

The Effect of Peer Education on Health Promotion of Iranian Adolescents: A Systematic Review

Vida Ghasemi¹, *Masoumeh Simbar², Farzaneh Rashidi Fakari¹, Marzieh Saei Ghare Naz¹, Zahra Kiani³

¹PhD Candidate of Reproductive Health, Student Research Committee, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

²Professor, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

³PhD Student of Reproductive Health, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Abstract

Background: Peer education is one of the most effective strategies for changing behavior in adolescents, which provides the unique learning opportunities for promote health behaviors. The aim of this study was to systematically review the effect of peer education on health promotion of Iranian adolescents.

Materials and Methods: In this systematic review, all interventional studies were searched from Web of Science, Scopus, Embase, Cochrane, Medline (via PubMed) as English databases and SID, Magiran and Irondoc as Iranian databases using keywords such as "adolescent, teenager, student, peer group, education, health and Iran" between January 2000 to October 2018. Two reviewer studied the full text of the articles and their main findings were extracted and categorized. The quality of the articles were checked and verified using the Effective Public Health Practice Project (EPHPP) tool.

Results: Finally, 20 articles (with total 6,652 adolescents) which met inclusion criteria were investigated and reviewed systemically in four categories including the effect of peer education on prevention of diseases, mental health, nutritional behaviors, and prevention of high-risk behaviors in adolescents. In all categories, the results showed the equal or greater effect of peer education on knowledge, attitude, practice, self-efficacy and health behavior of adolescents compared to other methods such as education by teacher, health personnel, lecture, pamphlet and booklet. Only effect of education by the physician was more than peer education.

Conclusion: According to the results, peer education improves the knowledge, attitude, health behavior, and self-efficacy of adolescents and as a result, it will promote the adolescent health.

Key Words: Adolescent health, Education, Health promotion, Iran, Peer group.

*Please cite this article as: Ghasemi V, Simbar M, Rashidi Fakari F, Saei Ghare Naz M, Kiani Z. The Effect of Peer Education on Health Promotion of Iranian Adolescents: A Systematic Review. *Int J Pediatr* 2019; 7(3): 9139-57. DOI: **10.22038/ijp.2018.36143.3153**

*Corresponding Author:

Dr. Masoumeh Simbar, **Address:** Midwifery and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Cross of Vali-Asr and Neiaiesh Highway, Opposite to Rajaei Heart Hospital, Tehran, Iran.

Email: msimbar@gmail.com

Received date: Aug.19, 2018; Accepted date: Nov. 22, 2018

1- INTRODUCTION

The adolescence period is one of the most important periods of human life. The World Health Organization (WHO) introduces adolescents as people 10-19 years old (1, 2). According to the results of the census in 2011 in Iran, adolescents make up 34.16% of Iranian population (3). Considering high percentage of adolescents in Iran and their different needs from adults, it is necessary to identify and meet their needs, and design educational interventions based on these needs to increase the effect of these interventions (4, 5). Studies have shown that knowledge and performance of adolescences, related to issues such as puberty mental health (6), physical health (7), Human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS) transmission (8), and other sexually transmitted diseases (9), are less than expected. Teaching health and sexual issues is very important for adolescences. Awareness and understanding of puberty health and changes in this course can be effective in solving many adolescent problems (4, 7). Adekun et al. stated that 84% of adolescents considered that the access to reproductive health data is necessary however; only 48.3% of them had access to this information (10).

In many societies, e.g. Iran, adolescents have problems to access to the right information because their parents not only do not have enough skills to teach them but also they feel embarrassed (11, 12). Pillitteri believes that adolescents rarely talk to health personnel about their sensitive issues because they often receive their information from peers and friends (13). On the other hand, at this stage, adolescents have a desire to separate from the family and join the peer group (14). One of the best ways to educate adolescents about the sexual and reproductive health issues is through peer

groups (15). Peer education is one of the most effective strategies for changing behavior and have been used as public health strategies to promote various positive health behaviors resulting in transfer of knowledge and experience into members of the same group (7). It also empowers peers by creating a sense of teamwork and collaboration (16). Researches have shown that adolescents are more likely to change their attitudes if they receive health information from their peers who have similar concerns and problems (17). Peer education causes to share knowledge, and experience among people in the peer group, and ultimately lead to good health outcomes (18). The cause of this case could be spending more time by peers for training (19).

The purpose of peer education method is to enhance the knowledge, attitude and skill of adolescents, which leads to the responsibility of adolescents for maintaining and promoting their health (19). Considering the importance of adolescents' health, low awareness of Iranian adolescents about the sensitive issues in adolescence period such as reproductive and sexual health, unreliable sources of information and possibility of transferring these incorrect and inadequate information to each other (20), in addition the high acceptance level of peer education method between adolescents, and as well as the lack of a systematic review study about the effect of this approach in adolescents' health in Iran, this study was carried out to systematically assess the effect of peer education on health promotion of Iranian adolescents in various health issues and compare it with other methods.

2- MATERIALS AND METHODS

2-1. Data sources

This study is a systematic review of Iranian authors' articles about the effect of peer education on adolescents' health.

Web of Science, Scopus, Embase, Cochrane library and Medline (via PubMed) databases as English database; SID, Magiran and Irondoc as Iranian databases and search engine of Google scholar were searched. To investigate the research question, Population, Interventions, Comparisons, and the Outcomes (PICO) of the study were considered

2-2. Search strategy

In this study, we assess all Iranian interventional studies in both Persian and English language from January 2000 to October 2018. In the present study PICO included the following: **P**: adolescents between the ages of 10 and 19 years old, **I**: indicating peer education, **C**: comparison was done between peer education group and control group (other educational method), and **O**: indicating the effect of

peer education on health promotion of Iranian adolescents. In order to maximize the comprehensiveness, related keywords were identified and selected based on PICO and using the medical subject headings (MeSH), and then our search performed by using the following keywords: "adolescent", "student", "teenager", "peer group", "education", "health," and "Iran", and with the aid of the Boolean operators: AND / OR, in combination with each other. The details about the search strategy in Medline (via PubMed) are displayed in **Table.1**. The method of presenting the subjects, including analysis and interpretation, determination of aim of the study, and gathering of the findings were based on the preferred reporting items for systematic reviews and meta- analyses (PRISMA). To avoid bias, search of the articles was done by two researchers.

