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The Effect of Sexual and Reproductive Health Education on Knowledge and Self-Efficacy of School Counselors

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A B S T R A C T

Purpose: Enrichment of school counselors' knowledge would be an effective way to promote sexual and reproductive health (SRH) among adolescents. The present study aims to assess the effect of educational intervention on knowledge and self-efficacy of high school counselors on teenage SRH.

Methods: A randomized controlled trial was conducted between June 2016 and March 2017. One hundred and twelve high school counselors from Tehran were recruited and randomized into two groups. The intervention was comprised of training courses on adolescent SRH as per two educational approaches: the team-based learning (TBL) and lecturing, which consisted of four sessions of 2 hours in 2 weeks. The knowledge and feeling of self-efficacy in both groups were assessed at the beginning of the study and 8 weeks after the intervention by researcher-made questionnaires.

Results: After intervention, the mean and standard deviation of the knowledge and self-efficacy scores increased significantly in both TBL and lecture groups ($p < .001$). However, the final mean (standard deviation) of counselors' knowledge and self-efficacy scores in the TBL group were significantly higher than that of those in the lecture group [20.06 (2.74) vs. 18.90 (2.95); $p = .03$ for knowledge and 43.01 (4.08) versus 41.15 (4.99); $p = .03$ for self-efficacy] with an almost moderate effect size $d = .55$ for both outcomes.

Conclusions: The better SRH knowledge and self-efficacy in TBL group can be indicative of the group's effect on making challenges, especially in subjects that are socio-religious by nature. It seems that applying learner-centered educational approaches such as TBL can facilitate achieving pre-assigned SRH goals.

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IMPLICATIONS AND CONTRIBUTION

The results of the present study suggest that team-based learning educational method is of greater effect than the conventional lecturing on increasing school counselors' awareness and self-efficacy. Team-based learning can thus be utilized in adolescent sexual and reproductive health program where challenging, group-based, and friendship-based approaches are required.

Conflict of Interest: The authors have no conflict of interest to disclose.

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Adolescence is associated with specific health needs and challenges, and due to sexual maturation, along with features such as risk aversion, it is a sensitive period in the trend toward high-risk sexual behaviors [1]. A long process of providing information on sexual issues on healthy sex, healthy interpersonal relationships, positive physical image, and gender roles [2–4] is regarded as one of the main strategies for controlling high-risk behaviors in SRH training [5]. As one of the key components of SRH program for adolescents, schools, and teachers, the two influential groups contributing to the formation of sexual values and beliefs, have always been emphasized [6].

The role of teachers in this field depends on many factors, one of the most important of which is the amount of education that

teachers receive in this field as well as their attitude toward, and beliefs about, sex [7,8]. The results of numerous studies indicate that most teachers have a positive attitude toward sexual education in adolescents and understand the necessity of these trainings in schools; however, the majority of educators have not had enough information on this domain [9,10]. Even in cases where sex education is included in the curriculum, and teachers have had some information about SRH, they have felt embarrassed and lack of self-efficacy in adolescents' training. Advisers did not know how to keep the class in order while challenging teens and creating a safe and free environment for dialogue [11]. In fact, teachers do not receive specialized and pragmatic education on adolescent SRH concerns [12], and consequently they cannot employ an effective way to transfer their knowledge to adolescents [13]. In Eisenberg's study, teachers suggested that specialist SRH educators be trained to improve SRH for adolescents [14]. Teaching methods that challenge the learner's knowledge are considered to be more effective. This seems especially true for those that already have some familiarity with the subject. For example, some understanding of a specific topic may contribute to a false sense of expertise that prevents the participant to seek a new perspective unless done through discussions [15,16]. However, lecturing is the usual teaching method in the majority of cases as it provides a massive amount of information, although the learners' retention of information is low in this approach which can be attributed to learners' inactivity during the learning [17]. In other words, lecturing is a convenient and handy approach, yet can be monotonous and does not promote self-confidence of learners [18]. Studies show that teachers all over the world face different internal and external challenges in SRH education. Discussion and team-working are the prerequisites in finding appropriate (teaching) strategies that may not be possible during lecturing [13,19]. Team-based learning (TBL) as a modern educational technique enhances the power of learners' thinking and creativity [20,21] and it could be an appropriate method for teaching SRH. TBL can lead to deeper learning, emotional intelligence, and increased learner participation by developing critical thinking skills and performance improvements [22].

