

Healthy Lifestyle: Promoting Walking Behaviour in Kuala Lumpur, Malaysia

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While many people recognise that walking is good for their health, very few do enough regular walking to derive the maximum health benefits. A questionnaire was administered to a sample of local residents in Kuala Lumpur, Malaysia and found that 65.1 % did not achieve the recommended standards for walking to gain any health benefits, 27.4% did not walk at all, and only 1% engaged regularly in neighbourhood walking. This finding is important to better inform local government departments about the current situation and justifies the need for new intervention strategies to promote walking. This is because frequent physical activity, such as walking, is important for a person's health and well-being, with many individuals in urban settings heavily reliant on engagement in such activities through the intervention delivered by local government agencies.

Keywords: Walking Behaviour, Physical Activity, Social Ecological Model, Malaysia

1. Introduction

The physical inactivity and obesity syndrome is now rapidly increasing in many countries in the developing world such as Malaysia and especially in the larger urban cities (World Health Organization, 2008). A study conducted in 12 Asian cities ranked Kuala Lumpur as the third highest in levels of obesity (Noor, 2002). In addition, a national survey (2004) was conducted on the prevalence of obesity among Malaysians (aged 18 years and above) recorded that there was a 280% increase in obesity since the last survey in 1996. A further physical activity research study conducted in Western Pacific region has also identified Malaysia as the leading country which is experiencing the highest level of physical inactivity among adults of both genders (16.5 % men and 23.6% women) (Guthold, Ono et al., 2008). As a result, there is growing agreement among experts that an increased level of obesity is mainly due to increased physical inactivity (Noor, 2002; Popkin & Gordon-Larsen, 2004; Lekhraj Rampal, Sanjay Rampal et al., 2007; World Health Organization, 2008).

The increased of physical inactivity levels of residents living in Kuala Lumpur needs to be taken seriously before this lifestyle problem becomes a major health epimemic (Helbing, Schweitzer et al., 1997; Vojnovic, Jackson-Elmoore et al., 2006; Aytur, Rodriguez et al., 2008; Guthold, et al., 2008). Physical inactivity has been significantly related to obesity related illnesses and Type 11 Diabetes. Illnesses that are associated with physical inactivity have been said to be responsible for the deaths of at least 1.9

million people worldwide; with approximately 220,000 cases reported in North America, 320,000 in European countries, and over 13,000 reported cases in Australia (World Health Organization, 2002; 2008). By the year 2020 it has been predicted that the annual death rates of individuals who are classified as overweight and/or obese will increase to approximately five million people worldwide (World Health Organization, 2002). Such a pattern of illnesses indicates that there is an urgent need for the development of appropriate forms of health intervention strategies to address these concerns. One of the proposed strategies to address concerns about physical inactivity and obesity is to promote regular walking. This is because walking is practical form of exercise that can be integrated into people's daily routines and is suitable for all socio-demographic groups to participate in (Fenton, 2005; Gobster, 2005; Merom, Rissel et al., 2007). This study investigates the walking behaviour of community residents in Kuala Lumpur and identifies appropriate intervention strategies to increase walking behaviour.

2. Literature Review

Generally, health researchers have supported the belief that walking is a form of exercise that improves people's health. The recommended weekly walking activity to gain the necessary health benefits is at least 30 minutes a day, five days per week (Darker, Larkin et al., 2007). However, if 30 minutes walking at one time is difficult to achieve, shorter 10 minutes bouts of brisk walking can provide similar health benefits when they total 30 minutes a day. Experimental research has shown that walking 15 minutes a day would only burn 100 calories and prevent the typical adult gaining 0.5 to 1 kilogram which will eventually result in the gaining of weight over time (Hill, Wyatt et al., 2003). Addy et al. (2004) classified walking into three main categories, regular walker (walk 30 minutes or more, 5 days per week = 150 minutes or more per week); irregular walker (walk between 10 to 150 minutes per week); and non-walker (there is no walking for 10 minutes or more at a time). Encouraging people to walk on a regular basis is seen as the best way of providing the greatest gains to the health of the general population (Cleland, Timperio et al., 2008).

