Perceived Individual and Environmental Factors For Physical Activity Participation among Office Workers

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ABSTRACT

Physical inactivity is revealed as the global health problem that contributes to noncommunicable diseases (NCDs). High technological developments including smart phones or computers can cause of increased sedentary work and decreased leisure time of activities in healthy adults particularly in office workers. Sitting at desk or computer is routine in office workers. They did not require moderate or high physical workload. These caused of physical inactivity in office workers. Therefore, the facilitating factors or barriers related to physical activity (PA) participation should be identified. The purpose of this study was to assess the level of PA and to determine the facilitating factors and barriers associated to PA participation in office workers. Two study design were conducted: cross sectional survey and qualitative research. First, PA was collected by Thai version of short-form International Physical Activity Questionnaire (IPAQ). The participants were classified into high and low level of PA. Second, the facilitating factors and barriers of individual and environmental perspectives associated to PA participation in each level of PA were determined for 15-30 minutes. Data were analyzed by the descriptive statistics and content analysis. Our results found 18 of 22 office workers completed the IPAQ. Their mean ages were 32.6±4.62 years and spent 1585.89±1140.74 MET-min/wk. Of 18 office workers, 2 from low PA and 4 from moderate to high PA participated the in-depth interview. The health appearances and facilities could facilitate them to participate PA while lack of time and motivation were identified as the barriers. Our findings indicated the factors influenced on PA participation, therefore, it useful for planning the new strategy of PA promotion.

Keyword: physical activity, office worker, in-depth interview

1. Introduction

Physical inactivity was determined as the fourth leading cause of morbidity and mortality worldwide. Now, it happened in many countries with major implications for noncommunicable diseases (NCDs) such as cardiovascular disease and cancer (World Health Organization, 2008). In 2010, the World Health Organization (WHO) reported the prevalence of physical inactivity was 23% in total population worldwide and it caused of more than 3 million deaths in each year (World Health Organization, 2010). In Thailand 2016 reported that 19% of physical inactivity found in healthy adults (International health policy program (iHPP); Thai Health Promotion Foundation, 2016).

High technological developments including smart phones or computers can be cause of increasing sedentary work and decreasing leisure activity time in adults particularly in office workers. Sitting at desk or computer is routine of office workers. Their work did not require moderate or high physical effort. These led to physical inactivity in office workers. Physical inactivity is defined as less than 150 minutes/week of moderated physical activity (PA) or 75 minutes/week of vigorous PA. Physical inactivity related to decrease of leisure time activities and increase in sedentary behavior at work or home (World Health Organization, 2008). Sedentary behavior associated with the risk of obesity, having chronic diseases and premature deaths. Office workers who exposed to long period of workplace sitting that did not require high physical efforts workload were more likely to have NCDs than those who did not exposed (Biernat, Tomaszewski, & Milde, 2017).
Pan et al in 2009 reported that the factors influenced on physical inactivity can be classified into individual and environmental perspective (Pan et al., 2009). Based on the social ecological model, the impact of combination between individual and environment factors on exercise behavior should consider (American College of Sport and Medicine, 2005). For individual factors, the self-efficacy and positive outcome expectation are necessary for PA participation and behavioral change. The social and physical environments such as interpersonal relationship and facilities resource management in workplace are also essential. These factors can facilitate or impede to participate PA. Therefore, this study identified the facilitating factors and barriers influenced on PA participation in office workers. The objectives of this study were to assess level of PA in office workers and to determine the factors in term of individual and environmental perspectives that associated with PA participation.

2. Method

A cross-sectional survey and qualitative study design were conducted to determine the factors influenced on PA participation in office workers. This study was approved by Mahidol University Institutional Review Board (MU-CIRB 2016/029.1202). Thirty-eight office workers at Faculty of Physical Therapy, Mahidol University were informed our study protocol and criteria to enroll in this study by e-mail. The inclusion criteria were male or female office workers who had good communication and cooperation. They were excluded if they pregnant and having physical or mental disabilities. Those who passed our criteria and volunteered to participate in this study were signed the consent form. Demographic data collection were age, body mass index (BMI) and waist-to-height ratio (WHR). The level of PA was measured by the Thai version of short-form International Physical Activity Questionnaire (IPAQ) (Rattanawiwatpong, Kunphasee, Pongurgsorn, & Intarakamhang, 2006). The participants were classified into low, moderate and high PA groups. Each group was invited to participate the in-depth interview for 15-30 minutes for determining their perceived factors associated with PA.