To the best of our knowledge, there is no Randomized Control Trial (RCT) evaluating TBL as a modern learning method in the field of SRH education. Accordingly, the present study was designed to improve high school counselors' awareness of, and self-efficacy in, adolescent SRH and compare the effectiveness of the two different approaches.

Objectives

The main goal of this clinical trial was to assess the effectiveness of educational intervention on girl's high school counselors' knowledge on, and self-efficacy of, adolescent SRH. In addition to this main goal, this study compared the effect of the two different learning approaches: lecturing and TBL.

Methods

The present research is a multicentered, single blind, parallel-controlled randomized clinical trial conducted in Tehran, Iran. At first, the necessary scientific permissions were obtained from Tehran University of Medical Sciences. Then the approval of the respective Ethical Committee was obtained. At the next stage, the study was registered and approved by the Iranian Registry of

Clinical Trials. At the final stage, the study permission was obtained from the Department of School-Counselors.

Setting

Studies in Islamic societies, including Iran, show the fundamental differences in the state of SRH in these societies with those in developed countries as the norms and values of societies have an impact on sexuality [23]. Tehran, with more than 8 million people and about one million and six hundred thousand adolescents (10–19 years), is the most populous city as the capital of Iran. It includes 19 educational zones with different economic, social, cultural, and even environmental conditions [24]. Schools in all zones of Tehran are affiliated with the Ministry of Education. Boys and girls attend separate schools where the students and teachers are often of the same sex. In Iran, all high school teachers graduate exclusively from a University named "Teacher Training University". School counselors are teachers that have graduated from this university with majors/ minors in Psychology, counseling or social sciences. The term "counselor" is only used as a school title, as these teachers do not have degrees in psychology or a counseling certificate and therefore cannot provide any counseling services outside of the school. Their role in the schools is to provide life skills and counseling about different educational, personal, or familial issues to pupils. We only have a few SRH curriculums but students refer to these counselors if they need to discuss SRH issues in school. Recent profound cultural and economic changes in Iran have had an impact on adolescents' sexual and reproductive health status. Moreover, considering the high rate of Internet penetration (80%) in Tehran and expansion of social networks, the culture of other countries clearly affects adolescents. Despite the legal, cultural, and religious prohibition of premarital sexual relationships, adolescents' tendency toward early sex has increased. Few studies which have evaluated the sexual behaviors among Iranian adolescents indicate that sexually active adolescents had no adequate and useful knowledge on high-risk behaviors [25]. The results of two qualitative studies in Iran signified that teenagers demand reliable sources and accurate SRH information [26,27]. JavadNoori et al. in their research aimed at examining teenage girls' perceptions and experiences of sex education at school reported that sexual education in Iranian schools is not adequate. Non-prioritization of sexual education, sexual silence, evading teaching sexual issues, introducing sexual issues as horrifying, and lack of appropriate instructors and educational materials were among the reasons accounting for teens' dissatisfaction with sexual education [28]. Due to the importance of improving adolescents' health and based on numerous recommendations by previous studies, the research team decided to conduct such a study.

Participants

One hundred and twenty school counselors from five random zones of Tehran were selected for the study between November 2016 and January 2017. These individuals were randomly selected from the list of educational counselors. The inclusion criteria were employment as an advisor in a girl's high school, having at least 2 years' work experience as a teacher or counselor, and not having attended an SRH program within the last 6 months; and the exclusion criteria were absence for more than one session in the course. Eligible candidates were called and, after explaining the study goals, those willing to participate were recruited for the research.

Having offered their verbal and written consent, the participants were randomly assigned to lecture or TBL groups.

Randomization

Initial randomization was carried out in the absence of the research team and by the Tehran Department of Consulates, which were randomly selected from five zones of the city. For the randomization, the city of Tehran was divided into five geographical areas of north, south, east, west, and center and one box was devoted to each area. Then the number of all educational zones that were situated in each area was inserted in the respective box. Finally, from each of these five boxes, the name of one zone was selected randomly. Of the 180 counselors from these five zones, 120 were eligible and willing to enter the research. The names of the individuals were listed and then, with the help of computer-generated random numbers, the participants were divided into two groups of lecturing and TBL training. Group assignments were concealed in a sealed and opaque envelope. The study was single-blind and the participants were unaware of the existence of the other group.

