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EFFICACY OF PROJECT-WRITING AND APPLICATION TRAINING FOR ACADEMIC PERSONNEL IN THE FIELD OF HEALTH SCIENCES

Sibel Yalçın, Özgür Özerdoğan, Buse Yüksel, Coşkun Bakar

Onsekiz Mart University, Department of Public Health, Canakkale, Turkey

ABSTRACT

Objective: *This research aimed to assess the efficacy of project writing training for participants wishing to write projects for the health sciences field.*

Material and Method: *This interventional-type research was conducted in November 2017 on 32 individuals who were interested in writing projects in the health sciences field. Pretest and posttest were applied before and after training by answering under observation of the research team. The efficacy of the second stage of project writing training was assessed by creating a skill checklist based on the project writing stages for Scientific and Technological Research Council of Turkey (TUBITAK) 1001 number project.*

Results: *The mean knowledge points of participants were identified to significantly increase after training compared to those before training ($p<0.05$). 14 people successfully completed the project-writing training. For each group the project-writing stages were found at "should be developed" and "sufficient" levels. Participants stated that project-writing was not as easy as they thought and they required more time. When the feedback from participants is investigated, medical faculty specialization students found that they required separate group training about scientific project writing. Additionally, feedback was received that specific project-writing training for different occupational groups within the health science field may be more beneficial.*

Conclusion: *The project-writing training presented in this research was found to be effective. A "project writing training module" that is updateable and may be used to train different groups in the future was created.*

Keywords: *Project, training, knowledge, skill, health science*

CORRESPONDING AUTHOR: Özgür Özerdoğan Public Health Department of Onsekiz Mart University Medical Faculty drozgurozerdogan@gmail.com

SO https://orcid.org/0000-0002-1119-6446 **ÖÖ** https://orcid.org/0000-0003-2176-9073 **BY** https://orcid.org/0000-0002-7959-618X

CB https://orcid.org/0000-0002-5497-2759

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SAĞLIK BİLİMLERİ ALANINDA AKADEMİK PERSONEL İÇİN PROJE YAZIMI VE UYGULAMA EĞİTİMİNİN ETKİNLİĞİ

ÖZET

Amaç: Bu çalışma, sağlık bilimleri alanında proje yazmak isteyen katılımcılara verilen proje yazma eğitiminin etkinliğini değerlendirmeyi amaçlamıştır.

Materyal ve Metot: Bu müdahaleli tipteki çalışma Kasım 2017'de sağlık bilimleri alanında proje yazmak isteyen 32 kişi ile yapıldı. Ön test ve son testler, araştırma ekibinin gözetimi altında cevaplanarak eğitim öncesi ve sonrası uygulandı. Proje yazma eğitiminin ikinci aşamasının etkinliği, Türkiye Bilimsel ve Teknolojik Araştırma Kurumu (TÜBİTAK) 1001 projesi için proje yazma aşamalarına dayanan bir beceri kontrol listesi oluşturularak değerlendirildi.

Bulgular: Katılımcıların ortalama bilgi puanlarının, eğitim sonrası eğitim öncesi ile karşılaştırıldığında anlamlı olarak arttığı belirlendi (p<0,05). Proje-yazma eğitimini 14 kişi başarıyla tamamladı. Her grup için proje yazma aşamaları "geliştirilmeli" ve "yeterli" düzeylerde bulundu. Katılımcılar, proje yazmanın düşündükleri kadar kolay olmadığını ve daha fazla zamana ihtiyaç duyduklarını belirttiler. Katılımcılardan alınan geri bildirimler incelendiğinde, tıp fakültesi uzmanlık öğrencilerinin, bilimsel proje yazımı hakkında ayrı grup eğitimi almaları gerektiği tespit edildi. Ayrıca, sağlık bilimi alanındaki farklı meslek grupları için özel proje yazma eğitimlerinin daha faydalı olabileceği konusunda geri bildirim alındı.

