

Supplementary Material:*Test Item Analysis*

Participant performance on each question of the training assessment improved significantly for each item on the pre- and post-tests, except for questions 7(7), 12(23), and 22(10). Prior to training, 11 out of 26 total questions (42.3%) showed that the majority of participants reported the correct answer, while 15 questions (57.7%) showed that the majority of participants reported the incorrect answer. Contrastingly, 23 questions (88.5%) showed that the majority of participants reported the correct answer on the post-assessment, while 3 questions (11.5%) showed that the majority of participants chose the incorrect answer on the post-assessment. Question 6(3) showed the maximum improvement between the pre- and post- assessments (82.6%, $p < 0.001$) (Table 5).

Item-difficulty Index

Indices were assigned based on the proportion of questions correctly answered on both the pre- and post-training assessments, ranging from 0 to 1. Pre-test item difficulty indices ranged from 0.05 to 0.81 whereas post-test item difficulty indices ranged from 0.42 to 0.96. Generally, good questions should score between 0.30 and 0.80, however indices are subject to be lower for pre-test scores and higher for post-test scores (17). All questions showed an increase in PPDI (Pretest Posttest Difference Index) except for question 23(12). Seven pretest questions had item difficulty indices below 0.30 [questions 6(3), 9(16), 10(21), 19(12), 20(18), 24(19), and 26(13)] while only question 25(20) had an index above 0.80. No posttest questions showed an item difficulty index below 0.30 while nine showed indices greater than 0.80 [questions 2(1), 18(2), 6(3), 17(5), 3(9), 13(15), 25(20), 10(21), and 21(24)].

Item-discrimination Index

Item discrimination indices were assigned using point bi-serial correlation coefficients, or Rpbi-values, to assess the representativeness of a question for the general participants' total performance. Assigned values range from 0 to 1, with 0 representing a question that is in no way correlated with total performance, and a value of 1 representing a question that is perfectly correlated with performance. Generally, a value of 0.25 or greater shows that a given question discriminates well. Pre-test Rpbi-values ranged from -0.08 to 0.54 where post-test values ranged from 0.08 to 0.52. Eight questions on the pre-test yielded an Rpbi-value less than 0.25 [questions 6(3), 10(21), 15(6), 17(5), 19(12), 20(18), 24(19), 26(13)], while only three post-test questions yielded an Rpbi-value of less than 0.25

[questions 25(20), 24(19), and 17(5)]. One question on the pre-test yielded a negative Rpbj-value [question 20(20), R= -0.08]. Per-question data is presented in Table 6 and Table 7.

Proportion Correct by Quartile

Test questions that discriminate well should show the greatest amount of correct answers in the highest quartile, along with a sequential increase in percent correct across quartile (17). Twenty-two (84.6%) pre-training assessment questions showed that the highest quartile contained the highest percent of correct answers, while all post-training assessment questions showed that the highest quartile contained the highest percent of correct answers (Table 6, Table 7). Of these questions, 23.1% showed a sequential increase on the pre-training assessment, while 50.0% showed a sequential increase on the post-training assessment.

Table 4: Exam Questions and Answers

Pre (Post)	Question	Pre (Post)	Answers
1 (14)	The most secure way to stop bleeding is:	1 (3) 2 (1) 3 (4) 4 (2)	Using a tourniquet Pouring clean water on wound Applying direct pressure, elevating the wound Elevating the wound and using a tourniquet
2 (1)	When approaching the scene of an accident, the first step should be:	1 (4) 2 (2) 3 (3) 4 (1)	Run to the victim Establish which victims you should treat first Make sure the scene is safe for you and others Continue driving carefully
3 (9)	When responding to an injured patient, what is the first thing you should do?	1 (4) 2 (1) 3 (3) 4 (2)	Check if he/she is bleeding Assess for signs of injuries Move the patient into a vehicle Check if he/she has an open airway and is breathing
4 (25)	What is the best position for transporting an unconscious patient who does not present with a trauma?	1 (1) 2 (3) 3 (4) 4 (2)	Lying on their back Lying on their side in the recovery position Lying on their abdomen Sitting upright
5 (26)	In an emergency, when transporting someone to a health facility, it is important to drive as fast as possible because it will make a difference because the patient's life is at risk.	1 (1) 2 (2)	True False
6 (3)	The "safety zone" around the scene in case of spills of hazardous materials must be at least:	1 (2) 2 (1) 3 (3) 4 (4)	30 m/100 ft 15 m/50 ft 6 m/20 ft 3 m/10 ft
7 (7)	In case of mass casualties, you should prioritize the evaluation of the person who is:	1 (1) 2 (3) 3 (2) 4 (4)	Shouting for help Has a fractured leg and it is bleeding Is not breathing and is turning blue Has no breathing and no pulse
8 (11)	For the unconscious patient, the first priority is to:	1 (3) 2 (1) 3 (2) 4 (4)	Open the mouth with chin lift head tilt Keep warm with a blanket Begin CPR immediately Swipe mouth with two fingers to see if there's an object
9 (16)	When using a tourniquet to stop bleeding, you should:	1 (3) 2 (2)	Keep the bleeding site covered Write the time of application on the victim's