Interventions

The intervention included two educational methods: the TBL and lecturing approaches. The same sexual health providers delivered both programs. After pretest, both groups participated in four sessions of 2 hours, held over 2 weeks. The educational content included information on anatomy and physiology of the female reproductive system, puberty changes, menstrual health, positive body image, sexually transmitted infections prevention, sexual abuse, recognition of reproductive and sexual taboos, appropriate views on sexual issues, modern learning methods, and reliable educational resources in the field of SRH.

In addition to the four sessions, a short meeting was held for the TBL group to introduce this method and the grouping. In the present study, TBL technique included preparation, group formation, individual test, group test, appeal, and feedback. High-school advisers were expected to be familiar with SRH issues due to their professional experience. In addition, the subject of each session and educational content was already available to the participants to find out about it. In the first meeting, people were divided into groups of 5–7, and the members of each group chose a group name and one person as their representative, whose role was only to register the group's comments. Next, a multiple-choice test, consisting of 4 or 5 questions about the subject of that meeting, was administered individually. Both questions and choices were challenging so that the answers could not be easily achieved. At the next stage, the groups were formed and after 10–15 minutes of discussion and consultation, the same questions (individual test questions) were administered to the group. The teacher immediately corrected the group's responses and provided appropriate feedback to the participants as a whole, and then explained the contents of the meeting. At the end, the topic was discussed and the participants were asked to research and think about it. The content and timetable of the lecture group training was similar to that of the TBL group. During the lecture, people were allowed to ask questions and take answers from the teacher, but there was no group discussion. Finally, 8 weeks after the end of the course, post-test was held in both groups. Pretest and post-test questions were the same, but they were completely different from the questions in the TBL sessions.

Outcome measurements

Participants were evaluated at the time of entering the study and 8 weeks after the end of the intervention. The researcher-made questionnaire included three sections of demographic inquiry, awareness, and self-efficacy questions on teaching adolescent SRH. The demographic section consisted of 13 questions. The knowledge questionnaire included 35 questions with three, "false", "I don't know" and "correct" options. The minimum and maximum score of this questionnaire was 0 and 70. The self-efficacy part, composed of 12 Likert-scale questions, assessed participants' belief in their ability to handle counseling in the field of SRH. Responses to the 12 items ranged from strongly capable (1) to strongly incapable (4). The questions were designed in the same areas as counselors' knowledge was evaluated, but this time, the sense of counselors' self-efficacy was measured from their point of view in response to the scenarios. The minimum and maximum scores of the self-efficacy questionnaire stood at 12 and 48, respectively. Validity of the questionnaires and the content of the training were approved by 10 professors of Tehran University of Medical Sciences. A high degree of internal consistency was observed in both questionnaires (Kuder–Richardson .89 for knowledge and Cronbach's alpha .81 for self-efficacy). Two-week test-retest reliability co-efficient of the knowledge and self-efficacy questionnaires on 15 participants indicated a good agreement: .89 and .85, respectively. These 15 participants were excluded from the study.

Statistical methods

With regard to effect size of .65, 60 individuals per group were required for the present research to provide the study with 90% power (with a two-sided alpha of .05) and anticipation of a 20% dropout rate. Chi-square, Fisher's exact test, and independent t test were used for homogeneity of the two groups. The results at baseline and after 8 weeks within each group were compared with Paired t test. The results for two interventional groups of TBL and lecturing were evaluated through independent t test. Results are expressed as the mean (standard deviation [SD]), and $p < .05$ was considered statistically significant and all analyses were conducted by the SPSS version 21 for Windows (SPSS IBM, New York, NY).

Results

To promote high school counselors' SRH knowledge and self-efficacy, 120 participants were randomly divided into two educational groups of TBL and lecturing (Figure 1). After the training, eight participants were excluded from the study due to absence, and the data pertaining to 52 subjects in the lecture and 60 subjects in the TBL group were analyzed.

