

The Effect of an Educational Program based on Health Literacy Strategies on Physical Activity in Postpartum Women

Monireh Abdollahi (MSc)^{1,2}, Nooshin Peyman (PhD)^{3,2*}

¹ MSc Student of Health Education, Social Determinants of Health Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

² Department of Health Education & Health Promotion, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran

³ Associate professor, Social Determinants of Health research center, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: Health literacy is the degree to which individuals can obtain, process, and understand the required basic health information and services to enhance and sustain good health status. Mothers with higher health literacy may have more physical activity than others in the postpartum period. This study sought to assess the effect of an educational program based on health literacy strategies on promoting physical activity in postpartum women.</p> <p>Methods: This quasi-experimental study conducted on 80 postpartum women who referred to healthcare centers of Mashhad, Iran, 2016, and randomly selected by multistage cluster sampling method. The subjects were placed in two groups of control and intervention (n=40 for each group). The intervention group received three 80-min theoretical and practical training sessions based on the health literacy strategies, while the control group received the routine care. Data was collected using Short Test of Functional Health Literacy in Adults (S-TOFHLA), Rapid Estimate of Adult Literacy in Medicine (REALM), and International Physical Activity Questionnaire (IPAQ) before and eight weeks after training. Data analysis was performed using the chi-square, independent and paired t-tests with SPSS software version 16.</p> <p>Results: There was no significant difference between the levels of health literacy and physical activity among the groups before intervention; however, eight weeks after the educational intervention, the levels of both health literacy and physical activity significantly increased among the intervention group (P<0.001).</p> <p>Conclusion: According to the results of the present study, the education based on the health literacy strategies has an impact on the postpartum physical activity in comparison to the control group with routine training.</p>
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Introduction

The postpartum period has a great effect on the physical and mental health of the entire family (1). It is essential to obtain knowledge regarding the proper conduct of the exercises during the postpartum period to promote the health, life span, and the quality of life of the women. Certainly, people should be supported and trained to change their health-related behaviors (2).

Life expectancy is 1.3 to 3.3 years longer among women who regularly exercise in comparison to the sedentary ones (3). According

to the Roozbahani et al. study in 2011, the mean level of moderate-intensity physical activity was 45 min per week, which was less than the minimum recommended amount (150 min per week) for adults. It revealed the need for behavioral interventions to promote the physical activity among the postpartum women (4).

For this purpose, identifying effective factors in creating behavior will make it easier to make changes. Few studies were conducted in this regard which did not consider all aspects of education and only a small percentage of

* Corresponding author: Nooshin Peyman, Associate professor, Social Determinants of Health research center, Mashhad University of Medical Sciences, Mashhad, Iran. Email: Peymann@mums.ac.ir

women participate in the effective period; therefore, specific training interventions are necessary (5).

Before the development of social media, the health practitioners were the most important source of health information. However, due to the rapid dissemination of information through the internet, it is easy to achieve the required skills and knowledge to change the health-related behaviors. Most recently, these skills are regarded as a concept of health literacy (6). Four skills of health literacy include improving the speaking and writing communications, self-management and empowerment, and supportive systems (8).

For capacity building and appropriate behavioral modification, strategies such as training by simple and pictorial methods (e.g. pictures and graphs) and provide summarized information is recommended. This enables the patients to provide appropriate feedback, become more aware, and make better decisions (9, 10). The main goal of promoting health literacy is to further the effective health communicative strategies and health information technology, improve the health, and achieve the equity in health care (11).

Lower levels of health literacy are associated with less healthy outcomes. Improving health literacy is likely to result in a change in behavioral behavior (12).

To the best of our knowledge, no study has been conducted on the effect of health communicative strategies on improving the health literacy in Iran. This study sought to determine the influence of educational program based on these strategies on enhancing the health literacy and physical activity among the postpartum women.

Materials and Methods

This quasi-experimental pilot-study with 95% confidence interval was conducted on 80 postpartum women selected by randomized cluster sampling method and they were equally divided into intervention and control groups (5). Four urban health centers were selected among the sub-centers of two Mashhad healthcare centers, finally two centers were selected randomly for each group.

The inclusion criteria entailed the mothers aged from 20 to 35 years old with the infants

younger than three months and whether or not divorced. The participants who had a positive history of any physical or mental diseases and those who skip the training sessions were excluded from the study. Data was collected using International Physical Activity (IPAQ) and demographic questionnaires to measure the levels of physical activity. Likewise, the Short Test of Functional Health Literacy in Adults (S-TOFHLA) and Rapid Estimate of Adult Literacy in Medicine (RELAM) were used to determine the health literacy.

The IPAQ is consisted of seven questions used to measure the intensity (light, moderate, and severe) and the duration of physical activity. The Metabolic Equivalent of Task (MET index) is utilized to determine the energy consumption in terms of intensity of the activity. The S-TOFHLA score is ranged from zero to 36, which the score more than 23 is considered as appropriate health literacy. The RELAM is a one-page instrument consisting of 66 health-related words arranged in increasing difficulty to identify the words the participants are aware of.