		3 (1) 4 (4)	forehead using a pen Make sure it is not too tight so it does not cut off all blood circulation in the extremity Never use a tourniquet to control bleeding
10 (21)	A patient with a pelvic fracture can lose up to:	1 (3) 2 (4) 3 (1) 4 (2)	1/2L of blood 1L of blood 5L of blood Not much blood because the pelvis has no blood vessels
11 (22)	Splinting of a fractured extremity is important because:	1 (3) 2 (1) 3 (2) 4 (4)	Alleviates pain Limits blood loss Facilitates transport All of the above
12 (23)	Splints should:	1 (1) 2 (3) 3 (4) 4 (2)	Be made as tight as possible Provide support only at the site of the injury Should be long enough to immobilize above and below the injury A splint should not be used because it may worsen the injury
13 (15)	When there exists an impaled object, you should:	1 (1) 2 (3) 3 (4) 4 (2)	Remove it as fast as possible Cut the protruding portion of the object Pour water and keep it wet Protect the object and maintain its position using bulky dressing around it
14 (17)	In a burned patient:	1 (2) 2 (4) 3 (3) 4 (1)	Complete burns (3rd degree) are painful and moist Superficial burns (1st degree) should be treated with creams Blisters indicate a 2nd degree burn Blisters should be excised as soon as possible
15 (6)	When at a mass casualty scene, you should ask:	1 (2) 2 (3) 3 (4) 4 (1)	Those who can walk to walk away from the scene Those who can't move should wait until help arrives Victims to divide themselves in groups of 4 to facilitate their transport Do not approach mass casualty scenes until help arrives
16 (4)	When there are body fluids, you should:	1 (4) 2 (2) 3 (1) 4 (3)	Stop your rescue efforts because it is very dangerous Pour water on the area to rinse it and use gloves to protect your hands Use clean cotton materials to absorb the fluids Pour vinegar on the area of your body that is in contact with the fluids
17 (5)	If you do not have access to gloves, you may use plastic bags to protect your hands from body fluids:	1 (1) 2 (2)	True False
18 (2)	You witnessed a collision with a car and a pedestrian. Of all the options, you should:	1 (3) 2 (2) 3 (1) 4 (4)	Track the offending vehicle Immediately put victim in your vehicle Should always help regardless of what the victim says Call for backup
19 (12)	When you elevate the chin and tilt the head, this:	1 (3) 2 (2) 3 (4) 4 (1)	Stimulates the patient to breathe when he/she is unconscious Removes foreign bodies from the mouth Stabilizes the cervical spine Lifts the tongue from the throat
20 (18)	When you decide that a patient needs CPR, the first thing you should do is:	1 (1) 2 (3)	Begin CPR immediately Call for backup for immediate appropriate transportation (if not already available)

		3 (2) 4 (4)	Wait until the patient is safe in a vehicle for transport before you begin CPR Leave him/her and declare the death of the patient at the scene
21 (24)	When you notice a protruding bone, you should:	1 (3) 2 (1) 3 (2) 4 (4)	Reduce the fracture by pulling on the limb Push the protruding bone back into its place Apply a tourniquet above the fracture site Cover with clean, wet gauze
22 (10)	When you ask a patient their name and they respond appropriately you know:	1 (2) 2 (1) 3 (3) 4 (4)	That the airway is open That they are breathing That the circulation to the brain is sufficient All of the above
23 (8)	Which patient would you attend to first at the scene of an accident?	1 (3) 2 (1) 3 (2) 4 (4)	A 25-year-old who is walking around moaning A 35-year-old female who is bleeding from an amputated leg A 7-year-old boy who is lying down and has no pulse and no breathing A 20-year-old who is screaming because his/her leg hurts
24 (19)	At the scene of an accident, you should only perform CPR until appropriate transport is available.	1 (1) 2 (2)	True False
25 (20)	During a transport of a patient in an ambulance, you may continue to perform CPR on the patient.	1 (1) 2 (2)	True False
26 (13)	Which of the following places can be a site of invisible bleeding?	1 (2) 2 (4) 3 (3) 4 (1)	Head Forearm Foot Thigh

