces of information are given separately from one another. Students are required to make decisions regarding diagnosis, investigation as well as a treat for the three pieces of information provided, including answering questions on a Likert scale with five points. This study was conducted to estimate the opinions of the script concordance test among health students in Saudi Arabia. The hypothesis for the study is that Saudi health students have a favorable opinion about the script concordance test.

Methodology:-

A cross-sectional study was conducted in Saudi Arabia using an electronic questionnaire with motion graphic video to explain the process of assessment of the SCT.A cross-sectional study is an observational study that evaluates exposure as well as the outcome at a particular point in time in a given study sample. This kind of study does not have prospective, or even retrospective follow up. However, causality cannot be inferred using the cross-sectional study because it is not possible to establish a temporal sequence. Study participants in cross-sectional studies are selected based on the inclusion and exclusion criteria for the study. After the selection of study participants, the investigator then follows the study to evaluate the exposure as well as the outcome.

A cross-sectional study design is an observational study where the investigator does not change the status of exposure but measures the effects of the exposure. All participants in a cross-sectional study are measured for results as well as exposure at the same time (Setia, 2016). Therefore, it becomes possible for the investigator to study the association between the variables.This study design was considered because it was relatively faster and inexpensive. Similarly, the investigator considered the study design because of the belief that it could give information regarding exposures. Thirdly, the design was considered because of its usefulness in planning, monitoring, as well as evaluation. The limitation of this design is that it is a one-time measurement of exposure alongside outcome; therefore, it is not easy to determinecausal relationships from analysis (Setia, 2016).

The online survey is advantageous because it enables the investigator to collect data from many participants in a short period. Likewise, the online method of data collection creates a stringer external validity when the sample data is from a larger accessible population(Rice et al., 2017). Moreover, online surveys enable the researcher to target a specific age and gender for the study. Lastly, data quality continues to be a significant concern for research that is not conducted on a face-to-face basis. However, online data collection allows researchers to rate the performance of research participants subjectively. Therefore, the researcher can reject the works of participants who fail to complete tasks or filter participants using pre-determined criteria.Filtering potential participants before the commencement of the investigation ensure that the researcher accepts only participants who achieve a particular higher approval rating (Rice et al., 2017). Lastly, the anonymity of study participants is critical in order to provide factual data. An online survey canguarantee the anonymity and protection of study participants.

In the study, a total of 106 students filled the electronic questionnaires with ten survey questions that were answeredusing a 4-point Likert scale. The questionnaires contained questions regarding satisfaction, understanding, method of evaluation, format, whether it can be used in the future, the ability to use it as part of the Saudi medical

license exam, participation in SCT, and recommending the testing to others. Demographic information considered for the study included; sex and nationality. Also, students and staff from the colleges of medicine, dentistry, and pharmacy completed the questionnaires. In particular, the investigator chose students in the 2nd, 3rd, 4th, 5th, and sixth years of study as well as those in internship, residency, specialists, and consultants.

Results:-

Table 1:- Demographic factors, Total no 106.

		n	%
Sex	**Female**	26	24.5%
	Male	80	75.5%
Nationality	**KSA**	100	94.3%
	Other	6	5.7%
University	**KAU**	54	50.9%
	Non-KAU	52	49.1%
Level	**Post Graduate**	30	28.3%
	Under Graduate	76	71.7%
College	**Medicine**	80	75.5%
	Other Health sciences	26	24.5%

There were 106 study participants with 75.5% and 24.5% male and female, respectively. The majority of the participants, 94.3% were from the Kingdom of Saudi Arabia (KSA) while the rest, 5.7% were from other nationalities. At the university level, 50.9% of the participants were KAU, while 49.1% were non-KAU. Postgraduate students accounted for 28.3% of the participants, while 71.7% were undergraduate students. Importantly, the college of medicine had most of the respondents representing 75.5% of the respondents, while the other colleges of health sciences had 24.5% of respondents.

Table 2:- Prior knowledge about SCT by various demographic factors.

