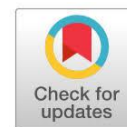


## The effect of premarital sex counseling using jigsaw method on adolescent's knowledge



Happy Imanisa Mahira<sup>1</sup>, Anita Rahmawati<sup>2</sup>, Yani Widyastuti<sup>3</sup>

<sup>1</sup>Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, [happyimanisa@gmail.com](mailto:happyimanisa@gmail.com)  
<sup>2</sup>Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, [anitarahmawati1108@gmail.com](mailto:anitarahmawati1108@gmail.com)  
<sup>3</sup>Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Indonesia, [yaniwidyastuti.yk@gmail.com](mailto:yaniwidyastuti.yk@gmail.com)

### ARTICLE INFO

#### Article history:

Received: Sep, 25<sup>th</sup> 2020

Revised : Jan, 17<sup>th</sup> 2020

Accepted: Jan, 29<sup>th</sup> 2020

#### Keyword:

Jigsaw method  
Lecture method  
Knowledge  
Premarital Sex  
Adolescent

### ABSTRACT

The problem that stands out among adolescents is about the Three Problems of Adolescent Reproductive Health, one of which is premarital sex. The low level of knowledge about sexuality and reproductive health is one of the factors that influence the occurrence of premarital sex relations. One effort to provide reproductive health information for adolescents is to provide health promotion or counseling. Health counseling conducted in this study was the jigsaw. The objective was to know the influence of giving counseling with jigsaw compare to lecturer method on knowledge about premarital sex. This research was quasi-experiment research with pre-test and post-test nonequivalent control group design. The study was conducted in March 2019 in SMK YPKK 1 and SMK YPKK 2, Sleman. The sampling uses convenience sampling. The sample for each group of this study amounted to 30 respondents. Data was analyzed using the Wilcoxon test and the Mann Whitney test. There was significant difference in the pre-test and post-test of adolescent's knowledge about premarital sex with the jigsaw method (Mean difference= 14.66; p-value= 0.000) and lecture method (Mean difference= 6.00; p-value= 0.001). There was significant difference in knowledge changes of adolescent's knowledge about premarital sex with the jigsaw method than lecture method (Mean difference= 19.84; p-value= 0.000). The jigsaw method was more effective on increasing knowledge of adolescent's about premarital sex.

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



### Corresponding Author:

Happy Imanisa Mahira  
Department of Midwifery, Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia  
Mangkuyudan Street, MJ III/304 Yogyakarta, 55143. Telp/ Fax: (0274) 374331  
Email: [happyimanisa@gmail.com](mailto:happyimanisa@gmail.com)

### INTRODUCTION

The problem that stands out among adolescents is about the Three Problems of Adolescent Reproductive Health, one of which is premarital sex. Premarital sex is sexual behavior carried out by someone who is not married, by changing partners or loyal to their partners. Sexual behavior carried out by adolescents during dating is like holding hands, hugging, dry kissing, wet kissing, fingering the breasts, petting, oral sex, and having sex.(1)

Based on the Center for Data and Information on Adolescent Reproductive Health of the Ministry of Health in 2014 around 33.3% of adolescent girls and 34.5% of adolescent boys aged 15-19 years began dating. Premarital sexual relations in adolescents are mostly out of curiosity, namely 57.5% in men just happen, 38% in women and forced by partners 12.6% in women. This shows a lack of knowledge about the risks of sexual relations and the attitude of rejecting relationships that they don't want.(1) Premarital sex results in

---

unwanted pregnancy, abortion and sexually transmitted infections (STIs) including HIV. Unwanted pregnancies in young women can continue to abortion and teenage marriage, this has an impact on the future of adolescents where the fetus is conceived and their families.(2)

The low level of knowledge about sexuality and reproductive health is one of the factors that influence the occurrence of premarital sexual relations. Many teenagers know about sex but cultural factors forbid talking about sexuality in public because it is considered taboo.(3) This causes adolescent knowledge about sex is incomplete, where adolescents only know the effects that will arise due to sexual behavior.(4)(5)(6)(7) Adolescent knowledge about menstruation, fertility and reproductive health risks are still relatively low.(8)(9) Information about early sex education which is still taboo to discuss it must begin to be developed to several agencies so that the taboo culture can be transformed into a clear and directed source of information for adolescents so that they are not blind, one of which is school.(10)(11)(12)

