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Research Article/Özgün Araştırma

The effect of first aid training provided to teachers on their first aid knowledge level

Öğretmenlere verilen ilk yardım eğitiminin ilk yardım bilgi düzeyine etkisi

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Abstract

Aim: This study aims to evaluate the impact of first aid training on the knowledge levels of middle school teachers and to emphasize the importance of school health nursing.

Materials and Methods: The study was conducted between January and June 2022 with 104 teachers, utilizing face-to-face interviews and the Individual Identification and First Aid Knowledge Test. The research was conducted in a quasi-experimental design with a pretest-posttest control group. Statistical analyses, including descriptive statistics, mean, standard deviation, median, ANOVA, and two-way analysis of variance, were performed using SPSS version 29.0.

Results: It was found that 52.9% of participants frequently encountered situations requiring first aid, and 78.3% felt inadequate in first aid. The experimental group's mean score increased from 63.65 in the pre-test to 77.33 in the post-test following first aid training. In contrast, the control group's mean scores were 62.40 in the pre-test and 61.94 in the post-test. Significant differences were observed between the experimental and control groups on the first aid knowledge test in the post-tests ($p=0.00$).

Conclusion: It has been determined that the first aid training given has a positive effect on the short-term first aid knowledge levels of teachers.

Keywords: teacher; school injuries; first aid training; nursing.

Öz

Amaç: Bu çalışmanın amacı, ilk yardım eğitiminin ilköğretim öğretmenlerinin bilgi düzeyleri üzerindeki etkisini değerlendirmek ve okul sağlığı hemşireliğinin önemini vurgulamaktır.

Gereç ve Yöntemler: Çalışma, Ocak-Haziran 2022 tarihleri arasında 104 öğretmenle yüz yüze görüşmeler ve Bireysel Tanımlama ve İlk Yardım Bilgi Testi kullanılarak gerçekleştirilmiştir. Araştırma, ön test-son test kontrol grubu ile yarı deneysel bir tasarımda yapılmıştır. Tanımlayıcı istatistikler, ortalama, standart sapma, medyan, ANOVA ve iki yönlü varyans analizini içeren istatistiksel analizler SPSS sürüm 29.0 kullanılarak gerçekleştirilmiştir.

Bulgular: Katılımcıların %52,9'unun ilk yardım gerektiren durumlarla sıklıkla karşılaştığı ve %78,3'ünün ilk yardımda yetersiz hissettiği bulunmuştur. Deney grubunun ortalama puanı, ilk yardım eğitiminin ardından ön testte 63,65'ten son testte 77,33'e yükselmiştir. Buna karşılık, kontrol grubunun ön testte ortalama puanları 62,40 ve son testte 61,94'tür. Deney ve kontrol grupları arasında son testlerde ilk yardım bilgi testi puan ortalaması arasında anlamlı fark saptanmıştır ($p=0.00$).

Sonuç: Verilen ilk yardım eğitiminin öğretmenlerin kısa vadeli ilk yardım bilgi düzeyleri üzerinde olumlu bir etkisi olduğu belirlenmiştir.

Anahtar kelimeler: öğretmen; okul yaralanmaları; ilk yardım eğitimi; hemşirelik.

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Bu makale araştırma ve yayım etiğine uygun hazırlanmıştır.



intihal incelemesinden geçirilmiştir.



Introduction

Injury is the most common cause of preventable morbidity and mortality among children.¹ Although the school environment prepares children for life, it also contains some environmental risks. School-age children spend most of their time at school.² The most common health problem faced by school-age children is school injuries. In a study, it was found that 14.0% of injuries occurred in schools.³ When the etiology of school injuries is examined, it is seen that there are factors such as children spending most of their time at school daily, starting to socialize, engaging in more physical activity, and increasing their movement skills and independence.⁴