Although walking is good for people's health, very few do enough walking to derive the recommended health benefits. Previous researches have shown that walking behaviour is influenced by both non-modifiable and modifiable factors. The non-modifiable variables of walking behaviour are the socio-demographic factors which are useful in guiding the formation of intervention strategies (Glanz, Rimer et al., 2002). The pertinent socio-demographic characteristics that are related to walking activity include age, gender, ethnicity, car ownership, education and work status (Lee, Kawakubo et al., 2007; Giles-Corti, Knuiiman et al., 2008). On the other hand, the modifiable factors that influence people's walking behaviour are individual beliefs and social and physical determinants. In order to successfully promote walking behaviour at the general population level, it is essential to identify these modifiable factors so that appropriate intervention measures can be undertaken (Titze, Giles-Corti et al., 2010).

The first modifiable factor is the individual level, where it is the most basic concern in health promotion practice and one of the most important factors in influencing walking behaviour (Giles-Corti & Donovan, 2002; 2003; Titze, Stronegger et al., 2005; Rimer, 2008). Consistent with the health belief model, the individual characteristics that influence people's behaviour are (i) perceived susceptibility of contracting diseases related to physical inactivity, (ii) perceived severity of diseases related to physical inactivity, (iii) perceived benefits of walking activity, (iv) perceived barriers in participating walking, (v) cues to action, and (vi) self-efficacy (Rimer & Glanz, 2005). The second factor that has been recognised as one of the important influential determinants on walking activity is the social factors (Giles-Corti, et al., 2003; Burton, Turrell et al., 2005; Titze, et al., 2005; Cleland, et al., 2008; Takemi Sugiyama & Catharine Ward Thompson, 2008). Social influences exist within the structure of the social network that can be described in terms of the specific relationships between individuals and other people in the network (Heaney & Israel, 2008). This relationship creates what is termed social support that is important in encouraging participation in walking activities, and this influence is dynamic and varies according to individual characteristics (Giles-Corti, et al., 2002; Phongsavan, McLean et al., 2007). The third factor is the availability of suitable walking facilities in a local neighbourhood (Henderson, 2006; Vojnovic, et al., 2006; Deborah, Thomas et al., 2007). The provision of walking facilities provides physical environmental enhancement which is able to facilitate walking activity (Cohen, Scribner et al., 2000; Wendel-Vos, Schuit et al., 2004; Wendel-Vos, Droomers et al., 2007). Research findings have shown that people who were provided with appropriate physical environmental settings experience an increase in their walking behaviour (Alcalay & Bell, 2000). This is because walking normally occurs in specific settings that promote walking as a form of exercise to occur (Giles-Corti, Timperio et al., 2005; Mota, Almeida et al., 2005).

Because walking behaviour is influenced by a number of factors, any increase is dependent on a multi level intervention which is consistent with the social ecological perspective (Hutzler, 2007). Furthermore, a multi level approach has provided strong evidence for health behavioural changes since the 1960s, and has been accepted as the one of the most effective approaches to health intervention (Sallis, Owen et al., 2008). In the early years, social ecological models (SEM) were applied to general behaviour, but more recently models have been specifically created for their application to health intervention strategies (Sallis, et al., 2008). The increased popularity of the ecological orientation to health behaviour was inspired by a growing recognition that most public health interventions are complex and require multi-level interventions (Stokols, 1996). According to Sallis et al (2008) the SEM is a generic model that can be applied to any behavioural change research by modifying the variables that are relevant to a specific behaviour. The SEM provides a way of thinking about the planning of an intervention that examines the relationship between the individual, social and physical, and behavioural determinants of walking activity (Alcalay, et al., 2000).

3. Methods

The sample respondents were randomly selected from the Kuala Lumpur enumeration block. An enumeration block listing is compiled by the Malaysian Statistics Department and provides basic information, such as names and addresses of Kuala Lumpur residents. This listing is normally updated every four to five years for use in the general election. A stratified random sampling procedure was adopted as the means of increasing the representativeness of the sample, with due consideration given for an equal number of respondents in each ethnic group and similar gender numbers. In the first stage, the three ethnic groups were identified from a sampling frame (enumeration block listing) and categorized into three different ethnic groups: Malay, Chinese and Indian. In the second stage, each ethnic group was further stratified according to gender (males and females). Then, using systematic random sampling an equal sample size of males and females from each of the Malay, Chinese and Indian groupings were selected. Overall, a total of 2,150 survey questionnaires were sent through the mail, with a total response rate of 478 (22.2%). Respondents who completed the survey questionnaire were from the three different ethnic groups (Malay, Chinese and Indian) who were residents in Kuala Lumpur, and aged 18 years and older.