Sonuç: Bu çalışmada sunulan proje yazma eğitimi etkili bulundu. Güncellenebilen ve gelecekte farklı gruplar yetiştirmek için kullanılabilecek bir "proje yazma eğitim modülü" oluşturuldu.

Anahtar kelimeler: Proje, eğitim, bilgi, beceri, sağlık bilimi

INTRODUCTION

Scientific papers are written and published to report the results of research. The most effective method of ensuring communication in science is through writing scientific articles. Additionally, the majority of articles are product of research projects. When the literature is investigated, there appear to be many researches on the topic of writing scientific papers.[1-6] However, there is information about development and assessment of project writing and project-writing skills in a limited number of researches. Additionally, there is no reference investigating the efficacy of project-writing training in Turkey. This deficiency shows the presence of a negative feedback cycle regionally and nationally about research and development quality, not observed in reality.

The most effective route to identify problems and solutions in our society is the scientific method. Identification of problems, especially in the field of health, analysis of causes, evidence-based observation and experiments about development of solution recommendations and interventions, and application and observation of solutions is only possible by using scientific methods. Additionally, considering the basic function of many teaching staff is to produce scientific data, this topic is a very important point. However, it is observed that research and applications revealing working methods both in public institutions and academic areas are insufficient. Papers published about the topic of writing scientific works provide significant contributions to transforming scientific researches into publications. An important work on this topic was written by Robert A. Day.[3] Experimental or clinical scientific research is performed with the desire to find new medical applications or to develop available medical applications in the health field. New research reports prepared are published as articles. However, for publication of scientific articles, they must be written in accordance with certain rules.[5]

For completion of prepared projects, results must be published in scientifically-acceptable environments (thesis, scientific congress, peer-reviewed journals, etc.). Thus, scientists working on the same topic should be able to access these researches and researches may be assessed by the scientists. As a result, result of researches should be reported as scientific publications and shared in the relevant scientific field. To create scientifically-acceptable publications, there is a need for well-designed projects written in line with certain rules.

The majority of researches on project writing and application are related to project writing training. This research provided training with the aim of developing knowledge on and skills in project writing and presentation necessary for researchers working in the field of health sciences to describe a problem scientifically , to be able to conduct analytical researches and to be able to decide on research methods in line with topics, aims and targets they wish to research. Additionally, survey forms measuring knowledge,

attitudes and behavior were applied before and after training with the aim of investigating the efficacy of training given to participants.

MATERIAL AND METHOD

This research is an interventional-type epidemiologic research.

The research team included public health teaching staff expert on the topic of training skills, project writing and application.

Before the question forms were used in the research (pretest-posttest, project stages writing skills checklist), the research team held preliminary training. After preliminary training, pre-trials of the question forms were applied to 10 randomly chosen individuals not included in the research. During this application, observations were made by implementers on the research team. After completing pre-trials of the question form and the implementers, questions were reviewed and the form was given its final form. Additionally, the "Project Writing Guide" used in training and distributed to participants was updated by the researchers, the content related to scientific research techniques and organization information, application conditions, etc. for national projects was revised and standardization of training was ensured.

This research included 32 individuals wishing to prepare projects in the Health Sciences field on 25-26 November 2017. The research was held in an University Faculty of Medicine Deanary Building. Participants completed a pretest comprising 20 questions in 10-15 minutes before training under observation of the research team. After pre-test participants were given training and completed applied project writing. Training was completed in two stages. In the first stage participants were given training about "Scientific Research Techniques" with the aid of visual-audio material, while in the second stage training was given about developing knowledge and skills about project writing. After training, participants had a posttest comprising 20 questions applied in 10-15 minutes under observation of the research team. The tests applied before and after training comprised a question form with statements about topics of "knowledge, attitude and behavior related to project writing and application". After the posttest, participants were divided into 3 groups containing participants with different occupations with the aim of gaining knowledge and skill related to being a "research team". Each group completed group research to fill the form prepared to evaluate project writing skills and to prepare project presentations. After completing group research, the team leader chosen by each group presented a project. Group presentations were attended by the researchers and participants. After each presentation, questions were answered, with active participation by participants ensured. Aspects of the presented projects that were lacking or required development were debated. Researchers gave points for each group presentation using the skills checklist created based on the Scientific and Technological Research Council of Turkey (TÜBİTAK) project number 1001 writing stage form as "insufficient". "should be developed" and "sufficient". Later participants completed the course and trainer assessment forms in 10-15 minutes under observation by the research team.

