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# BECOMING THE HOPE FOR LIFE ON THIN ICE: FIRST AID TRAINING PROJECT FOR THE FIRST YEAR STUDENTS OF TEKIRDAG NAMIK KEMAL UNIVERSITY

## PAMUK İPLİĞİNE BAĞLI HAYATTA BİR UMUT OLMAK: TEKİRDAĞ NAMIK KEMAL ÜNİVERSİTESİ BİRİNCİ SINIF ÖĞRENCİLERİ İÇİN İLK YARDIM EĞİTİMİ PROJESİ

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**Abstract**

**Aim:** In this study, theoretical and applied education is given to the volunteer first class university students. At the end of the education, it is aimed to give first aider certification which has international validity and to open first aid education center within the university.

**Materials and Methods:** In the first step of the study, 78 of the first year volunteer School of Health students are given a book about first aid. They were requested to study that book during summer time. A test was applied when the schools are open and a pre-test was applied to the 53 students who were found successful. A 16 hours long education about “Basic First Aid” was given. The post-test was re-applied after the education. Consequentially they are tested with written and an oral exam on “Basic First Aid Training”.

**Results:** The results of the test after education is also compared between the group of successful students and students who failed.When successful and failed students were evaluated among themselves and together with the same questions before and after education, the difference in all questions after education is statistically significant (p< 0.001).

**Conclusion:** “First Aid Staff Certificate” with both national and an international validity was given to the thirty-one succesfull students and first aid education center was established within the university.

**Keywords:** First aid training, cardiopulmonary resuscitation, public health, nursing students

**Öz**

**Amaç:** Bu çalışmada; gönüllü üniversite birinci sınıf öğrencilerine ilkyardım konusunda teorik ve uygulamalı eğitim ve eğitim sonunda başarılı olanlara uluslararası geçerliliği olan ilkyardımcı sertifikası verilmesi ile üniversite bünyesine ilkyardım eğitim merkezi açılması amaçlandı.

**Materyal ve Metot:** Çalışmanın ilk aşamasında, Sağlık Yüksekokulu gönüllü birinci sınıf öğrencilerinden 78’ine ilkyardım kitabı gönderildi ve yaz dönemi kendilerinden kitaba çalışılması istendi. Okul açıldığında ilkyardım konusunda bir sınav yapıldı ve başarılı olan 53 öğrenciye ön test uygulandı ve 16 saat “Temel İlkyardım Eğitimine” alındı. Eğitim sonrasında tekrar son test uygulandı.

**Bulgular:** Eğitimden sonra, başarılı ve başarısız öğrenciler arasında test sonuçları karşılaştırıldı. Başarılı ve başarısız öğrenciler kendi aralarında ve eğitimden önce ve sonra aynı sorularla değerlendirildiğinde, tüm sorularda eğitimden sonra istatistiksel olarak anlamlı fark izlendi (p<0.001)

**Sonuç:** Hem uluslararası hem de ulusal geçerliliği olan bir “İlk Yardımcı Sertifikası” başarılı olan 31 öğrenciye verildi ve üniversite bünyesinde ilkyardım eğitim merkezi açıldı.

**Anahtar Kelimeler:** İlk yardım eğitim, kardiyopulmoner resüsitasyon, halk sağlığı, hemşirelik öğrencileri

## INTRODUCTION

“First aid” constitutes an important part of public health. In case, these applications are not performed by individuals with prior sufficient knowledge, challenging health problems, even life-threatening conditions can evolve for the person who is already in a critical situation. So, first aid conveys a priority for public health and in order to deliver right applications with success, training interventions on this issue should be released from redundant details. During human life natural balance works in favour of maintaining corpus integrity in any emergency condition. Accidents in the traffic, at home, drawning and fire can be the most frequent emergency conditions to mention [1,2,3].These accidents resume being major public health problem in whole world

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while they are the most important cause of disability and labour loss besides leading to high morbidity and mortality[4].Traffic accident are the major component of accidental cases but occupational accidents are also frequent that can not be ruled out [5].

Accidents are one of the most important cause of death in the world and sixth most cause of death in our country. Occupational accidents are also frequently recorded as cause of death in Turkey[5,6]. As a consequence of these accidents; annually 700.000 people are injured, 30.000 people are died 10.000 of which are due to traffic accidents.

