

ORIGINAL RESEARCH

Comparison of the effects of direct and indirect education of sexually transmitted infections on knowledge and attitude of male nursing and medical students of Shahid Beheshti University of Medical Sciences, Tehran – Iran, 2018

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Abstract: **Introduction:** It is very important to prevent Sexually Transmitted Diseases (STIs) as they cause many other health problems with serious complications. In fact, prevention is the most effective mean of dealing with STIs. In saying that, the basic requirements of prevention include appropriate health education on the subject. This study compares the effectiveness of two health education programs regarding bacterial STIs among male students at Nursing and Medical Schools of Shahid Beheshti University of Medical Sciences and Health Services in Tehran. **Methods:** The quasi-experimental study included 430 male students aged between 18 and 30 who were majoring in nursing and medical field. Two faculties were selected through purposeful non-random sampling. A valid and reliable researcher-made questionnaire was filled out in two steps (before and one month after the training). The training interventions in direct education group included a lecture along with a session of questions and answers (Q&As) for one and a half hours. On the other hand, the indirect education only included a weblog on the topic of STIs. The statistical tests were employed to analyze the collected data in SPSS 22. **Results:** Generally, students' knowledge and attitudes toward this subject were at a moderate level before the intervention, and only %18.4 of them were well-aware of bacterial STIs. In fact, %44 of the respondents had positive attitudes toward those diseases. The research results indicated that the educational intervention managed to increase the awareness and attitudes of the students in relation to STIs in the two case groups in comparison with the control group. However, the different methods of education produced similar results and had no significant differences. Moreover, attitudes increased in the weblog intervention group slightly more than the lecture group. **Conclusion:** According to the findings of this research, The weblog intervention had more effects on their attitudes than the lecture intervention. Therefore, the modern training method based on the use of the internet (weblog) can be used effectively as an alternative or supplement to traditional training methods.

Keywords: Knowledge; Attitude; Bacterial STIs; Direct Training; Indirect Training

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1. Introduction

Sexually Transmitted Infections (STIs) are caused by a wide variety of bacteria, viruses, and parasites. These diseases can be transmitted through (vaginally, anally, or orally) sexual contacts or nonsexual ways such as the consumption of contaminated blood products. They can also be transmitted from a mother to her fetus during the pregnancy or childbirth. STIs can cause serious health problems [1]. Thereby, leaving STIs untreated can cause complications which would threaten a patient's health and leave them incurring additional treatment expenses. Furthermore, untreated patients can transmit the disease to others. A treated patient may be afflicted again in case of having sexual contact with another patient, as there is no immunity after affliction [2]. Over one million people are afflicted with an STI every day across the world. Every year, nearly 500 million people are afflicted with one of the four bacterial STIs, including chlamydia, gonorrhea, syphilis, and trichomoniasis [3]. According to the statistics published by the World Health Organization (WHO), STIs are proliferating worldwide. Out of 357 million STI patients, it is estimated that 131 million, 78 million, 5.6 million, and 143 million people are afflicted with chlamydia, gonorrhea, syphilis, and trichomoniasis, respectively, every year [4]. These increasing rates can be due to certain factors including social variations spreading STIs, changes in the methods of prevention and treatment, and the increasing number of young individuals starting to experience sexual relationships [4]. According to the WHO, the AIDS affliction rate was %0.2 in Iran in 2017 [5]. Unfortunately, STI prevention educational programs are very limited in Iran. According to the Iranian ministry of health and medical education, HIV sexual transmission rate is now at a warning level as it has increased from 10% to 21%. In 2013, nearly %38.9 of the 28 thousand %0-0.06 in Iran [7].

Chlamydia is known as a latent infection due to the fact that most of the infected patients show no symptoms. The youth are prone to affliction with chlamydia due to a combination of behavioral and biological reasons. Therefore, it is a common STI among the youth [8]. This disease can cause secretions in genitals, urination irritation, and pain or swelling in one or both testicles (epididymitis) in men. Chlamydia rarely leads to infertility in men [8]. On a separate note, the bacterial infection of syphilis is an STI caused by a bacterium. In most countries, the prevalence of syphilis is higher in men than in women [9]. Syphilis wounds in the mouth, anus, and genitals, can increase the chances of AIDS transmission and

affliction. If syphilis is not treated properly, it can cause long-term complications or even death [10]. In men, syphilis can cause white, yellow, or green secretions in the penis, pains, swelling of testicles, and/or urination irritation. In rare cases, it may also cause infertility in men. If syphilis is left untreated, it may also spread to the blood and joints, a condition which can threaten a patient's life [11].

