Modern media-based intervention on promotion of women's physical activity

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Abstract:

Poor mobility and low physical activity among people is the result of mechanized life and technological advances in the current century. Accordingly, this study was conducted with the aim to assess the effect of modern media-based (multi-media, internet, and mobile phone) intervention on promotion of women's physical activity. This was an interventional field trial study conducted on 360 women divided into case and control groups. This media-based educational intervention was conducted on the case group electronically, using virtual medium and mobile phone. The results showed insignificant differences between the two groups in terms of mean scores of knowledge, attitude, and physical activity before intervention. However, based on independent t-test, significant differences were found between two groups after intervention in mean scores of knowledge, attitude,

and physical activity, and mean scores had increased in the intervention group. Thus, it can be concluded that media-based interventions such as multi-media, internet, and mobile phone can positively affect women's physical activity.

Keywords: Modern media, physical activity. Health promotion

1. Introduction:

A sedentary life is recognized as a risk factor for various diseases, and a reversible main risk factor in heart diseases. Furthermore, lack of physical activity plays an important role in causing other diseases[1].

Physical activity is among the most important behaviors that can affect non-communicable diseases. In 2005, 35 million deaths occurred due to non-communicable chronic diseases (NCDs) worldwide, comprising 60% of all deaths and 47% of diseases [15]. According to a report by the World Health Organization (WHO), these figures will reach 73% (3/4 of all deaths) and 60% of burden of diseases by 2020. This is even more serious in average and poor income countries, and has turned into an epidemic that involves about 80% of deaths [2].

The prevalence of obesity and weight gain among Iranian women has increased due to changing lifestyle, mechanization of tasks, and dramatic reduction in physical activity, and since benefits and impact of regular physical activity in promoting health is well-recognized, interventions should be so designed to encourage women to adopt, maintain and enhance such health behaviors [3].

Self-watch behaviors, especially in physical activity, are recognized as an important factor in maintaining active lifestyle. Various studies have demonstrated that self-watch behaviors are associated with promotion of health, increased physical activity, and weight loss [4-6].

A possible way to enhance self-watch behaviors and increase participants' involvement in health-related behaviors is use of modern media, such as the internet, mobile phone technology etc., which

easily allow self-watch [7]. Thus, in an attempt to reduce current rates of physical inactivity in women, modern media can be used as an effective mechanism [8].

According to statistics provided by the International Telecommunication Union in 2001, there were more than 20000 health-related sites, and internet users were estimated at 500 million people. In 2013, this union estimated internet users at 2/3 of a billion, which is more than 1/3 of the world's population. Accordingly, health education and promotion researchers throughout the world are currently trying to explore innovative ways based on internet and other modern media to increase efficacy of their interventions [9].

These media have the advantage of availability at any time or place, and have a wide range of capabilities such as useful subjects and appropriate interaction with the user. Therefore, they provide a suitable context for self-watch, like: watching physical activity with the aim to promote health [10].

Thus, given the highly important role of regular physical activity in improving women's quality of life, and valuable women's role in forming active family and social lifestyle, the present study was conducted to assess the efficacy of modern media-based intervention (multi-media, internet, and mobile phone) to promote women's physical activity.

2. Method:

2.1 Study setting and data collection:

This was an interventional, field trial study, with a population of women at health centers in Kerman, Iran. On the occasion of study, there were 8 active health centers in Kerman, of which, 4 were randomly selected as intervention centers, and 4 as control. Considering type 1 error of 0.05 and power of 80%, and assuming 15% score difference before and after intervention, sample size was calculated at 180 subjects, and the same number as control group, making total sample size of 360 people.

Data were collected in stage 1 (pre-test) simultaneously in all 8 centers. First, study team explained the importance and objectives of the study and the need for women's cooperation. Moreover, women were briefed on how to answer questions using a completed typical questionnaire, and further explanations were given if needed.