Table-1: Search strategy in Medline database (via PubMed)

("adolescent"[MeSH Terms] OR "adolescent"[All Fields]) OR ("students"[MeSH Terms] OR "students"[All Fields] OR "student"[All Fields]) OR ("adolescent"[MeSH Terms] OR "adolescent"[All Fields] OR "teenager"[All Fields]) AND ("peer group"[MeSH Terms] OR ("peer"[All Fields] AND "group"[All Fields]) OR "peer group"[All Fields]) AND ("education"[Subheading] OR "education"[All Fields] OR "educational status"[MeSH Terms] OR ("educational"[All Fields] AND "status"[All Fields]) OR "educational status"[All Fields] OR "education"[All Fields] OR "education"[MeSH Terms]) AND ("health"[MeSH Terms] OR "health"[All Fields]) AND ("Iran"[MeSH Terms] OR "Iran"[All Fields]).

2-3. Study Selection

Literature search performed by using the combinations of keywords. The criteria for selecting studies were based on inclusion and exclusion criteria that previously determined. The inclusion criteria included: the study was perform in Iran, in Persian or English language, from January 2000 to October 2018, interventional design, and in adolescents (10-19 years old). The exclusion criteria include lack of

access to the full text of the article, unrelated results, repeated studies, review studies, and target group other than adolescents. The abstract of all article reviewed and where article could not be excluded based on title or abstract or when there were disagreement between researchers, the full-text paper was retrieved and assessed. After removing unrelated studies, finally, 20 studies were included in the research for the quality assessment (**Figure.1**).

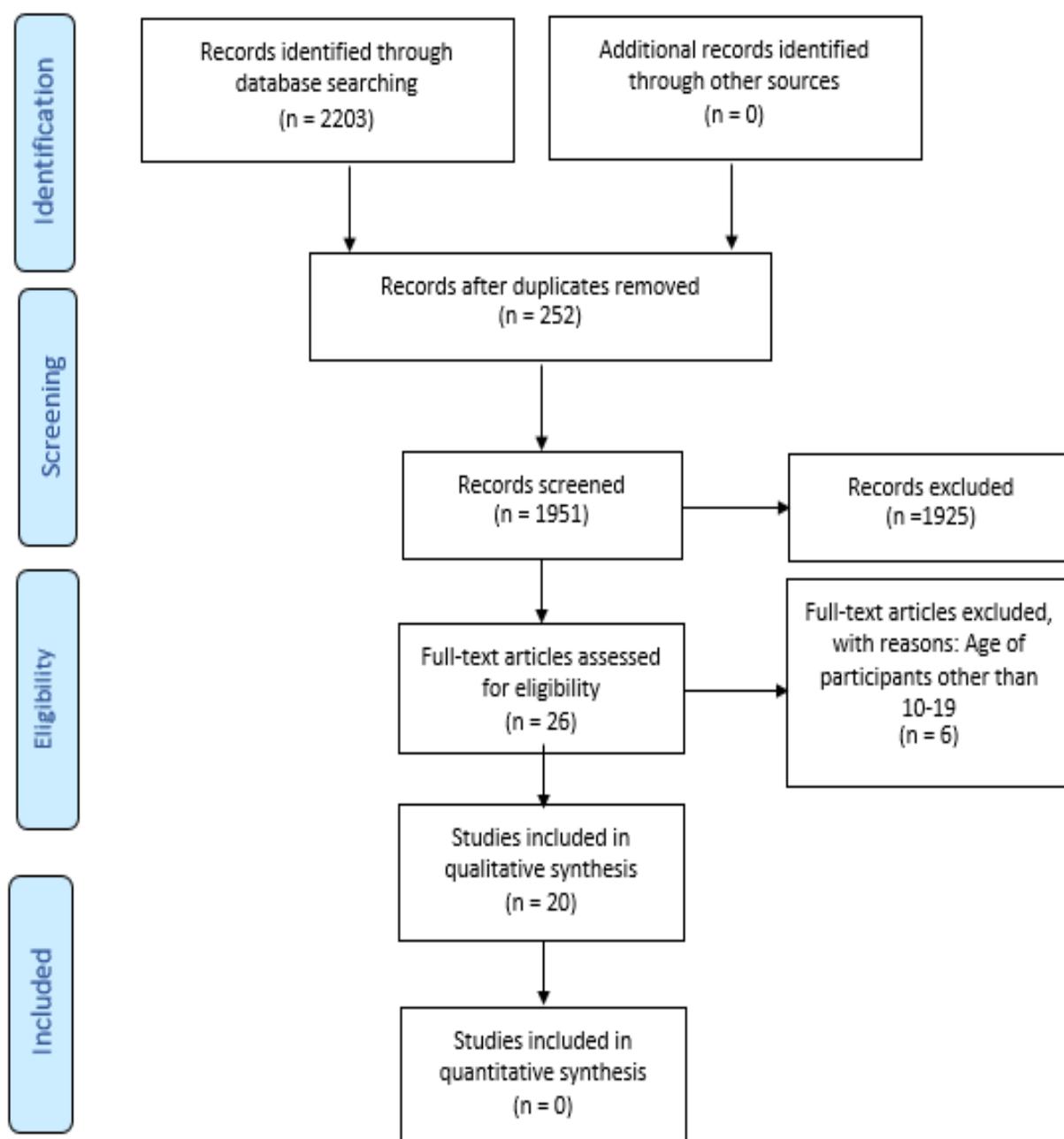


Fig.1: PRISMA flowchart for selection of studies.

2-4. Quality Assessment

To access the desired information, we used the Effective Public Health Practice Project (EPHPP) tool in order to assess the quality of articles (21). This tool assesses six domains: selection bias, study design, confounders, blinding, data collection method, and withdrawals/dropouts. According to the instructions of this tool,

each of these dimensions is assessed to be at three levels: weak (1), moderate (2), and strong (3). Finally, the score of each study were averaged to provide the total score. The maximum mean total score in each study is 3.00. Based on the mean of total score, the quality of studies is rated as weak (1.00–1.50), moderate (1.51–2.50) or strong (2.51–3.00) (22-24). To avoid bias, the search for articles and assessment of

their quality were performed by two independent researchers. Due to the scope of study designs included in this review, which may affect quality rating no studies were excluded based on the quality assessment. To avoid bias, assess of the quality of the articles was done by two researchers. After quality assessment, studies were analyzed qualitatively.