The IPAQ contained 7 questions to pertain all kinds of PA within the last 7 days (Craig et al., 2003). The participants reported moderate and vigorous intensities of PA, walking and sitting activities performed at least 10 minutes without significant break. Type, frequency and duration of activities were recorded. For moderate PA, they feel somewhat harder and breath faster than normal but they can still talk. The vigorous PA refers to very harder feeling and breath faster and harder than normal but they cannot talk or sing. Walking is excluded from the moderate and vigorous PA. They reported walking activities at workplace and home or walking from place to place and any others. For sitting, the amount of time sitting at workplace and home (in minutes) such as working, studying or homework, sitting for public transport or personal car, reading or watching television or computer or phone. The energy expenditure of PA (MET-min/week) was calculated by the formula: 8METs×min/session × day of vigorous PA, 4METs×min/session × day of moderate PA and 3.3METs×min/session × day of walking.

The participants were classified into 3 groups: low, moderate and high level of PA. Low PA level is defined as no activity or some activity is not enough to meet moderate or high PA. Moderate PA level is defined as either of the following 3 criteria: a) doing vigorous-intensity of PA at least 20 min./day, b) doing 5 or more days with moderate-intensity activity and/or walking at least 30 min./day and c) doing 5 or more days of any combination of walking, moderate-or vigorous-intensity activities achieving a minimum of at least 600 MET-min/wk. High level of PA have to meet at least one of the following criteria: a) doing vigorous-intensity PA at least 3 days and accumulating at least 1500 MET-min/wk and b) doing 7 or more days of any combination of walking, moderate or vigorous intensity activities accumulating at least 3000 MET-min/wk (The IPAQ team, 2005).

To determine the perceived factors associated with PA, the participation in each level of PA were invited to participate the in-depth interview. Three structural questions were formulated. First was Did you known about physical activity? and What are the physical activity and its benefits? The second was During this time, do you perform exercise? if the subjects answered “YES” then continues asked frequency of exercise, motivation or facilitating factors to perform exercise, problems or barriers to perform exercise. If they answered “NO” then continue to ask the motivation or facilitating factors to perform exercise, problems or barriers to perform exercise. The last question was Who (or What) was your encouragement or discouragement to do exercise?

Data were analyzed using SPSS® (version 21.0; Armonk, NY: IBM). Descriptive statistics were used to determine characteristic of all participants in term of the mean and standard deviation (mean±SD) for continuous variables and the number and percentage (n, %) for categories variables. The content analysis method was used for in-depth interview data (Podhisita, 2055).

3. Results

3.1 A cross-sectional survey data

Of total 38 office workers, 22 (58%) met our criteria and volunteered to participate in this study. There were 18 office workers completed the IPAQ and their data used for statistical analysis. Table 1 demonstrates the
Table 1 Characteristics and level of physical activity (PA) in office workers (n=18).

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Total mean±SD</th>
<th>Low PA mean±SD</th>
<th>Moderate PA mean±SD</th>
<th>High PA mean±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>18</td>
<td>32.61±4.62</td>
<td>3 38.33±4.51</td>
<td>12 31.33±4.12</td>
<td>3 32.00±3.00</td>
</tr>
<tr>
<td>male</td>
<td>8</td>
<td>32.86±4.56</td>
<td>1 34</td>
<td>7 32.86±4.56</td>
<td>-</td>
</tr>
<tr>
<td>female</td>
<td>10</td>
<td>32.45±4.89</td>
<td>2 40.5±3.54</td>
<td>5 29.20±2.39</td>
<td>3 32.00±3.00</td>
</tr>
<tr>
<td>Body mass index</td>
<td>18</td>
<td>24.98±4.53</td>
<td>3 30.47±1.73</td>
<td>12 23.95±4.13</td>
<td>3 23.63±4.86</td>
</tr>
<tr>
<td>Waist to height ratio</td>
<td>18</td>
<td>0.51±0.07</td>
<td>3 0.59±0.00</td>
<td>12 0.50±0.06</td>
<td>3 0.50±0.09</td>
</tr>
<tr>
<td>PA (MET-min·wk⁻¹)</td>
<td>18</td>
<td>1585.89±1140.74</td>
<td>3 263.67±248.17</td>
<td>12 1437.08±662.91</td>
<td>3 3503.33±558.83</td>
</tr>
<tr>
<td>Sitting time (hours)</td>
<td>18</td>
<td>7.00±2.57</td>
<td>3 7.00±5.57</td>
<td>12 7.25±2.00</td>
<td>3 6.00±1.00</td>
</tr>
</tbody>
</table>

characteristic data. The age was 32.61±4.62 years and mean BMI was 24.98±4.53. The average of energy expenditure was 1585.89±1140.74 MET-min·wk. They were classified into three groups of PA: low (n=3), moderate (n=12) and high (n=3).