School health in the world and our country the development of nursing was characterized by work aimed at solving health problems of the school-age population, developed over time according to need and now emerges as a separate area of specialization.^{5,6} School health nursing is an advanced nursing practice to protect the health of children.⁷ In the regulations on school health or school nursing, the first The importance of first aid and the duties of the nurse related to first aid are included.⁶ However, not every school in our country has a school health nurse. For this reason in the group of first responders in injuries occurring in schools teachers.^{8,9}

First aid is particularly important in the context of school injuries. In a study, it was determined that the classroom teacher was the first to intervene in 64.3% of school injuries.¹⁰ In many studies conducted in our country, it has been determined that teachers' first aid knowledge is not sufficient.¹⁰⁻¹³ Similarly, when looking at international literature, studies are showing that teachers' first aid knowledge level is insufficient.^{11,14,15,16}

Teachers spend extended periods with students, and as a result, they play a very important role in tasks such as intervening in injuries as part of health services, providing education, and observing for risk factors.¹⁶ Although school health nurses cannot take an active role in the field, studies show that nurses and teachers have a significant role in the school injuries that school children encounter

most frequently. Therefore, this study aimed to determine the effect of first aid training on protection from school injuries given to secondary school teachers on the teachers' first-aid knowledge level.

Research hypotheses

Ho: First aid training given to teachers has no effect on the first aid knowledge levels of teachers.

H₁: First aid training given to teachers has an effect on the first aid knowledge levels of teachers.

Materials and Methods

Type of research

This research was conducted a quasi-experimental design with pretest and posttest control group.

Population and sample of the research

The population of the study consists of 208 teachers working at two middle schools affiliated with the Ministry of National Education in a province in western Turkey. The sample is made up of 104 teachers working in middle schools in a province in western Turkey between January and June 2022 (Experimental Group:69, Control Group:35). Although randomization was not applied, naturally existing groups (e.g., schools) were used to assign participants to the experimental and control groups.

The first aid knowledge levels of secondary school teachers were the dependent variables of the study. The sociodemographic characteristics of the participants and the content of first-aid training constitute the independent variables of the study.

Procedur

Before the training, the Individual Identification Form and First Aid Knowledge Test were applied to the experimental and control groups. The appropriateness of the training content, which included first aid practices, was evaluated by obtaining the opinions of 12 experts, each of whom was an expert in their own field. These experts consisted of 2 first aid trainers, 5 public health nurses, 2 surgical nurses and 3 pediatric nurses. After the training content and materials were

finalized after the opinions of these experts, first aid training was given to the experimental group in two sessions in the meeting room provided by the school administration. Each session lasted approximately 40-45 minutes. Immediately after the completion of the training sessions, a simultaneous post-test (First Aid Knowledge Test) was applied to both the experimental and control groups immediately after the training. A follow-up test was applied to the experimental and control

groups 8 weeks after the post-test. Later, training was planned for the control group for ethical reasons, but it could not be done because the school administration refused to receive training. The dependent variables of the study were the first aid knowledge levels of secondary school teachers. The sociodemographic characteristics of the participants and the content of the first aid training were the independent variables of the study (Figure I).