Based on the obtained score, ten ratings were categorized which the ninth and tenth categories (with the score above 61) were considered as adequate health literacy (13). The validity and reliability of the questionnaire was approved in formal studies in Iran (5). In previous studies, the correlation coefficient of S-TOFHLA and RELAM questionnaires was 0.80 and in this study, it was 0.794 (14).

The participants were provided with some advice about the research tool, and the informed consent was obtained. Subsequently, the samples were selected from the healthcare centers of Mashhad by random cluster sampling method and assigned into the control and intervention groups. The subjects were asked to fill in the pre-test questionnaires with the presence of the researcher to inhibit possible ambiguities.

The intervention group was divided into 12 sub-groups, who received three 80-min theory-training sessions within a month based on the educational intervention strategies to promote the health literacy. Additionally, a practical session was allocated to jogging, which is the most popular postpartum exercise (15).

These sessions aimed to perform lectures, ask and answer the questions, brainstorming, group discussions, video displaying, showing practical exercises, providing the training package, and utilizing the health literacy strategy entailing: spoken and written communication, self-management and empowerment, and supportive systems.

Improvement of the Spoken Communication: The participants were trained in a tranquil place accompanied with good eye contact and simple language. In each session, just a limited content was trained through a moderate teaching rate. Using pictorial methods such as graphs and asking open-ended questions encouraged the subjects to participate in the discussion and take their feedback. To enforce the thought content, the key points were repeated and the training package was designed based on the health literacy strategies.

Improvement of Written Communication: The media was written in a simple language and several pictures were shown to boost the comprehension. Various writing pamphlets, posters, leaflets, and booklets were used and several tables were drew to monitor the weekly weight and exercise.

Improvement of self-management and empowerment: The practical training is needed for designing a complete physical activity program. The participants could register in website, and benefit from the educational sources and experiences in the field of physical activity and weight loss programs and compare their progression with other individuals. The goal was to design an exercise program in a way that the participant could live according to their daily routines; therefore, several group discussions and individual counseling were performed and the plan, time, and place of exercise were explained to the mothers. Moreover, several exercises were expressed which could be done along with their children. The encountered problems during the follow-ups were resolved through phone call.

Improve Supportive Systems: The participants were informed about the places where people can do exercise and look after their children at the same time.

Furthermore, various virtual groups were introduced to join. The both intervention and control groups were asked to come to the healthcare centers to fill in the post-test questionnaire after eight weeks of intervention.

Data analysis was performed using chi-square and Kolmogorov-Smirnov tests (for checking the normality of the data), as well as independent and paired t-tests. The statistics job was done by using SPSS software version 16. In all measurement P-value less than 0.05 was considered statistically significant.

Results

This study was performed on 80 postpartum women with the mean age of 27.91 ± 4.03 years old. The results of chi-square test revealed no significant diversity between two groups in terms of their demographic data (Table 1).

Before the intervention, mean and standard deviation of health literacy was 26.02 ± 6.11 and 24.9 ± 6.13 based on the S-TOFHLA questionnaire among the intervention and control groups, respectively. However, it was 60.88 ± 2.78 and 60.20 ± 2.57 based on the RELAM questionnaire among the intervention and control groups, respectively. Regarding the results of S-TOFHLA REALM questionnaires, 39 and 37% of the mothers had limited health literacy, respectively.

Although there was no significant difference between the intervention group subjects in terms of mean score of health literacy before the training sessions; after the intervention they revealed a significant diversity based on the independent t-test ($P < 0.001$). It is worth to mention that the difference was under-reported by REALM questionnaire ($P < 0.01$). According to the results of the independent t-test, there was no significant differences between the groups in terms of physical activity; nevertheless, after the behavioral alterations the level of physical activity was higher among the interventional group ($P < 0.001$). Moreover, the t-test results demonstrated no significant changes in mean levels of physical activity and health literacy among the control group (Table 2).

Table 1. The homogeneity of demographic characteristics in both intervention and control groups based on chi-square test results

Variable		Intervention	Control	χ^2	P-value
Age (years) Mean (SD*)	<30	27 (65.5)	30 (75)	0.54	0.46
	≥30	13 (32.5)	10 (25)		
BMI** Mean(SD) (kg/m ²)	<25	18 (45)	16 (40)	0.20	0.65
	≥25	22 (55)	24 (60)		
Subjects' Educational stage n (%)	Under college	9 (22.5)	8 (20)	0.75	0.78
	College and higher	31 (77.5)	32 (80)		
Spouses' educational stage n (%)	Under college	8 (20)	9 (22.5)	0.75	0.78
	College and higher	32 (80)	31 (77.5)		
Family income status n (%)	Under 1,000,000	22 (55)	27 (67.5)	1.31	0.25
	1,000,000 and higher	18 (45)	13 (32.5)		
Employment status n (%)	Working	9 (22.5)	7 (17.5)	0.31	0.57
	Unemployed	31 (77.5)	33 (82.5)		
Breastfeeding status n (%)	Breast	36 (90)	38 (95)	0.72	0.39
	Bottle	4 (10)	2 (5)		
Method of delivery n (%)	Vaginal labor	17 (42.5)	15 (37.5)	0.20	0.65
	Caesarean section	23 (57.5)	25 (62.5)		

