

ORIGINAL PAPER**Effects of Training for Reproductive Health on Knowledge of Reproductive Health and Behavior in Adolescents**

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**ABSTRACT**

**Background:** Adolescence is a period when physical, psychological and social maturity is achieved. Therefore, reproductive health in adolescence is of great importance.

**Aims:** This study was performed to determine the effects of training for reproductive health and behavior on knowledge of reproductive health and reproductive behavior in adolescents.

**Methodology:** This is a semi-experimental study and included 700 adolescent from the city of Sanlıurfa, Turkey. The participants were selected from volunteers and aged 15-24 years. A questionnaire composed of questions about demographic features and reproductive health and behavior. The dependent variables tested were mean scores of the participants on reproductive health, breast self-examination of the female participants, testicular self-examination and use of condoms by the male participants. The independent variable tested was training for reproductive health. T-test was used to analyze data about dependent groups and Chi-square test (McNemar) was used to compare between two dependent groups.

**Results:** The mean age of the participants was  $18.80 \pm 2.82$  years and 51.0% of the participants secondary school graduates. The total score of the participants on knowledge of reproductive health increased from 6.48 before training to 15.80 after training, with a significant difference ( $p=0.000$ ). While the percentage of the female participants performing breast self-examination was 22.9% before training, it increased to 71.2% after training, with a significant difference ( $p=0.000$ ). However, the percentage of the male participants performing testicular self-examination only rose from 14.7% to 29.4% ( $p=0.000$ ). The use of condoms by the male participants increased from 12.2% to 18.3%, with a significant difference ( $p=0.000$ ).

**Conclusion:** Training for reproductive health did not only increase knowledge of reproductive health but also promote reproductive health behavior. It can be recommended that nurses should continuously perform student centered reproductive health education for adolescents.

**Key Words:** Adolescent, Reproductive Health Education, Nursing

**INTRODUCTION**

Adolescents can have reproductive abilities at an early age, depending on their physical maturity. Therefore, reproductive health in

adolescence is of great importance (Özcebe 2000).

*The age at first sexual intercourse* has gradually declined in many countries. It is estimated that most of the adolescents throughout

the world have their first intercourse when they are 10-20 years old (Gölbaşı 2002, Grene, Rasekh & Amen 2002). Twenty to forty percent of the women in Latin America and the Caribbean, about one third of the women in Ghana, Kenya and Zimbabwe, about 30% of the women in North Africa and the Middle East and about half of the women in Yemen get married before the age of 18 years (The Alan Guttmacher Institute 1998). According to the Population and Health Survey in Turkey in 2003, there was a considerable decrease in the rate of the people who got married at young ages (Population and Health Survey in Turkey 2003). In fact, the median age at first marriage among the women aged 25-49 years was 19.5 years in 1998 and 20.1 years in 2003 (Population and Health Survey in Turkey 2003).

Sexual intercourse at young ages before marriage is associated with *reproduction at young ages*. Ninety-percent of the young women having sexual intercourse without using contraceptives become pregnant in one year (Özcebe 2000). There has been a decrease in adolescent birth rates in the world. However, adolescent population is increased, which causes an increase in the number of adolescent births. In fact, 15 million adolescents give birth in developing countries every year and adolescent births account for 10% of all births in the world (Population and Health Survey in Turkey 2003)

According to the Population and Health Survey in Turkey in 2003, 8% of the adolescent females aged 15-19 years give birth and there is a direct relationship between increased age and the percentage of the adolescents becoming a mother. Indeed, this rate increases from 1% in the adolescents aged 16 years to 17% in the adolescents aged 19 years (Population and Health Survey in Turkey 2003).

Since adolescents are not ready for pregnancy, they prefer *abortion* in order to end their pregnancy (Saroj et al. 2005). More than 4.4 million adolescents have voluntary abortion in developing countries every year. In Turkey, 8.7% of the married women aged 15-24 years have voluntary abortion (Population and Health Survey in Turkey 2003).

Sexual intercourse at young ages causes *sexually transmitted diseases (STD)* (Özcebe 2000). Every year one in every 20 young people in the world contracts a STD. The individuals who most frequently contract STDs are aged 20-24 years.