Leaving STIs unchecked and untreated can adversely affect a patient's health, cause various physical and/or mental complications, and make the patient incur greater treatment costs. In addition, patients who disregard treatment can spread the disease onto others. An important reason why the disease might be left untreated is the lack of diagnosis. An obstacle in the diagnostic of STIs is that male patients may lack any symptoms such as genital secretions and wounds [1]. Those infected with STIs may face a number of challenges in the screening and treatment of the disease. These challenges include potential insufficiencies of screening centers, unavailability of treatment, low quality of services, fear of social judgment, and/or spouse's indecision for treatment. Although the prevalence rate of STIs is highest among drugs and substance addicts, inmates, adolescents having sexual contacts, prostitutes, and homosexuals, these individuals often do not have adequate access to health services [1]. The statistics collected from universities of medical sciences indicated that 28,663 patients with AIDS were identified in Iran by September 23, 2014. In fact, %88.4 of them were men, whereas women only made up %11.6. Hence, it is essential to diagnose the disease among men. Otherwise, irrecoverable complications can be faced [6]. It can be claimed that the most effective way of preventing STIs is to avoid risky and unprotected sexual behavior, and to educate the members of public through promoting healthy sexual practices worldwide. The principles and strategies for controlling and treating STIs include accurate and early diagnosis, effective and complete treatment, education in prevention and risk mitigation, encouraging the use of condoms, and timely treatment [6]. Currently, there are insufficient attempts at preventing the spread of STIs. Despite significant efforts to identify simple intervention, which can decrease cases of sexually risky behavior, change of behavior has remained a challenge [1].

The WHO has introduced health education as a global strategy for preventing and controlling STIs. Health education can inform people on the subject of STIs and help them know what appropriate actions to take for prevention [12]. Unfortunately, STI prevention educational programs are very limited in Iran. A few studies have been conducted by Khodakarami et al. in Tehran [13], Mahmudifar et al. in Mahabad [14], and Malekshahi et al. in Khorramabad [15], who showed that people's awareness and attitudes were significantly elevated once they received appropriate education on SDTs and

AIDS. This finding reveals the importance and necessity of education in STIs, especially among the youth of Iran, as well as the significance of universities in raising awareness on this topic. A few other studies indicate an increase in premarital sex in Iran. For instance, one study reported %25 prevalence rate of sexual contacts among unmarried female students at major universities in Tehran [16], %20 prevalence rate of sexual contacts among students [17], and the prevalence of sexually risky behavior among male and female high school students [18]. A series of research showed that different interventional studies of the sexual health education's effectiveness could have substantial effects on people's awareness and attitudes. The findings of Rajali et al. indicated an increase in the awareness among students who had received educational interventions [19]. Apart from the studies on the direct effects of education on awareness and attitudes in statistical populations, different studies show the positive effects of the internet, used as a modern indirect education method, on the awareness, self-efficacy, and attitudes of people [20, 21]. This finding shows the need for education in STIs, especially among the Iranian youth as well as universities, to increase people's awareness and attitudes toward the prevention of STIs. Moreover, men's health is a topic requiring special attention across different age groups. Thereby, officials should place special emphasis to this topic. In doing so, in addition to educating the male population on the topic of their marital life skills, they are also to provide appropriate education on STIs [12]. In an effort to further investigate this matter, this study aimed to compare the effectiveness of direct education - a conventional education method through lectures accompanied by questions and answers [22] - with that of indirect education - a modern education method through weblog [22] - on the topic of STIs among the male students at Nursing and Medical Schools of Shahid Beheshti University of Medical Sciences and Health Services, in 2018.