The research protocol got the approval of the Ethical Committee (Date of decision:15.02.2017, Decision Number: 2017-03) at Çanakkale Onsekiz Mart University Faculty of Medicine. Participants voluntarily participated in the research and were informed about the aim, method and training program content one week before training by the project coordinator. This research was supported by Çanakkale Onsekiz Mart University Scientific Research Project Coordination Unit, project number: THD-2017-1144.

The data in the research were analyzed with the SPSS 20.0 statistical software program. Number, percentage, mean, standard deviation, median, minimum and maximum were used for presentation of data. Analysis of categorical data used the McNemar test. Statistical significance was taken as $p<0,05$.

RESULTS

The test before training was completed by 32 individuals, while the test after training was completed by 19 individuals. Of participants, 68.8% (n:22) were female and 31.3% (n:10) were male. The mean age of the group was 27.1±4.5 years. Descriptive characteristics of the research group are presented in Table 1.

The mean total points for those answering the pretest were 7.3±3.2 points with median 7.0 (min: 2.0, max: 15.0). For those who completed both the pretest and posttest, the mean points for the pretest were 7.9±3.5 points with median of 12.3 (min: 2.0, max: 15.0). The mean total points for posttest participants were 13.3±3.4 points, with median 14.0 (min: 7.0, max: 18.0). The difference between pretest mean points and posttest mean points in the group was statistically significant ($p<0.001$) (Figure).

Table 1. Demographic characteristics of the study group, Çanakkale, 2017

Variables	n (%)
Gender	
Female	22 (68.8)
Male	10 (31.2)
Undergraduate Education	
Medical faculty	11 (34.5)
Health vocational school (nurse, midwife, emergency medicine technician)	8 (25.0)
Biology	7 (21.9)
Administration	1 (3.1)
Tourism faculty	1 (3.1)
Agricultural faculty	1 (3.1)
Educational faculty	1 (3.1)
Food engineering	1 (3.1)
Health management	1 (3.1)

n: number, **%:** column percentage

The comparison of responses before and after training for each question on the pretest and posttest assessments of participants is presented in Table 2.

Participants' thoughts about the course were assessed with 5-point Likert type questions. The majority of participants stated they "definitely agree" with the statements "aim and target of course were clear" (86.7%), "information was clearly presented" (73.3%), "trainers were excited and enthusiastic about the topic" (86.7%), "I can use what was taught in my working life" (73.3%), "activities in class were appropriate for aims" (86.7%) and "this course increased by confidence as an educator" (53.4%). Of participants, 53.3% chose "agree" for the statements "there was a good balance between theory and practice" and "the course was well-organized" (Table 3).

The thoughts of participants related to trainers were assessed with 5-point Likert-type questions. The majority of participants chose "definitely agree" for the statements "they made me feel comfortable" (100.0%), "they ensured effective participation of the whole group" (60.0%), "they knew the limits of their own knowledge; if they didn't know they accepted it" (86.7%), "they supported interaction between participants" (73.3%), "they made it easy for me to ask questions and express concerns" (80.0%), "they clearly stated the training skills target outcomes" (73.3%), "they explained the principal and logic underlying the skills" (86.7%) and "they encouraged me to become a competent educator" (78.6%) (Table 4).

