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Training program for car drivers regarding first aid of road traffic accident at Sohag University

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Abstract

Road traffic accidents are a major community health problem that causes severe injuries withincreasing deaths each yea.

Aim of the study: Evaluate the impact of training program for car drivers regarding first aid of roadtraffic accident at Sohag University.

Subjects and Methods: Quasi-experimental research design was used.

Sample: Convenient sample of 87 Car drivers were participated in the study.

Tools: Two tools were used: Tool (1) A structured interviewing questionnaire used to assess knowledge of car-drivers. Tool (2) an observational checklist was used to observe practices of drivers regarding first aid of road traffic accidents.

Results: 86% of drivers had an unsatisfactory knowledge level and all of studied car drivers had unsatisfactory practices of first aid about road traffic accident before implement of the program. However, there was significant improvement in knowledge and practice of the car drivers after implementation of the program. The total of knowledge and practice were statistically significant (p<0.001).

Conclusion: The implemented program about first aid of road traffic accident had a good impact on knowledge and practice of. Car-drivers.

Recommendations: First aid training program should be compulsory before getting driving licenses. This training should be continuous and repeated before every renewal of the driving license.

Keywords: Car-drivers, first aid, road traffic accidents, training programs

Introduction

Accident is an unplanned process of events that leads to undesired injury, loss of life and damage to the system or the environment. It's a part of the price people pay for technological progress and are no longer considered accidental, because majority of them are preventable (Centers For Diseases Control and Prevention CDCP, 2017) [4].

Road traffic accidents (RTA) represent a huge global public health concern due to their increasing occurrence, related deaths and disabilities, social and financial consequences. In 2018, the World Health Organization (WHO) estimated that 1.35 million people globally die each year from Road traffic accidents and this is alongside the additional 20–50 million people who are seriously injured or disabled. (World Bank (WB, 2017) [20] and World HealthOrganization (WHO, 2018) [21]. Causes of road traffic accidents are excessive speed, defective roads, poor street lighting, defective layout of cross roads and speed breakers, defective vehicles, disregard of road signs, fatigue, alcoholism and unusual behaviors of men and animals (Kussia, 2017) [14]. Provision of first aid for injuries is a secondary preventive measure taken immediately after an injury event by trained clinicians and first responders, resulting in better outcomes for injured victims. The International Federation of Red Cross and Red Crescent Societies (IFRC) states that while first aid is by no means a substitute for emergency health services, it is a pivotal primary step for providing effective and rapid interventions to reduce serious injuries and increase the chances of survival. To be most effective, first aid should be provided immediately after the event. For example, effective bystander cardiopulmonary resuscitation (CPR) provided immediately after cardiac arrest can double a person's chance of survival as it helps maintain vital blood flow to the heart andbrain. (International Federation of Red Cross and Red Crescent Societies, IFRC, 2019 and Hoque *et al*., 2017) [12, 10].

It is possible to identify and train motivated lay people to provide basic first aid treatment to the victims until the professional medical staffs arrive at the accident scene or transporting to the victim to a health facility. A blocked airway and severe bleeding are the most common fatal in traffic road accident victims. A blocked airway when it occur with in less than four minutes can cause death. There are ample medical evidences to recommend a " golden hour" for road traffic accident victims. If first aid and medical assistance administered immediately for causalities within this time, there is a greater chance of survival and a reduction in the severity of their injuries (Teshale & Alemu, 2017) [19].

Community Health Nurse has the responsibility of preparingdrivers and bystanders with basic first aid training to react and provide immediate and efficient treatment for a wide variety of incidents including alerting the Emergency Medical System, maintaining the airway, breathing and circulation, respiratory and cardiac arrest, and hemorrhage control. The response time in emergency situations is critical, but the first aid provided must be performed properly in order to prevent further complications and potentially save lives. In addition; Community Health Nurseshould instruct drivers to obey traffic laws on drink-driving, seat-belt wearing, speed limits, to bring about the expected reduction in road traffic fatalities and injuries (Edelman *et al*., 2017 and Elsayed *et*

al., 2018) [6].