One effort to provide reproductive health information for adolescents is to provide health promotion or counseling. Health education is a dynamic process of behavior change with the aim of changing or influencing human behavior which includes the components of knowledge, attitudes, or practices related to the goals of healthy life both individually, in groups and society, and is a component of health programs.(13) Health education is influenced by several factors, including methods, material delivered by educators or resource persons, and the media used. It is intended that adolescents can fully absorb the material provided in the health education. Various methods have been used to deliver sexual education, including information from parent,(14)(15) using print media,(16)(17) electronic media,(18)(19)(20) games,(21)(22) social media(23)(24) and through cooperative counseling.(25)(26) However, cooperative counseling has an advantage in providing premarital sexual education because the counselee will feel more emotional closeness to peer counselors when compared to expert counselors, they will be more open in expressing opinions and asking questions about things that are not yet known and can provide motivation and confidence to do problem solving. (25)(26) (27)

The cooperative learning method of the jigsaw model takes a pattern of how to work a saw (zigzag), that is, students do a learning activity by working with other students to achieve a common goal. In this jigsaw learning model students have many opportunities to express opinions, and process information obtained and can improve communication skills, group members are responsible for the success of the group and the completeness of the part of the material being studied, and can convey to the group. Thus, education should be able to condition and provide encouragement to be able to optimize and generate student potential, foster creativity activities and creativity so that it will ensure the dynamics in the learning process.(28) In this learning a broader interaction will be created, namely interaction and communication between teacher and students, students with students, and students with teachers (multi way traffic communication).(29) Research by Ryzka Adhiyani Helmi in 2012 that the jigsaw method is proven to improve achievement learning because there are significant differences in the learning achievement scores between the experimental and control groups.(30) In the 2012 Hanum Swandarini study that there was a significant difference in learning ability based on self-regulation of students who obtained the jigsaw method with those who did not get the jigsaw method.(31) The purpose of this study was to know the effect of premarital sex counseling using jigsaw method on adolescent's knowledge.

## **METHOD**

The type of research used was quasi eksperimen. The design used in this study is non equivalent control group design. This research was conducted in March 2019 at SMK YPKK 1 Sleman for the experimental group and SMK YPKK 2 Sleman for the control group. This research has been conducted based on ethical clearance number LB.01.01 / KE-01 /

VII / 250/2019. This study does not use inclusion and exclusion criteria because the sample is taken using non-probability sampling. The sampling in this study uses non-probability sampling technique that is convenience sampling. Convenience sampling is a non-probability sampling where subjects are chosen because of convenient accessibility. Considerations from researchers are recommendations from productive teachers in schools that understand the level of ability of each class which has more or less the same level of ability. The sample size is 60 with 30 respondents each. The results of the study data were then tested by the Wilcoxon test and the Mann Whitney test.

## RESULTS

### Characteristics of Respondent

Table 1. Frequency of Respondent Distribution

Characteristics	Jigsaw		Lecture		p-value
	f	(%)	f	(%)	
<b>Gender</b>					
Male	5	17	3	10	0.133
Female	25	83	27	90	
<b>Address</b>					
Rural	19	63	14	47	0.182
Urban	11	37	16	53	
<b>Information exposure</b>					
Media (TV, Internet, Magazine/ Newspaper)	21	70	24	80	0.80
Non-Media (Parents, Friend, Teacher)	9	30	6	20	
<b>Parent Education</b>					
Basic (Primary School, Junior High School)	16	53	17	57	0.629
Intermediate (Senior High School)	14	47	13	43	
<b>Parent Job</b>					
Work	28	93	25	83	0.24
Not Working	2	7	5	17	
<b>Parent Income</b>					
≤Regional Minimum Wage (Rp. 1.570.922)	27	90	25	83	0.133
> Regional Minimum Wage (Rp. 1.570.922)	3	10	5	17	

From table 1. Show that the summary homogeneity test it is known that  $p > 0.05$ , the characteristics of the jigsaw and lecture group subjects are equivalent or homogeneous.