DISCUSSION

When the national and international literature is investigated, researches related to how to perform research and project writing training, its place within the training program and developing research and project writing knowledge, attitude and skills during training of professionals in the health sciences field, especially, mainly appear to be completed with medical faculty students.[7-19] As a result, both globally and in Turkey there is a clear need for researches performing training for other health personnel and health researchers in different disciplines, in addition to medical faculty graduates who will work in health services, researches identifying the current situation related to this topic and assessing the efficacy of training, as in our research. The most important unique value of our research is the presentation of a significant scientific data source to fill this gap in both the national and international literature. The mean knowledge points of participants in our research were identified to increase significantly after training compared to before training ($p<0.05$). Every group was found to have project writing stages at "should be developed" or "sufficient" levels; however, no group completed the project. Project summaries, especially, could not be written. These results are expected results from the training. One of the aims of our training was to develop the knowledge and attitudes of participants related to the fact that "project writing" does not take a few days' workbut requires a few months' work. Feedback made by participants during presentations stated that project writing was not as easy as they thought, that they needed more time, that before training they did not know there were different types of project or that applications should be made according to area of interest but they gained information about these topics during training.

The Association of American Medical Colleges has noted a reduction in the number of research physicians in recent years. For medical students to choose the area of research as a career, the "critical inquiry elective" was included in the syllabus, mandatory in 2nd year of Queen's University Faculty of Health Sciences. Tests were applied before and after the elective with an increase in the number of students choosing research as a career following the elective. Students additionally stated they developed their debating skills after training and that literature knowledge and critical thinking skills had increased.[9] Another research of medical students in New Zealand assessed research and career attitudes to this area. The research results reported 25% of students gained research experience with student grants during the