Significance of the study

The Central Agency for Public Mobilization and Statistics (CAPMAS) reported that the number of car accidents whichoccurred in 2017 recorded 11,098 incidents. Car accidentson roads resulted in 3,747 deaths, 13,998 injuries, and 17,201 damaged vehicles. Cairo governorate recorded the highest road accidents mortality rate 17.7 % while assuit governorate recorded 5.8% (Central Agency for Public Mobilization and Statistics, (CAPMAS 2017) [3].

Road traffic injuries pose a significant threat to the Egyptianpopulation. Recent estimates revealed that Egypt experiences 42 road traffic deaths per100, 000, population (1,8% of all deaths in the country), which is the highest death rate in the region. In addition; road traffic injuries are the sixth leading cause of death forming of injuries and of causes of death, and they account for at least one-quarter of all outpatient visits. More than half of the road traffic crashes that resulted in injuries occurred on the country's highways. Despite the significance of this public health problem, very little risk factor information currently exists and studies surrounding this topic are scarce, and reliable data are limited. (EL-Sharkasy *et al.*, 2015 and El-sayed, 2018) [8, 7].

International Federation of Red Cross and Red Crescent Societies reported that "tens of millions of lives are saved each year by first aid techniques applied by neighbors and bystanders to the victims of accidents or disasters. (International Federation of Red Cross and Red Crescent Societies (IFRC, 2017) [11].

Because car-drivers are the first witnessed to an accident and rush to rescue, this study was conducted to assess first aid training program about road traffic accidents for car-drivers working in Sohag university.

Aim of the study

The aim of this study is to

Evaluate the impact of training program for car drivers regarding first aid of road traffic accident at Sohag University

Research hypothesis

1. Knowledge of car drivers about first aids of road traffic accidents will be improved after the program implement.
2. Practices of car drivers about first aids of road traffic accidents will be improved after the program implement.

Subject and methodologyStudy designs

Quasi experimental design was used in the current study.

Study settings

The study was conducted in the four cars units that presented in sohag university namely as old sohag university, new sohag university hospital, faculty of medicine and faculty of agriculture.

Sample of the study

Convenient sample of 87 Car drivers who working at the previous setting are including in the study and they are agree to participate in the study. They were presented as the following table:

Setting	Numbers
Old Sohag university	50
New Sohag university	13
Faculty of medicine	14
Faculty of agriculture	10
Total number in pre-test	87
Total number in post test	83 (4 drivers were retired after pretest from old university)
Total number in follow-up	82(driver die after posttest from the faculty of medicine)

Tools of the Study

Two tools were developed by the researcher to collect necessary data after review of current related literature design in simple Arabic language; included A structured interviewing questionnaire and observational checklist.

Tool I: A structured interviewing questionnaire, it included two parts:

First part: Assess demographic data for car drivers. This part is composed of 9closed/ended question as age, education, residence, marital status and years of experience for drivers, history of previous first aid training, history of previous witness road traffic accident and previous assisting in road traffic accident victims.

Second part: -Assess knowledge of car drivers regarding first aid of road traffic accidents. It includes assess knowledge about road traffic accidents, first aid, cardiac andbreathing arrest, shock, wound and bleeding, burns and fractures.

Scoring system

For the knowledge represented as one degree for each correct answer, zero degree for the incorrect one and do not know. For each part, the scores of the items were summedup and converted into a percentage. The driver's knowledge was considered satisfactory if 50% and more where theunsatisfactory knowledge considered when the percent of score was less than 50% (EL-Sharkasy *et al.*, 2015) [8].

Second tool: An observational checklist

It was developed by the researcher and used to assess practice of car drivers about first aids measures such as cardiopulmonary resuscitations, wound and bleeding, shock, fracture and burns.

Scoring system

In the observational checklists, items "done" take one gradeand "not done" take zero grade. For each step, the scores of items were summed up and the total was divided by the number of the items, giving a mean score for the part. These score were converted into a percent score. The performance was considered satisfactory if the percent score was 60% or more and unsatisfactory if it less than 60 %. (El-sayed,2018) [7].