Table 5: Participant Performance by Question

Matched Test Questions Pre (Post)	Correct-Correct (%)	Incorrect-Incorrect (%)	Correct-Incorrect (%)	Incorrect-Correct (%)	PPDI (%)*	p-value**
1 (14)	50.2	15.7	11.8	22.3	10	0.003
2 (1)	72.5	2.8	1.0	23.7	23	<0.001
3 (9)	52.6	8.0	10.8	28.6	18	<0.001
4 (25)	25.4	27.5	4.9	42.2	37	<0.001
5 (26)	34.1	24.7	4.9	36.2	31	<0.001
6 (3)	5.2	11.5	0.3	82.9	83	<0.001
7 (7)	32.1	29.6	17.4	20.9	3	0.391

8 (11)	47.0	14.6	11.1	27.2	16	<0.001
9 (16)	22.6	22.0	1.7	53.7	52	<0.001
10 (21)	4.5	14.6	0.7	80.1	79	<0.001
11 (22)	36.2	35.9	9.8	18.1	8	0.010
12 (23)	41.1	25.4	18.1	15.3	-3	0.475
13 (15)	73.5	7.0	1.7	17.8	16	<0.001
14 (17)	30.7	26.1	2.1	41.1	39	<0.001
15 (6)	33.8	26.5	6.6	33.1	26	<0.001
16 (4)	31.0	26.8	7.7	34.5	27	<0.001
17 (5)	54.7	1.7	3.8	39.7	36	<0.001
18 (2)	50.5	12.2	3.8	33.4	30	<0.001
19 (12)	9.4	53.0	2.1	35.5	33	<0.001
20 (18)	6.3	53.7	4.2	35.9	32	<0.001
21 (24)	63.8	10.8	4.5	20.9	16	<0.001
22 (10)	59.2	17.4	9.1	14.3	5	0.087
23 (8)	34.8	20.6	3.5	41.1	38	<0.001
24 (19)	17.1	44.9	10.5	27.5	17	<0.001

25 (20)	78.4	2.1	3.1	16.4	13	<0.001
26 (13)	5.2	46.3	2.8	45.6	43	<0.001

Bold = answer choice with the highest proportion of responders per question

**PPDI- Pre Post Difference Index, showing the percentage difference in pre- and post-assessment scores*

***McNemar's Chi-Squared test utilized to assess significance*

Table 6: Item Analysis of Pre-assessment Questions

Test Question	Choices					Difficulty Index	Point bi-serial Correlation	Quartiles			
	1(%)	2(%)	3(%)	4(%)	Blank (%)			1(%) 12-35	2(%) 36-42	3(%) 42-54	4(%) 54-81
1	23	1.4	62.4	12.2	1	0.62	0.52	4.5	16	17.1	24.4
2	5.6	17.8	74.2	0.7	1.7	0.73	0.44	9.4	21.3	17.4	25.4
3	7	28.2	0.7	63.8	0.3	0.63	0.26	11.1	18.1	10.8	23.3
4	61.3	30.7	2.4	4.5	1.1	0.30	0.33	2.8	5.6	9.1	12.9
5*	60.3	39.4	0	0	0.3	0.39	0.33	5.6	7	10.1	16.4
6	64.5	18.1	5.9	6.6	4.9	0.06	0.07	0.7	1.7	0.7	2.4
7	15	12.9	49.8	21.6	0.7	0.49	0.29	7	13.6	10.5	18.5
8	58.9	1.4	27.5	10.8	1.4	0.58	0.37	8	15.7	12.5	22
9	16	24.7	39	18.1	2.2	0.24	0.33	1.4	6.3	4.9	11.8
10	13.9	17.1	5.6	50.5	12.9	0.05	0.12	0.7	1.4	0.3	2.8
11	11.8	8.4	29.3	46.3	4.2	0.46	0.46	5.2	9.1	10.5	21.3