3.2 The in-depth interview data

The perceived factors associated with PA level was determined by the in-depth interview method. The participants in low and moderate to high PA groups were invited to participate in-depth interview for 15-30 min. Of total, 6 subjects volunteered to participate the in-depth interview. There were two participants from low PA group. They aged 38.5±6.36 years and spent 313±329.5 MET-min·wk for PA. Six participants were from moderate to high PA, aged 32.25±2.06 years and spent 1317.75±514.3 MET-min·wk for PA. The results were concluded in 3 main issues: perceived PA knowledge and benefits, facilitating factors and barriers of PA participation. The factors related to PA participation were concluded in the aspect of individual, social and physical environmental factors.

3.2.1 Perceived physical activity knowledge and benefit: All of participants in both groups did not clearly understand about PA and its benefits. Most of them though that PA like an exercises or sports. The benefits of PA were used energy expenditure, made themselves strong and healthy. However, some participants did not know PA before.

3.2.2 Facilitating factor to physical activity participation: These factors could be divided into three categories; individual factor, social and physical environmental factors.

Individual factors
Self-esteem: The participants who were in moderate to high PA concerned their healths and though as the main facilitating factor for PA participation. They believed that PA can help to reduce body weight, make good looking and body image, increase muscles strength and delay aging process. Some participants continued to perform exercise because they need to recover from injuries. One participants exercised because of he avoided becoming a burden to family or friends.

Attitude: Positive outcome expectation to exercise is name as a facilitating factor. They felt fun and happy when performed exercise. These decreased stress and made them to participate with others.

Social environment factor
Colleagues: Colleagues were the main social environmental factor for physical activity participation. Two participants were started exercise by their colleagues and exercise together after working time. Then participants get exercise become was a routine.

Physical environment factor
Availability of place to exercise and recreation area: Most participants with moderate to high physical activity level perceived that they could get in place to exercise and recreation area. Due to this organize located in university, it’s a large workplace for both students and office workers. It had many place to exercise and recreation area in university such as gym, badminton court, aerobic dance place and ground running. Also in faculty, they had a fitness room for exercise too.

3.2.3 Barrier factor to physical activity participation: These factors could be divided into three categories; individual factor, social and physical environmental factors.

Individual factors
Jobs: For low PA, long period of working time was a barrier to PA participation. They worked overtime that averaged time was longer than regular work (8 hour/day). They felt tired, lack of motivation to exercise and did not have enough time to exercise. Except from work, they had other duties to carry on everyday. For moderate to high PA, the amount of time working was not a barrier to PA participation. They still can performed exercise regularly in prolong working day. One of low physical activity participant perceived that, due to their work led them to sedentary lifestyle; they feel it difficult to change their sedentary lifestyle to
active lifestyle.

**Fatigue**: All participants who were in moderate to high PA perceived that fatigue from work decreased their motivation to exercise. They tired and felt laziness to move or being active.

**Fear to injury**: Fear to injury was a minor barrier factor for some participants in both groups. It was one of the reasons why participants do not start to exercise more or exercise in other type from present program.

**Social environment factor**

**Colleagues**: In previous section, we found that colleague was a one of facilitator factor for moderate to high physical activity group to get active. On the other hand colleagues were made them difficult to keep exercise regularly when their colleagues persuade them to do something else in someday. Colleagues were a barrier to get active for in low physical activity participants group. Because they not had friends to exercise together. So they did not wanted to exercise alone.

**Physical environment factors**

**Inadequate exercise facilities**: Inadequate exercise facilities were a main problem for exercise as demand was more than supply. But this problem did not affect to some participant. Because they could choose other type of exercise to get active.

**Weather**: Due to Thailand was located in tropical monsoon area, which cause the weather be hot, humid and sometime rainy. This kind of weather made participants exercise less and tried easily. However this kind of weather was not a main barrier for participants to get active.

4. Conclusion

Our findings demonstrated the facilitating factors and barriers of PA participation in office workers. The qualitative data concluded many aspects associated with their PA level in term of individual, physical and social environmental factors in office workers. These findings might be useful to conduct the new strategy or health promotion programs for PA in workplace. The factors associated to physical activity participation may be different. This study can be use for a guideline to explore the physical activity level and factor associated with physical activity participation in other workplace.

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