2. Methods

This paper reports the findings of a quasi-experimental interventional study conducted on 430 students at Nursing and Medical Schools of Tehran's Shahid Beheshti University of Medical Sciences, in 2018. For this purpose, the purposive nonrandom sampling method was employed. First, a list identifying all faculties of Shahid Beheshti University of Medical Sciences was codified. According to the chosen sample size, two faculties were selected. The nursing school included the two case groups, receiving direct and indirect educational interventions. The case groups consisted of 140 participants each. The medical school included the control group consisting of 150 participants. All of the search samples were included in this study. There were 430 participants, 280 of

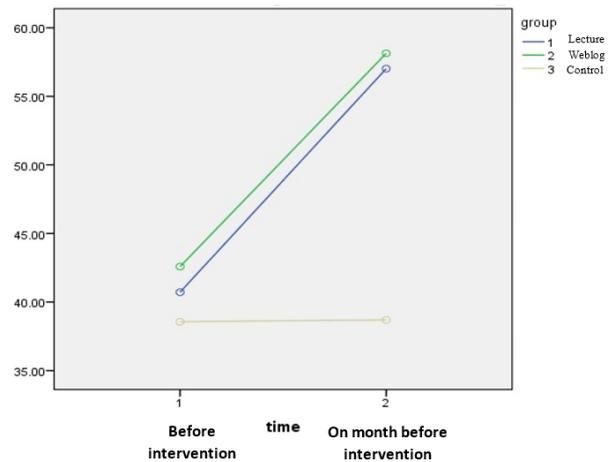


Figure 1: Comparing the Scores of Knowledge about STIs before and One Month after the Intervention in the Study Groups.

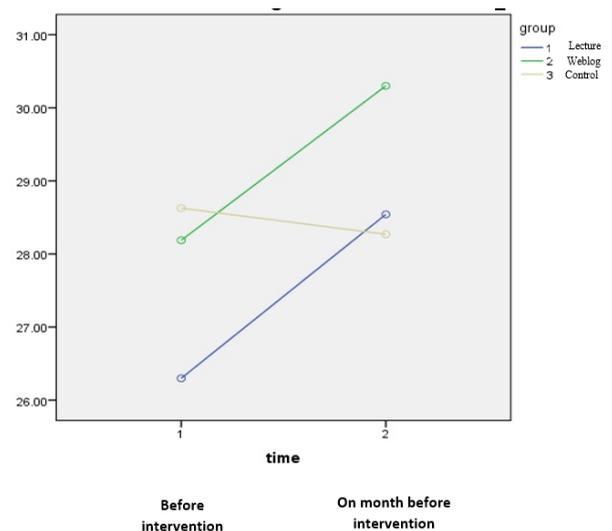


Figure 2: Comparing the Scores of Attitudes towards STIs before and One Month after the Intervention in the Study Groups.

whom belonged to the case groups, and the other 150 to the control group. All participants filled out the questionnaires. The data collection tool was a comprehensive researcher-made questionnaire, designed through consulting the references present in the WHO and the Center for Diseases Control and Prevention. The questionnaire was validated before utilization. Pearson's product-moment correlation coefficient was 0.75, and the internal consistency of the whole questionnaire was 0.843. The final questionnaire included 29 knowledge questions, and 11 items on attitude which was measured by calculating the scores obtained by participants of the study. The significance level was considered 0.05. The awareness of participants was categorized as poor (obtaining less than %40 of the total score), medium (obtaining %40-