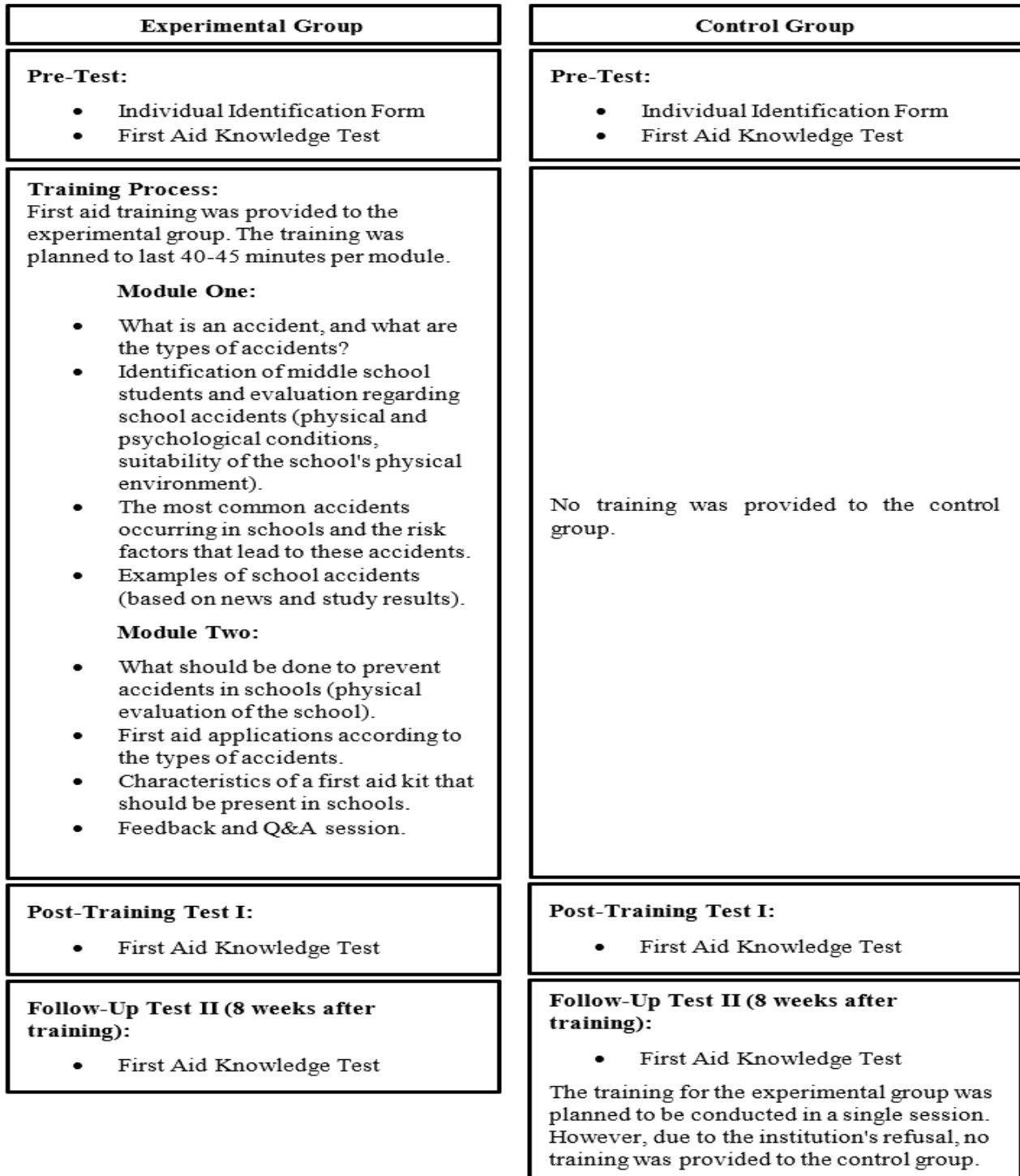


Figure I. Flowchart of the study for the participant.

Data collection tools

The study's data were collected through face-to-face interviews using the "Individual Identification Form" and the "First-Aid Knowledge Test".

Individual identification form

This form, prepared by the researcher in light of the literature, consists of 19 questions, including 10 questions about the sociodemographic characteristics of the participants and 9 questions about their school injuries and first aid experiences.^{3,4,10,13,14}