2-5. Data extraction

Finally, 20 articles (14 quasi-experimental, two randomized control trial, two comparative interventional, one interventional, and one experimental) which met inclusion criteria were selected. Of these, 13 articles from Iranian databases, and 7 articles from English databases were extracted. After quality assessment, studies were analyzed qualitatively. The abstract, full text, the purpose of the study, target group, intervention, and results of the 20 final articles assessed by two researchers and categorized into four categories in form of tables.

3-RESULTS

In this research, we reviewed all original published article in electronic database. In the first stage, 2,203 studies (Medline: 34, Scopus: 562, Web of Science: 115, Embase: 480, Cochrane library: 362, Irandoc: 98, SID: 62, Magiran: 50, and search engine of Google scholar: 400), were determined based on the initial search according to the keywords. After reviewing their titles and abstracts and excluding unrelated studies, 20 studies with 6,552 adolescents were reviewed in four categories including the effect of peer education on prevention of diseases, mental health, nutritional behaviors and prevention of high-risk behaviors in adolescents. The summary of the results has been described in **Tables 2-5** (*Please see the tables at the end of paper*); the methodological quality of studies was generally acceptable and most

of the studies had moderate quality. On the other hand, due to the nature of the intervention, there was no possibility in blinding participants in all studies. In the category of peer education effect on prevention of diseases in adolescents, 12 studies with a sample size of 4,434 adolescents were reviewed (25-36). Studies in this category have mainly focused on HIV/AIDS. However, six studies have also been conducted to prevent osteoporosis (31), upper urinary tract infections (34), anemia (32), Head Lice Infestation (36), and menstrual health (28, 35). The results of all studies in this category indicated that peer education had equal or greater effect on knowledge, attitude, practice, self-efficacy and health behavioral of adolescent about prevention of diseases compared to other methods.

In a study by khalajabadi Farahani and Ebadi (2004), peer education and adult education increased the knowledge of adolescents about prevention of HIV/AIDS, attitude toward rejecting AIDS patients and self-efficacy skill of student, but no difference has been detected between the two interventional groups in this regards (25). The result of Abbaspour et al. (2007) showed a significant increase in knowledge and attitude of students about prevention and transmission of HIV/AIDS in peer education and health personnel groups, but peer education was more effective (26). In the study of Baghianimoghadam et al. (2012), the effect of peer education about HIV/AIDS prevention was measured using constructs of health belief model (HBM). The results showed a significant increase in the mean scores of knowledge and all constructs of the HBM in the peer education group. However, in the training group by the teacher, there was a lower increase in the mean scores of knowledge compared to peer education group. In addition, there was a significant increase, only in perceived severity and perceived barriers

of HBM. In control group, there were no significant differences in scores on knowledge or any of the constructs of the HBM (29). In a study by Alizadeh Siouki et al. (2013), the results showed the significant increase in mean scores of knowledge, attitude, practice, behavioral intention, subjective norms and perceived behavioral control in peer education group compared to control group (30). Babazadeh et al. (2015) in their study showed significant changes in the mean score of knowledge, attitude and behavioral intention of female student related to HIV/AIDS in the peer education group compared to control group (33). However, in the study of Azizi et al. (2008), despite the positive effect of peer education, this effect was less than education by the physician (27). In a study by Kargar et al. (2013), the results showed that peer education and health personnel education are equally effective on self-efficacy of adolescents with nephritic syndrome about prevention of osteoporosis (31). The result of Sehhati Shafai et al. study showed a significant increase in the mean score of knowledge and performance of female students about iron deficiency and taking iron supplements compared with teaching by lecture (32). In two study, education based on the HBM model by peers significantly increased the mean scores of knowledge, the constructs of the HBM and preventive behaviors against head lice infestation and urinary tract infection (34, 36). In the field of menstrual health, the results of two studies showed a significant increase in knowledge, attitude and practice of the students toward menstrual health (28, 35) (**Table.2**) (*Please see the table at the end of paper*). In the category of peer education effect on mental health, three studies with a sample size of 681 adolescents were found to evaluate the effect of peer education on mental health (6), self-esteem (37), and stress control (38) in adolescents, and the results showed the positive effect of this

method on the level of self-esteem, knowledge and practice about mental health and the mean score of stress control in adolescents compared to the control group (**Table.3**) (*Please see the table at the end of paper*). In the category of peer education effect on nutritional behaviors, three studies with a sample size of 755 adolescents were reviewed (38-40). In the study of Lotfi Mainbolagh et al. (2012), Alizadeh Siouki et al. (2015), the peer education was conducted using the health belief model on nutritional behaviors (39, 40). The results indicated that this method improves the mean scores of knowledge and health belief model constructs such as perceived benefits, barriers, susceptibility and severity, and self-efficacy (**Table.4**) (*Please see the table at the end of paper*).

In the category of peer education effect on prevention of high-risk behaviors, three studies with a sample size of 773 adolescent were found to assess the effect of peer education on prevention of smoking, drug addiction and sexual behavior. The results of the studies indicated the effect of this educational method on improving the attitude towards smoking as well as the knowledge and attitude toward drug addiction and sexual behavior. In a study by Baraz et al. (2012) the mean scores of knowledge about drug addiction prevention in peer education group was higher than teacher education group (41). In addition, the results of the study by Maarefvand et al. (2015) showed that education by peers was effective on labor children's attitude toward smoking (42). The study of Hatami et al. (2015) showed a significant effect of peer education on knowledge and attitude toward sexual health during puberty (43) (**Table.5**) (*Please see the table at the end of paper*).