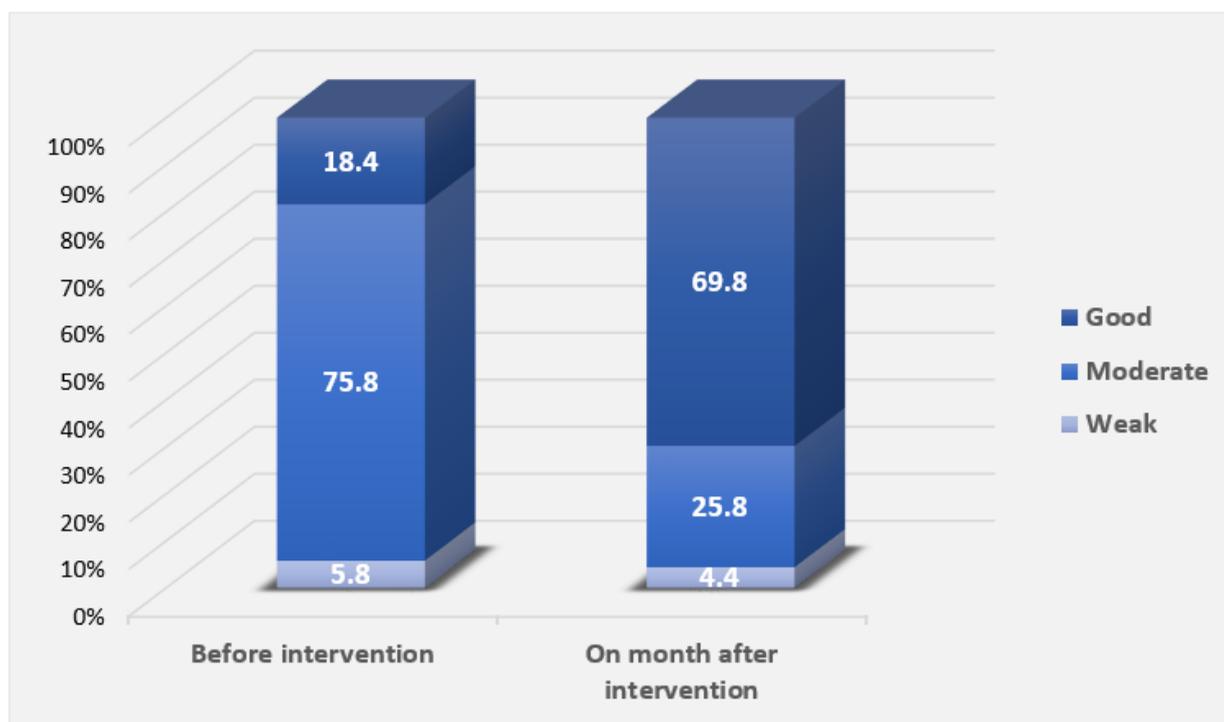


Figure 3: Comparing of knowledge of STIs before and One Month after an educational Intervention in Study Groups.

Table 1: Comparing the Mean and Standard Deviation of Scores of Knowledge about STIs before and One Month after the Intervention in the Study Groups

Step	Before Intervention	One Month after Intervention	ANCOVA
Index/ Group	SD ± Mean	SD ± Mean	
Lecture	40.71 ± 0.609	56.98 ± 0.476	P-Value < 0.001
Weblog	42.58 ± 0.609	57.64 ± 0.482	
Control	38.56 ± 0.588	39.19 ± 0.466	
ANOVA	P-Value < 0.001		

60 of the total score), and good (obtaining %60 of the total score). Finally, the 40-item questionnaire was filled out by 430 male students studying at two faculties. Each student was given a code written on a colored arrow. They were asked to keep the colored sheets or save the codes on their cell-phones, so to remember the codes during the entire project implementation period. After the initial test was conducted, the educational intervention was implemented at the nursing school. The intervention was conducted through a direct education method, including a 1.5-hour-long lecture and a 30-minute-long session of questions and answers, as well as a weblog with valid references on the subject of STIs. Subsequently, the questionnaire was reviewed after four weeks following the intervention, to evaluate the awareness and attitudes of students in all three groups. The results were analyzed in all three stages. It should be mentioned that the two methods share the same contents. No intervention was

given to the control group including medical students. After the study was finalized, the data were analyzed in SPSS 22 to compare the results for the groups before the intervention and one month after it. In this project, nursing and medicine male students were invited to participate. Exclusion criteria was lack of interest to continue the study and/or having close interactions with the students in the control group.

3. Results

According to the demographic information of the students, they were mostly aged between 19 to 22. Thus, the mean age was 21.45 years old. According to the research questionnaire, the responses given by the participants of the lecture and weblog groups were analyzed in relation to their awareness and attitudes toward STIs. Analysis of the responses, given by the participants of the lecture and weblog groups, to