Acquired Immune Deficiency Syndrome (AIDS) is a STD which has been most extensively studied recently and is a serious public health problem in Africa and some developing countries (Saroj et al. 2005). The prevalence of Human Immunodeficiency Virus (HIV) in young people is over 25% (Ross & Dick 2006). It peaks in the women aged 20-24 years and in the men aged 25-29 years (Özcebe 2000, Açikel et al. 2005). In Turkey, both the disease and the carrier state most frequently appear in the individuals aged 20-29 years (72.9%) (Açikel et al. 2005). Condoms, a family planning method, are effective in prevention of AIDS (Gölbaşı 2002, Özcebe 2000, Population and Health Survey in Turkey 2003, Saroj et al. 2005).

The rate of *contraceptive use* is lower in developing countries than developed countries (The Alan Guttmacher Institute 1998). Data from the studies in developing countries in Asia and Sub-Saharan Africa have shown that less than 10% of the sexually active unmarried adolescents use condoms (Özcebe 2000). Esgin from Turkey revealed that as age increased so did the use of contraceptives (Esgin 2000).

It has been reported in many studies that adolescents do not have basic information about reproductive physiology, contraception, HIV/AIDS, sexuality, reproductive health, breast self examination (BSE) and testicular self examination (TSE) (Brandurup-Lukanov 2002, Eggleston, Jackson & Hardee 1999, Ip, Janita & Chau 2001, Özcebe 2000, Beydağ & Karaođlan 2007, Rodriguez et al. 1995). In one study adolescents noted that they wanted to receive education about reproductive organs, pregnancy, STDs and family planning (Ip, Janita & Chau 2001).

There have been many studies showing an increase in adolescents' knowledge about reproductive health and in adolescents' positive health behaviors (Gölbaşı 2002, Özcebe 2000, Saroj et al. 2005, Tuna 2002, Ford 2000). It is clear that reproductive health education provided by public health nurses play an important role in protection and promotion of public health and acquisition of positive health behaviors (Gölbaşı 2002, Özcebe 2000, Saroj et al. 2005, Tuna 2002, Ford 2000). Therefore, reproductive health education should be offered to all adolescents.

It is known that reproductive health education enhances adolescents' knowledge about reproductive health and improves adolescents' reproductive behaviors and that

nurses play a crucial role in this education. Therefore, further studies about reproductive health education offered by nurses are needed.

The results of this study will have a positive influence on adolescents' knowledge about reproduction and adolescents' reproductive health and will provide guidance in planning and conduction of reproductive health education programs.

### AIM

The aim of this study was to evaluate effects of *reproductive health education* on adolescents' knowledge about reproductive health and reproductive behaviors.

### HYPOTHESES OF THE STUDY

**Hypothesis 1.** The subjects will have higher mean scores on reproductive health after reproductive health education.

- **Hypothesis 1a.** The subjects will have higher mean scores on knowledge of family planning after reproductive health education.
- **Hypothesis 1b.** The subjects will have higher mean scores on knowledge of STDs after reproductive health education.
- **Hypothesis 1c.** Total mean scores on knowledge of reproductive health will be higher after reproductive health education.

**Hypothesis 2.** There will be a difference between BSE before and after reproductive health education.

**Hypothesis 3.** There will be a difference between TSE before and after reproductive health education.

**Hypothesis 4.** There will be a difference between the use of condoms before and after reproductive health education.

### METHODS

This is a quasi-experimental study with a pre-test and post-test model (Figure 1) and was conducted at Apprenticeship Education Center, Public Education Center, School of Koran Studies and Youth Center in the city of Şanlıurfa between July 2007 and May 2008. No sampling procedure was used and 700 adolescent aged 15-24 years and volunteering to participate in the study were included into the study sample. Exclusion criteria were being younger than 15 years old and being older than 24 years old.