* Standard deviation, **Body mass index

Table 2. The comparison between the levels of health literacy and physical activity of mothers before and eight weeks after intervention based on the t-test

Variable		Intervention	Control	P-Value*
S-TOFHLA**	Before M***±SD****	26.02±6.11	24.92±6.13	0.42 (0.80)
	After M±SD	29.18±5.19	25.55±5.88	
	P-Value	<0.001 (-7.74)	0.27 (-1.11)	
	Differences before and after the intervention M±SD	3.15±26.63	0.62±2.04	<0.001 (4.78)
REALM*****	Before	60.88±2.78	60.20±2.57	0.26 (1.12)
	After	62.18±2.48	60.60±2.58	
	P-Value	<0.001 (-9.45)	0.05 (-2.02)	
	Differences before and after the intervention M±SD	1.30±9.39	0.40±1.85	<0.01 (2.74)
Physical activity (MET*****)	Before	718.76±483.52	583.45±437.21	0.19 (1.31)
	After	1143.00±632.81	616.66±450.79	
	P-Value	<0.001 (-20.17)	0.15 (1.46)	
	Differences before and after the intervention M±SD	423.98±325.74	33.21±87.83	<0.001 (7.32)

* Based on the t-test, ** Short Test of Functional Health Literacy in Adults, *** Mean, ****Standard deviation, ***** Rapid Estimate of adult literacy in medicine, ***** Metabolic Equivalent of Task

Discussion

Given the present study, after intervention the mean score of health literacy was

significantly enhanced among the interventional group in comparison to the control group. A

significant difference between two groups was observed in terms of the levels of health literacy immediately after the intervention and during the follow-up. Regarding the results of this study, the training program had a positive impact on the improvement of health literacy. The various aspects of physical activity and its benefit were evaluated in both experimental and control groups and the results were consistent with the literature (16, 17).

In consistent with the present study, Naseh nejad et al. in 2015 determined a significant increment of health literacy in the experimental group after the intervention and during the follow-up (18). Kandula et al. in 2009 conducted a study to evaluate the effect of training programs on the level of health literacy in diabetic patients and demonstrated that 79% of them had adequate literacy after the training sessions (13).

According to the results, there was a significant difference between the health literacy and the level of postpartum physical activity in the interventional group, pre- and post-intervention.

In a systematic review of the literature, a total of 19 studies conducted on 3,747 individuals (female: 71%) were studied. This review investigated the impact of health literacy-based education on the lifestyle entailing diet and exercise during six to twelve months. The mentioned study indicated the effect of educational programs on the promotion of health literacy, lifestyle, and physical activity (19).

James et al. in 2015 conducted a study on 413 African-American females and determined that the women with adequate health literacy were more likely to do exercise and lose weight during postpartum in comparison to those with lower levels of literacy (12). Another systematic review in 2012 which sought to assess the influence of educational interventions on the level of health literacy and risk factor reduction, was consistent with the present study (11).

In another study, after controlling for demographic factors including age, income, employment status, marital status, and gender, there was a significant correlation between the results of the RELAM questionnaire and the level of physical activity ($r=0.37$, $P<0.01$) (20). Moreover, another systematic review in the

period of 2004 to 2013 was consistent with the current study (21). The results of a systematic review of the literature, including 52 studies up to 2012, demonstrated the importance of promoting health literacy to make lifestyle modification (22).

The results of British and American studies on the general population in 2007 were inconsistent with the aforementioned studies and found no relationship between the health literacy and the level of physical activity (23, 24). This lack of consistency may well be due to the method of these two studies, which were cross-sectional.

Conclusion

Based on the results of this study, the level of maternal health literacy was effective in increasing the level of physical activity during postpartum. The appropriate educational intervention for developing the maternal health literacy was consisted of improvement of spoken and written communications, self-management, capacity building, and the supportive systems. This procedure led to enhancement of health literacy, lifestyle, appropriate usage of services, and reduction of the complications and expenses.

Considering the results of this study, it was suggested to use simple language and principles to increase the capacity of healthcare providers to decide whether the subjects' weight control program is going well. Only two or three concepts were discussed in each session and the participants' feedback were collected.

Additionally, due to public access to the internet and cyberspace, further studies are recommended to evaluate the effect of the software applications and websites on the weight management, commensurate with the individuals' level of health literacy (14). Assessment of the health literacy and postpartum physical activity and the effect of educational intervention on the improvement of these variables could aid the health providers to more efficiently plan in this field.

One of the limitations of this study was using complicated research instruments, which was resolved by filling them under guide of an interviewer. Furthermore, the employed mothers were less likely to participate in this study due to the working hours of the selected

health centers. In addition, out of different categories of questionnaires assessing the health literacy, two valid questionnaires were used.

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Conflicts of Interest

There are no conflicts of interest.

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