Many people are died or get injured due to traffic accidents [7]. Most of the deaths occurs before the hospital [8]. First aid and basic life support provided gains importance in out-of-hospital injuries or road accidents, and basic life support saves lives. First aid support provided until reaching the hospital or emergency health services increases the survival [9-11]. For this reason, it is known that first aid courses are especially common in developed countries compared to developing countries. Adequate training must be provided for effective life-saving first aid [12,13].

In the study of Bayraktar et al. [14], theoretical and practical first aid training was given to the drivers and knowledge level scores were evaluated before and after the training. Post-training test questionnaire knowledge level scores were higher than pre-test questionnaire. As a result of the research, it was suggested that first aid trainings should be given of the whole population [14]. In the past studies, especially the methods for first aid training given to students were evaluated and it was stated that the training was effective. However, there was no consensus on the method of education in the studies conducted on the students [15,16].

The aim of this study was to perform a training intervention on first aid and basic life supportto the volunteers among first year students an University Health School and to open first aid education center in university and. Our secondary objective was to certificate the students who were succesfull in final exam.

## MATERIAL AND METHODS

At the end of the academic year 2012 – 2013, the project was announced to school of Health and they were informed about main content of the intervention. A total of 78 students were included who the age of volunteer students for the training ranged between 18-20and they had no prior first aid knowledge.

Then; first aid booklets were e-mailed to 78 students who were intented to be trained. The 78 candidates underwent a self learning period of 3 months.

And lastly, a First aid center affiliated to Continious training Center was established with the confirmation of Ministry of Health. After two months, 53 students who succeeded on the test about basic life support were subjected to 16 hours of first aid training.

In our project, a manikin park is developed. The manikins and materials used in the training are presented in Table 1.

Trainer of our intervention is subjected to 16 hours firs aid training from a lokal Office. Theoretical basic life support lecture is given to

all 43 students at once. Practical lessons of BLS were given in two groups due to excessive number of students. Both groups were given BLS practice lessons for two days. At the end of BLS lectures students were given written and practical exams.

**Statistical Analysis**

Analysis is processed by SPSS22.0(IBM Corparation, Armonk, New York, United States) programme. Compatibility of the data with normal distribution is detected via Shapiro-Wilk test and Levene test is used for the homogenity of variance. Comparison of two independent group is done by Independent-SamplesT test. To compare the datas with two dependent categories, Mc-Nemar test is used withExact results. Pearson Chi-Square test is evaluated with Monte Carlo Simulation technique and FisherExact test is evaluted with Exact results in comparison of categorised datas with eachother. Quantitative datas are shown in tables as mean±std(standart deviation) and Range(Maximum-Minimum) values. Categorised datas are shown with n(number) and percentiles (%). Datas are examined with 95 % confidence level and p value <0.05 is considered significant.

**Results**

The results of written and practical exam applied to group I and II trainees are shown in Table 2 respectively.

Theoretical basic life support lecture is given to all 43 students at once. Forty-one of these students attended to Basic Life support (BLS) practice class. Practical lessons were taken in two groups. A written and practical exam was done after BLS training. From the first group 23 students attended to the exam. Twenty-three of these student were successfull in written exam who gathered over 85. However only 11 of 23 were able to manage over 85 in the practical exam. Two students who were not successfull took the practical exam second time and was able to do over 85. In the second group 18 students attended to written and practical exam and all of them managed to get marks higher than 85 in both exams.

**Table 1.** The manikins and materials used in the training

| Quantity | Type |
|---|---|
| 1 | Adult BLS Manikins CPR 12 Full Body Skillguide |
| 1 | Baby CPR 02 Full Body without skillguide, |
| 1 | Adult Heimlich Maneuver Manikin CPR 145 Hemi Body |
| 1 | Baby Heimlich Maneuver Manikin, CPR 140 Infant Heimlich |
| 1 | Trauma Simulation Kit, H111/20 Trauma Simulation Kit |
| 10 | Elastic bandages |
| 10 | Triangular bandages |
| 10 | Rolling bandages |
| 6 | Wooden splints |
| 10 | Selotapes |
| 20 | Gause |
| 30 | Lock Pins |
| 30 | Pins |
| 5 | Board Markers |
| 6 | Blunt Tipped Scissors |