4- DISCUSSION

This study was conducted for the first time in Iran with the aim of systematically

review the effects of peer education on health promotion of Iranian adolescents. The effect of this approach can be due to the imitation of peer groups from each other, the easy transfer of information between peers, good peer understanding of the target group's social and cultural environment, and active participation in all stages of planning, implementation and evaluation (28, 44). Studies in the world have also shown the effect of this method in the prevention of HIV/AIDS (45), sexually transmitted diseases (STD) (46), sexual education (47), and the reduction of high-risk behaviors among injecting drug users (48). In general, according to the Tolli study, the impact of peer education depends on factors such as recruiting of the peer educators, peer educators' self-determination and empowerment and training and supervision of the peer educators (15). Twenty articles were reviewed in four categories including the effect of peer education on prevention of diseases, mental health, nutritional behaviors and prevention of high-risk behaviors in adolescents.

4-1. Prevention of diseases

The majority of studies (12 studies) (24-35) were related to the effect of this kind of education on prevention of diseases, which the most studies were assigned to the HIV/AIDS (seven studies) (25-27, 29, 30, 33). This could result from global importance and rapid spread of this disease as well as the vulnerability of most adolescents, with almost half of the reported cases in the United States were in the age group of 15-24 years old (49). According to United Nations Programme on HIV/AIDS (UNAIDS) report in 2017, the Islamic Republic of Iran had 5,000 new HIV infections and 4,000 AIDS-related deaths. There were 66,000 people living with HIV in 2016 (50). A review study by Medley et al. also showed that peer education is effective in preventing HIV/AIDS in developing countries (16). In

conducted studies in this category, peer education has been compared with education by adults (health personnel, school counselor and teacher), and with booklet and lecture. In the study of Khalajabadi Farahani and Ebadi (2004), peer education increased knowledge, attitude toward rejection of HIV/AIDS patients and self-efficacy skill of students (25), and in the study of Kargar et al. (2013), it led to the promotion of self-efficacy in adolescents with nephritic syndrome (31), but in both studies, peer education did not make a difference compared to education by the adults. Of course, in the study of Khalajabadi Farahani and Ebadi (25) adolescents trained by their peers, were better at evaluating their level of knowledge, that indicating an increase in self-confidence. In a study by the Kargar et al. (31), this could be due to the illness of peer educators and the impact of the disease on their ability. Mellanby et al. (2001), compared the effect of peer education and adult education on education of sexual issues, and suggested that both methods have a special place in sex education (47).

In the study by Abbaspour et al. (2007), peer education was more effective than training by health personnel (26), and in the study of Baghianimoghadam et al. (2012), peer education was more effective than teacher education (29). This could be due to feeling comfortable of adolescent with their peers in talking to each other, especially about sensitive issues. The results of a review study on interventions for the prevention of sexually transmitted diseases indicated that peer education was more effective and acceptable than training by teacher (51). In the study of Azizi et al. (2008), the effect of training by the physician was higher than peer education (27). Of course, education by peers also raised student knowledge, but the effect of education by the physician was higher than peer education. This can be due to the

physician's credibility for adolescent compared to peers in health-related issues, high readiness and more accurate response to adolescent questions, and the physician's ability to resolve the ambiguity due to greater mastery of the subject. In the study of Sehhati Shafai et al. (2013), and Parsa et al. (2015), peer education was more effective than training through lecturing by researcher (32, 35). Although the lecture method is considered as a simple and cost-effective method in education, its role in health issues and its ability to motivate participation of the students is not clear (52).

4-2. Mental health

In conducted studies in this category, effect of peer education on mental health (6), self-esteem (37), and stress control (38) have been evaluated and compared with the control group. The results showed a greater effect of peer education compared to control group. The results of study by Turkashvand et al. showed that participation in group training, such as peer education, is effective in improving self-esteem, reducing anxiety and stress in adolescents (53). In addition, in adolescence, peers are a major source of support for mental health in adolescents (54). The results of a study in Indonesia showed that peer education reduced anxiety among adolescents in post menarche period (55).

4-3. Nutritional behaviors

In conducted studies in category of peer education on nutritional behaviors in Iranian adolescents, peer education improves the nutritional behaviors of adolescents in comparison with the control group. Children and adolescents, more than any other age, requires adequate nutrition to achieve sufficient physical growth and mental development, and peer education is one of the most suitable educational methods for promoting knowledge of students because school

environment is a place for the development of nutritional patterns (56). In the study performed by Story et al. (2002), nutrition education by peers in the school was introduced as a feasible and acceptable method from the point of view of students and teachers (57). The results of a review study showed that education by peers improved the knowledge, attitude and self-efficacy of adolescents toward healthy eating (58). However, it should be noted that nutritional behaviors of adolescents are influenced by various individual, social and economic factors and improvement in knowledge and attitude are not necessarily sufficient to improved nutrition behaviors in adolescent.

4-4. Prevention of high-risk behaviors

In conducted studies in category of peer education on prevention of high-risk behaviors among Iranian adolescents, Baraz et al. (2012) compared the impact of peer education with teacher education in preventing drug addiction (41). The results showed the effect of both methods, but peer education was more effective than teacher education. Given the concerns of the present age due to increasing use of drugs, cigarettes, alcohol and psychotropic drugs, unintended pregnancy and sexual transmitted disease in adolescents, as well as low adolescent awareness about these issues and the high impact of adolescents to each other, peer education is one of the effective approaches to increase the awareness of adolescents in this field (59). In the study carried out by Garfein et al. in 2007, peer education, compared to the control group, reduced the injection risk among young injection drug users (48).

4-5. Limitation

The limitations of this study was no search in gray literature such as dissertations. Thus, it is suggested that other studies with accessibility to such documentation should be carried out. In this study, only the effect of this method in the adolescent groups

was studied. Therefore, studies on other age groups are recommended.

5- CONCLUSIONS

The results of this systematic review showed that using peer education could enhance the knowledge, attitude, practice, self-efficacy, positive behavior of adolescents toward health issues and as a result, it will promote the adolescent health. Regarding the continuing presence of students in schools, easy transfer of information between peers, the promotion of communication skills and self-confidence in adolescents, as well as low cost and simplicity of this method, this procedure can be used to educate the health issues to adolescents in schools.

6- CONFLICT OF INTEREST

All the authors declare that they have no conflict of interest.