Methods

Preparatory phase and administrative design

An official approval letter was obtained from the dean of thefaculty of nursing to president of Sohag University to conduct the study after full explanation about the aim of the study. This letters included a permission to carry out the

study.

Pilot study
After developing the necessary tools of the study. A pilot study that included (9) car drivers (10%) was carried out to ensure clarity and applicability of the developed tool and to estimate the time needed to fill the questionnaire's. The pilotstudy was not excluded as no modifications were done.

Validity of study tools
It was checked and revised by panel of seven experts from community health nursing and medical surgical nursing at assuit and sohag university to review the instrument for clarity, relevance, comprehensiveness, understanding and applicability. According to their opinion minor modifications such as (observational checklists of cardiopulmonary recitations and burns) were applied.
Reliability test was carried out by the researcher in order to examine the internal consistency of its questions by using test –retest method. It was done during the pilot study beforestarting of data collected. The value of Cranach's alpha for knowledge 0.788 and 0. 721 for practice implying that the instrument was consistent and reliable in achieving.

Ethical consideration
The study was approved from ethical committee in the faculty of nursing.

- The purpose of this study was explained for every interviewed Car drivers of the studied sample
- Car drivers have ethical rights to participate or refuse participate and or withdraw from the study without any rational any time.
- Oral consent was taken from all car drivers who participated in the study to ensure active participation and cooperation during the implementation of the program.
- All car drivers were informed that the information obtained will be confidential and will be used only for the purpose of the study.

IV- data collection Field of work

- The teaching program conducted during the period of the first January till the end of April 2019 and follow uptest completed at the end of July 2019.
- The program has been finished by eighty three 83 car drivers (4 drivers were retired after pretest from old university), who were divided into eight 8 groups. Each group contained ten- eleven (10-11) car drivers, who were conducted in the car unit at Sohag University.Two group each month was taken.
- The total number of sessions for the group was two 2 sessions / day, group received 4 sessions a week, every session two 2 hours, and the session begins from 10
  a.m. to 2 p.m. through Sunday and Thursday every week. The total time of the program was sixteen 16 hours divided into eight 8 sessions.

The researcher designed eight sessions repeated for eachgroup as the following:
(First day)

1. **First session** contains orientation the participants about the program, fill pretest and booklet was distributed to all participants after completing pretest.
2. **Second session "unit one"** it includes theoretical part about road traffic accident. (Second day)
3. **Third session "unit two"** it consists of theoretical part about first aid and practical part of applying actions must be taken during a road accident example (get the victim out of the car crash)
4. **Fourth session "unit three"** it contains of theoretical part about cardiac and breathing arrest and practical part for performing the steps of cardiopulmonary resuscitations (Third day)
5. **Fifth session "unit four"** it includes of theoretical and practical parts for shock.
6. **Sixth session "unit five"** it consist of theoretical and practical parts about wound and bleeding (Fourth day)
7. **Seventh session "unit six"** it includes of the theoreticaland practical parts about fractures splint and bandage.
8. **Eighth session "unit seven"** it contains theoretical and practical parts about burns and fill the post test.
9. **Follow –up** after 3month of the end implementation training program for each group and follow-up has beenfinished by 82 car drivers

Statistical Analysis
Data entry and data analysis were done using SPSS version 19 (statistical package for social science). Data were presented as frequency, percentage, mean and standard deviation as well as test statistical significance and associations by using chi-square test (X), and spearman correlation test (r).

Results

Table 1: Distribution of the car drivers according to their demographic characteristics at Sohag University, 2019

Personal Characteristics	No. (87)	%
Age: (years)		
30-39	35	40.2
40-49	26	29.9
50 or more	26	29.9
Mean ± SD (Range)	43.36 ± 9.48 (28.0-59.0)	
Residence		
Rural	51	58.6
Urban	36	41.4

Educational level		
Read and write	19	21.8
Primary	16	18.4
Preparatory	23	26.4
Secondary	29	33.3
Marital status		
Single	12	13.8
Married	73	83.9
Widowed	2	2.3
Years of experience		
5 - < 10	11	12.6
10 - < 15	20	23.0
15 - < 20	14	16.1
≥ 20	42	48.3
Mean ± SD (Range)	19.54 ± 8.72 (5.0-38.0)	
First aid training		
Yes	7	8.0
No	80	92.0
Previous witness of road accident		
Yes	81	93.1
No	6	6.9
Previous assisting in road traffic accident victims		
Yes	48	59.3
No	33	40.7