Baseline data

The mean (SD) age of counselors was 45.51(6.46). The average of their work experience as a teacher and counselor was 21 and 14 years old, respectively. The majority of participants were married (87%), with moderate economic conditions (60%) and desirable social position (66%). Forty-three percent of the subjects were graduates in psychology, 31% in counseling, 15% in social sciences and 11% in other fields. Fifty-one percent of advisors had obtained a bachelor's degree, 45% had obtained a master's, and 4% a doctorate. Although 92% of counselors regarded sex education as

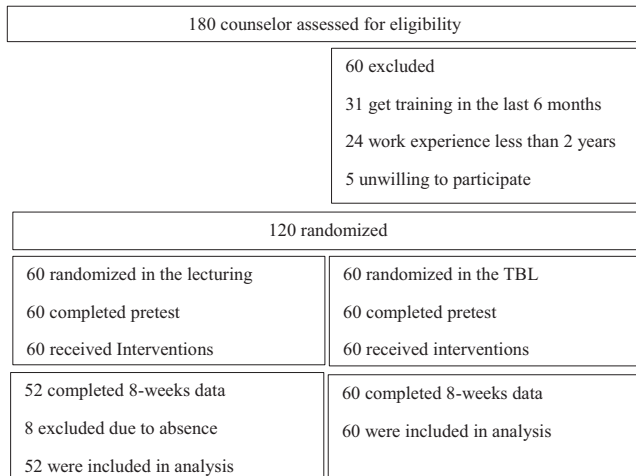


Figure 1. Flow diagram of participants' selection process.

necessary, only 29% of them had received some brief and limited trainings during the course of their life. There were no significant differences between baseline demographic items in the two groups (Table 1).

The baseline mean (SD) of counselors' knowledge scores on adolescent SRH in TBL and lecturing groups were 13.63 (3.51) and 14.82 (3.64), respectively. Also, the mean (SD) of counselors' self-efficacy scores at the baseline in TBL and lecturing groups stood at 33.25 (9.71) and 36.1 (9.33), respectively. The two groups showed

no statistically significant difference in baseline knowledge and self-efficacy (Table 2).

Summary of results

Table 2 shows the changes observed in mean (SD) of the knowledge and self-efficacy of the two groups from baseline to 8 weeks after the intervention. Knowledge and self-efficacy increased from pre to post-test significantly in each of the two interventional groups ($p < .001$). In the lecture group, the knowledge score increased from 14.82 (3.44) in pretest to 18.90 (2.95) [$p < .001$, $d = .89$] in post-test and self-efficacy score grew from 36.01(9.33) in pretest to 41.15 (4.99) [$p < .001$, $d = .63$] in post-test. In the TBL group, knowledge score increased from 13.43 (3.51) in pretest to 20.06 (2.74) [$p < .001$, $d = 1.71$] in post-test and self-efficacy score grew from 33.25 (9.71) in pretest to 43.01 (4.08) [$p < .001$, $d = 1.17$] in post-test. Figure 2 illustrates the changes from baseline to 8-weeks after intervention in percentages.

However, a comparison of pre- and post-test scores with one another indicates that this increase was significantly higher in TBL than lecturing in both categories, $p = .03$, with an effect size of $d = .4$ (95% CI .03–.78). The mean (SD) score of counselors' knowledge after intervention in the lecture group was 18.90 (2.95) and in the TBL group was 20.06 (2.74). After intervention, the mean (SD) score of counselors' self-efficacy was 41.15 (4.99) in the lecture group and 43.01(4.08) in the TBL group.

Discussion

This RCT showed that counselors awareness of, and self-efficacy in, adolescent SRH increased significantly 8 weeks after the intervention in both lecture and TBL groups, but TBL group showed a significantly higher level of effectiveness. Considering the difficulties with entering the Iranian Education Ministry, the training of this number of high school teachers can be a major contributor to promoting adolescent health. A review of counselors' knowledge scores before the intervention shows clearly that the scores of all participants were very low. All participants' scores were less than 33% of the total score, which is in agreement with other studies indicating the dearth of teacher's awareness of adolescent SRH [26].