Table 2. Knowledge increase in the Jigsaw method group before and after counseling

Group		Median		Mean	Std Deviasi	Z	p-value	CI 95%	
		Min	Max					Lower	Upper
Jigsaw	Pretest	76	88	80.67	3.942	-4.818	0.000	79,19	82,14
	Posttest	84	100	95.33	3.942			93,86	96,81

Table 2 show that the average before being educated by the jigsaw method is 80.67 while the average after counseling is 95.33, so there is a difference in the average value of 14.66. The test results obtained significant p-value 0,000 so that there was a difference in the mean value of knowledge about premarital sex in the experimental group after counseling with the jigsaw method.

**Table 3. Increased Knowledge on the lecture method before and after counseling**

Group		Median		Mean	Stdr Deviasi	Z	p-value	CI 95%	
		Min	Max					Lower	Min
Lecturer	Pretest	72	88	81.20	4.715	-3.450	0.001	79,44	82,96
	Posttest	80	92	87.20	3.986			85,71	88,69

Table 3 show that the average before counseling with the lecture method is 81.20 while the average after counseling is 87.20, there is a difference in the average value of 6.00. The test results obtained significant p-value 0.001 so that there was a difference in the mean value of knowledge about premarital sex in the experimental group after counseling with the lecture method.

**Table 4. Increased knowledge on jigsaw and lecture methods**

Category	Method	Mean Rank	Sum of Rank	Mann-Whitney Z	p-value
Knowledge	Jigsaw	40.42	1212.50	152.500	-4.503
	Lecture	20.58	617.50		

Table 4 show that the increase in knowledge using the lecture method has a mean rank of 20.58 and an increase in knowledge using the jigsaw method has a mean rank of 40.42. So that there is a difference in the average increase in knowledge after counseling with the jigsaw and lecture methods. The results of the independent Mann Whitney test of the increase in the value of the pretest and posttest knowledge on the jigsaw method compared to the lecture method obtained a significance value of 0.000 ( $p < 0.05$ ) its meaning that there is the influence of giving the jigsaw method of counseling.

## DISCUSSION

In this research, Mann Whitney Test was conducted to find out the differences in the increase in students' knowledge before and after counseling using the jigsaw method with the lecture method. The results of the statistical test show that the increase in knowledge using the jigsaw method has a mean rank of 15.50 and an increase in knowledge using the mean rank lecture method is 8.00. The Mann Whitney Test test results of the increase in the value of the pretest and posttest of students' knowledge on the Jigsaw method were higher than the lecture method with a significance value of 0,000 (p-value <0.05).

The different test data shows that the researcher hypothesis is accepted, meaning that there is a difference in the average increase in knowledge of YPKK 2 Sleman Vocational students about premarital sex in counseling with the Jigsaw method compared to the lecture method. The results of different tests show the value of the difference in the average increase in knowledge with the jigsaw method is higher than the value of the difference in the average increase in knowledge in the lecture method group. This study proves that counseling with the Jigsaw method is more influential than counseling with the lecture method as evidenced by an increase in the higher average difference. In this connection, counseling with the jigsaw method in the process can influence students to develop a framework for thinking in the learning process. The main difference between the two methods is that the jigsaw method is student-centered, while the lecture method is centered on the teacher / facilitator. Mahsun in his research stated that based on the results of the study showed that learning with the Jigsaw method could increase activity. This can be seen from the activeness and collaboration of students during the learning process so that they are able to generate student mastery learning.(32) Research conducted by Hertiavi (33), learning with the Jigsaw method can improve students' problem solving abilities which are illustrated by significantly increasing student learning outcomes. Sudjana in his book "How to Learn Active Students in the Teaching and Learning Process" also

supports the results of this study, learning is a process that is characterized by a change in a person. Changes as a result of the learning process can be shown in various forms such as knowledge, understanding, attitudes, and behaviors of skills, skills, habits and changes in other aspects that exist in individuals who learn.(34) The research conducted by Rofiqoh 2014 revealed that jigsaw learning made students more active and enthusiastic in the learning process itself.(35) So jigsaw learning has an impact on student learning outcomes that are increasing. Hanum in his study showed that there was a significant difference in the learning ability of students who received the jigsaw method and those who did not get the jigsaw method.(31)