First-Aid information form

This form, which was prepared by the researchers based on the literature, consists of 25 statements about injuries that teachers may encounter in school-age children and first aid practices, which are answered as "yes" or "no". For the validity and appropriateness of the "First Aid Information Form", 12 experts in the field were consulted. Accordingly, each question in this test, which consists of 25 questions, was valued at 4 points, and the first aid knowledge scores of the participants were evaluated as over 100 points. The highest score that could be obtained from the first aid information form was accepted as 100. As the score obtained increases, the level of first aid knowledge increases in direct proportion. For the First Aid Information Form to be used to measure the first aid knowledge levels of the participants, ANOVA with Tukey's Test for Nonadditivity was applied to the form. According to the results obtained, it was seen that this test had the "additivity" feature ($p=0,169$). In addition, Box's M and Mauchly's Test of Sphericity values were examined for the reliability of this test. In the literature, it is said that if $0.00 \leq \alpha < 0.40$, the scale is not reliable, if $0.40 \leq \alpha < 0.60$, the scale has low reliability, if $0.60 \leq \alpha < 0.80$, the scale is quite reliable, and if $0.80 \leq \alpha < 1.00$, the scale is a highly reliable scale.¹⁷ However, as a result of the analysis made for the First Aid Knowledge Test, it was determined that the Cronbach alpha coefficient was 0.47 and its reliability was low.

Statistical evaluation of the data

In the data analysis of the research, descriptive statistics (mean, standard deviation, median), ANOVA test, and two-way analysis of variance were used in the SPSS 29.0 program. The significance level was set at 0.05.

Ethics committee approval

Before starting the study, written permission was obtained from the Non-Interventional Ethics Committee of a university (date:05.01.2022 and decision number: 2022/01-04) (2015/118) and the Provincial Directorate of National Education. After the necessary explanations about the study were made, written consent was obtained from all teachers. The study was conducted in accordance with the Declaration of Helsinki.

Results

The average age of the teachers participating in the research ($n:104$) is 40.7 ± 7.0 (min:28, max:55) 74% of the participants were women, 81.7% were married, 88.5% had a bachelor's degree, and 69.2% stated that they had received first aid training before. It was determined that 45.2% of the participants received first-aid training through the Ministry of National Education.

Of the participants, 52.9% reported frequently encountering situations requiring first aid at school, 61.5% stated that they had never provided first aid before. Of the participants, 99% thought that first aid was necessary and that first aid training should be provided in undergraduate education to teachers. The answers given by the participants to questions about first aid are shown in Table 1.

The correct responses given by the experimental group participants to the statement about applying pressure to bleeding gradually increased in the post-test (75.3%) and follow-up test (84.0%). The correct responses given by the experimental group participants to the statement about tetanus intervention in puncture wounds were found to be at the same rate in both the post-test (75.3%) and the follow-up test (75.3%).

Table 1. Characteristics of participants regarding first-aid.

Questions	Answers	Experimental Group		Control Group		Total Participants	
		n	%	n	%	n	%
Do you often encounter situations requiring first aid at school?	Yes	34	49.3	21	60.0	55	52.9
	No	33	47.8	14	40.0	47	45.2
Have you ever given first aid to anyone before?	Yes	27	39.1	13	37.1	40	38.5
	No	42	60.9	22	62.9	64	61.5
Is there a first aid cabinet at the school?	Yes	50	72.5	26	74.3	76	73.1
	No	4	5.8	2	5.7	6	5.8
	I don't know	15	21.7	7	20.0	22	21.2
Do you feel competent in first aid?	Yes	15	21.7	5	14.3	20	19.2
	No	54	78.3	30	85.7	84	80.8
Would you like to receive training in first aid?	Yes	57	82.6	29	82.9	86	82.7
	No	12	17.4	5	14.3	17	16.3
Total		69	100	35	100	104	100

The rate of correct responses from the experimental group participants regarding the statement involving actions to be taken in a fire situation increased in the post-test (33.3%), but this rate decreased in the follow-up test (4.3%). The correct response rate to the statement about heatstroke in the posttest increased in the experimental group and decreased in the control group. While there was an increase in the correct answer rates given by the experimental group in the post-test to statements about animal bites and bee stings, there was a decrease in the follow-up test. The correct response rates to the statement about low blood sugar (hypoglycemia) increased in the experimental group (97.1%) in the post-test, whereas a decrease was observed in the control group (71.4%).