One of the strengths of this study is the simultaneous evaluation of awareness and self-efficacy, since otherwise it would not be possible to identify participants' overestimation of their own self-efficacy in the pretest. Although the knowledge score of 100% participants were below 33% of the total score, they had a sense of self-efficacy, and 50% of them earned over 50% of the total self-efficacy score. It means that despite inadequate knowledge in SRH, counselors assumed themselves efficient and capable. Bandura defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplishing a task [28]. Although self-efficacy is a positive trait, it can lead to misjudgments when it is significantly beyond one's actual ability [29]. Our first evidence for the unreal sense of self-efficacy would be our data. We had designed a question for every specific issue on knowledge section and then we repeated this issue in a scenario format in self-efficacy section; interestingly, those who had given a wrong answer to the knowledge section had assumed themselves as capable persons in response to the related scenario in self-efficacy section. The second evidence for this claim would be the findings of other researches, such as Javadnoori's report that showed that students believed even

Table 1
Baseline data of team-based learning and lecture groups and statistical comparison

Group Variables	Lecturing (52) Number (%)	TBL (60) Number (%)	Statistical test
Age (year)			$t = -0.934$, $df = 110$,
40>	12 (23.1)	7 (11.7)	
40–49	32 (61.5)	36 (60)	$p = .35$
>50	8 (15.4)	17 (28.3)	
Level of education			$P = .07$
Bachelor	22 (42.3)	36 (60)	
Masters	29 (55.8)	21 (35)	
Ph.D.	1 (1.9)	3 (5)	
Field of education			$p = .80$
Psychology	24 (46.2)	24 (40)	
Consultation	16 (30.8)	19 (31.6)	
Social Sciences	9 (17.3)	8 (13)	
Others	3 (5.8)	9 (14.8)	
Economic situation			$p = .62$
Undesirable	0	1 (1.7)	
Average	33 (63.5)	34 (56.7)	
Desirable	19 (36.5)	25 (41.7)	
Social position			$p = .25$
Undesirable	0	3 (5)	
Average	19 (36.5)	16 (26.7)	
Desirable	33 (63.5)	41 (6.3)	
Experience as a consultant (years)			$t = -.126$, $df = 110$,
5>	6 (11.5)	8 (13.3)	$p = .90$
5–9	6 (11.5)	6 (10)	
≥10	40 (76.9)	46 (76.7)	
Previous training history			$p = .059$
Yes	10 (19.2)	22 (38.7)	
No	42 (80.8)	38 (63.8)	

TBL, team-based learning.

Table 2
Comparison of knowledge and self-efficacy of counselors about SRH in two group of TBL and lecturing

	Lecturing (N = 52) Mean (SD)	TBL (N = 60) Mean (SD)	Compare the TBL and lecturing (Between groups) (Independent t test)
Knowledge score			
Pretest	14.82 (3.64)	13.63 (3.51)	t = 1.76, df = 110, p = .08
Post-test	18.90 (2.95)	20.06 (2.74)	t = -2.15, df = 110, p = .03*
Score changes	4.07 (4.56)	6.43 (4.02)	t = -2.90, df = 110, p = .004**
Compare the pre- to post-test (Within groups) (Paired t test)	t = -6.43, df = 51, p < .001***	t = -12.37, df = 59, p < .001***	
Self-efficacy score			
Pretest	36.1 (9.33)	33.25 (9.71)	t = 1.76, df = 110, p = .08
Post-test	41.15 (4.99)	43.01 (4.08)	t = -2.15, df = 110, p = .03*
Score changes	5.13 (8.08)	9.76 (8.96)	t = -2.90, df = 110, p = .005**
Compare the pre- to post-test (Within groups) (Paired t test)	t = -4.58, df = 51, p < .001***	t = -8.43, df = 59, p < .001***	

SD = standard deviation; SRH = sexual and reproductive health; TBL = team based learning.

Significant:

* p < .05,

** p < .01,

*** p < .001.

when teachers had enough knowledge on some issues in SRH, they were concerned about their inadequate control over class conditions, or inappropriate response in such situations [26]. In addition, such an overestimated self-efficacy can be a justification for lack of any meaningful efforts by counselors to acquire more knowledge on SRH. Despite the fact that 92% of advisers considered SRH education very essential and 50% of them had postgraduate degrees, only a few of them had attended any courses on SRH.