The results of this study support the statement that the learning environment that is structural in the learning method has a role on students' creativity and self-development.(36) Because in the jigsaw method the material is studied by all members of the expert group in depth, then all members of the expert group return to the original group must submit the material learned in the expert group so that students will be actively involved and can copy ideas about the material being studied. Then each group member always tries to prepare the learning process well. Khalil's research, Lazarowitz stated that cooperative learning methods (jigsaw method) can build students' interest in learning the material provided so that it can improve student learning achievement.(37) The results of this study are also in line with the statement that learning abilities are obtained through experience and self reflection so that the material taught can be developed through the assistance of people who influence around students such as teachers, facilitators and friends.(38) According to Aronson, jigsaw learning can be characterized through four main activities namely self-sufficiency, discussion, peer tutoring, and evaluation. Active learning activities which are the main characteristics of cooperative learning are reflected in independent learning activities and discussions in expert groups. After the expert group discussion is completed, students are asked to return to their original group to present and explain the material they have discussed in the expert group to friends in the original group.(39) This is in line with Hanze & Berger's statement that the learning process using the jigsaw method is able to improve students' self-concept and students' confidence in their ability to learn something, so that students' learning motivation increases.(40)

In the control group, health education was given by the lecture method. Lecture is a transfer process that has 3 main components, namely educator / facilitator, material and learning atmosphere. the implementation of counseling in this group is not divided into small groups. During the course of counseling the obstacles that occur are students form a separate discussion forum so that the atmosphere becomes not conducive. The research conduction by Handika 2017 that there is correlation of level of knowledge of reproductive health of adolescent significant with premarital sexual attitude.(41) According to motivation theory, group success, individual success, and healthy competition are sources of motivation to learn.(28) Individual success greatly influences the success of the group, but each group member based on the togetherness they experience during learning causes them to be very concerned about group success.(28)

In this study, it was proven that there were differences in the increase in knowledge with higher scores of students given counseling with the Jigsaw method than students who received counseling with the lecture method. Extension activities with appropriate methods such as those carried out with jigsaw counseling are expected to be able to increase future knowledge and can be applied in daily life so as to improve health status in Indonesia.

## **CONCLUSION**

There is a difference in the average increase in knowledge about premarital sex after getting counseling with the Jigsaw method compared to the lecture method. There is the influence of giving jigsaw counseling to knowledge of premarital sex at YPKK 2 SMK Sleman.