A survey instrument was modified based on previous studies (ref?). Walking behaviour was measured by asking respondents about the purpose and regularity of their walking (Takemi Sugiyama, et al., 2008). This included self reported recall of walking activity by asking respondents to report their weekly duration and frequency of walking for recreation, exercise, and/or to reach a destination. Each participant's walking time was calculated and the estimated weekly walking (minutes/week) was used to classify three levels of walking frequency. Each walking measure was then classified into regular, irregular and non-walker for further analysis (Addy, et al., 2004). A pilot test was conducted before proceeding to collect data using the final survey questionnaire to test for reliability of the items. The results of the test-retest reliability analysis found that all questions were considered to have high reliability with interclass correlation coefficient ranging from 0.82 to 0.95.

The collection of data occurred using a questionnaire that was sent through the mail to the respondent's home address, as well as a reply paid envelope for return of the completed questionnaire. Together with a copy of the questionnaire, the researcher attached a letter informing the potential respondents about the purpose of the study and indicated that the questionnaire should be completed and returned in two weeks time. In addition, a follow up reminder including another questionnaire were sent two weeks after the initial mailing time had closed, to help increase the response rate. After a four month collection period, 504 were received and following a screening process several were excluded leaving a final total of 478 completed questionnaires (22.2% response rate) which were used for the study. Data was analysed using SPSS version 17 and frequency distributions, ANOVA and factor analysis were calculated. An alpha level of 0.05 was used to determine the statistical significance for all analyses.

4. Results

Table 1 summarises the socio-demographic background of sample respondents. The total number of sample respondents was 478, with 35.4% Malays, 34.3% Chinese and 30.3% Indians. Although the number of respondents for each of the three groups was not equal, Chi square analysis found that they did not differ significantly from each other ($\chi^2=2.01$, $df=2$, $p=0.366$). Thus, the sample was considered representative of the three ethnic groups used in this study. The distribution of gender was approximately equal between males (49.4%) and females (50.6%). The three largest age groups were within the 18-24, 40-49 and 30-39 year old categories. Looking at the educational background of respondents, they were from various educational backgrounds, ranging from as low as primary school to the postgraduate level, with the majority (32.6%) completing secondary school and 31.8% with an undergraduate degree. With respect to employment status, over 88.5% of the respondents were employed and only 10.5% were not working/or retired. A majority (38.9%) of respondents worked five days per week. Records on household income showed that 46.0% respondents were low-income earners (below RM3000.00 per month) and 46.0% respondents were middle-income earners (RM3000.00 to RM8000.00 per month). In regard to access to a motor vehicle, 88.7% respondents were able to access a motor vehicle and only 11.3% were not able to. Marital status showed that 67.2% respondents were married/living with partner and 28.5% were single. The majority (48.7%) of respondents had no responsibility for children under 12 years old of age and only 2.5% has more than five children.

Table 2 presents the patterns of weekly walking behaviour participated by all respondents. Generally, among the 478 respondents, only 34.9% reported that they engaged in sufficient weekly walking to achieve the recommended weekly walking from the World Health Organisation to induce sufficient health benefits. Overall, walking was most popular for recreation, exercise, and/or to reach a destination. In regard to neighbourhood walking, only 1% of sample respondents engaged in regular walking. This strongly indicates that walking is not regarded as popular among respondents, especially walking in and around their neighbourhood. When comparing the three purposes of walking, behaviour walking to reach a destination was found to be the most popular (33 respondents) followed by exercise (17 respondents) and for recreation (5 respondents).