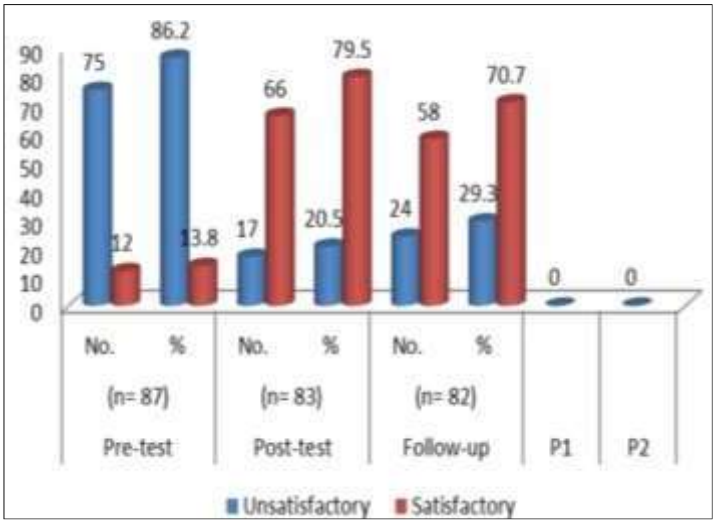

Fig 1: Total knowledge level of the car drivers about first aid of road traffic accident pre,post and follow-up tests.
P1=P-value between pre and posttest. P2= P-value between pre and follow-up
*statistically significant difference (p<0.05)

Table 2: Distribution of car drivers' practice regarding to first aid of road traffic accident in pre, post and follow-up, at Sohag University, 2019

Practice level	**Pre-test (n= 87)**		**Post-test (n= 83)**		**Follow-up (n= 82)** after 3month		**P1**	**P2**
	No.	**%**	**No.**	**%**	**No.**	**%**		
Satisfactory	0	0.0	63	75.9	58	70.7	0.000*	0.000*
Unsatisfactory	87	100.0	20	24.1	24	29.3		

P1=P-value between pre and posttest. P2= P-value between pre and follow-up *statistically significant difference (p<0.05)

Table 3: Correlation between score of knowledge and practice in pre-test, post-test and follow-up, at Sohag University, 2019

items	R-value	P-value
Pre-test	0.446	0.000*
Post-test	0.624	0.000*
Follow-up	0.474	0.000*

*statistically significant difference (p<0.05)

Table 4: Relationship between car drivers' score of knowledge with their demographic characteristics in pre, post and follow-up test, at Sohag University, 2019