The self evaluation of students before and after education with the same questions, the difference and significance is shown in Table 3. When successful and failed students were evaluated among themselves and together with the same questions before and after education, the difference in all questions after education is statistically significant (p< 0.001). The first of two significantly different questions was " Do you know how to stabilize with triangle bandage in case of fractures, luxations and strains?". In the group of students who failed 15.9 % answered "No", 84.1 % answered "Yes" where in the group of successful students 0 % answered "No", 100 % answered "Yes" and this difference was statistically significant (p=0.037). The next significantly different question was "Do you

know the technique to carry speedy for short distances". In the group of students who failed 13.6 % answered "No", 86.4 % answered "Yes" where in the group of successful students 0 % answered "No", 100 % answered "Yes" and this difference was statistically significant (p=0.039).

**Table 2.** Results of Group I-2 Trainees

| Results of Group I-2 Trainees | Grup 1 Total student (n=23) | Grup 2 Total student (n=20) |
|---|---|---|
| **Number Accomplished written exam** | 23 | 20 |
| **Number Accomplished practical exam** | 11 | 20 |
| **Result/accomplished** | 11 | 20 |
| **Result/failed** | 12 | 0 |
| **Total student accomplished** | 33 | |

The results of the test after education is also compared between the group of successful students and students who failed. The difference in answers of two questions were significant where 4 questions were not significant. Remaining 8 questions were not available for evaluation while none of the students in both groups answered "No".

Although whole number of first year nursery students was 120, this project started with 78 students and 43 of them attended to theorical classes. Besides, 31 of these 43 students attended BLS practical lessons and had first aid certificate.

While first aid is a life saving implementation especially practical success and skillful application is important.

## Discussion

Accidents consists of an important part of mortality and morbidity causes and in a considerable amount of these accidents victims need first aid [18-21].

First aid is defined as medical intervention appliedto a person in a life threathening condition due to any reason for avoiding him to get worse, until skilled staff arrived, with available equipment [6,18,21- 23].

Previous studies stated that 34% of the consequential deaths after the accidents occur in the first 5 minutes and 54% deaths are recorded to happen in first 30 minutes. These rates are indicating that first medical interventions are applied by the person in the accident scene and unfortunately these favorable attempts are so far from saving victims life [4,24]. Whereas the interventions applied by the people firstly arrived to the victim can avoid mortalitiy or any consequential disability. Especially a facultative and qualified first aid increases the success of the educationafter the accident and decreases deaths by 20%[21].

BLS Training is a social responsibility more than an act of obligation. Currently it is obligatory in EU countries according to Quality Management Statements and many accreditations [25, 26].

In another study, Xanthos et al. [27], 18 nurses and 18 physicians trained by the European Resuscitation Council (ERC) trained 108 nurses divided into two groups and assessed their basic first aid skills. One month after the completion of the course, 108 nurses were re-evaluated. There was no statistically significant difference between the two groups in the written exam. However, in practice, nurses in group A who were trained by doctorswere able to identify the patient easily during cardiac arrest, but had difficulty in using chest compressions and AED, and it was observed that group B who were trained by nurses used

AED more accurately and continued cardiopulmonary resuscitation without delay. In conclusion, according to this study, nurses trained by nurses were found to be more successful in practice[27].

In study, Tuyisenge et al., last year students from 84 medical schools in Rwanda were given triage and clinical skills courses[28]. Students were initially pre-tested. Trainings were given after the test for the assessment of knowledge and clinical skills and re-tested immediately after the training and at 3 and 9 months. In the test where the information was evaluated, the average increased from 47% to 71% and showed a significant improvement in correct answers ($p < 0.001$). As a result of the evaluation with two clinical scenarios, 98% of the students went through the scenarios. For clinical skills, 74% of both scenarios were immediately successful after training and 32% were successful after retraining. 8% did not succeed if they were retrained. As a result; students gained knowledge and skills immediately after a comprehensive course. While the knowledge continued after 3-9 months, several short courses and practical training were proposed for practice [28].

In the studied by Santos et al., The first-aid information of senior students was asked to be evaluated and a questionnaire was applied. The students were asked to distinguish between emergency, first aid and non-emergency situations. As a result of the study, it was founded that very few of the students knew the situations requiring basic life support and therefore it was emphasized that first aid education should be given in the first year of the university[29].