		Knowledge about the existence of these script concordance tests				**P-Value**
		No		**Yes**		
		n	**%**	**n**	**%**	
Sex	**Female**	15	57.7%	11	42.3%	0.246
	Male	56	70.0%	24	30.0%	
Nationality:	**KSA**	69	69.0%	31	31.0%	0.071
	Other	2	33.3%	4	66.7%	
University	**KAU**	41	75.9%	13	24.1%	0.046*
	Non-KAU	30	57.7%	22	42.3%	
Level	**Post Graduate**	15	50.0%	15	50.0%	0.020*
	Under Graduate	56	73.7%	20	26.3%	
College	**Medicine**	55	68.8%	25	31.3%	0.497
	Other health sciences	16	61.5%	10	38.5%	

The study finds that 42.3% of the female participants knew of the existence of the SCTs with the analysis showing a P-value of 0.246. Therefore, the investigator failed to reject the null hypothesis from the study. On the other hand, 30% of the males had prior knowledge regarding the existence of SCT before the test, while 70% lacked prior knowledge about SCT before the test.

In terms of nationality, the analysis finds that 31.0% of students from KSA with a P-value of 0.071 had prior knowledge regarding the existence of SCTs before the study. Similarly, in this case, the investigator failed to reject the null hypothesis. Sampled respondents from other nationalities with prior knowledge on SCTs totaled 66.7%.

Moreover, 24.1% of university-level respondents originating from KAU reported having had prior knowledge of the existence of SCTs. The P-value for this category of respondents was 0.046, meaning that the null hypothesis was

rejected. The investigator found that 50% of the postgraduate students with a P-value of 0.020 knew of the existence of the SCT. Therefore, the null hypothesis was rejected. On the other hand, 26.3% of the study participants did not know of the existence of the SCTs. Importantly, 31.3% of study participants from the college of medicine with a P-value of 0.497 reported that they had prior knowledge about the existence of SCTs. Therefore, the null hypothesis was rejected. On the other hand, 38.5% percent of participants from other colleges of health sciences reported having had prior knowledge about the SCTs.

		Knowledge about the existence of these script concordance tests				
		No		**Yes**		
		n	**%**	**n**	**%**	**P-Value**
2. Are you satisfied to have participated in this test?	**No, Not at all**	11	84.6%	2	15.4%	0.251
	No, Not really	9	75.0%	3	25.0%	
	Yes, Somewhat	32	68.1%	15	31.9%	
	Yes Completely	19	55.9%	15	44.1%	
3. Did you understand the teaching value of taking such a test?	**No, Not at all**	13	86.7%	2	13.3%	0.294
	No, Not really	9	69.2%	4	30.8%	
	Yes, Somewhat	24	66.7%	12	33.3%	
	Yes Completely	25	59.5%	17	40.5%	
4. Do you think this method of evaluation would enhance your learning?	**No, Not at all**	7	87.5%	1	12.5%	0.043*
	No, Not really	14	87.5%	2	12.5%	
	Yes, Somewhat	30	68.2%	14	31.8%	
	Yes Completely	20	52.6%	18	47.4%	
5. Were you uncomfortable with the format of the questions?	**No, Not at all**	11	52.4%	10	47.6%	**0.094**
	No, Not really	22	73.3%	8	26.7%	
	Yes, Somewhat	30	76.9%	9	23.1%	
	Yes Completely	8	50.0%	8	50.0%	
6. Do you think this type of test is useful for your future medical practice?	**No, Not at all**	4	100.0%	0	0.0%	0.045*
	No, Not really	13	86.7%	2	13.3%	
	Yes, Somewhat	32	69.6%	14	30.4%	
	Yes Completely	22	53.7%	19	46.3%	
7. Do you think this type of test should be part of the SLE?	**No, Not at all**	14	77.8%	4	22.2%	0.208
	No, Not really	16	76.2%	5	23.8%	
	Yes, Somewhat	27	67.5%	13	32.5%	
	Yes Completely	14	51.9%	13	48.1%	
8. If you were invited to participate in another script concordance test, would you accept it?	**No, Not at all**	4	80.0%	1	20.0%	0.114
	No, Not really	12	80.0%	3	20.0%	
	Yes, Somewhat	40	71.4%	16	28.6%	
	Yes Completely	15	50.0%	15	50.0%	
9. Would you recommend this test to	**No, Not at all**	8	80.0%	2	20.0%	0.171
	No, Not really	7	63.6%	4	36.4%	