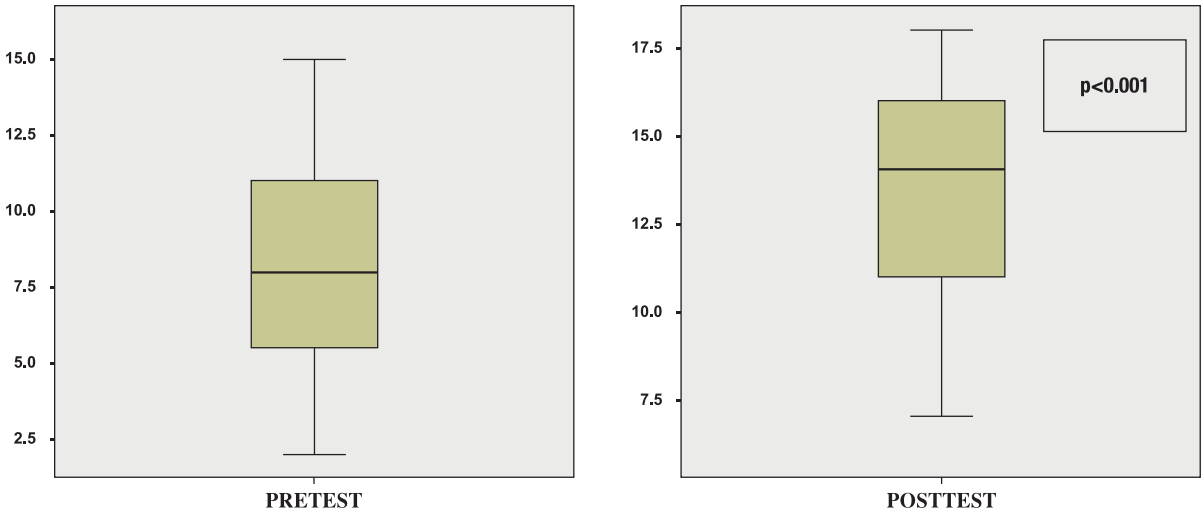

Figure. Mean total pretest and posttest points for participants

summers of their educational years. Of students, 70% reported they were interested in participating in research during education. Of students, 68% were aware that research is an intermediate position in their schools; however, only 8.6% stated they were were interested in this position. The most important reasons for this were lack of interest in research experience in this format, social reasons and material reasons, in that order. Only 22% of students in this research stated they wished to gain MD or PhD degrees after graduation. Students chose high living standards and wages rather than a research career.[17] However, encouraging students in undergraduate education about research will be beneficial to employ academically-strong people in health sciences in the future and to increase the quality of postgraduate researches and as a result, it will be beneficial to include research training. With this aim, student opinions and feedback about training, lessons, courses and electives added to the syllabus should be obtained.[16] Research training is a part of modern medical education. A research of medical students by Burgoyne *et al.* assessed the research awareness, use of skills related to research, motivation about performing research and personal opinions on the topic of research of students. The ability of students to use knowledge and skills while performing research, skills specific to research like research design, use of scientific research techniques, data collection and data analysis, research experience and attitude and motivation about performing research were investigated. At the end of the research, the majority of students wished to perform research, additionally, the majority of students were identified not to be aware of medical research and successes from their own universities. Those reporting they were not interested in research as a career stated "researchers are not involved in clinical applications and avoid patients" as a reason for this. The research between December 2008 and February 2009 by Burgoyne *et al.* identified that the lack of awareness about the research activities of teachers and supervisors was a factor in interest in research.[7] As a result, it is important to increase awareness of trainers, specialists and students during research training.

It is necessary to develop academic skills such as project writing, coordinating research, writing a scientific paper, etc. As a result of the present educational syllabus, problems like academic aspects of newly-trained health personnel being insufficient display similar progression in Turkey as in many other countries. According to the literature, the deficiency of educational programs in terms of developing article, project writing, and skills related to taking part in and coordinating research, especially, in medical education has begun to be criticized by educators in recent years.[20,21] A research by Young, a 3rd year student at Brown University, Warren Alpert Faculty of Medicine in Rhode Island USA, completed with his trainers stated that 1/3 of students completing medical training graduated without performing any research. The use of scientific research techniques does not only teach students research, project, and article writing knowledge and skills, at the same time students gain skills and responsibility in organizing more than one thing at a time, skills related to communication are developed by teamwork and thus, significant skills that will ensure success in future careers such as the ability to exchange and use, criticize and debate scientific information are gained.[21] A research investigating the inclusion of medical students as authors in biomedical research found 79% of students were included as author in articles produced from