The subjects were assigned into 28 groups. Each group had 25 subjects and was offered reproductive health education three times. Each education session lasted for about one hour. After reproductive health education, the subjects who asked for counseling were provided with counseling. Female and male subjects were offered education in separate classes. In the first session of education, the subjects were provided with knowledge about physical, sexual and psychosocial development in adolescence and family planning. In the second session of education, the subjects were provided with knowledge about STDs, prevention of these diseases, breast cancer and BSE. In the third session of education, the subjects were provided with knowledge about testicular cancer, TSE and the use of condoms.

Data were collected with a questionnaire composed of 30 questions about socio-demographic features and knowledge of reproductive health and reproductive health behaviors. The questionnaire was completed by the subjects before and after reproductive health education. The subjects were asked not to write their names on the questionnaire, but they were asked to write their nicknames to contact with them after the education. A total of 30min was allocated to complete the questionnaire both before and after the education. The investigator read the questions for the subjects who were not literate at face to face interviews and the responses given by the subjects were marked on the questionnaire. The dependent variables were mean scores on knowledge of reproductive health, BSE performance, TSE practice and the use of condoms. The independent variable was reproductive health education (Figure 1).

Data were analyzed with SPSS 11.00. t-test for dependent groups was used to determine the difference between mean scores on knowledge of reproductive health before and after the education. Chi-square test for two dependent groups (McNemar test) was used to determine whether the female subjects performed BSE regularly before and after the education, whether the male subjects performed TSE regularly before and after the education and whether the male subjects used condoms before and after the education.

Approval was obtained from Şanlıurfa Governorship, school administrations and the ethical committee of Dokuz Eylül University School of Nursing. Oral informed consent was obtained from the subjects.

**RESULTS**

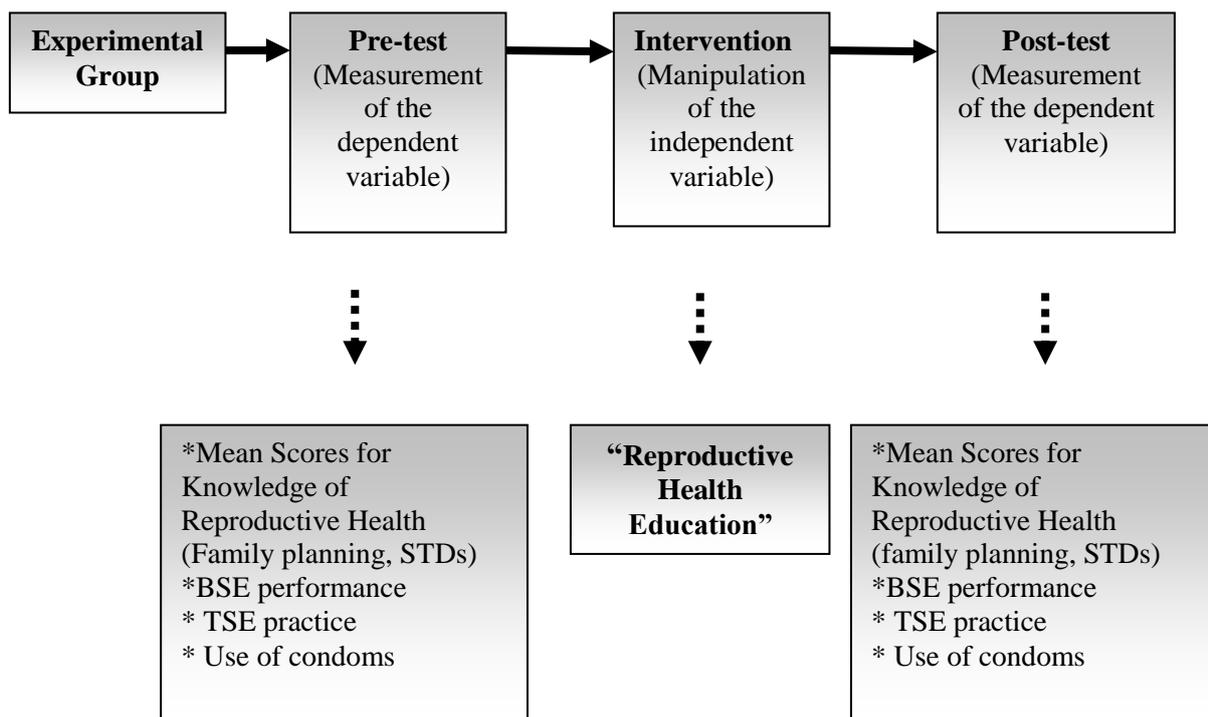
Socio-demographic features of the subjects are shown in Table 1. The mean age of the subjects was 18.80±2.82 years and 48.6% of the subjects were female. Fifty-one percent of the subjects were secondary school graduates and 91.4% of the subjects were single. As for the residence where the subjects lived for the longest period of time, 76.6% lived in the city center. The mean number of siblings was 6.18±2.49.