item	Knowledge score					
	Pre-test Mean ± SD	P-value	Post-test Mean ± SD	P-value	Follow- p Mean ± SD	P- alue
Age: (years)		0.143		0.534		0.414
30-39	36.29 ± 8.36		57.11 ± 10.73		53.31 ± 10.02	
40-49	37.00 ± 11.14		57.31 ± 11.40		54.50 ± 10.91	
50 or more	32.38 ± 7.70		54.09 ± 11.98		50.33 ± 12.17	
Residence		0.269		0.818		0.348
Rural	34.41 ± 9.41		55.39 ± 12.29		52.02 ± 11.66	
Urban	36.64 ± 8.88		57.94 ± 9.26		54.34 ± 9.49	
Educational level		0.000*		0.000*		0.000*
Read and write	28.16 ± 5.80		42.78 ± 7.84		39.06 ± 7.02	
Primary	30.25 ± 6.40		49.71 ± 8.62		46.14 ± 8.54	
Preparatory	38.91 ± 8.07		62.18 ± 6.50		59.05 ± 6.57	
Secondary	40.00 ± 9.11		63.62 ± 6.61		59.69 ± 5.52	
Marital status		0.131		0.082		0.050*
Single	34.08 ± 10.40		56.00 ± 11.55		53.09 ± 12.63	
Married	35.88 ± 8.94		56.94 ± 10.96		53.43 ± 10.33	
Widowed	23.00 ± 1.41		39.00 ± 8.49		34.50 ± 3.54	
Years of experience		0.017*		0.202		0.130
5 - < 10	38.18 ± 10.26		59.36 ± 13.56		56.82 ± 11.99	
10 - < 15	32.15 ± 7.92		52.45 ± 11.99		48.55 ± 11.27	
15 - < 20	41.21 ± 10.88		59.93 ± 8.18		55.79 ± 8.31	
≥ 20	34.14 ± 8.08		56.26 ± 10.80		53.05 ± 10.73	
First aid training		0.001*		0.001*		0.001*
Yes	46.43 ± 6.00		69.43 ± 4.43		65.29 ± 2.56	
No	34.36 ± 8.82		55.17 ± 10.90		51.77 ± 10.62	
Previous witness of road accident		0.053		0.518		0.655
Yes	35.85 ± 9.27		56.60 ± 10.92		53.08 ± 10.63	
No	28.33 ± 4.63		53.50 ± 15.66		51.00 ± 14.55	
Previous assisting in road traffic accident victim		0.868		0.655		0.587
Yes	35.71 ± 9.58		56.15 ± 11.56		52.55 ± 11.56	
No	36.06 ± 8.93		57.30 ± 9.97		53.93 ± 9.06	

*statistically significant difference (p<0.05)

Table 5: Relationship between car drivers' score of practice with their demographic characteristics in pre, post and follow-up test, at Sohag University, 2019

Items	Practice score					
	Pre-test Mean ± SD	P-value	Post-test Mean ± SD	P-value	Follow-up Mean ± SD	P-value
Age: (years)		0.678		0.759		0.748
30-39	10.49 ± 4.14		43.26 ± 6.73		39.49 ± 5.97	
40-49	9.58 ± 4.82		42.50 ± 8.24		39.15 ± 6.96	
50 or more	9.85 ± 3.38		41.73 ± 8.16		38.10 ± 7.42	
Residence		0.033*		0.828		0.833
Rural	9.24 ± 3.35		42.47 ± 8.38		38.90 ± 7.10	
Urban	11.14 ± 4.85		42.84 ± 6.09		39.22 ± 5.90	
Educational level		0.079		0.000*		0.000*
Read and write	8.26 ± 2.62		37.67 ± 7.72		35.41 ± 7.16	
Primary	9.25 ± 3.96		35.00 ± 5.43		32.79 ± 4.90	
Preparatory	11.26 ± 4.37		46.09 ± 5.78		41.41 ± 5.53	
Secondary	10.62 ± 4.51		46.72 ± 4.47		42.34 ± 4.49	
Marital status		0.941		0.082		0.061
Single	9.67 ± 4.31		42.25 ± 9.16		38.18 ± 7.28	
Married	10.07 ± 4.11		43.01 ± 7.13		39.46 ± 6.39	
Widowed	10.50 ± 6.36		31.00 ± 2.83		28.50 ± 2.12	
Years of experience		0.811		0.408		0.580

5 - < 10	10.27 ± 4.92		45.36 ± 7.67		40.18 ± 6.52	
10 - < 15	9.25 ± 4.23		41.65 ± 7.97		38.95 ± 6.86	
15 - < 20	10.50 ± 4.57		44.21 ± 6.13		40.71 ± 6.16	
≥ 20	10.17 ± 3.80		41.74 ± 7.74		38.08 ± 6.77	
First aid training		0.057		0.018*		0.085
Yes	12.86 ± 3.63		49.00 ± 4.93		43.14 ± 5.76	
No	9.77 ± 4.09		42.03 ± 7.49		38.64 ± 6.60	
Previous witness of road accident		0.038*		0.323		0.222
Yes	10.27 ± 4.09		42.84 ± 7.64		39.28 ± 6.74	
No	6.67 ± 3.20		39.67 ± 5.99		35.83 ± 3.82	
Previous assisting in road traffic accident victim		0.444		0.887		0.628
Yes	10.56 ± 4.14		42.74 ± 7.58		38.98 ± 6.49	
No	9.85 ± 4.04		43.00 ± 7.85		39.76 ± 7.23	

*statistically significant difference (p<0.05)

Results

Table (1): shows the distribution of the car drivers, according to their personal characteristics. It was found that,(40.2%) of drivers their age younger than 40 years with mean ± SD (Range) 43.36 ± 9.48 (28.0-59.0). (58.6%) of them lived in rural areas. (33.3%) of them had secondary education. (83.9%) of them were married and (59.3%) of them was previous assisting in road traffic accident victims.