Table 2. Comparison of answers given to pretest and posttest questions

Variables		Posttest		
	Pretest	Wrong-blank n(%)	Correct n(%)	*p*
Which of the following is true about science?	Wrong-blank n(%)	1 (5.3)	6 (31.6)	0.031
	Correct n(%)	0 (0.0)	12 (63.1)	
Which statement is started with scienctific research process?	Wrong-blank n(%)	3 (15.8)	5 (26.3)	0.063
	Correct n(%)	0 (0.0)	11 (57.9)	
Which of the following scientific research, scientist doesn't need to be an objective and beside?	Wrong-blank n(%)	3 (15.8)	3 (15.8)	1.000
	Correct n(%)	3 (15.8)	10 (52.6)	
Which of the following study method is not true for finding an association between cause and result?	Wrong-blank n(%)	5 (26.3)	5 (26.3)	0.063
	Correct n(%)	0 (0.0)	9 (47.4)	
Which of the following study method do you prefer to detect variability and realibility of a new diagnostic test developed by you?	Wrong-blank n(%)	5 (26.3)	4 (21.1)	0.375
	Correct n(%)	1 (5.3)	9 (47.3)	
You have done a training study for protecting young people at 15-24 age in a immigrant camp from accidents, And you have calculated the parameter of "relative efficacy", Which of the following study method of this research is true?	Wrong-blank n(%)	11 (57.9)	1 (5.3)	1.000
	Correct n(%)	2 (10.5)	5 (26.3)	
Which of the following study methods is not true about an Observational Study?	Wrong-blank n(%)	2 (10.5)	8 (42.1)	0.008
	Correct n(%)	0 (0.0)	9 (47.4)	
Which of the following study methods uses randomization?	Wrong-blank n(%)	9 (47.3)	4 (21.1)	0.687
	Correct n(%)	2 (10.5)	4 (21.1)	
Which statement is not true about criteria for causality?	Wrong-blank n(%)	8 (42.1)	9 (47.4)	0.004
	Correct n(%)	0 (0.0)	2 (10.5)	
Which of the following parameters is used for evaluating power of association?	Wrong-blank n(%)	6 (31.6)	5 (26.3)	0.063
	Correct n(%)	0 (0.0)	8 (42.1)	
Which of the following TUBİTAK Projects is open for always and application is done all the time during a year?	Wrong-blank n(%)	2 (10.5)	16 (84,2)	<0,001
	Correct n(%)	0 (0.0)	1 (5,3)	
Which of the following project types is true about priority areas of TUBITAK?	Wrong-blank n(%)	5 (26.3)	14 (73,7)	<0,001
	Correct n(%)	0 (0.0)	0 (0,0)	
Which of the following statements is not true about original value for a project?	Wrong-blank n(%)	7 (36.8)	9 (47,4)	0,021
	Correct n(%)	1 (5.3)	2 (10,5)	
Which of the following is true and plus point for evaluating management skills of project?	Wrong-blank n(%)	8 (42.1)	0 (0,0)	0,250
	Correct n(%)	3 (15.8)	8 (42,1)	
Which of the following sections should be written latest while the project application form is being created?	Wrong-blank n(%)	3 (15.8)	11 (57,9)	0,001
	Correct n(%)	0 (0.0)	5 (26,3)	
Which of the following is not true about common effect for a project?	Wrong-blank n(%)	8 (42.1)	8 (42,1)	0,039
	Correct n(%)	1 (5.3)	2 (10,5)	
Which of the following titles is not true about section of the project method?	Wrong-blank n(%)	5 (26.3)	2 (10,5)	0,687
	Correct n(%)	4 (21.1)	8 (42,1)	
Which of the following advantages is not true about B plan for the proposed project?	Wrong-blank n(%)	11 (57.9)	4 (21,1)	0,687
	Correct n(%)	2 (10.5)	2 (10,5)	
Which of the following statements is true about original value for the project?	Wrong-blank n(%)	2 (10.5)	6 (31,6)	0,289
	Correct n(%)	2 (10.5)	9 (47,4)	
Match the following project writing steps with appropriate statements.	Wrong-blank n(%)	2 (10.5)	4 (21,1)	0,125
	Correct n(%)	0 (0.0)	13 (68,4)	

n: number, **%:** percentage of total number of participants, ***p:*** McNemar Test. In the present study, researchers used and benefited from TUBITAK (The Scientific and Technological Research Council of Turkey) for evaluating project writing training. The following questions were used for evaluating the impact of the training by looking at differences between pre- and post test scores. The participants filled out the 20-item questionnaire before and after the training with the same set of questions concerning project writing knowledge level

projects or wrote their own articles. This research of medical students in New York reported more than half of students had not received training about "author guidelines", while 41% stated this training may be beneficial.[22] In our research, though our research group did not only include medical students in graduate and postgraduate education, all reported that their project writing knowledge and skills, at least, were increased by this preliminary training research. However, feedback from students in medical specialization training stated academic aspects were deficient in postgraduate training, and that research, project writing and coordination knowledge and skills could not be developed linked to problems due to the working environment including work load.