Table 1: Characteristics of respondents

| Characteristics | Frequency | Percentage |
|-------------------------------------|-----------|------------|
| Ethnicity: | | |
| Malay | 35.4 | 169 |
| Chinese | 34.3 | 164 |
| India | 30.3 | 145 |
| Gender: | | |
| Male | 49.4 | 236 |
| Female | 50.6 | 242 |
| Age: | | |
| 18-29 | 31.6 | 151 |
| 30-39 | 27.4 | 131 |
| 40-49 | 29.7 | 142 |
| 50-59 | 8.4 | 40 |
| 60 and older | 2.9 | 14 |
| Education: | | |
| Primary school | 6.9 | 33 |
| Secondary school | 32.6 | 156 |
| Certificate/diploma degree | 28.7 | 137 |
| Degree and above | 31.8 | 152 |
| Working day per week: | | |
| Not working/retired | 10.5 | 50 |
| >4 | 3.1 | 15 |
| 5 | 38.9 | 186 |
| 6 | 37.4 | 179 |
| 7 | 10.0 | 48 |
| Household's monthly income: | | |
| Low income | 46.0 | 220 |
| Middle income | 46.0 | 220 |
| High income | 7.9 | 38 |
| Access to a motor vehicle: | | |
| Yes | 88.7 | 424 |
| No | 11.3 | 54 |
| Marital status: | | |
| Married/living with partner | 67.2 | 321 |
| Separated/Widowed/Divorced | 4.4 | 21 |
| Single | 28.5 | 136 |
| Children under 12 years old: | | |
| None | 48.7 | 233 |
| 1 -2 | 34.3 | 164 |
| 3 - four | 14.4 | 69 |
| >5 | 2.5 | 12 |

Table 2: Walking behaviour of the respondents

| Walking activity (N=478) | Weekly walking (n/%) | | |
|--------------------------|----------------------|-------------|-------------|
| | Regular | Irregular | Non-walker |
| Overall walking | 167 (34.9%) | 180 (37.7%) | 131(27.4%) |
| Neighbourhood walking | 5 (1.0%) | 282 (59.0%) | 191 (40.0%) |

Socio-demographic variables were included in the analysis in order to explore which socio-demographic factors were most important with the overall walking behaviour of sample respondents. ANOVA analysis showed that significant differences in walking behaviour were found by ethnicity ($F=11.73$, $p=0.000$), gender ($F=7.39$, $p=0.001$), education ($F=13.88$, $p=0.000$), household income ($F=12.89$, $p=0.000$), and employment ($F=8.85$, $p=0.000$). Descriptive analysis found that the Chinese ($\bar{x}=1.64$, $SD=0.78$) engaged less in walking compared to Malays ($\bar{x}=2.31$, $SD=0.60$) and Indians ($\bar{x}=2.30$, $SD=0.78$). Walking activity were found to be not popular among males ($\bar{x}=2.02$, $SD=0.84$) who had completed primary school ($\bar{x}=1.85$, $SD=0.83$), middle-income earners ($\bar{x}=1.95$, $SD=0.82$) and those not working/or retired ($\bar{x}=1.84$, $SD=0.77$).