Once pretest was completed, media-based educational intervention program was performed for the case group. Six months later, the efficacy of interventions was assessed, and data were collected using the same tools. Data were then analyzed with LISREL and SPSS-20 software using descriptive and analytical statistics such as chi-square, and paired and independent t-tests to determine difference in distribution of variables between women and the two groups.

Study inclusion criteria were being older than 18 years, having a mobile phone and the ability to use it, access to internet, ability to use a computer and internet, and willingness to participate.

Data collection tools included: knowledge and attitude questionnaire, and International Physical Activity Questionnaire (IPAQ) that estimated women's physical activity rate in the previous week in terms of MET-minutes/week [11].

2.2 Educational intervention:

A unique characteristic of this study was modern media-based electronic educational intervention using virtual space and mobile phone that provided the space for exchange of ideas and suggestions by participants, while transferring knowledge. To that end, an educational CD with several chapters was prepared in auto-run format according to the latest physical activity topics by the Ministry of Health and Medical Education, and made available to women. Furthermore, an educational website on women's physical activity (www.vc.salem.ir) was designed with different sections, in which, in addition to various trainings about physical activity and benefits of regular exercise, a page was designed for educational video clips, enabling women to watch videos, or download them on their mobiles. In the chat-room section, participants could exchange information. The site also contained an electronic section that enabled women to assess their physical activity, BMI, and diet on-line. In fact, through self-assessment, physical activity was encouraged in women.

Mobile phone numbers of participants and of people whose views on physical activity were important to them (supporters) were taken at pretest. Then, on regular daily basis, unique, self-run messages were sent to supporters and participants using existing infrastructures.

3. Results:

Study results showed insignificant differences between control and case group in terms of demographic characteristics, except for weight (P>0.05) (table 1).

Before intervention, BMI was 24.353 in the control group and 25.522 in the case group, and the difference between the two groups was significant (P=0.028). After intervention, this value increased to 24.404 in the control group, but according to paired t-test, the increase was insignificant (P=0.664). In the case group, mean BMI reduced to 25.186, and according to paired t-test, this reduction was significant (P<0.001).

The results showed insignificant differences between the two groups in terms of knowledge, attitude, and physical activity before intervention. However, according to independent t-test, the difference between the two groups was significant after intervention (P<0.05), and mean scores of the above increased in the intervention group (table 2).

According to results obtained, there was an insignificant difference between the two groups in terms of mean scores of knowledge, attitude, and physical activity before and after intervention, while in the case group, this difference before and after intervention was significant (P<0.001), and mean scores of the above-mentioned increased after intervention (table 3).

4. Discussion:

This study was conducted with the aim to compare and assess the effect of modern media-based (multimedia, internet, and mobile phone) intervention and education on women's physical activity. Generally, before intervention, control and case groups were similar in terms of distribution of demographic characteristics. The results showed a significant increase in physical activity level in women that used educational multimedia and websites and received daily text messages, compared to women in the control group, which is indicative of the positive impact of media in health promoting educational interventions.

Ornes et al. also investigated the effect of web-based education on university female students that received education through internet for 4 weeks. By the end of the study, mean number of steps per

day had increased by 38.8% in the group that received education through internet [12], which is indicative of the positive effect of using internet and the web on physical activity, and concurs with the present study results.

With rapid growth of modern media, including internet and mobile phone, and increasing number of people with access to such media [13], use of these media seems necessary to encourage physical activity among people. The strength of these media is in educating large numbers of people at low cost, compared to print media and face-to-face intervention [14].

In the present study, in addition to a significant increase in physical activity in the case group, women's knowledge and attitude also significantly increased after intervention, while no such an increase was observed in the control group. This shows that modern media, such as internet, computer software, and mobile phone-based programs, not only encourage women to perform physical activity; they also increase their knowledge and attitude toward the subject.

Palmer et al. study was also web-based, and was conducted on students, which led to students' increased attitude and knowledge about physical activity, and indicated the positive effect of internet-based intervention on knowledge and attitude [15].

