The effect of health belief model training on physical activity in geriatrics

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Abstract

Background and aim: The most important issues in health promotion and life quality in the elders is to protect their independence of physical and cognitive activities and take care of continuing active life. This study aimed to determine the effect of health belief model training on physical activity in rural geriatrics.

Material and Methods: This study is a quasi-experimental, which was conducted over 200 elderly who lived in rural areas of Zabol, Iran. The subjects were recruited through a simple random sampling method. The collected data were analyzed using SPSS.

Results: The average scores of health belief structures between the intervention and control groups was not significantly different before intervention. However, most structures were significantly different in the intervention group after training. Before the intervention the awareness was not significantly different in both intervention and control groups (P = 0.183), But after training, the difference was significant (P < 0.001).

Conclusion: The results showed that the usage of the health belief model for training is an effective way to increase physical activity in geriatrics.

Keywords: training intervention, health belief model, physical activity of elderly.
Introduction:
Elderly issues and adoption of proper policies for them already has become a common concern in the world. So that, the World Health Organization has considered supporting of research and education about elderly and regarded the community care as a basic principle for a new strategy from 2006 to 2015 (1). The elderly population of a community considers as a vulnerable group of that community that face with series of age specific problems. Of course, these problems can be prevented with lifestyle modification (2). Lifestyle in old age should address the different aspects of life, including economy, health and welfare. Healthy lifestyle conditions in the elderly include: observance of proper nutrition principles, observance of Sleep Health, necessary activity during the day, non-smoking, doing regular periodic checkups, mental health preserve, Participation of elderly in social activities and being with family (3). World Health Organization introduced the Physical activity level and mobility as the first indicator of one community health (4). World population aging and increasing the prevalence of chronic diseases in this age group could indicate the importance of physical activity more than before (5). The proportion of the elderly population In rural areas is more than urban area And this is despite life expectancy in rural area is usually less than in urban area and The main reason for this problem is that the migration of young rural people is higher than rural elderly Which reduces young population and increases the proportion of elderly in rural areas. And indicate that more Consideration should be given to this age group (6). Models and theories are guidelines of health training and health promotion activities. The theories could respond to the questions of planners about why people do not have the desired behavior, how to change the behaviors and which factors must be considered in evaluating of programs. Health Belief Model (HBM) is one of the first theories that were developed exclusively for health related behaviors. The HBM rooted in teamwork of social psychologists in the 1950s that was designed for more participation and then influenced by Kurt Levine theory. The Levine and his colleague’s theory was that human behavior is based on two major variables:

1) The value that is set by the person on purpose and results.
2) Person prediction and estimation of the probability of reaching the target if that behavior is done (7).

Health Belief Model that is considered as a main framework of this study is an individual model of health behavior study that was established by Huvjam and Rosen Stoke in the 1950s in America and then adjusted by Baker and Mai Man (7).

HBM Model components: HBM Model structure includes Perceived susceptibility, Perceived severity, Perceived benefits, Perceived barriers, Cues to action, Self-efficacy (8).

According to studies, about the effectiveness of the health belief model and regarding to physical, psychological, social and economic problems that impose by inactivity to elder and their families and society and existence the ability of improving the awareness and attitude of elderly toward the issue, it could be possible to prevent the incidence and prevalence of inactivity related problems including chronic diseases (physical and mental diseases). Therefore, this study was aimed to determine the effect of theory based training on awareness and elderly performance in rural areas of Zabol in 2014.
Methods
This research was a quasi-experimental study. Sampling method was a cluster sampling. At first, rural area of Zabol was divided into four regions that were under the coverage of Zabol health centers, including Zabol Health Center, Zehak Health Network, Hirmand Health Network and Hamoun Health Network. Two health homes were selected by simple random sampling method from each region that one of them considered as intervention group and the other one was considered as control group; so among total of 8 health home, 4 health homewere in intervention group and 4 health home were in control group. In each health home, 25 people were selected by randomly systematic method from the health home list of elderly. In general 200 people aged over 60 years were studied. The two study groups were matched in terms of age and sex. Other variables were controlled in the analysis step.

Data collection tool included a questionnaire that was designed based on the Health Belief Model with variables including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, self-efficacy, behavior, awareness and personal information (demographic). In regard to the method of this study, after preparing the research tool, in order to understand the questions in the questionnaire, the questionnaires were given to a number of people in target groups (30 persons). It should be noted that these persons were not considered as study subjects and just their comments were collected and necessary modifications were made.

Then to obtain the validity of questions, the content validity was used; so the questionnaires were given to 10 experts including health training experts and doctors and was approved by them, and their comments were applied as much as possible. To investigate the durability of the questionnaires, they were given to 30 elderly people in rural area who met study inclusion criteria. After one week of collecting the questionnaires, durability was obtained with SPSS 16 software and by Cronbach's alpha method upper than 0.8. About one month later, after applying the comments to the questionnaire, CVR and CVI scores were in acceptable range.