The distribution of the scores on knowledge of reproductive health before and after reproductive health education is presented in Figure 2. The mean score for knowledge of family planning was 5.65±4.27 before the

education and 13.91±3.99 after the education with a significant difference (p=0.000). The mean score for knowledge of STDs was 0.83±1.03 before the education and 1.89±0.73 after the education with a significant difference (p=0.000). The mean total score for knowledge of reproductive health was 6.48±4.78 before the education and increased to 15.80±4.25 with a significant difference (p=0.000).

BSE performance before and after reproductive health education is shown in Table 2. Twenty-two point nine percent of the female subjects were performing BSE before the education and 71.2% of the female subjects were found to perform BSE after the education with a significant difference ( $\chi^2$ McNemar=144.397; p=0.000).

**Figure 1. Study Design**



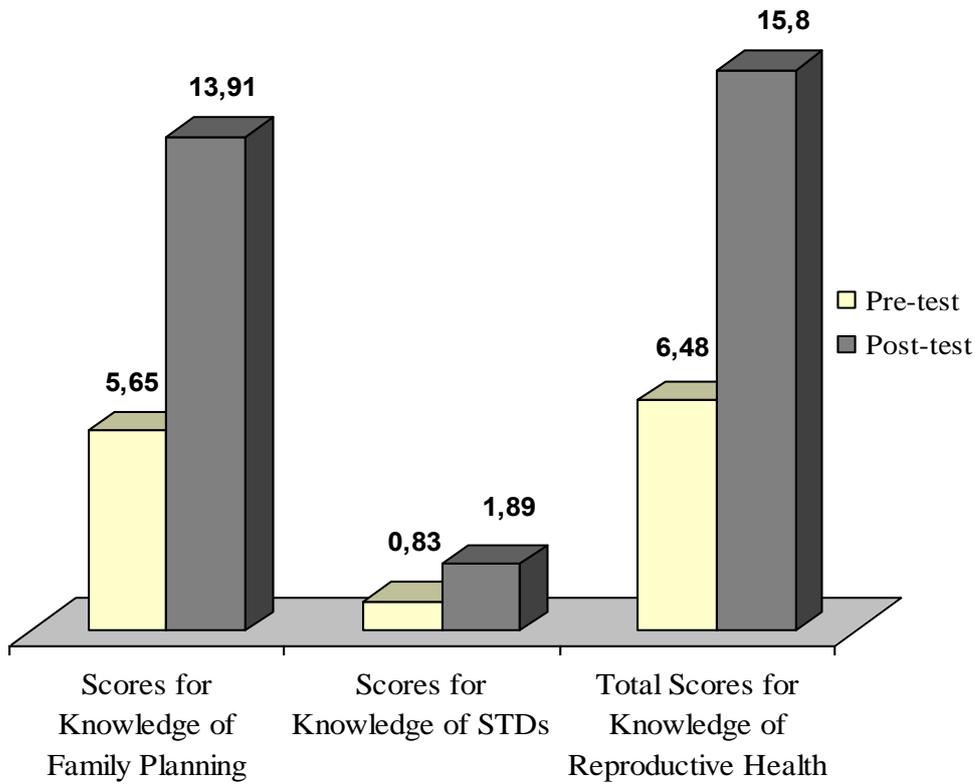
**Table 1. Distribution of The Subjects by Socio-Demographic Features (n=700)**