Post-test findings indicated that counselors' knowledge on SRH in both groups was significantly increased, which was similar to the results obtained by Kaushal et al. [30]; however, these results were not consistent with those obtained by Devgan. In the study conducted by Devgan, there was no significant increase in high school teachers' awareness 3 months after a three-part training on adolescent issues. The significant increase in follow-up awareness

in the present study can be attributed to participants' lower primary knowledge. In addition, our counselors' positive attitude as compared to those in Devgan's study can contribute, as the second reason, to such a distinction [31].

In the present study, the rate of self-efficacy changes in both groups increased significantly ($p < .001$) after the training of counselors. Similarly, in the study by Kulinna et al., 2 months after training, teachers' self-efficacy increased in the education of healthy teens' behaviors, and also led to an increase in students' grades in healthy behaviors [32]. In the study conducted by Karunwi and Oshiname teachers' self-efficacy in children's health increased significantly after 4 days of training [33].

The results of the present study suggest a greater effect of TBL educational method in comparison with conventional lecturing on increasing both groups' awareness and self-efficacy. Interest in learning and teaching SRH topics is influenced by a variety of factors, including sociocultural and personal experiences. It seems that the sharing of these experiences in a team-based class presents a challenge and produces positive effects on attitude that ultimately facilitates self-efficacy and learning process. Even if discussions, disagreements, and hearing others' views do not lead to general consensus, they can reduce negative judgments on SRH concerns. This result is concordant with those obtained by Buckelew et al. suggesting that learner-centered education such as discussion and role playing can increase self-efficacy of health providers [34]. The effect of TBL training on the field of health was examined by Fatmi's systematic review. Seven of 14 studies showed a significant increase in knowledge score for TBL group [35]. Interestingly, our effect size is highly compatible with Freeman's meta-analysis that compared student performance in active learning versus traditional lecturing, and reported the preference of active methods with an overall effect size of .47 [36].

This study was limited in some respects. Firstly, it should be considered that the participants of the present study were selected randomly and they did not know each other. Consequently, the

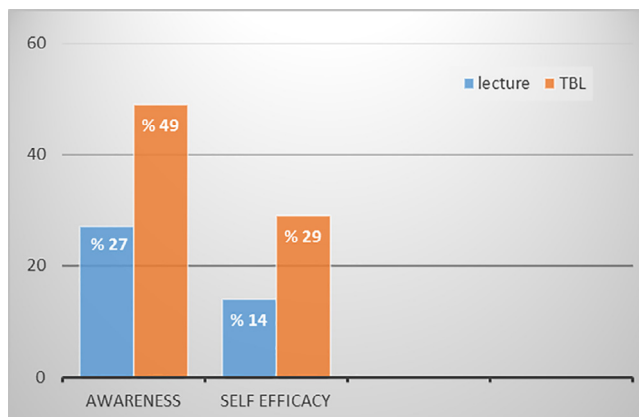


Figure 2. Percentage change in awareness and self-efficacy from baseline to 8 weeks after intervention in team-based learning and lecturing group.

sense of competition as one of the key elements of TBL effects was missing in this study. In addition, participants did not care much about obtaining a higher score due to the nature of our study. It seems that if the optimal conditions of TBL were available, the effect size could be even higher in the TBL group. Secondly, it is likely that, in response to self-efficacy questions and due to their fear of jeopardizing their future career, the counselors may have deliberately pretended to be capable, even though the research team and the location of the classes were affiliated with the university and participants were ensured about the confidentiality of the collected data.

The present study with a considerable population size is one of the first RCTs that evaluates the impact of TBL technique on SRH education. Our findings in line with earlier studies indicate that group-based and learner-centered education could be more efficient than traditional methods to deal with culturally sensitive topics. Furthermore, this research confirms the consensus that school administrations' awareness of SRH is inadequate, although most of high school advisers agreed on urgency of this education. It seems that some school teachers' tendency toward overestimating their own ability in SRH education may lead to self-misjudgment, and consequently lead to contentment with the current level of their knowledge as being adequate.

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Supplementary data

Supplementary data related to this article can be found at [doi:10.1016/j.jadohealth.2018.05.031](#).

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