7- ACKNOWLEDGMENTS

The present study results from the research project in the Midwifery and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences with code IR.SBMU.PHNM. 1396.805. In this regard, we are grateful for cooperation and assistance of personnel in Midwifery and Reproductive Health research, Faculty of Nursing and Midwifery of Shahid Beheshti University of Medical Sciences.

8- REFERENCES

1. Agampodi SB, Agampodi TC, Piyaseeli U. Adolescents perception of reproductive health care services in Sri Lanka. *BMC health services research*. 2008;8(1):98.
2. WHO. Technical consultation on indicators of adolescent health, WHO, Geneva, Switzerland, 30 September-1 October 2014: global reference list of health indicators for adolescents (aged 10-19 years). 2016.
3. Nourolahi T, Ghaemi Z, Goodarzi HM, Naeneeni O, Jafari S, Ghaderi S, et al. 1390 National Census of Population and Housing. Statistical Center of Iran. 2011. Available at: https://unstats.un.org/unsd/demographic/sources/census/wphc/Iran/Iran_2013.pdf.
4. Shahhosseini Z, Hamzehgardeshi Z. Female adolescents' perspective about reproductive health education needs: a mixed methods study with explanatory sequential design. *International journal of adolescent medicine and health*. 2015;27(1):57-63.
5. Shahhosseini Z, Simbar M, Ramezankhani A. A qualitative study of adolescents, parents and key informants' experiences towards the importance of peer groups. *Journal of Nursing and Midwifery Sciences*. 2014;1(1):59-65.
6. Taghdisi M, Noori Sistani M, Merghati Khoi E, Hoseini F, Asgharnejad F. Impact Peer Education Approach on Knowledge and Practice about Mental Health of Adolescent Girls. *Tolooebehdasht*. 2012;10(3):92-105.
7. Nouri M, Merghati khoie Es. The impact of peer-based educational approaches on girls' physical practice of pubertal health. *Arak Medical University Journal*. 2010;12(4):129-35.
8. Khodakaramy B, Bakhat R. Studying the effect of education on knowledge and view of senior students in Tehran high schools about AIDS. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*. 2006;14(1):12-22.
9. Afshary P, Pazhohideh SZ, Yazdi Zadeh H, Mohammadi S, Tabesh H. Survey educational needs of 11-14 years old Girls about Sexual health. *Journal of Holistic Nursing And Midwifery*. 2016;26(1):1-9.
10. Adeokun L, Ricketts O, Ajuwon A, Ladipo O. Sexual and reproductive health knowledge, behaviour and education needs of in-school adolescents in northern Nigeria. *African Journal of Reproductive Health*. 2009;13(4):37-50.
11. Alimordi Z, Simbar M. Puberty health education for iranian adolescent girls: challenges and priorities to design school-based interventions for mothers and daughters. *Payesh*. 2014;13(5):621-36.
12. Azizi M, Hamzehgardeshi Z, Shahhosseini Z. Influential Factors for the Improvement of Peer Education in Adolescents: A Narrative

Review. *Journal of Pediatrics Review*. 2017;5(1):5-12.

13. Pillitteri A. *Maternal & child health nursing: Care of the childbearing & childrearing family*: Lippincott Williams and Wilkins; 2010. Available at: https://books.google.com/books/about/Maternal_Child_Health_Nursing.html?id=apeLf0mPx1QC.

14. Golchin NAH, Hamzehgardeshi Z, Fakhri M, Hamzehgardeshi L. The experience of puberty in Iranian adolescent girls: a qualitative content analysis. *BMC public health*. 2012;12(1):698.

15. Tolli M. Effectiveness of peer education interventions for HIV prevention, adolescent pregnancy prevention and sexual health promotion for young people: a systematic review of European studies. *Health education research*. 2012;27(5):904-13.

16. Medley A, Kennedy C, O'Reilly K, Sweat M. Effectiveness of peer education interventions for HIV prevention in developing countries: a systematic review and meta-analysis. *AIDS Education and Prevention*. 2009;21(3):181-206.

17. Injecting A, League IDU. *A framework for peer education by drug-user organisations*. Canberra: Australian Injecting and Illicit Drug Users League. 2006. Available at: http://www.spen.org.uk/mymedia/files/resource_pdfs/hepatitis_C/Framework%20and%20research%20forPeerEducation%20with%20drugs%20users.pdf.

18. Seymour JE, Almack K, Kennedy S, Froggatt K. Peer education for advance care planning: volunteers' perspectives on training and community engagement activities. *Health Expectations*. 2013;16(1):43-55.

19. Bulduk S, Erdogan S. The effects of peer education on reduction of the HIV/sexually transmitted infection risk behaviors among Turkish university students. *Journal of the Association of Nurses in AIDS Care*. 2012;23(3):233-43.

20. Simbar M, Alizadeh S, Hajifoghaha M, Golezar S. Review of Iranian Adolescents' Educational Needs for Sexual and Reproductive Health. 2017. 2017:10.

21. Thomas B, Ciliska D, Dobbins M, Micucci S. A process for systematically reviewing the literature: providing the research evidence for public health nursing interventions. *Worldviews on Evidence-Based Nursing*. 2004;1(3):176-84.

22. Thomas B, Ciliska D, Dobbins M, Micucci S. A process for systematically reviewing the literature: providing the research evidence for public health nursing interventions.

Worldviews Evid Based Nurs. 2004;1(3):176-84.

23. Armijo-Olivo S, Stiles CR, Hagen NA, Biondo PD, Cummings GG. Assessment of study quality for systematic reviews: a comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: methodological research.

J Eval Clin Pract. 2012;18(1):12-8.

24. Jackson N, Waters E. Criteria for the systematic review of health promotion and public health interventions. *Health promotion international*. 2005;20(4):367-74.

25. Khalajabadi Farahani F, Ebadifar Azar F. Comparing the effect of peer-led versus adult-led AIDS education on knowledge, attitude and self-efficacy of female students in high schools in 4th region of education ministry in Tehran, using socio-cognitive theory, 2002-2003. *Journal of Reproduction & Infertility*. 2004;5(1):77-91.