<b>Variables</b>		
<b>Age</b>	X:18.80 ± SS: 2.82	
<b>Gender</b>	<b>(n)</b>	<b>%</b>
Female	340	48.6
Male	360	51.4
<b>Education</b>		
Illiterate	21	3.0
Literate	61	8.7
Primary School	96	13.7
Secondary School	357	51.0
High School	137	19.6
University or Post Graduate	28	4.0
<b>Marital status</b>		
Single	640	91.4
Married	60	8.6
<b>The Longest residence</b>		
City center	536	76.6
Town	125	17.9
Village	38	5.4
Abroad	1	0.1
<b>Number of siblings</b>	X: 6.18 ± SS: 2.49	
<b>Total</b>	<b>700</b>	<b>100.0</b>

Table 2. BSE Performance Before and After Reproductive Health Education

<b>BSE Performance Before Education</b>	<b>BSE performance After Education</b>				<b>Total</b> <b>n    %</b>		
	<b>Yes</b>		<b>No</b>				
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>			
<b>Yes</b>	68	20.0	10	2.9	78	22.9	$\chi^2$ McNemar=144.397 P= 0.000
<b>No</b>	174	51.2	88	25.9	262	77.1	
<b>Total</b>	242	71.2	98	28.8	340	100.0	

**Figure 2. Distribution of Scores for Knowledge of Reproductive Health**



**Table 3. TSE Practice Before and After Reproductive Health Education**

TSE Practice Before Education	TSE Practice After Education				Total		$\chi^2$ McNemar=22.723 p=0.000
	Yes		No		n	%	
	n	%	n	%			
Yes	20	5.6	33	9.1	53	14.7	
No	86	23.9	221	61.4	307	85.3	
<b>Total</b>	106	29.4	254	70.56	360	100.0	

**Table 4. Use of Condoms Before and After Reproductive Health Education**

Use of Condoms Before Education	Use of Condoms After Education				Total		
	Yes		No		n	%	
	n	%	n	%			
Yes	38	10.1	6	1.7	44	12.2	$\chi^2$ McNemar=12.971 p=0.000
No	28	7.8	288	80.0	316	87.8	
Total	66	18.3	294	81.7	360	100.0	

TSE practice before and after reproductive health education is shown in Table 3. Fourteen point seven percent of the male subjects were performing TSE before the education and this rate increased to 14.7% after the education with a significant difference ( $\chi^2$ McNemar 22.723; p=0.000).

Table 4 presents the use of condoms before and after reproductive health education. Twelve point two percent of the male subjects were using condoms before reproductive health education and 18.3% of the male subjects were found to use condoms after the education with a significant difference ( $\chi^2$ McNemar 12.971; p=0.000).

## DISCUSSION

The difference between the scores for knowledge of family planning before and after reproductive health education was 8.26, which was significant (p=0.000) and confirmed the hypothesis 1a. Lou et al. (2004) also reported increased scores for knowledge of family planning after the intervention.

There have been many other studies showing an increase in scores for knowledge of family planning after reproductive health education (Saroj et al.2005, Brieger et al. 2001, Kırmızıtoprak 2007, Ege, Timur & Zincir 2005, Özcebe 2000, Toker 2005).

The difference between the scores for knowledge of STD before and after the education was 1.06. This difference was significant (p=0.000) and confirmed the hypothesis 1b, which is consistent with the literature (Ford et al. 2000, Saroj et al. 2005, Kırmızıtoprak 2007, Açıkel 2005, Özcebe 2000, Çınar et al. 2007).

The significantly lower scores for knowledge of family planning and STDs before the education can be explained by several factors. First, the subjects might not have been offered education for family planning and STDs before. Second, the subjects might have found it embarrassing to talk to the family

members about these issues for cultural reasons. Last, they might not have accessed appropriate sources or the education offered might not met their needs of knowledge.