12	1.7	29.6	59.6	3.1	6	0.59	0.39	7.3	15.7	13.2	23
13	16.4	4.2	1	76	2.4	0.75	0.54	8	22	18.5	26.8
14	36.6	23	33.1	2.4	4.9	0.33	0.44	1.4	8.4	5.6	17.4
15	40.8	31.4	16.4	8.4	3	0.40	0.23	5.9	11.8	8.4	14.3
16	9.8	39	44.3	1.7	5.2	0.39	0.33	4.2	8.4	11.1	15
17*	58.9	36.9	0	0	4.2	0.59	0.06	13.2	18.1	9.1	18.1
18	2.4	5.9	34.1	55.1	2.5	0.54	0.39	6.3	15.7	10.5	22
19	72.1	5.2	8	11.8	2.9	0.11	0.19	1	2.8	2.4	5.2
20	82.6	10.8	3.8	0.7	2.1	0.10	0.18	1	3.5	2.1	3.8
21	7	3.1	18.1	69	2.8	0.68	0.38	10.1	18.5	15.3	24.4
22	4.2	10.1	14.3	68.6	2.8	0.68	0.42	9.8	17.8	15	25.8
23	0.7	39	55.1	1	4.2	0.38	0.36	4.2	8.4	7.7	18.1
24*	27.9	67.9	0	0	4.2	0.28	-0.08	8.7	7	5.6	6.3
25*	82.2	14.3	0	0	3.5	0.82	0.26	13.9	24.4	19.5	23.7
26	84	2.4	2.8	8.4	2.4	0.08	0.06	1	2.1	2.8	2.1

* True/False Question

Table 7: Item Analysis of Post-assessment Questions

Test Question	Choices					Difficulty Index	Point bi-serial Correlation	Quartiles			
	1(%)	2(%)	3(%)	4(%)	Blank (%)			1(%) 12- 58	2(%) 59- 69	3(%) 70- 77	4(%) 78- 96
1	0	2.1	96.5	0.7	0.7	0.96	0.26	19.2	21.6	18.5	36.9
2	12.2	2.8	0	84.3	0.7	0.84	0.30	14.6	15.7	18.5	35.2
3	1.4	5.2	88.5	4.2	0.7	0.88	0.35	15.3	19.2	17.8	35.9
4	28.6	65.9	0	2.8	2.7	0.66	0.32	8	16	10.5	31
5*	94.8	3.8	0	0	1.4	0.94	0.23	18.5	20.6	18.1	37.3
6	3.1	67.2	10.1	17.1	2.5	0.67	0.32	9.4	13.6	14.3	29.6
7	7.3	53.3	27.2	10.1	2.1	0.53	0.35	5.6	9.8	10.5	27.2
8	76.3	20.2	0.3	2.1	1.1	0.76	0.37	12.5	13.9	15.3	34.1
9	14.3	81.5	0.7	3.5	0	0.81	0.29	12.9	19.2	15	34.1
10	11.1	8.4	6.6	73.9	0	0.74	0.43	9.8	13.2	16	34.5
11	0.3	19.2	74.6	4.9	1	0.74	0.30	11.5	14.6	14.6	33.4
12	45.3	2.4	47.4	4.2	0.7	0.45	0.34	4.5	8.4	8.7	23.3
13	51.2	40.4	0.7	0.7	7	0.51	0.36	6.3	8.4	10.8	25.4
14	0.7	20.9	5.6	72.8	0	0.72	0.45	9.8	12.9	14.3	35.5
15	4.9	91.6	1	2.4	0.1	0.91	0.30	17.1	19.2	17.8	37.3

16	14.6	76.7	5.2	1.7	1.8	0.76	0.46	11.1	14.3	14.6	36.2
17	2.4	16.4	72.1	6.6	2.5	0.72	0.46	9.1	12.9	15	34.8
18	47	8.7	42.5	0.7	1.1	0.42	0.44	4.5	4.2	7.3	26.1
19*	44.9	55.1	0	0	0	0.45	0.08	9.1	9.8	6.6	19.2
20*	95.1	3.8	0.3	0	0.8	0.95	0.20	18.8	21.3	17.8	36.9
21	85	7.3	1.7	3.8	2.2	0.85	0.42	11.8	19.2	18.1	35.5
22	7	7.3	27.2	54.7	3.8	0.54	0.40	6.6	9.4	10.5	27.9
23	9.4	2.4	26.8	56.8	4.6	0.56	0.31	7.7	11.5	9.4	27.9
24	1	7.3	3.5	85	3.2	0.85	0.45	12.5	17.8	17.1	37.3
25	18.8	7.7	67.9	2.8	2.8	0.68	0.39	8.7	13.2	13.6	32.1
26*	27.2	70.7	0	0	2.1	0.70	0.52	7	12.9	15.7	34.8

* True/False Question