Figure (1): showed that 86.2% of the car drivers were unsatisfactory knowledge in pre-test which improved in post and follow-up tests to (79.5%, 70.7%) were satisfactory it. There is highly statistical significant difference between pretest and posttest, the car-drivers knowledge were developed after implementation of the training program and slightly decreased in follow up tests.

Table (3): illustrated that 100% of the car drivers had unsatisfactory practice in pre-test which developed in post and follow up test to(75.9%, 70.7%) had unsatisfactory it respectively. there is highly statistical significant difference between pretest and posttest, the car drivers practice were improved after implementation of the training program and slightly decreased in follow up tests.

Table (4): demonstrated that there was a significant positive correlation between the score of knowledge and practice of car drivers regarding first aid of road traffic accidents in pre-test, post-test and follow-up r=(0.446, 0.624 &0.474) p= (0.000, 0.000&0.000) respectively.

Table (5): illustrates that there is a statistical significant difference between total level of knowledge and educational level and first aid training in pre, post and follow-up test P= (0.00, 0.00, 0.00, 0.001, 0.001&0.001) respectively and a statistical significant difference between total levels of knowledge and Years of experience in pretest and Marital status in follow-up test p=(0.017 &0.050) respectively.

Table (6) demonstrates that there is a statistical significant difference between level of practice and residence and previous witness of a road accident in pretest at P=(0.033, 0.038),respectively and a statistical significant difference between level of practice and educational level in post& follow up test and first aid training in posttest at p=(0.000, 0.000&0.018) respectively.

Discussion

Road traffic accidents are a major public health problem; they are a major cause of mortality and morbidity worldwide resulting in over one million deaths. In Egypt, road traffic injuries are a significant cause of morbidity and mortality; they are the sixth leading cause of death forming 11.07% of injuries and 3.85% of causes of death, and they account for at least one-quarter of all outpatient visits. (EL-Sharkasy *et al.*, 2015 [8] and National Center for Biotechnology Information, (NCBI), 2019).

First aid training is an effective way to raise awarenessamong the population about safety issues and prevention. When all drivers and more people learn how to prevent roadaccidents and what to do to help accident victims, more lives will be saved (International Federation of Red Cross, (IFRC), (2019)) [12]

This study was carried out in order to evaluate the impact of training program for car drivers regarding first aid of road traffic accident at Sohag University.

According to research hypothesis about drivers' total score of knowledge regarding first aid of road traffic accident.it showed that the majority of the car drivers were unsatisfactory knowledge in pre-test which improved to more than three quarter of them in post were satisfactory it. There is highly statistical significant difference between pretest and posttest, the car-drivers knowledge were developed after implementation of the training program and slightly decreased in follow up tests.

This findings may be explained by lack of knowledge for car drivers in basic emergency police and to deal with crises in the roads due to Sohag University wasn't interested of first aid courses for car drivers and car drivers are busy and low salary as well as increasing the price for first aid courses out of university. The improvement of theirknowledge in posttest was due to a good impact of training program.

This result agreed with Midani *et al.*, 2019 [15] who conducted study in the United Arab Emirates about Knowledge and attitude toward first aid: A cross-sectional study. They found that more than half of the population had poor knowledge of basic first aid.

Also, agreed with El-sayed *et al.*, 2018 [7] who conducted the study in Benha City about first aid training Program for drivers regarding road traffic Injuries. They found that preprogram implementation one tenth of drivers had good knowledge regarding first aid and road traffic injuries, while post program implementation nearly half of them had good knowledge.