Since there were repeated measurements of different groups in this research, ANOVA and two-way analysis of variance were used for mixed measurements. When the interactions of

the participants were examined according to time, it was found that the control and experimental groups had similar/same characteristics, and the sample showed a normal distribution.

The mean score of the participants included in the experimental group from the pre-test was 63.65, the mean score from the post-test administered after the first aid training was 77.33, and the mean score from the follow-up test administered six to eight weeks after the training was 67.76. The mean of the scores of the control group from the pre-test is 62.40, the mean of the scores from the post-test is 61.94 and the mean of the scores from the follow-up test administered six to eight weeks after the post-test is 65.14. (Table 2).

Significant difference was found in the answers given by the experimental and control groups on the first aid knowledge form in the post-test ($p=0.00$) (Table 3).

Table 2. Mean scores of participants on first aid knowledge tests.

Groups	Time	Mean	Std. Error
Experimental Group	Pre Test	63.65	0.99
	Post Test	77.33	0.93
	Follow-Up Test	67.76	1.03
Control Group	Pre Test	62.40	1.39
	Post Test	61.94	1.30
	Follow-Up Test	65.14	1.45

Two-Way Analysis of Variance

Table 3. Comparison of participants' first aid knowledge levels over time.

Time	Groups (I)	Groups (J)	Mean Difference (I-J) and Standard Error	Sig. ^b
Pre Test	Experimental Group	Control Group	+1.25±1.71	0.46
Post Test	Experimental Group	Control Group	15.39*±1.60	0.00
Follow-Up Test	Experimental Group	Control Group	-2.62±1.78	0.14

The significance level was set at 0.05. ANOVA Test

Discussion

When the health problems of school-age children are examined, school injuries emerge as the most common health problem.¹⁻⁴ It is estimated that 10% to 25% of childhood injuries occur while the child is in school.^{15,18} In studies conducted in Turkey, children are more exposed to injuries, mostly in schools, and injuries are identified as the most prevalent health issue in schools.^{10,13,19} In a study conducted by Sönmez et al.,¹³ it was determined that 68.2% of teachers encountered a situation requiring first aid in their professional lives. In another study by Dinçer et al.,²⁰ 68.8% of teachers were found to experience the same situation. All these findings indicate that teachers are the individuals who should provide initial intervention for students in school injuries.^{15,19} In this study, it was determined that almost half of the experimental group and more than half of the control group stated that they frequently encountered situations requiring first-aid at school.

Almost all of the teachers who participated in our study believed that first aid was necessary, and they considered their knowledge of first aid to be insufficient.^{6,13,14} In the study conducted by Nayir et al.,²¹ which showed similar results to our study, 86.0% of the teachers stated that they did not find their first aid knowledge level sufficient and 81.0% of the teachers stated that they wanted to receive training on first aid.²¹ In another study, it was revealed that teachers have insufficient knowledge in first aid, may provide incorrect interventions, and emphasize the significance of education in this field.¹² Gowri and Missiriya¹⁴ found that 78% of teachers did not have sufficient knowledge about health care.

The mean score of the participants in the experimental group from the pre-test was 63.65 ± 0.99 , and the mean score of the control group was 62.40 ± 1.39 . Upon reviewing other studies in the literature, in the study conducted in Isparta, among primary and high school teachers, the mean of the first aid knowledge score was 7.07 out of 12.²¹ Demirci and Alptekin¹⁶ in their study, the mean score of teachers on the First Aid Knowledge Form was inadequate in a study conducted with

preschool teachers, the mean score of teachers on first aid knowledge questions and in another study conducted with primary school teachers the mean of first aid knowledge level scores of teachers was low score.^{12,15,16,22} In both the studies reviewed in the literature and the results of our study, the mean of first aid knowledge scores of teachers were generally moderate level.