In medical sciences, for support of young researchers who wish to be successful in academic careers, support including distant learning, courses, mentoring and supervision in their specialization field has been shown to be beneficial in developing project and research writing and application knowledge and skills of students.[23-25] Especially, students knowing the learning targets at the beginning of training and courses was emphasized to increase the knowledge and skill outcomes expected at the end of the research training and students need to know their own responsibilities in the learning process.[25] A research in Berlin, Germany, investigated research projects, evidence-based medical knowledge, attitudes and behavior and attitudes to scientific research techniques. Of students, 2/3 stated they were included in research during education with 70% identified to have difficulty reading articles and about research. The research results found the students had positive attitudes to science, scientific method and scientific research techniques, additionally they reported similar researches in different fields and student groups would be beneficial.[18] Another research in Croatia obtained similar results to the German research and investigated the correlation between learning the "scientific method" on the 2nd year syllabus with attitudes to science and the scientific method, and scientific research techniques. This research observed that medical students generally had positive approaches to the use of science, scientific research, scientific methods and scientific research techniques in medicine. It was reported that courses and training about research methods would be beneficial to develop positive attitudes about science among students.[10] A research of students beginning first year of medical school in Croatia investigated the correlation between scientific knowledge and attitudes of students with high school education, gender, place of residence and acceptance points.

Table 3. Assessment of course by participants

	Definitely Agree	Agree	Uncertain	Disagree	Definitely Disagree
	n (%)	n (%)	n (%)	n (%)	n (%)
Aim and target of course were clear	13 (86.7)	2 (13.3)			
Information was clearly presented	11 (73.3)	3 (20.0)	1 (6.7)		
Trainers were excited and enthusiastic about the topic	13 (86.7)	2 (13.3)			
There was a good balance between theory and practice	4 (26.7)	8 (53.3)	2 (13.3)	1 (6.7)	
The course was well-organized	6 (40.0)	8 (53.3)	1 (6.7)		
I can use what was taught in my working life	11 (73.3)	4(26.7)			
Activities in class were appropriate for aims	13 (86.7)	2 (13.3)			
This course increased by confidence as an educator	8 (53.4)	5 (33.3)	2 (13.3)		

n: number, **%:** row percentage

Table 4. Assessment of trainers by participants

	Definitely Agree	Agree	Uncertain	Disagree	Definitely Disagree
	n (%)	n (%)	n (%)	n (%)	n (%)
They made me feel comfortable	15 (100.0)				
They ensured effective participation of the whole group	9 (60.0)	5 (33.3)	1 (6.7)		
They knew the limits of their own knowledge; if they didn't know they accepted it	13 (86.7)	2 (13.3)			
They supported interaction between participants	11 (73.3)	4 (26.7)			
They made it easy for me to ask questions and express concerns	12 (80.0)	3 (20.0)			
They clearly stated the training skills target outcomes	11 (73.3)	3 (20.0)	1 (6.7)		
They explained the principal and logic underlying the skills	13 (86.7)	2 (13.3)			
They encouraged me to become a competent educator	11 (78.6)	2 (14.3)	1 (7.1)		

n: number, **%:** row percentage

First year students had no basic information about scientific methods and communication in medical sciences; however, they were reported to have positive attitudes to participation in scientific research.[19] A research of medical students in Pakistan reported

that students receiving problem-based education had higher interest in performing research compared to those not receiving this training, and that the use of this educational model may be effective in directing medical students to research careers.[8,12] Additionally, it was stated that research training is important for medical education, and that there is a need for training to increase the knowledge, attitude and skills related to research among future physicians.[11-13] Feedback from participants in our research stated they knew very littleabout the topic before training and emphasized that it may be beneficial to refresh and recall information with repeated training in the field at certain intervals.

Decision-making in health services is based on evidence-based medical knowledge and skills. As a result, developing scientific thinking skills is an important component of medical education. During project writing training of medical students in India, participants were divided into groups of 3-5 people and requested to determine a project topic and write about it with a supervisor. The majority of participants gave feedback that the project writing training accompanied by a supervisor developed their research skills.[26] Additionally, it was reported that feedback about training contributed to the measurement and assessment process and may be beneficial for the development of planned training modules.[27] In our research in the second stage of project writing training, participants were divided into three groups and each group was accompanied by three teaching staff acting as supervisors and training coordinator. Feedback from participants were similar to those in the Indian research, that this type of group research developed project writing skills. In our research, a short-term state analysis was performed. In accordance with the Indian research, it was observed that learning targets were achieved in our research and that scientific research techniques and project writing knowledge and skill levels were identified to significantly increase after training compared to before training.