This result in contrast with Olumide *et al.* 2015 [17], in South West Nigeria about " Effect of first aid education on first aid knowledge and skills of commercial drivers " and reported that knowledge scores for intervention drivers were at48.9% pre intervention,57.8% post intervention, and three months

59.2%post-intervention. This might be due to decreased awareness and low level of education of drivers in addition to lack of educational activities.

Also, supported by El-Sharkasy *et al*., 2015 [8] who conducted the study in Port Said- Egypt about Impact of first aid training program for car drivers about road traffic injuries. They found lack of satisfactory knowledge in relation to first aid measures in pre-test. While, immediately post the intervention program; it was revealed that the knowledge was satisfactory and the total mean scores of all items were much higher in comparison to their pre-test evaluation.

This result is in accordance with Sango Wawa, and Owoaje 2010 [18], who conducted the study in Nigeria about Capacity building of drivers on provision of first aid for crash victims. They found that the first aid knowledge increased immediately after the intervention program.

In the same line with Bayraktar *et al*., 2010 [2], who conducted in Turkey about evaluating the effectiveness of a first aid training course on drivers. They found that The mean knowledge level of the drivers on first aid was calculated as 41.87±13.9 (min:2, max:74) in pre-test, and 69.05 ±14.2 (min:12, max:95) in post-test. The difference between pre and post-test scores was found statistically different p= (0.000)

At the follow-up (after 3 months) of the intervention program, the total scores of all items in the intervention program were slightly decreased relative to the immediate post-test due to the long time between immediate post and follow-up tests. The result is in accordance with Sangowa-wa and Owoaje, 2010 [18] who conducted the study in Nigeria about Capacity building of drivers on provision of first aid for crash victims. They found that, in the 4th month post intervention period the median scores for first aid knowledge was slightly reduced among the intervention sample.

Regarding to research hypothesis about drivers' total score of practice regarding first aid of road traffic accident, it was found that all of the car drivers had unsatisfactory practice of first aid regarding road traffic accident in pre-test which developed to more than three quarter of them in posttest had satisfactory it. There is highly statistical significant difference between pretest and posttest, the car drivers practice were improved after implementation of the training program and slightly decreased in follow up tests.

This might be due to 92% of car drivers weren't first aid training program, Egypt traffic law does not obligate all cars-drivers to take different types of training as well as firstaid training before obtaining a license of driving and Sohag University does not obligate car drivers to take first aid training before getting a driver job. The improvement due to better motivation for those car drivers from the researcher and that those car drivers were highly interesting to getbenefits from the training program to use it throughout their life.

At the follow-up of the intervention program the total scores of observed practice of all items in the intervention program were slightly decreased relative to immediate post-test. This might be due to the long time between immediate post and follow-up test of the intervention program.

This results agree with El-sayed *et al*., 2018 [7]. who reported that total practices score of drivers preprogram implementation less than one fifth of them had satisfactory practices, while post program implementation more than half of them had satisfactory practices. This finding was in contrast with Olumide *et al*., 2015 [17] who conducted the study in Nigeria about: Effect of first aid education on first aid knowledge and skills of commercial drivers. they reported that first aid skill scores for intervention drivers were 17.5% pre intervention, 80.7% post intervention, and72.3% three months post-intervention. This might be dueto the effect of the training program in improving theirpractices.

Also, the current study supported by El-Sharkasy and *et al*., 2015 [8]. they found that 99% of the car drivers were unsatisfied performance level regarding first aid of road traffic injuries and it was improved in posttest 97% and 97% in follow-up had satisfied it. In the same line with Bayraktar *et al*., 2010 [2]. They found that the persons exposed to the training program had higher practice scores than those with no exposure to training program.

Concerning the correlation between knowledge and practice score in pre-test, post-test and follow-up, the current study shows that. There was a positive correlation between the score of knowledge and score of performance in pre-test, post-test and follow-up r=(0.446, 0.624 &0.474) p= (0.000, 0.000&0.000)respectively.