The questionnaire consisted of demographic specifications (10 instances), awareness questions (13 instances), behavioral questions (5 instances), and 26 questions about the health belief model components which were considered for perceived susceptibility, perceived severity, perceived benefits, perceived barriers and self-efficacy that for any of them 5 questions were allocated and one question was allocated for cues to action. The questions' scoring was done in a way that in the awareness questions part, three scores was considered for correct answers, ‘I do not know’ answers were scored at two and wrong answers scored at one and a total of 39 scores were allocated to this part. Also in Behavioral questions part, four scores were given for the right answer (about exercise, more than 4 times or more). Also, three scores for fewer answers (3 times), two scores (less than 3 times) and one score (never) were given. In the questions about HBM component part (perceived susceptibility), (perceived severity), (perceived benefits), (perceived barriers), (cues to action), (self-efficacy) correct answers scored three, I do not think scored two, and for wrong answers, one score was considered. Then, the questionnaires collected and analyzed and training needs assessed and relevant training content was designed.

Results:
Study results showed that in both intervention and control groups, the most important cue for television action is 57% in the intervention group and 63% in the control group. Also in children,
it was 19% and 23% in the intervention and control groups respectively. In the elderly, a greater return to physical activity occurred in the control group after the intervention in regard to susceptibility arose in health workers.

Independent t-test statistical test showed that there is no significant difference between averages of all parameters in both control and intervention groups (p < 0.05) but there was a significant difference between the averages of awareness score, perceived severity, perceived barriers, self-efficacy and behavior in control and intervention groups after training (p > 0.05) (table 3). Like an independent t-test, paired t-test in intervention group indicated that there is a significant difference between awareness, perceived severity, perceived barriers and self-efficacy in this group (p > 0.05) (table 1).

**Table 1:** comparison between variation of awareness, behavior and structures of health belief model score averages (and standard deviation) before and after of intervention in both control and intervention groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Before intervention</th>
<th>After intervention</th>
<th>Average of created changes</th>
<th>test</th>
<th>Paired t-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>awareness, behavior and model structures</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>intervention</td>
<td>35.6 ±2.47</td>
<td>37.85 ±1.38</td>
<td>5.62</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>35.7 ±2.05</td>
<td>35.49 ±1.82</td>
<td>0.83</td>
<td>0.008</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.183</td>
<td>0.001</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived susceptibility</td>
<td>intervention</td>
<td>14.45 ±1.1</td>
<td>14.71 ±0.77</td>
<td>2</td>
<td>0.012</td>
</tr>
<tr>
<td>control</td>
<td>14.47 ±1.2</td>
<td>14.60 ±0.99</td>
<td>0.78</td>
<td>0.043</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.91</td>
<td>0.41</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived severity</td>
<td>intervention</td>
<td>13.87 ±2</td>
<td>14.46 ±0.95</td>
<td>4</td>
<td>0.005</td>
</tr>
<tr>
<td>control</td>
<td>13.51 ±1.82</td>
<td>13.97 ±1.2</td>
<td>3</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.186</td>
<td>0.002</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived benefits</td>
<td>intervention</td>
<td>14.73 ±1.13</td>
<td>14.90 ±0.38</td>
<td>1.1</td>
<td>0.150</td>
</tr>
<tr>
<td>control</td>
<td>14.88 ±0.40</td>
<td>14.89 ±0.39</td>
<td>0.2</td>
<td>0.320</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.215</td>
<td>0.858</td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived barriers</td>
<td>intervention</td>
<td>13.7 ±2.94</td>
<td>14.34 ±1.67</td>
<td>1.17</td>
<td>0.001</td>
</tr>
<tr>
<td>control</td>
<td>13.14 ±2.20</td>
<td>13.14 ±2.20</td>
<td>0.0</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.935</td>
<td>0.001</td>
<td>0.0001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>intervention</td>
<td>12.35 ±4.05</td>
<td>15.49 ±2.99</td>
<td>15.8</td>
<td>0.001</td>
</tr>
<tr>
<td>control</td>
<td>11.24 ±4.87</td>
<td>11.09 ±4.77</td>
<td>-0.8</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.082</td>
<td>0.001</td>
<td>0.0001</td>
<td></td>
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<tr>
<td>behavior</td>
<td>intervention</td>
<td>6.73 ±3.43</td>
<td>12.83 ±4.09</td>
<td>31</td>
<td>0.001</td>
</tr>
<tr>
<td>control</td>
<td>6.04 ±2.82</td>
<td>6.04 ±2.82</td>
<td>0.0</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.122</td>
<td>0.001</td>
<td>0.0001</td>
<td></td>
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</tbody>
</table>
There was a significant correlation between perceived susceptibility and all other parameters, except for behavior. Pearson correlation coefficient between behavior and self-efficacy was 0.49 which represents this is the greatest value for correlation in comparison to the others.