Altintas et al. developed 24-hour and 12-hour programs for first aid and basic life support training and evaluated the participants' views on the event. 682 first-year medical students stated that the 24-hour training program met their expectations (85.9%) and was satisfied with the training (91.1%). 75.6% stated that they could be applied safely in real situations by using the subjects they have learned. 84.4% of the students stated that they felt resourceful in their first aid and basic life support applications. As a result, both programs were considered to be effective [25].

In another study, 122 first-year medical, dental, nursing and physiotherapy students were randomized to receive basic life support lessons from second-class student instructors or experienced clinical staff. At the end of the course, students' practical skills, knowledge and satisfaction were tested. First-year students were found to be significantly higher at the end of the education given by second-year student instructors than those given by clinical staff. (56/57 vs. 53/62). It was stated that the success in basic life support with the education received from the student trainers will provide advantages in terms of reliability in undergraduate education, and at least as good education quality as the clinical staff provides[30].

In light of the known reality that: 127,000 deaths 2.4 million injuries are caused by traffic

accidents every year in European Union countries, a first aid and basic life support course seems to become mandatory for drivers. A study aimed to evaluate theeffect of a course on participants' knowledge and self-assessed first aid and basic life supportskills. Totally 115 participants were given a questionnaire before and after course. Upon completion of the course, 95% knew how to relieve a foreign bodyairway obstruction, and knew the recommended compression-ventilation ratio during CPR. Despite significant improvements after the course only 64% knew how to diagnose cardiac arrest,44% knew when to activate an automatic external defibrillator and 23% were aware of when to activatethe emergency medical services. Participants significantly increased their self-confidence after the course ($p < 0.001$) [31].

Ischaemic heart disease is the leading cause of death in the World [32]. The cardiovascular illnesses are among the foremost reasons of mortality in the World [33]. Sudden cardiac arrest (SCA) is a leading cause of death, recent estimates of SCA incidence for age 1 to 35 years have rangedfrom 0.8–2.8 per 100,000 person-years[34].

Cardiopulmonary arrest is a very common emergency for health professionals and any delay in intervention reduces the chances of survival. Therefore, correct and timely intervention is important[35].

The important statements for ardiopulmonary arrest are as follows;

1.Early recognition of the emergency and call for help[35].

2.Early onset of cardiopulmonary resuscitation may double or triple survival[36,37].

3. Early defibrillation: Each minute of delay in defibrillation reduces the probability of survival to discharge by 10—15% [36,37].

4.Early advanced life support and postresuscitation care [9].

Harvey et al presented their 15-year peer-led health education undergraduate education and examination experience through literature review[38]. Training methods included the training and evaluation of peers by senior students who completed an instructor course approved by the European Resuscitation Council. For the first year, the successful completion of the Birmingham course in health care was compulsory for the second year of study. The first attempt was 86% successful and close to 100% after re-evaluation on the same day. The peer-led BLS course demonstrates that these programs can have excellent results with outstanding participant satisfaction. Peer teachers and assessors are competent, more appropriate, and less costly than clinical staff. Student trainers develop teaching, assessment and evaluation, organization and research skills [38].

Although basic life support improves outcomes in cardio-respiratory collapse, less than 1% of the general population can perform effectively. The education of school children in the CPR is then strongly supported by the European Resuscitation Council [39].