your colleagues who have not yet taken it?	**Yes, Somewhat**	36	75.0%	12	25.0%	
	Yes Completely	20	54.1%	17	45.9%	
10. Would you find it useful to be evaluated by this method in the future?	**No, Not at all**	8	88.9%	1	11.1%	**0.065**
	No, Not really	13	76.5%	4	23.5%	
	Yes, Somewhat	31	72.1%	12	27.9%	
	Yes Completely	19	51.4%	18	48.6%	

Study participants were asked if they were satisfied with the test; however, only 15.4% noted that they were not at all satisfied and the analysis showed that the P-value of 0.251 meaning the null hypothesis was rejected. Also, the participants were asked if they understood the value of teaching using the SCTs. The result showed that 13.3% of the participants did not understand it at all and the P-value was 0.294 meaning the null hypothesis was rejected; however, when the participants were asked if they thought that the method of evaluation would enhance their learning, 12.5% noted that they did not understand it at all. The P-value obtained was 0.043, meaning that the investigator would fail to reject the null hypothesis. Furthermore, the investigator questioned the participants if they were not comfortable with the format of the questions. The result showed that 47.6% of the participants with a P-value of 0.094 were not comfortable with it at all; hence, the null hypothesis was rejected. In contrast, 47.4% of the participants were delighted with the format that was used to set the questions.

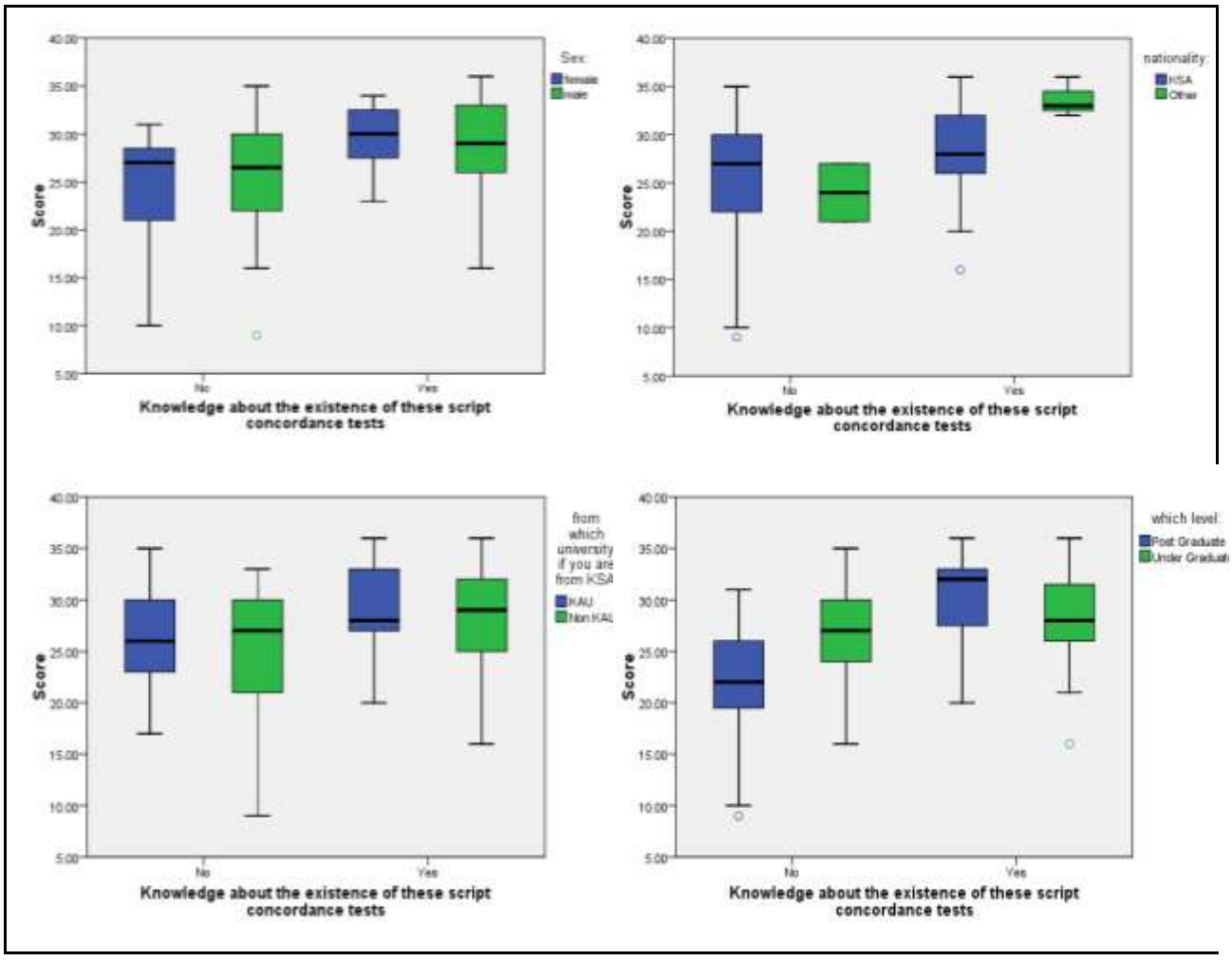
The participants questioned if they thought that test would be useful in their future practice. From the result, 0.0% of the respondents with a P-value of 0.045 did not think at all that the test would be useful in their future practice. Therefore, the investigator failed to reject the null hypothesis. Also, when the respondents were asked whether they believed that the kind of test should be included in the SLE, 22.2% of the respondents did not think at all that that the test should part of the SLE. The P-value for the analysis was 0.208, meaning that the null hypothesis was rejected.