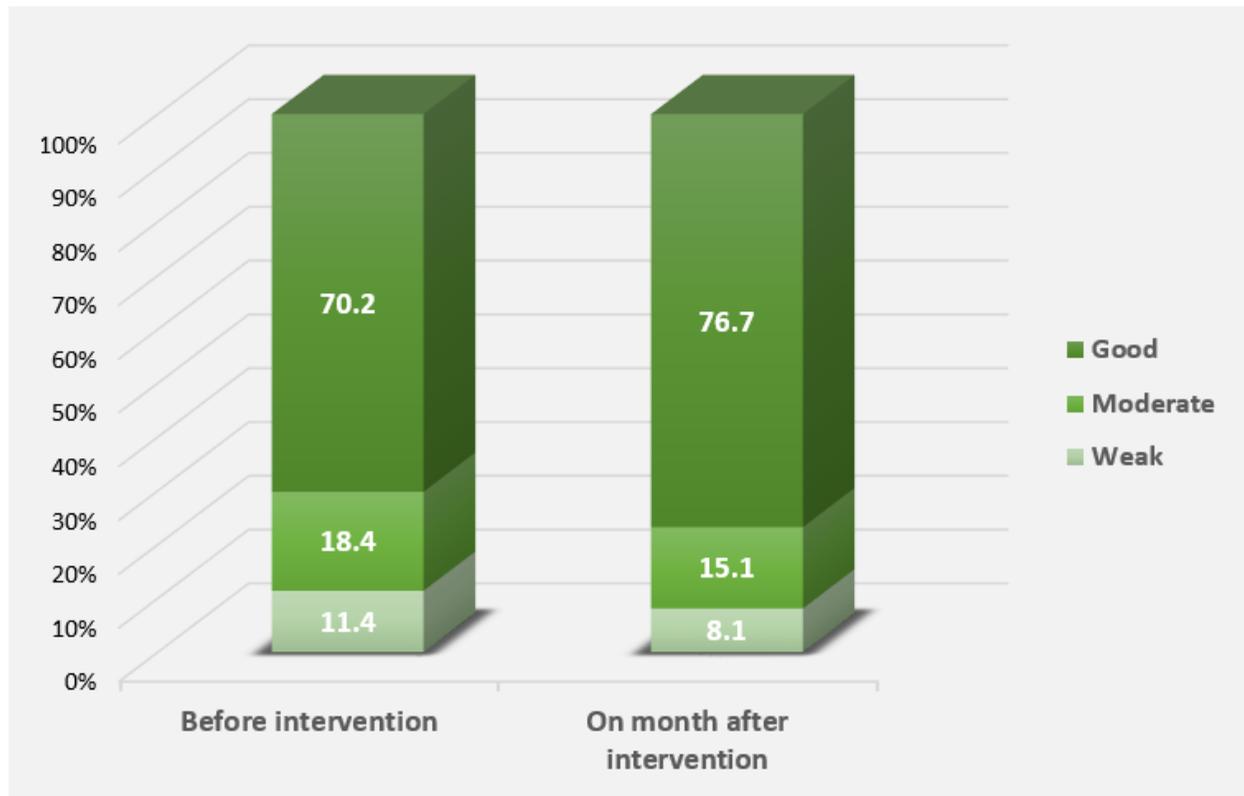


Figure 4: Comparing of attitude of STIs before and One Month after an educational Intervention in Study Groups.

Table 2: Comparing the Mean and Standard Deviation of Scores of Attitudes towards STIs before and One Month after the Intervention in the Study Groups

Step	Before Intervention	One Month after Intervention	ANCOVA
Index/ Group	SD ± Mean	SD ± Mean	
Lecture	26.29 ± 0.636	28.94 ± 0.489	P-Value < 0.007
Weblog	28.18 ± 0.636	30.17 ± 0.487	
Control	28.62 ± 0.615	28.01 ± 0.471	
ANOVA	P-Value < 0.02		

some awareness items indicated that the lecture group had the lowest levels of awareness in regards to treatment outcomes (%8.6), and that the weblog group had the lowest levels of awareness concerning relapse into STIs (%15.7). Furthermore, the lecture group had the lowest levels of awareness on the topic of diagnosis method (%13.6) after the disease was left untreated, and the weblog group had the lowest levels of awareness on outcomes of no treatment (%17.1). In both groups, students had insufficient information on chlamydia, gonorrhea, and syphilis, with regard to symptoms, transmission, diagnosis, and treatment. According to the research findings, the weblog group had the highest levels of awareness in relation to STI types (%95.7) and relevant causes (%78.6). Whereas the lecture group had the highest

levels of awareness on the topic of affliction with STIs in both genders (%85.7), and the use of condoms for STI prevention (%84.3).