## REFERENCE

1. Pusat Data dan Informasi Kementerian Kesehatan Republik Indonesia. Situasi Kesehatan Reproduksi Remaja. Jakarta: Kementerian Kesehatan; 2018.
2. Dinas Kesehatan Provinsi DIY. Profil Kesehatan Provinsi Daerah Istimewa Yogyakarta Tahun 2017. Yogyakarta: Dinas Kesehatan DIY; 2017.
3. Zakiyah R, Prabandari YS, Triratnawati A. Tabu, hambatan budaya pendidikan seksualitas dini pada anak. *Ber Kedokt Masy* [Internet]. 2018 Mar 30 [cited 2020 Aug 19];32(9):323. Available from: <https://jurnal.ugm.ac.id/bkm/article/view/10557>
4. Hasibuan R dkk. Faktor-Faktor Yang Mempengaruhi Kejadian Seks Pranikah Pada Remaja Putri Di SMAN 1 Pagai Utara Selatan Kabupaten Kepulauan Mentawai Roma. *Univ Riau*. 2013;708-18.
5. Kardiya IN, Estiwidani D, Hernayanti MR. Tingkat pengetahuan dan sikap remaja tentang seks bebas siswa kelas X dan XI SMK Bina Harapan Sleman Tahun 2015. *J Kesehat Ibu dan Anak*. 2016;10(2).
6. Muslihatun WN, Kurniati A. Pengetahuan, sikap, dan perilaku seksual pranikah remaja. *J Kesehat Ibu dan Anak*. 2014;5(1).
7. Sidan ES, Sumarah S, Arum DNS. Gambaran tingkat pengetahuan dan sikap tentang pendidikan seks remaja kelas X di Sekolah Menengah Atas Negeri 1 Sleman Tahun 2015. *J Kesehat Ibu dan Anak*. 2016;10(1).
8. Nurmansyah MI, Al-Aufa B, Amran Y. Peran Keluarga, Masyarakat dan Media sebagai Sumber Informasi Kesehatan Reproduksi pada Mahasiswa. *J Kesehat Reproduksi*. 2013;3(April):1-8.
9. Hidayat AAN, Suherni S, Purnamaningrum YE. Adolescent's knowledge about abortion. *J Kesehat Ibu dan Anak*. 2018 Jul 31;12(1):58-64.
10. Fonner VA, Armstrong KS, Kennedy CE, O'Reilly KR, Sweat MD. School based sex education and HIV prevention in lowand middle-income countries: A systematic review and meta-analysis. *PLoS One*. 2014 Mar 4;9(3).
11. Saul Butler R, Sorace D, Hentz Beach K. Institutionalizing Sex Education in Diverse U.S. School Districts. *J Adolesc Heal*. 2018 Feb 1;62(2):149-56.
12. Woo GW, Soon R, Thomas JM, Kaneshiro B. Factors Affecting Sex Education in the School System. *J Pediatr Adolesc Gynecol*. 2011 Jun;24(3):142-6.
13. Notoadmodjo S. Ilmu Kesehatan Masyarakat Prinsip-prinsip Dasar. Jakarta: Rineka Cipta; 2003.
14. Sridawruang C, Crozier K, Pfeil M. Attitudes of adolescents and parents towards premarital sex in rural Thailand: A qualitative exploration. *Sex Reprod Healthc*. 2010 Nov;1(4):181-7.
15. Ayalew M, Mengistie B, Semahegn A. Adolescent - parent communication on sexual and reproductive health issues among high school students in Dire Dawa, Eastern Ethiopia: a cross sectional study. *Reprod Health* [Internet]. 2014 Dec 7 [cited 2020 Jan 29];11(1):77. Available from: <https://reproductive-health-journal.biomedcentral.com/articles/10.1186/1742-4755-11-77>
16. Hidayat PN, Mahanani R, Putra AK. Kuku pesek (buku saku pendidikan seks) media edukatif pendidikan seksual anak. *Pelita-Jurnal Penelit Mhs UNY*. 2016;11(2):86-92.
17. Yuliasitini NKS, Dharma Tari IDAEP, Putra Giri PAS, Dartiningsih MW. Penerapan Media Bimbingan Konseling untuk Meningkatkan Keterampilan Guru BK dalam Memberikan Layanan Pendidikan Seks terhadap Peserta Didik. *Int J Community Serv Learn*. 2020 May 28;4(2):117-24.
18. Ramadhani K, Shaluhiyah Z, Suryoputro A. Bisakah Film Drama Korea Membuat Remaja Kita Aman dari Hubungan Seks Pranikah dan HIV-AIDS? Bisakah Film Drama Korea Membuat Remaja Kita Aman dari Hub Seks Pranikah dan HIV-AIDS? 2016 Dec 1;9(1):32-44.
19. Suhailah Z, Kusumaningrum T, Nastiti AA. Pendidikan Kesehatan Media Short Education Movie (SEM) Terhadap Pengetahuan Dan Sikap Remaja Tentang Seks