The respondents were asked if they would take part in another SCT if they were invited, and 20% of the respondents with a P-value of 0.114 noted that they would not do it at all again, implying that the null hypothesis was rejected.Significantly, the investigator asked the participants if they would not recommend the SCT to their colleagues, and 20% with a P-value of 0.171 showed that they would recommend the test at all. Therefore, the null hypothesis was rejected. Finally, when the investigator asked whether they found it useful to be evaluated using the method, 11.1% of the respondents claimed that they did not find it useful at all and had a P-value of 0.065; therefore, the null hypothesis was rejected.

Table 4:- Comparison of SCT perception score with prior knowledge about SCT.

Knowledge about the existence of these script concordance tests		N	Mean	Median	Std. Deviation	Std. Error Mean	P-Value
	Yes	35	28.6857	29.0	4.80056	.81144	0.028*
	No	71	25.4085	27.0	5.74351	.68163	

In this comparison, the investigator found the P-value to be 0.028. As a result, the investigator failed to reject the null hypothesis.



In these tests, female participants scored higher than males in terms of knowledge of the existence of the SCTs. Also, students from KSA were more knowledgeable about the tests than students from other nationalities. Moreover, KAU students were more knowledgeable about the SCTs of those non-KAU students. Finally, postgraduate students had more knowledge about SCTs than undergraduate students.

Discussion:-

The study investigated the opinions of Saudi health students on SCT. The data from the study confirm the hypothesis that Saudi health students have a positive perception of the SCT. The findings of the study corroborate with that of Aldekhayelet al. (2012), who found that students in KSA universities knew the SCT. In particular, the findings from the analysis showed that female students were more knowledgeable about the tests than male students.Also, postgraduate students were more knowledgeable about the SCT than undergraduate students. Subra et al. (2017) are used to enhance the clinical reasoning of postgraduate students.

Conclusion:-

The SCT is a critical clinical reasoning tool for medical students at undergraduate and postgraduate levels. Although medical students generally have a positive perception of the test and accept it, it is essential to enhance knowledge and uptake of the test because some students still do not consider it essential. It is critical to determine why fewer male than female students think positively about the test. Postgraduate students are exposed to the test because they perform specialized functions, which require higher levels of clinical reasoning, but still, undergraduate students need knowledge because of their roles in clinical environments. Moreover, more students from Saudi Arabia know, meaning they can develop a culture of appropriate reasoning in their clinical environments.

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