Data analysis showed that nearly %82 of the respondents in the lecture group and %95 of the respondents in the weblog group believed that STIs could be dangerous. Also, on average, %75 of the respondents in both groups believed that nobody should be afraid of taking actions for treatment. The most common belief among the students was that people could be afflicted with STIs at any age (%65). After that, %64 of the respondents believed that moral adherence was the most reliable way of preventing STIs. The results indicated that the educational intervention effectively increased the awareness of the students in the two case groups in compari-

son with the control group. However, the education methods produced similar effects with no significant difference.

According to the results, the educational intervention effectively increased attitudes toward STIs in the two case groups in comparison with the control group. Moreover, the weblog education method had more effects on the attitudes of the students compared to the lecture education group. Figure 2 indicates that the educational intervention effectively increased attitudes toward STIs in the two case groups in comparison with the control group. Furthermore, attitudes increased slightly more in the weblog group than in the lecture group.

4. Discussion

This study compared the effects of a direct education - a conventional method through lectures accompanied by questions and answers - and those of indirect education - a modern education method through weblog - on STIs among male students at Nursing and Medical Schools of Shahid Beheshti University of Medical Sciences and Health Services. One of the limitations of this study was its inability to include a more diverse groups of students in terms of their schools. There were also a few research constraints in this study. For instance, the researcher found it challenging to ask the participants specific questions regarding their sexual beliefs and behaviors. According to the results, only %18 of students showed good awareness of the three bacterial STIs. More than two-thirds of the students in all three groups did not know the correct answers to 18 out of 29 items on the subject of awareness. The topics of which the students were unaware included symptoms, complications, latency possibility of surveyed STIs, and relapse. The results of attitudes were better than those of awareness. Obviously, the lack of awareness across the mentioned topics would increase the probability of affliction, transmission, and negligence of referral or delayed referral for the diagnosis and treatment of STIs. This can magnify the health and social challenges of the condition, and increase treatment expenses. Other studies conducted in Italy, Nigeria, and Malaysia, reported poor awareness and attitudes toward STIs among university students [23, 24, 25]. According to the findings of this study and the low levels of awareness among university students representing the open-minded class of the Iranian society where STIs are increasing every day, it is fair to say that those from lower sociodemographic circles and social classes may also have very insufficient awareness. Given the importance of STIs and outcomes of unawareness for the Iranian youth, the fact that academic and tertiary courses give no or very little emphasis to these diseases, can be a warning for the ever-increasing affliction with STIs and their complications. Moreover, people's attitudes and religious beliefs may some-

times prevent them from getting information on STIs. In addition, the acquired information can only be about a student's interest in searching for these diseases or can come from the public media discussing AIDS. Respondents also showed insufficient awareness of other STIs except for AIDS, and the pre-intervention score came from the information obtained from different references on AIDS, but not at very high levels. The results of different studies indicated that education could have a significant role in increasing people's awareness and attitudes toward STIs [26, 27]. The results of this study showed that the lecture intervention increased awareness by %36 and attitudes by %7.5 among students. At the same time, the weblog intervention increased awareness and attitudes by %39 and %8.5, respectively. Similar studies confirmed these results [13, 14, 15, 19, 28]. Furthermore, the results indicated that the mean score of awareness in the lecture group was slightly lower than the mean score of awareness in the weblog group; thus, there was no significant difference between the two groups. This indicated that the different education methods made no significant difference in terms of the effects on awareness. This finding is consistent with two studies by shahsavari et al. and a study by Bahrami et al. [20, 21]. Both educational interventions increased attitudes among students. However, the weblog education method had more effects on attitudes than the lecture education method. This could be due to the fact that the students could access and review the content at a later time, if needed. In this study, participants demonstrated great interest in learning about STIs. There was an acceptable change in their attitudes after the educational intervention was implemented. They also became very interested in learning more about the subject, a fact which shows the need for educational programs on the subject STIs. Since no official course or reference is available to university students, there is a great need and demand for developing educational packages and interventions regarding STDs for university students. Utilising web-based technology can produce similar outcomes at lower costs. Considering the social position of tertiary students as role models in society, educating university students is a key intervention in promoting population reproductive health.

5. Appendix

5.1. Acknowledgements

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5.2. Author contribution

All the authors have the same contribution.

5.3. Funding/Support

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5.4. Conflict of interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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