The difference between the mean total scores for knowledge of reproductive health before and after the education was 9.32, which was significant and confirmed the hypothesis 1c (p=0.000). Saroj et al. (2005) also reported that the adolescents got significantly higher mean total scores for knowledge of reproductive health after reproductive health education. In addition, Gölbaşı (2002) evaluated effectiveness of a school based reproductive health education program directed towards adolescent girls and reported significantly higher mean total scores for knowledge of reproductive health after the education. Özcebe (2000) performed a study to determine what the adolescents living in the rural areas knew about reproductive health and found a significant increase in the mean total scores for knowledge of reproductive health after reproductive health education.

The reasons for significantly lower scores before the education may be that the adolescents had not been offered education for sexuality and reproductive health before and that cultural factors might have prevented them from talking to their families about sexuality.

The adolescents really needed knowledge of reproductive health. This might have increased their curiosity for and interest in reproductive health education, which in turn might have caused significantly increased scores for knowledge of reproductive health after the education.

A significantly higher rate of the female subjects was found to perform BSE after reproductive health education (p=0.000), which is consistent with the results of the studies by Ogletree et al. (2004) and Lu (2000). The significantly increased rate of BSE performance confirmed the hypothesis 3. There have been many other studies showing an increase in BSE

practice (Öztürk et al. 2000, Beydağ & Karaoğlan 2007, Gölbaşı, Kutlar & Akdeniz 2007, Parlar, Bozkurt & Ovayolu 2004, Şen 2002, Tuna 2002). However, these studies revealed that adolescents had low perceived risk of breast cancer and therefore did not adopt BSE practice or performed BSE infrequently. For this reason, adolescents need to be informed about BSE. Adolescents claim that the most appropriate information about BSE is offered by health professionals. In this study, many factors might have increased awareness in BSE and BES practice among the adolescents. First, nurses might have been accepted as educators who demonstrated BSE and played a role in early diagnosis of breast cancer. Secondly, most of the nurses are female, which might have caused a feeling of comfort in the adolescents. Last, the nurses might have been considered as the most easily accessible health professionals.

A significantly higher rate of the male subjects were found to perform TSE after reproductive health education, which confirmed the hypothesis 3 ( $p=0.000$ ). Similarly, Rodriguez et al. (1995) observed an increase in the rate of the adolescents who performed TSE. Considering that the people living in the study area were conservative and found TSE like subjects as embarrassing, the significant increase in the rate of TSE practice is striking. It may be that reproductive health education might have changed the belief that testicular cancer does not occur in the young. The education was offered by health staff equipped with appropriate knowledge, which might have played a role in behavioral changes in the subjects. The pretest lower scores for TSE might have been due to the fact that the subjects had not received appropriate education before and that cultural values might have prevented the subjects from communicating with members of their families and asking for information about testicular cancer and TSE.

A significantly higher rate of the subjects was found to use condoms after the education ( $p=0.000$ ), which confirmed the hypothesis 4 and which is consistent with the literature (Saroj et al. 2005, Ford et al. 2000, Caron et al. 2004, Brieger et al. 2001, Lou et al. 2004, Valem et al. 1996, Kırmızıtoprak 2007, Özcebe 2000). Depending on the nature of adolescents and lack of a previous exposure to reproductive health education, the subjects might have had increased interest in condom.

#### STUDY LIMITATIONS

The limitation of this study is that changes in subjects' knowledge and behaviors could not be observed at certain intervals.

#### CONCLUSIONS AND RECOMMENDATIONS

We found that reproductive health education enhanced knowledge of reproductive health and

improved reproductive health behaviors in the adolescents.

Sexual education should be continuously provided by the primary health centers in order to preserve knowledge and behaviors acquired in this reproductive health education program. Establishing cooperation between the organizations, nurses and mid-wives should conduct sexual education programs at regular intervals. This might play a crucial role in behavioral changes regarding reproductive health. Using active education methods, trainings should be conducted for nurses and mid-wives to become trainers for sexuality and reproductive health education. This also contributes to education of health staff concerning reproductive health. Considering the fact that adolescents receive information from their peers, peer education should be given priority. Nurses and mid-wives should educate adolescents to become peer educators in the primary health centers. These peer educators may inform other adolescents about reproductive health and safe sex and help to prevent STDs and to access to early diagnosis and treatment of these diseases.

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