26. Abbaspour Z, Saidian M, Abedi P. Peer education vs. health provider education in knowledge and attitude about prevention and transmission of AIDS in high school students. *Pak J Med Sci Q*. 2007;23(1):108-10.

27. Azizi A, Amirian F, Amirian M. Effects of peer education, education by physician and giving pamphlets on HIV knowledge in high school students: A Comparative Study. *Journal of hayat*. 2008;14(1):5-12.

28. Dabiri F, Abedini S, Shahi A, Kamjoo A. The effect of different methods of health education on knowledge, attitudes and practice of female students regarding menstrual hygiene in Bandar Abbas (2006). *Hormozgan Medical Journal*. 2009;12(4):271-9.

29. Baghianimoghadam M, Forghani H, Zolghadr R, Rahaei Z, Khani P. Peer-led versus teacher-led AIDS education for female high-school students in Yazd, Islamic Republic of Iran. *Eastern Mediterranean Health Journal*. 2012;18(4):353.
30. Alizadeh Siuoki H, Zareban I, Rajhshani F, Shahrakipour M, Hasanzadeh M, Razavishmaei N. The effect of peer education on AIDS preventive behaviors based on the theory of planned behavior in male students of high school second year in Zahedan. *JQ Horizon*. 2013;18(5):233-40.
31. Kargar M, Jamali Moghadam N, Moattari M. The effect of osteoporosis prevention education by peers and health personnel on self-efficacy of adolescents with nephrotic syndrome. *Iran Journal of Nursing*. 2013;26(81):44-53.
32. Sehhati Shafai F, Mohammadalizadeh Charandabi S, Ebrahimi Mamaghani M, Salmani R. Educating Female Adolescents about Iron Deficiency and Taking Iron Supplements and Its Influence on Their Peers. *Journal of Mazandaran University of Medical Sciences (JMUMS)*. 2013;23(1):223-33.
33. Babazadeh T, Zibaei N, Shabani L, Moradi F. Effectiveness of Educational Intervention Based on Peer Education on Knowledge, Attitude and Behavioral Intention Related to HIV/AIDS in the High School Female Students in the Region 14 of Tehran. *J Educ Community Health*. 2015;2(3):19-27.
34. Jahanbin I, Heydari N, Ghodsbin F, Sayadi M. The Effect of Peer-Education on UTI-Related Preventive Behavior According to HBM among First-Grade High School Female Students in Shiraz, 2014. *Journal of health sciences and surveillance system*. 2015;3(1):20-6.
35. Parsa P, Mosavi Z, Fatemeh C, Farhadiyan M. Comparing the effect of lecture and peer training on menstrual health knowledge and practices among high school girls in Hamadan city, 2014. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*. 2015;23(1):26-37.
36. Moshki M, Zamani-Alavijeh F, Mojadam M. Efficacy of peer education for adopting preventive behaviors against head lice infestation in female elementary school students: a randomised controlled trial. *PLoS one*. 2017;12(1):e0169361.
37. Kaveh MH, Hesampour M, Ghahremani L, Tabatabaee HR. The effects of a peer-led training program on female students' self-esteem in public secondary schools in Shiraz. *Journal of Advances in Medical Education & Professionalism*. 2014;2(2):63.
38. Ahmadizade Fini E, Madani A, Alizade A, Ghanbarnejad A, Aghamolaei T. Effect of Peer Education on Health Promoting Behaviors of Junior High School Students. *Iranian Journal of Health Education and Health Promotion*. 2015;3(2):105-15.
39. Lotfi Mainbolagh B, Rakhshani F, Zareban I, Montazerifar F, Sivaki HA, Parvizi Z. The effect of peer education based on health belief model on nutrition behaviors in primary school boys. *Journal of Research and Health Social Development & Health Promotion Research Center*. 2012;2(2):214-25.
40. Alizadeh Siuki H, Jadgal K, Shamaeian Razavi N, Zareban I, Heshmati H, Saghi N. Effects of Health Education Based on Health Belief Model on Nutrition Behaviors of Primary School Students in Torbat e Heydariyeh City in 2012. *Journal of Health*. 2015;5(4):289-99.
41. Baraz S, Rostami M, Karimi Pour F, Lalehgani H, Esmaeili Vardanjani S. Surveying and Comparing the effect of Two Training Methods: Drug Addiction Prevention (Peer education with Teachers) on the Level of Knowledge and Attitudes on the High School Students of Shahrekord, Iran. *Life Science Journal-Acta Zhengzhou University Overseas Edition*. 2012;9(2):1304-7.
42. Maarefvand M, Jamali T, Hosseinzadeh S. The Effectiveness of Smoking Prevention Intervention with Peer Education Approach on Labor Children's Attitude Toward Smoking. *Quarterly Journal of Social Work*. 2015;4(4):17-28.
43. Hatami M, Kazemi A, Mehrabi T. Effect of peer education in school on sexual health knowledge and attitude in girl adolescents. *J Edu Health Promot*. 2015;4:78.