Knowledge of risks and benefits of behaviors associated with lifestyle are the prerequisites of performing a behavior. If people lack relevant knowledge, they will not accept reasons for enduring difficulties associated with that behavior [16]. Modern media are capable of providing information in the shortest possible time and maximum efficiency, and have a huge impact on knowledge, literacy, and attitudes of their audience [17].

Another important result of the present study was about BMI variations before and after intervention. Although two groups' BMI showed a significant difference before and after intervention, after interventions, BMI had a significant drop in the case group, and a slight increase in the control. Thus, besides increasing physical activity, modern media caused a reduction in weight and an improvement in BMI in the case group.

In a study by Cavallo et al., conducted to assess the effect of social media-based intervention on physical activity, physical activity and social support increased in the case group and 66% of participants recommended modern media-based programs to their friends [18].

Bennett et al. also showed that internet-based weight loss interventions can be useful. In a study on weight loss, they used interventions based on internet and phone for 12 weeks, which led to weight loss in the group that received education through internet and mobile phone. Furthermore, weight loss was greater in participants that used internet interventions more [19].

Therefore, given increasing growth of virtual and modern media in the community, and role and status of such media in people's routine lives and their influence on healthy lifestyle, it seems essential to develop user-based strategies and strengthen behavior change theories and hypotheses based on modern media for effective influence on behavior.

The most important study limitations included low speed and bandwidth and disconnection of the internet.

5. Conclusion:

Despite limitations, and lack of follow-up after 6 months, still it seems media-based interventions (multimedia, internet, and mobile phone) can positively affect physical activity of women and other social strata.

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Table 1: Frequency distribution of personal details in control and case groups

Variable		Control group	Case group	P
Marital status	Single	68(37.2%)	54(30%)	Df=1
	Married	113(62.8%)	126(70%)	P**=0.147
Education level	Diploma	68(37.8%)	58(32.2%)	Df=3
	Associate diploma	17(9.4%)	22(12.2%)	
	Bachelor's	77(42.8%)	79(43.9%)	P**=0.638
	Master's and above	18(10%)	21(11.7%)	
Age		31.933±9.458	33.411±9.010	P*=0.130
Height		161.39±7.488	162.38±5.738	P*=0.159
Weight		63.022±12.366	67.288±11.958	P*<0.001

** Pearson Chi-Square

* Independent t test

Table 2: Mean and standard deviation of women's knowledge, attitude, and physical activity in control and case groups before and after intervention

Variable	Mean and standard deviation before intervention			Mean and standard deviation after intervention		
	Control group	Case group	P-value	Control group	Case group	P-value
Knowledge	0.8156 (±0.0600)	0.9611 (±0.641)	P*=0.099	0.8636 (±0.0744)	6.116 (±0.0600)	P*<0.000
Attitude	16.15 (±2.54)	16.16 (±3.412)	P*=0.136	16.70 (±2.87)	21.10 (±2.747)	P*<0.001
Physical activity	838.44 (±96.781)	992.17 (±83.302)	P*=0.229	881.82 (±90.482)	3604.32 (±271.195)	P*<0.001

*Independent t test

Table 3: Mean and standard deviation of women's knowledge, attitude, and physical activity before and after intervention in control and case groups

Variable	Mean and standard deviation before intervention			Mean and standard deviation after intervention		
	Control group	Case group	P-value	Control group	Case group	P-value
Knowledge	0.8156 (±0.0600)	0.8636 (±0.744)	P*=0.586	0.9611 (±0.641)	6.116 (±0.0600)	P*<0.001
Attitude	16.65 (±2.54)	16.70 (±2.87)	P*=0.859	16.15 (±3.41)	21.10 (±2.74)	P*<0.001
Physical activity	838.44 (±96.781)	881.82 (±90.482)	P*=0.566	992.17 (±83.302)	3604.32 (±271.195)	P*<0.001

*Paired t test