This results agree with El-sayed *et al*., 2018 [7], They showed that there was a positive correlation between total knowledge score and total practices score pre and post program implementation. This finding was in agreement with Galindo *et al*., 2017 who conducted the study in Brazil about " Health education interventions on first aid measures for lay people: integrative review" and reported that there was an association between the performance and knowledge for the study participants.

Also, supported by EL-Sharkasy *et al*., 2015 [8], they found that there was correlation between first aid knowledge, first aid measures and observed practice in pre-tests, immediate post and follow-up of the intervention program.

In the same line with Teshale and Alemu, 2017 [19], they found that a significant positive correlation between the score of knowledge and score of practice of first aid and factors associated with practice among taxi drivers r=,350 p=(0.05)

Regarding their relationship between car drivers regarding to their score of knowledge and demographiccharacteristics, there is a statistical significant differencebetween total levels of knowledge and educational level andfirst aid training in pre, post and follow-up test P= (0.00, 0.00, 0.00, 0.001, 0.001&0.001) respectively and a statistical significant difference between total levels of knowledge and Years of experience in pretest and marital status in follow-up test p=(0.017 &0.050) respectively.

This result agrees with El-Sharkasy *et al*., 2015 [8]. They revealed that there were statistically significant relations preprogram implementation between drivers' total knowledge score and care driver education, numbers of previous training. Also, supported by El-sayed *et al*., 2018 [7], they reported that there were statistically significant relations preprogram implementation between drivers' total knowledge score and Years of experience.

In the same line with Adelborg *et al*., 2011 [1] who conducted the study in turkey about benefits and shortcomings of man-datary first aid and basic life support courses for leaner drivers. They found that the person exposed to the training program had higher knowledge scores than those with no exposure to training programs.

This finding disagreed with Deepak & Nayak, 2012 [5] who conducted in Mangalore about a study on assessment of knowledge on practice regarding first aid measures among the self-help groups in selected areas of Mangalore. They found that there was no significant association between knowledge and demographic variables like age, educational status, membership in any social organization, occupation, place of living, and source of information other than gender. This might be due to when the drivers' education and years of experience increased this had a good effect on acquisitionof knowledge.

Concerning their relationship between car drivers regarding the score of practice and demographic characteristics in pre, post and follow-up test. it found that there is a statistical significant difference between level of practice and residence and previous witness of a road accident in pretest at P=(0.033, 0.038), respectively and a statistical significant difference between level of performance and educationallevel in post& follow up test and first aid training in posttestat p=(0.000, 0.000&0.018) respectively. This might be due to when the drivers' educational level increased this had a good effect on acquisition of practice.

This finding also confirms that of Adelborg *et al*., (2011) [1] who found that they found that the person exposed to the training program had higher practice scores than those with no exposure to training programs.

This finding was in accordance with Jayaraman *et al*., (2010) [13] who stated that, participants who had previously attended comparable courses obtained significantly betterresult in the practical test.

Practice level was increased with urban drivers because urban community which characterized by higher levels of exposure of urban drivers to health related knowledge and practices, the availability of first aid training opportunities for drivers, increased cultural awareness of first aid, population overcrowding and increased transportation whichleads to increased road accidents. Practice level wasincreased with previous witness of a road accident because of increasing the witness of accidents leads to increaseddriver motivation to seek first aid training.

Conclusion

Based on the results of the present study, it was concluded that the training program succeeded to improve knowledge and practices of car drivers regarding first aid of road traffic accidents. There was a positive statistically significant correlation between total knowledge and practices of car drivers also, There is highly a statistical significant difference between knowledge level and personal characteristics regarding educational level, years ofexperience and first aid training. Also, there is a statistical significant difference between practice level and personal characteristic as residence and previous witness of a road accident.

Recommendations

1. Continuous first aid training programs for car-drivers regarding road traffic accidents to improve their knowledge and practices.
2. Sohag university should conduct car drivers first aid training before attained acar- driver job, Also, refresher courses for drivers should be annually.
3. First aid training program should be directed todifferent populations: At school, at work, during military or civil service. it is better to be without fees.
4. Further studies needed to be focusing on prevention of road traffic accident.
5. First aid kit should be complete content and available to use at any time on every vehicle.

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