5. Discussion and Recommendations

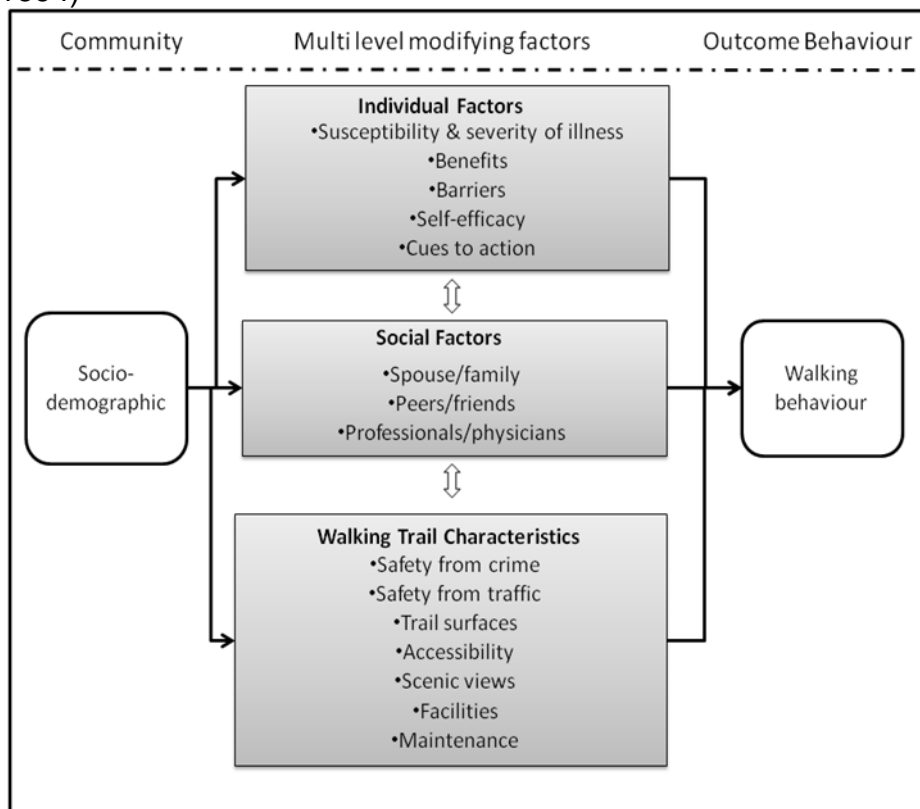
Although walking activity has been found to be the most popular and accessible form of physical activity, with little expense involved, as well as suitable for all socio-demographic groups (Giles-Corti, 2001; Humpel, Owen et al., 2004; Owen, Humpel et al., 2004; T. Sugiyama & C. Ward Thompson, 2008), only one third of the respondents in this study were found to engage in weekly walking behaviour at the recommended level to achieve any health benefits. These results confirmed the previous studies that claimed physical inactivity levels among Kuala Lumpur residents were at a critically high situation. The government of Kuala Lumpur is faced with the increased challenge of developing effective strategies to increase the walking behaviour of its residents to obtain the necessary health benefits. If all of the 65.1% (37.7% irregular walkers + 27.4% non-walkers) of the sample respondents who do not engage in sufficient walking to gain the necessary health benefits were also did not involve in other physical activities, the chance of having unhealthy population is very high. This will become a big loss to the country and necessary intervention is required.

The intervention that has received growing recognition from previous research studies is to increase walking behaviour by integrating walking activity into people's regular routine and to reach the largest number of individuals in the most cost effective manner (Siegel, Brackbill et al., 1995; Hillsdon & Thorogood, 1996; Giles-Corti, 2001; Humpel, et al., 2004; Owen, et al., 2004; Merom, et al., 2007). Determining factors that impact on walking activity at the local community level in Kuala Lumpur is critical, because two thirds of residents stated that they did not walk on a regular basis so as to help them to gain any health benefits. One of the recognised approaches that fulfils these conditions is through promoting walking activity in and around the neighbourhood where it is accessible to the majority of the population. In addition, these findings also showed that majority (85.7%) of respondents had at least two days per week that was free from work commitments (i.e., they worked five days or less per week) which allows them to engage in regular walking activities around their neighbourhood. Having said that, these finding also found that 99.0% of respondents did not engage in regular walking in or around their neighbourhood. This suggests that a close proximity location (such as a neighbourhood area) is not adequate to attract the community to engage in walking

(Abildso, Zizzi et al., 2007). This is because walking behaviour is influenced by multi factors such as individual beliefs, social support as well as the importance of adequate walking facilities (physical) (Hutzler, 2007).

In line with this condition, this study suggests that the use of a Social Ecological Model (SEM) that integrates a multi level intervention, which is targeted at individual, social, and the provision of walking trails as an overarching conceptual framework for an intervention strategy. Given that the SEM is a generic model that allows the combination of other theories or models to suit the specific behavioural research, this study recommends that the health belief model (Champion & Skinner, 2008) be used to examine and to understand the individual influences (Cohen, et al., 2000) that help to identify social and trail characteristics influences on walking behaviour. Using a structural model based on Cohen et al. (2000) it will be possible to identify four intervention strategies that help to modify the social and physical factors: (i) social structures and policies, (ii) media and cultural messages, (iii) availability of physical product (walking facilities), and (iv) the characteristics of the physical product (trail characteristics). Manipulating these factors will help to create an impact on the entire population. This conceptual framework, which has been developed and based on the SEM, will help to provide an understanding of the factors that influence walking behaviour and is shown in Figure 1.

Figure 1: Conceptual Framework based on the Social Ecological Model for Walking Behaviour, adapted from Hutzler (2007, p. 291) and Pikora et al. (2003, p. 1694)



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