44. Abdi F, Simbar M. The peer education approach in adolescents-narrative review
45. Visser MJ. HIV/AIDS prevention through peer education and support in secondary schools in South Africa. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*. 2007;4(3):678-94.
46. Shen L, Hong H, Cai Y, Jin X, Shi R. Effectiveness of peer education in HIV/STD prevention at different types of senior high schools in Shanghai, People's Republic of China. *International journal of STD & AIDS*. 2008;19(11):761-7.
47. Mellanby AR, Newcombe RG, Rees J, Tripp JH. A comparative study of peer-led and adult-led school sex education. *Health Education Research*. 2001;16(4):481-92.
48. Garfein RS, Golub ET, Greenberg AE, Hagan H, Hanson DL, Hudson SM, et al. A peer-education intervention to reduce injection risk behaviors for HIV and hepatitis C virus infection in young injection drug users. *Aids*. 2007;21(14):1923-32.
49. Weinstock H, Berman S, Cates W. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspectives on sexual and reproductive health*. 2004;36(1):6-10.
50. United Nations Programme on HIV/AIDS (UNAIDS). Islamic Republic Of Iran. 2017. Available at: <http://www.unaids.org/en/regionscountries/countries/islamicrepublicofiran>.
51. Lazarus JV, Sihvonen-Riemenschneider H, Laukamm-Josten U, Wong F, Liljestrand J. Systematic review of interventions to prevent the spread of sexually transmitted infections, including HIV, among young people in Europe. *Croatian medical journal*. 2010;51(1):74-84.
52. Hazavehei SMM, Taghdisi MH. The effects of three teaching methods of lecture, article. *Iranian journal of public health*. 2013;42(11):1200.
- training game and role playing on knowledge and practice of middle school girls in regard to puberty nutrition. *Strides in Development of Medical Education*. 2007;3(2):126-33.
53. Turkashvand R, Kermanshahi S, Azadfalsh P. The effect of educational group therapy plan on self-esteem rate in adolescent girls. *Zahedan Journal of Research in Medical Sciences*. 2011;13(3):30-4.
54. Burns JR, Rapee RM. Adolescent mental health literacy: young people's knowledge of depression and help seeking. *Journal of adolescence*. 2006;29(2):225-39.
55. Yati D, Rachman IT, Ikka W. The effect of peer education to anxiety of teenagers in post menarche in sub district Kasihan Bantul, Indonesia. *International Journal of Research in Medical Sciences*. 2017;3:10-8.
56. Prelip M, Kinsler J, Le Thai C, Erausquin JT, Slusser W. Evaluation of a school-based multicomponent nutrition education program to improve young children's fruit and vegetable consumption. *Journal of nutrition education and behavior*. 2012;44(4):310-8.
57. Story M, Lytle LA, Birnbaum AS, Perry CL. Peer-led, school-based nutrition education for young adolescents: feasibility and process evaluation of the teens study. *Journal of School Health*. 2002;72(3):121-7.
58. Yip C, Gates M, Gates A, Hanning RM. Peer-led nutrition education programs for school-aged youth: a systematic review of the literature. *Health education research*. 2015;31(1):82-97.
59. Corbett KK. Susceptibility of youth to tobacco: a social ecological framework for prevention. *Respiration physiology*. 2001;128(1):103-18.

Table-2: General characteristics of studies performed on the effect of peer education on prevention of diseases in Iranian adolescents between 2000 and 2018.

Study focus	Authors (year and reference)	Type of study	Target group	Intervention	Results	Quality rating EPHPP
Comparing the effect of peer-led versus adult-led AIDS education on knowledge, attitude and self-efficacy of female students	Khalajabadi Farahani and Ebadi (2004)(25)	Quasi-experimental	441 students in three groups (peer education, adult education and control group without any training).	Training peer educators and school consultants in a one-day workshop and then transferring this information to students in six hours.	The mean scores of knowledge and attitude of students toward rejecting AIDS patients in both groups were significantly improved compared to the control group. Only adult-led group has led to significantly enhancement of self-efficacy skills compared to control group.	Moderate
Peer education vs health provider education in knowledge and attitude about prevention and transmission of AIDS	Abbaspour et al. (2007)(26)	Quasi-experimental	417 students in two groups (peer education and training by health personnel).	Training peer educators in 4 one-hour sessions and then teaching students by peer educators and health personnel in 8 sessions.	The results showed a significant increase in knowledge and attitude in both groups but peer education was more effective.	Weak
Effects of peer education, education by physician and giving pamphlets on HIV knowledge	Azizi et al. (2008)(27)	Comparative-interventional	1500 students in three groups (training by physicians, peers and by using pamphlet).	Training peer educators in a one-day workshop. Then teaching students by peers, general physician and using pamphlet.	The mean score of knowledge in the group that taught by physicians was higher than the scores of other two group scores.	Moderate

The effect of peer education and booklet on knowledge, attitudes and practice of female students regarding menstrual hygiene	Dabiri et al. (2009)(28)	Quasi-experimental	400 students in two groups (peer education and booklet)	Training peer educators by researcher and then transferring this information to other students and in other group training through a booklet.	There was a significant increase in knowledge, attitude and practice of the students in both groups. Effect of peer education was higher than the booklet group.	Moderate
Peer-led versus teacher-led AIDS education	Baghiani moghadam et al. (2012)(29)	Comparative-interventional	180 students in three groups (peer education, teacher-led education and control without any training)	Training peer educators in 8 hours by researcher and then teaching adolescents with peer educators and teacher in 3 sessions. Training in both groups was according to HBM.	Peer education in comparison with the teacher education significantly increased the mean scores of knowledge and all the constructs of the health belief model.	Moderate
The effect of peer education on preventive behaviors from AIDS based on theory of planned behavior	Alizadeh Siouki et al. (2013)(30)	Quasi-experimental	280 students in two groups (peer education group and control group without any training).	Training peer educators in three 90 minute-sessions and then transferring this information to students in two 45-minute sessions.	The results showed the significant increase in mean scores of knowledge, attitude, practice, behavioral intention, subjective norms and perceived behavioral control in peer education group.	Moderate

Effect of osteoporosis prevention education by peers and health personnel on self-efficacy of adolescents with nephrotic syndrome	Kargar et al. (2013)(31)	Quasi-experimental	54 adolescents with nephritic syndrome in two groups (peer education and education by health personnel).	Training peer educators and then teaching adolescents with peer educators and health personnel in four 90-minute sessions based on the health belief model.	The results showed that peer education and health personnel education are equally effective on self-efficacy of adolescents with nephritic syndrome.	Moderate
Educating female adolescents about iron deficiency and taking iron supplements and its influence on their peers	Sehhati Shafai et al. (2013)(32)	experimental	885 students in two groups (peer education group and direct teaching group with lectures).	Training peer educators through a researcher in two two-hour workshops and then transferring this information to other students and in the direct teaching group, receiving the same content in two sessions in the form of lectures.	The results showed that education through peers was more effective than direct education in improving practice and knowledge scores.	Strong
The effectiveness of educational intervention based on peer education on knowledge, attitude and behavioral intention related to HIV/AIDS	Babazadeh et al. (2015)(33)	Quasi-experimental	330 students in two groups (peer and control groups without any training).	Training peer educators in three 60-minute sessions and then holding educational sessions in two 45-minute sessions by peer educators.	After training, significant changes were observed in the mean of knowledge, attitude and behavioral intention in the peer education group.	Moderate