- Bebas. *Pedimaternals Nurs J*. 2019 Mar 1;5(1):145.
20. Lou C, Cheng Y, Gao E, Zuo X, Emerson MR, Zabin LS. Media's contribution to sexual knowledge, attitudes, and behaviors for adolescents and young adults in Three Asian Cities. *J Adolesc Heal*. 2012 Mar;50(3 SUPPL.).
  21. Novita H, Dewi Haris VS. Pendidikan Kesehatan Metode Group Cooperative Game Untuk Peningkatan Pengetahuan dan Sikap Remaja tentang Seks Pranikah. *Qual J Kesehat*. 2019 Dec 4;13(2):62–7.
  22. Nurbaya S, Simon M. Pengaruh penerapan pendidikan seks (media ular tangga) terhadap kemampuan pencegahan kekerasan seksual pada anak jalanan di Kampung Savana Kota Makassar. *J Islam Nurs*. 2019 Nov 20;4(2):60.
  23. Rahayu YP, Santoso S, Purnamaningrum YE. Pemberian informasi melalui SMS terhadap sikap seks pranikah remaja SMA. *J Kesehat Ibu dan Anak*. 2016;10(2):33–8.
  24. Hakimi YKM, Hakimi YKHKM. Pemanfaatan Short Message Service Berbasis Seluler dalam Meningkatkan Pengetahuan dan Sikap terhadap Seks Pranikah pada Remaja. *Ber Kedokt Masy [Internet]*. 2013 May 27 [cited 2020 Jul 22];27(3):150. Available from: <https://jurnal.ugm.ac.id/bkm/article/view/3403>
  25. Amnur I, Prabandari YS, Claramita M. Pendidikan seksual berbasis collaborative learning bagi pendidik sebaya di sekolah. *Ber Kedokt Masy [Internet]*. 2018 Mar 29 [cited 2020 Aug 19];32(5):165. Available from: <https://jurnal.ugm.ac.id/bkm/article/view/7328>
  26. Oktarina J. Pengaruh pendidikan kesehatan reproduksi oleh pendidik sebaya terhadap pengetahuan dan sikap dalam pencegahan seks pranikah di SMAN 1 Sukamara Kalimantan Tengah. *J Kebidanan*. 2019 Apr 11;9(1).
  27. Handayani S, Emilia O, Wahyuni B. Efektivitas Metode Diskusi Kelompok Dengan Dan Tanpa Facilitator in Improving Knowledge , Attitude and Motivation of. *Ber Kedokt Masy*. 2009;25(3):133–41.
  28. Slavin RE. *Cooperative Learning Teori, Riset & Praktik*. Bandung: Nusa Media; 2009.
  29. Lie A. *Cooperating learning: mempraktikkan cooperative learning di ruang-ruang kelas*. Jakarta: Gramedia; 2005.
  30. Helmi RA, Andayani B. Pengaruh metode pembelajaran kooperatif Jigsaw terhadap prestasi belajar biologi pada siswa SMA. Universitas Gadjah Mada; 2011.
  31. Swandarini H, Prof. Dr. Asmadi Alsa, SU. P. Pengaruh metode pembelajaran Jigsaw dalam meningkatkan kemampuan belajar berdasar regulasi diri siswa SMA [Internet]. Universitas Gadjah Mada; 2011. Available from: [http://etd.repository.ugm.ac.id/home/detail\\_pencarian/53359](http://etd.repository.ugm.ac.id/home/detail_pencarian/53359)
  32. Mahsun M. Pembelajaran Jigsaw pada mata pelajaran matematika di SMP Islam Sudirman Ambarawa [Internet]. 2010 [cited 2019 Feb 2]. Available from: <http://mahsunguru.blogspot.com/2010/08/skripsi-model-jigsaw-bab-1-3.html>
  33. Hertavi MA, Langlang H, Khanafiyah S. Penerapan model pembelajaran kooperatif tipe jigsaw untuk peningkatan kemampuan pemecahan masalah siswa smp. *J Pendidik Fis Indones*. 2010;6:53–7.
  34. Sudjana N. *Penilaian Hasil Proses Belajar Mengajar*. Bandung: Remaja Rosda Karya; 1995.
  35. Rofiqoh A. Peningkatan hasil belajar siswa tentang bilangan ganjil dan bilangan genap mata pelajaran matematika melalui pembelajaran kooperatif tipe Jigsaw di Kelas II MI Sawocangkring. UIN Sunan Ampel Surabaya; 2014. <https://doi.org/10.7868/S0207401X16070141>
  36. Grinsven L van, Tillema H. Learning opportunities to support student self-regulation: comparing different instructional formats. *Educ Res*. 2006;48(1):77–91. <https://doi.org/10.1080/00131880500498495>
  37. Khalil MSJ, Lazarowitz R, Hertz-Lazarowitz R. Khalil MA Conceptual Model (The Six Mirrors of the Classroom) and It's Application to Teaching and Learning About

- 
- Microorganisms. J Sci Educ Technol. 2008;18(1):85–100.  
<https://doi.org/10.1007/s10956-008-9135-1>
38. Ormrod JE. Educational Psychology : Developing Learners. 5th ed. Pearson/Merrill Prentice Hall; 2006.
  39. Aronson E, Shelley P. The Jigsaw Classroom: Building Cooperation in the Classroom. 2nd ed. Longman; 1997.
  40. Hänze M, Berger R. cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th grade physics classes. Learn Instr. 2007;12(1):29–41.  
<https://doi.org/10.1016/j.learninstruc.2006.11.004>
  41. Handhika P, Suherni S, Sumarah S. Hubungan tingkat pengetahuan tentang kesehatan reproduksi remaja dengan sikap seksual pranikah di SMK Taman Siswa Nanggulan Tahun 2017. J Kesehat. 2017;11(2):98–101.  
<https://doi.org/10.29238/kia.v11i2.37>