Guidelines supporting development of research skills and participation in research projects by medical students have been developed, with these guidelines reviewed and revised according to needs at certain intervals.[14] In our research the "project writing guide" developed by the research team was updated. The research team added the pretest and posttest assessment forms, sample project application form, project writing skills checklist and participant feedback form to this guide and provided it to participants and the Dean of the Medical Faculty in both electronic and printed form.

Feedback from participants in our research stated that education about project writing and application for health personnel is insufficient, similar to the literature. With the applied project writing training, scientific research techniques and project writing knowledge and skill levels were identified to significantly increase after training. This situation indicates that training at certain periods on this topic will increase the knowledge and skill levels about the topic among young academics, who are the foot soldiers of the future of science, and thus aid in increasing their enthusiasm to write projects. Of course, the quality of training is as important as the quantity. Effective training will ensure what is learned is permanent and increase interest and relevance of the topic. As a result, in our research participants were requested to evaluate both course and trainers. In conclusion, both course and trainers were identified to be largely effective in line with our training targets.

Limitations of Research

There are some limitations to our research. The first of these is the low number in our target group. The second limitation is that our target group included health professionals in different occupational groups in accordance with the project heading. Though this situation was reported as an advantage during group research by participants, it was observed that biology, medical and nursing students had difficulty at different points in the first stage of the project especially in the "scientific research techniques" section and training continued at moderate levels linked to being planned for the whole group. To prevent this problem, it may be beneficial to perform training to increase the project-writing knowledge and skills specifically for each occupational group. During group work, it may be more beneficial to present knowledge about obtaining support from experts in different occupational groups about the topic that project coordinators and researchers wish to research and to provide examples with the aim of preserving variety.

The third limitation of our research is that we did not access any national literature on this topic in order to fully compare our findings. The global literature mainly includes samples of researches completed with medical faculty students, the heterogeneous structure of our target group, and the inclusion of different undergraduate and postgraduate students makes it more difficult to discuss our results. However, our aim with this research was to measure the efficacy of training given to develop knowledge and skills of young researchers at the start of their academic careers who wish to write projects in the health sciences

field. With this aim the targets determined were achieved at the end of training, with organization of multidisciplinary project writing training by bringing researchers together from different occupational groups who will work in the health sciences field and discussion of the results of this training clearly observed to be needed in both the national and international literature. As a result, in spite of these limitations, the project examples produced by participants from different occupational groups had a multidisciplinary perspective and for this reason feedback was positive.

CONCLUSION

To present quality projects in the research and development field and to ensure regional and national scientific gains, there is a need for training to develop the project writing knowledge levels, attitudes and skills of academic personnel and to repeat this at regular intervals. For this, the efficacy of this training should be researched, with revision in line with new data, problems, requirements and outcomes to ensure sustainability of these activities.

Our project writing and application training represents an example for other organizations and may encourage similar training to be given to academic personnel in organizations in different centers. Increasing project writing training applied in different universities and comparing the results may develop a national project writing training module. This training module may be applied at periodic intervals as in-service training to academic personnel at the beginning of developing their careers in universities. Thus, every newly-employed academic will develop project preparation knowledge, attitude and skills in the orientation period. In conclusion,this training will benefit the training of qualified academic personnel on a national scale and increase the quality and applicability of research and development projects they will complete.

Participants stated that providing this training over a longer time interval will be beneficial for young researchers in postgraduate education in similar fields. Specialist students from the medical faculty stated that academic aspects were deficient during specialization education, that they did not have time for research-development work or projects or they had not received training about this topic. In conclusion, project writing training was completed by 14 people. In our research, training was effective; when participant feedback is investigated and the training generally assessed, it was identified that specialization students from the Faculty of Medicine required separate group training. Additionally, it is predicted that organization of specific project writing training for different occupational groups in the health sciences field will be more beneficial.

*The authors declare that there are no conflicts of interest.

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