The effect of peer-education on UTI-related preventive behavior according to HBM	Jahanbin et al. (2015)(34)	Quasi-experimental	168 students in two groups (peer education group and control group without any training).	Training of peer educators in two 2-hour sessions by researcher and then transferring this information during two 1 hour-sessions in two weeks to students.	Education based on the HBM model by peers significantly increased the mean scores of knowledge, the constructs of the health belief model and the promotion of UTI-related preventive behaviors.	Moderate
Comparing the effect of lecture and peer training on menstrual health knowledge and practices	Parsa et al. (2015)(35)	Quasi-experimental	200 students in two groups (peer education group and lecture group).	Training peer educators in two sessions by the researcher and transferring this information to the students, and in another group, teaching the students during 4 sessions with lecture.	Mean scores of knowledge and practice in both lecture and peers showed a significant difference, but peer education has been more effective in improving knowledge and practice.	Strong
Efficacy of peer education for adopting preventive behaviors against head lice infestation	Moshki et al. (2017) (36)	Randomized controlled trial	179 students in two groups (peer education group and control group without any training).	Training of peer educators in one-day workshop by researcher and then transferring this information to students during three 45-minute sessions.	After the intervention, the mean scores of knowledge, HBM constructs and behavior significantly improved in the intervention group.	Moderate

Table-3: General characteristics of studies performed on the effect of peer education on mental health in Iranian adolescents between 2000 and 2018.

Study focus	Authors (year and reference)	Type of study	Target group	Intervention	Results	Quality rating EPHPP
Impact peer education approach on knowledge and practice about mental health	Taghdisi et al. (2012)(6)	Quasi-experimental	100 students in two groups (peer education and control groups without any training).	Educational intervention by peer group in ten 90 minute-sessions.	The results showed significant increase in the mean scores of knowledge and practice of girls in the peer group about mental health compared to the control group.	Moderate
The effects of a peer-led training program on female students' self-esteem	Kaveh et al. (2014)(37)	Randomized controlled trial	223 students in two groups (peer education and control groups without any training).	Training peer educators in a 2-day workshop by a researcher and then transferring this information to students in five 90 minute-sessions.	The results showed significant increase in the mean of self-esteem scores in the peer education group compared with the control group.	Moderate
Effect of Peer Education on stress control	Ahmadi Zadeh Fini et al. (2015)(38)	Quasi-experimental	358 students in two groups (peer education and control groups without any training).	Training peer educators in eight 1.5 hour- sessions and then transferring this information to students for 2 months.	The mean score of stress control area of health promoting behaviors in the intervention group was significantly higher than the control group.	Moderate

EPHPP: Effective Public Health Practice Project; Weak: EPHPP score 1.00–1.50; Moderate: EPHPP score 1.51–2.50; Strong: EPHPP score 2.51–3.00.

Table-4: General characteristics of studies performed on the effect of peer education on nutritional behaviors in Iranian adolescents between 2000 and 2018.

Study focus	Authors (year and reference)	Type of study	Target group	Intervention	Results	Quality rating EPHPP
Effect of peer education based on health belief model on nutrition behaviors	Lotfi Mainbolagh et al. (2012)(39)	Quasi-experimental	217 students in two groups (peer education and control group without any training).	Training peer educators in 5 one-hour sessions by researcher and then transferring this information to other students in one 45-minute session and playing health care role for 2 months in schools.	The results showed a significant increase in the mean scores of knowledge and HBM constructs in the peer education group compared to the control group.	Moderate
Effects of health education based on health belief model on nutrition behaviors	Alizadeh Siuki et al. (2015)(40)	Quasi-experimental	180 students in two groups (peer education and control group without training).	Training peer educators during 2 sessions and then transferring this information to students during one-hour session.	The results showed a significant increase in the mean scores of knowledge and HBM constructs in the peer education group compared to the control group	Moderate
Effect of peer education on nutrition behavior	Ahmadi Zadeh Fini et al. (2015)(38)	Quasi-experimental	358 students in two groups (peer education and control group without training).	Training peer educators in eight 1.5 hour- sessions and then transferring this information to students for 2 months.	The mean score of nutrition area of health promoting behaviors in the intervention group was significantly higher than the control group.	Moderate

EPHPP: Effective Public Health Practice Project; Weak: EPHPP score 1.00–1.50; Moderate: EPHPP score 1.51–2.50; Strong: EPHPP score 2.51–3.00.

Table-5: General characteristics of studies performed on the effect of peer education on prevention of high-risk behaviors in Iranian adolescents between 2000 and 2018.

Study focus	Authors (year and reference)	Type of study	Target group	Intervention	Results	Quality rating EPHPP
Effect of two training methods: drug addiction prevention (peer education with teachers) on the level of knowledge and attitudes	Baraz et al. (2012)(41)	Quasi-experimental	450 students in two groups (education by teacher and peers).	Training peer educators in a one-day workshop by an addiction specialist and then transferring this information to students. In another group teaching the students by the teacher.	The mean scores of knowledge in both groups showed a significant increase, but the average in the peer education group was significantly higher than the teacher education group.	Moderate
The effectiveness of smoking prevention intervention with peer education approach on labor children's attitude toward smoking	Maarefvand et al. (2015)(42)	Quasi-experimental	41 labor children in two groups (10 peer educators and 31 peer groups without control group).	Training peer educators on smoking prevention in 8 sessions and then transferring information to peers.	The score of general attitude and emotional dimension to smoking were significantly reduced in intervention group.	Moderate
Effect of peer education in school on sexual health knowledge and attitude in girl adolescents	Hatami et al. (2015)(43)	Interventional	282 students in two groups (peer education and control group without any training).	Training peer educators in three 90-minute sessions and then transferring this information to students for 6 weeks.	After intervention, mean scores of knowledge and attitude of students in all dimensions of sexual health showed a significant increase.	Strong

EPHPP: Effective Public Health Practice Project; Weak: EPHPP score 1.00–1.50; Moderate: EPHPP score 1.51–2.50; Strong: EPHPP score 2.51–3.00.