**Table 3.** Self – Evaluation of Knowledge

| Self – Evaluation of Knowledge | | Failed | | Successful | | Total | | P Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AE | BE | AE | BE | AE | BE | AE | S | F | TOTAL |
| | | n=44 | n=44 | n=31 | n=31 | n=75 | n=75 | S-F | BE-AE | BE-AE | BE-AE |
| Know how to maintain security | No | 24(54,5) | 0(0) | 16(51,6) | 0(0) | 40(53,3) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 20(45,5) | 44(100) | 15(48,4) | 31(100) | 35(46,7) | 75(100) | | | | |
| Knows to call for help in a right way | No | 10(22,7) | 0(0) | 7(22,6) | 0(0) | 17(22,7) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 34(77,3) | 44(100) | 24(77,4) | 31(100) | 58(77,3) | 75(100) | | | | |
| Knows to evaluate breathing | No | 31(70,5) | 0(0) | 13(41,9) | 0(0) | 44(58,7) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 13(29,5) | 44(100) | 18(58,1) | 31(100) | 31(41,3) | 75(100) | | | | |
| Knows to evaluate circulation | No | 33(75) | 0(0) | 15(48,4) | 0(0) | 48(64) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 11(25) | 44(100) | 16(51,6) | 31(100) | 27(36) | 75(100) | | | | |
| Knows to maintain airway | No | 31(70,5) | 0(0) | 16(51,6) | 0(0) | 47(62,7) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 13(29,5) | 44(100) | 15(48,4) | 31(100) | 28(37,3) | 75(100) | | | | |
| Knows to maintain respiration and circulation support | No | 28(63,6) | 0(0) | 15(48,4) | 0(0) | 43(57,3) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 16(36,4) | 44(100) | 16(51,6) | 31(100) | 32(42,7) | 75(100) | | | | |
| Knows the main differences between adult and child BLS | No | 33(75) | 0(0) | 21(67,7) | 0(0) | 54(72) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 11(25) | 44(100) | 10(32,3) | 31(100) | 21(28) | 75(100) | | | | |
| Knows to apply tourniquet | No | 24(54,5) | 2(4,5) | 17(54,8) | 0(0) | 41(54,7) | 2(2,7) | 0.508 | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 20(45,5) | 42(95,5) | 14(45,2) | 31(100) | 34(45,3) | 73(97,3) | | | | |
| Knows to stabilize a foreign body plunged to the trunk | No | 30(68,2) | 2(4,5) | 22(71) | 0(0) | 52(69,3) | 2(2,7) | 0.508 | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 14(31,8) | 42(95,5) | 9(29) | 31(100) | 23(30,7) | 73(97,3) | | | | |
| Knows Rentek maneuver | No | 32(72,7) | 4(9,1) | 22(71) | 0(0) | 54(72) | 4(5,3) | 0.138 | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 12(27,3) | 40(90,9) | 9(29) | 31(100) | 21(28) | 71(94,7) | | | | |
| Knows to stabilize with triangle bandage in case of fractures, luxations and strains | No | 30(68,2) | 7(15,9) | 19(61,3) | 0(0) | 49(65,3) | 7(9,3) | **0.037** | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 14(31,8) | 37(84,1) | 12(38,7) | 31(100) | 26(34,7) | 68(90,7) | | | | |
| Knows the technique to carry speedy for short distances | No | 34(77,3) | 6(13,6) | 18(58,1) | 0(0) | 52(69,3) | 6(8) | **0.039** | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 10(22,7) | 38(86,4) | 13(41,9) | 31(100) | 23(30,7) | 69(92) | | | | |
| Knows to stop external hemorrhage | No | 20(45,5) | 0(0) | 15(48,4) | 0(0) | 35(46,7) | 0(0) | - | **<0.001** | **<0.001** | **<0.001** |
| | Yes | 24(54,5) | 44(100) | 16(51,6) | 31(100) | 40(53,3) | 75(100) | | | | |
| Think that you have sufficient first aid knowledge and practice | No | 34(77,3) | 5(11,4) | 23(74,2) | 2(6,5) | 57(76) | 7(9,3) | 0.693 | **<0.001** | **<0.001** | **<0.001** |

BA: before education; AE: after education; S: successful; F: failed

## Conclusion

First aid and BLS is critical in life threathening conditions. And in order to avoid deaths and irreversable organ damage BLS must be applied early and effectively. Although American Cardiac Association and European

Resuscitation Guidelines BLS training is warranted for nurses, doctors and students of all other health related sciences previous publications stated that practice and knowledge about BLS were insufficient. Training intervention in our study aimed to give student nurses a BLS certificate and develop a self esteem on them to provide BLS in secured campus area or anywhere in their life when needed.

We observed that; first aid and BLS training in accordance with the reccomended standarts developed knowledge and practice of students with a pleasure of being a first aid staff. Another important conclusive statement to note is that most of the students who managed written exam could not success in practical evaluation. This warrants to pay a particular importance to the practical hours in such training interventions to achieve best results. These results can be instructive for revising the first aid and BLS trainings and obtaining the standart circumstances of these interventions.

Nursery students and nurses needs novel researches to manifest the training interventions and practical skills more than first aid and BLS knowledge. Precourse and postcourse evaluations revealed that first aid trainings should be given as a seperate practical lesson rather than a topic in a related theoretical lecture.

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