When looking at the correct knowledge rates based on answers of teachers to first aid knowledge questions, the least correct answers were given to the statements about fire, fracture, epilepsy crisis, and bleeding, while the highest correct answers were asthma, choking, and fainting.²³ In contrast to our study findings, Aktaş et al.²⁴ reported that 96.6% gave correct responses to fractures and dislocations and 94.8% gave correct responses to bleeding, whereas similar to our study, they indicated that 75% gave correct responses to blocking the trachea by a foreign object.²⁴ According to our study results, while the teachers' first aid knowledge test average score was 63.65 ± 0.99 before the first aid training, it increased to 77.33 ± 0.93 after the training. In addition, with advanced analyses, while there was no significant difference between the answers given by the experimental and control groups to the pre-tests ($p=0.04$), a significant difference was found between the answers to the post-test applied to the teachers in the control group and experimental group simultaneously after the training given to the experimental group ($p=0.00$). This result shows that the first aid training provided has a statistically significant effect on the short-acting first aid knowledge of teachers. Özyürek et al.²⁵ examined the short-term effect of 16 hours of basic first aid training given to teachers and found that the mean score of teachers from the pre-test was 48.512 ± 14.18 , the mean score of the post-test was 80.20 ± 11.25 , and that there was a statistically significant difference between the pre- and post-test knowledge levels. Similar results were observed in our study.

When we examined the further effects of the first aid training given to teachers in our study, it was found that the score of the experimental group in the post-test and follow-up test was

higher than the score they received in the pre-test, and the difference between the scores they received in the first aid information form created a statistically significant difference. However, although the score they obtained from the follow-up test was higher than that from the pre-test, it was lower than that from the post-test. These results indicate that first aid training should be repeated periodically and its continuity should be ensured. In addition, while no significant difference was detected between the answers given by the experimental and control groups in the follow-up tests ($p=0.14$), a slight increase was observed in the first aid score mean of the control group, but this increase was not statistically significant ($p=1.00$). This increase is thought to result from teachers becoming familiar with the questions by solving them again in the pre-test, post-test, and follow-up test.

The low reliability coefficient of the first aid knowledge test used in our study is an important limitation. The Cronbach alpha coefficient calculated for the scale is 0.47, which is below the generally accepted reliability threshold in the literature. Scales with an alpha value below 0.60 are considered to have low reliability.¹⁷

Conclusion

According to the results of this study investigating the effect of first aid training given to teachers on their knowledge levels, it was determined that the first aid training given had a high instantaneous and short-term effect on the first aid knowledge level of teachers, and the effect of the training on the first aid knowledge level decreased over time.

In line with these results; the development of measurement tools to assess the level of first-aid knowledge, with tested validity and reliability, periodic training for teachers on school injuries and first-aid, and the employment of school health nurses in schools are recommended. More studies are needed to identify school injuries and determine in which areas teachers are more likely to have a lack of knowledge. Furthermore, it is recommended that schools coordinate with Community Health Centers, the Provincial Public Health

Directorate, and the Provincial Directorate of National Education for the mentioned first-aid training programs, and even collaborate with universities in their regions if available.

Ethics Committee Approval

Before starting the study, written permission was obtained from the Non-Interventional Ethics Committee of a university (date:05.01.2022 and decision number: 2022/01-04) (2015/118) and the Provincial Directorate of National Education. After the necessary explanations about the study were made, written consent was obtained from all teachers. The study was conducted in accordance with the Declaration of Helsinki.

Informed Consent

All participating teachers were fully informed about the aim and procedures of the study. Written informed consent was obtained from all participants, and confidentiality of the data was ensured throughout the research process. This study was conducted in accordance with the Declaration of Helsinki.

Authors Contributions

Seheray Zeyrekli (S.Z.): Contributed to conceptualization, study design, data collection, material provision, data analysis, literature review, manuscript writing (original draft), and critical review of the content.

Gülendam Karadağ (G.K.): Contributed to study design, supervision of data collection, statistical analysis, manuscript writing (review & editing), and critical review of the final version

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Peer-review

Externally peer-reviewed.

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