Discussion and Conclusion
The findings of this study show the effect of training intervention based on the health belief model on the promotion of physical activity between elderly the in study samples. The average of awareness score in intervention group compared to control group before intervention was significantly increased after the training intervention that is indicating the effect of a training intervention on increasing the awareness of elderly that raised from 35.6 score to 38 (p < 0.001), while in the control group this increased from 35.17 to 35.49 that did not show any significant difference. These results were consistent with Shamsi study (9) on increasing the awareness of pregnant mothers about prevention of tooth decay after the training intervention in comparison with before of intervention based on health belief model. Our results were also in accordance with Karimi work on increasing the awareness of married women with 15 to 49 years old about the prevention of unwanted pregnancy and Namdar study that indicated the average of awareness scores of married women with 20 to 65 years old about the prevention of cervical cancer in the intervention group was significantly higher compared to control group (p = 0.005) (10). Khorsandi study on increasing the awareness of pregnant mothers based on the health belief model in regard to the prevention of osteoporosis in the intervention group showed that awareness was increased after the training intervention compared to before of it (11). In regard to health belief model structures, after the intervention, there was a significant difference between the average scores of perceived susceptibility after training. Average scores of perceived susceptibility in intervention and control groups before intervention were 14.45 and 14.47 of 15 scores, respectively. After the intervention, these scores were 14.71 and 14.60 in intervention and control groups, respectively, which was not statistically significant (p > 0.05). Model based training increased the susceptibility in people in regard to physical inactivity that was because of high susceptibility before the intervention. Training was shown to have about 2% of positive effects on increasing of susceptibility.

The Guny-Varden work on prediction of doing cancer diagnostic test indicated that perceived susceptibility has a significant correlation with doing its related behavior and the people who did not do that test had lower susceptibility than people who did it (12). In perceiving severity structure, the averages of scores before intervention were 13.87 and 13.51 of 15 scores in the intervention and control group, respectively, that there was no statistically significant difference between the two groups. After intervention, the average was increased to 14.46 in the intervention group that was statistically significant (p > 0.001). Because of training, people understanding of disease severity and its complications was increased in the intervention group, but there was no change in the control group. In one study, Shamsi et al investigated the pregnant mothers of Arak in regard to preventive behaviors in terms of intractably consumption of drugs and showed that before training intervention, perceived severity in women in regard to intractably consumption of drugs was higher than average but it was significantly different after the training intervention (13). The results of the perceiving benefits structure showed that the mean scores of perceived benefits before intervention in both intervention and control groups was 14.73 and 14.88 of 15 scores, respectively, that the difference was not statistically significant. Each group had well perceived
benefits before training and after intervention, this score reached to 14.90 in the intervention group that was not significant (p > 0.005). Also in control group, perceived benefits was not increased. In Karimi et al study on prevention of unwanted pregnancy in 15 to 49 years old women in the 49-15 year-old married women, significant positive correlations between preventive behaviors for unwanted pregnancy and perceived benefits was observed. There was a significant difference between the mean score of perceived benefits before and after the training intervention while in control group, this difference was not significant (10). Sayyar and colleagues studied men in Montana in regard to testing for colorectal cancer diagnostic test and showed that perceived benefits was the most effective factor for testing (14). Hazavei et al study on women regarding to testing for pap smear showed that there was no significant difference between control and intervention groups in terms of perceived barriers, but the average was increased in the intervention group after the training intervention (15). Before intervention, the average score of self-efficacy in the intervention and control groups was 12.35 and 11/24 from 20 score, respectively, that showed no significant difference, but after the intervention, this score increased to 15.49 in the intervention group that was statistically significant (P < 0.001). The results of Nawabi Rigi et al work on students about breast cancer and self-testing of the breast showed that negative attitudes towards self-efficacy were observed with increasing the awareness. These results represent that there are obstacles in the attitude (16). Shahnazi et al study on iron deficiency anemia in students represented that significant difference in this context was seen between case and control groups after the training intervention (17). Orouji et al worked on men in rural areas of Khomein. The study results showed that In the case of reducing the amount of malaria fever Incidence, the average of the performance score Before and two months after intervention was Significantly increased in case group But this difference was not significant in the control group (18). The study results showed the impact of the health belief model based training on performance of physical activity behavior in elderly. Awareness, behavior and most of health belief model structures were significantly different after intervention in case group and training promoted effective behaviors. After health belief model based training intervention, the results showed that training has positive effects on awareness and self-efficacy and ultimately improve healthy behaviors (appropriate physical activity) in study participants that means it is possible to improve favorite behaviors by promoting awareness and self-efficacy.

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