# Lifestyle in Visually Impaired or Blind Massage Therapists: A Preliminary Study

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## ABSTRACT

**Background:** Lifestyle is among the most important factors affecting individual health status. Limited access to health information may limit the ability of people with visual impairment or blindness to practice healthy lifestyles. However, no studies have investigated how lifestyle practices affect health specifically in visually impaired and blind populations.

**Purpose:** The aim of this study was to investigate the lifestyle behaviors of visually impaired and blind massage therapists (VIBMTs) in Taiwan.

**Methods:** This exploratory study used a purposive sampling technique to recruit 50 VIBMTs who were employed at massage stations in southern Taiwan. All of the participants completed the Health-Promoting Lifestyle Profile II (HPLP-II) and a survey of demographic characteristics. Descriptive and inferential statistical tests, including the Mann–Whitney *U* test and the Kruskal–Wallis *H* test, were used. Statistical significance was defined as $p < .05$ in two-tailed tests.

**Results:** Fifty participants completed both the HPLP-II and the demographic survey. The mean subscale score for the HPLP-II was 2.52 ± 0.37. The lowest scores were on the physical activity (2.09 ± 0.67) and nutrition (2.35 ± 0.39) subscales, and the highest scores were on the spiritual growth (2.89 ± 0.56) and interpersonal relations (2.79 ± 0.46) subscales. Scores on the stress management and physical activity subscales were significantly higher in men than in women ($p < .05$). In addition, mean HPLP-II scores were significantly higher in VIBMTs who exercised regularly compared with those who did not ($p < .05$). Compared with nonsmokers, current smokers had significantly higher scores on the stress management subscale ($p < .05$).

**Conclusions/Implications for Practice:** The low physical activity scores in this population may be improved by developing physical activity programs for the home and workplace and by establishing community recreational and exercise facilities for visually impaired populations. The low scores for nutrition may be improved by establishing nutrition education programs that are designed specifically for VIBMTs to increase their consumption of fresh produce and other healthy foods and by requiring food manufacturers to use labels that may be easily read or understood by visually impaired populations.

**KEY WORDS:**
visually impaired or blind, massage therapist, lifestyle.

## Introduction

Achieving high-quality health is a common personal goal, and the pursuit of high-quality healthcare is a driving force of national social progress. According to many studies (American Heart Association, 2016; Office of Disease Prevention and Health Promotion, 2014; Prüss-Üstün & Corvalán, 2006), determinants of health may be divided into four categories: health services, biology and genetics, environmental factors, and lifestyle behavior. Of these, the lifestyle category is the most important category in terms of its effect on individual health. A healthy lifestyle must be actively pursued and cannot be achieved passively. According to Walker, Sechrist, and Pender (1987), a health-promoting lifestyle is characterized by sufficient physical activity, good nutrition, and acceptance of the personal responsibility to maintain good health. In addition to its positive effects on physical health, a health-promoting lifestyle contributes to spiritual growth, good interpersonal relations, and effective stress management. The health effects of lifestyle have been recognized in many studies worldwide (Eshah, 2013; Khalil, 2014; Kirag & Ocaktan, 2013; Tsai & Liu, 2012).

According to World Health Organization (2014) estimates, approximately 285 million people worldwide experience visual impairment or blindness (VIB). According to the Taiwan Ministry of Health and Welfare, Taiwan, ROC (2017), the population with VIB in Taiwan numbered 57,291 in April 2017, of which approximately 9,618 live in the Tainan area. Visual dysfunction substantially limits career and occupational options. Although most of the population with VIB in Taiwan are unemployed, the most common occupation for those who have sufficient physical and mental functions is as massage therapists (Chen, 2011; Li, 2001).

People with VIB are highly vulnerable because VIB limits access to health information and the ability to practice a healthy lifestyle (Ministry of Health and Welfare, Taiwan,

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ROC, 2017; World Health Organization, 2014). For example, people with VIB may have difficulty reading health-related information in various electronic media and in print media such as flyers, pamphlets, brochures, and newspapers. Moreover, people with VIB may be discouraged from engaging in physical activity at home, in the workplace, and at community recreation centers because of concerns about becoming disoriented or about being injured or even immobilized in a fall. In addition, maintaining good nutrition may be complicated by difficulties in purchasing food, identifying food, reading nutrition labels, and even preparing meals. These and similar activities, which are routine for people with normal vision, may be extremely challenging for people with VIB.

Although several studies have investigated health-promoting lifestyles in vulnerable populations (Hurlbut, Robbins, & Hoke, 2011; Kavlak et al., 2013; Kirag & Ocaktan, 2013; Lo, 2009; Padden, Connors, Posey, Ricciardi, & Agazio, 2013), no studies have investigated the impact of healthy lifestyle practices in populations of visually impaired and blind massage therapists (VIBMTs). Hence, this study was designed to address this research gap by collecting data that policy makers may use to develop health-promoting strategies for this population. Specifically, the purpose of this preliminary study was to investigate the lifestyle of VIBMTs in Taiwan.

# Methods

## Samples and Setting

This exploratory study collected data for a population of VIBMTs in southern Taiwan. According to the manager of the Tainan Visual Impaired Massage Therapists Union (C. H. Huang, personal communication, April 19, 2017), approximately 150 of the 210 active union members in the Tainan area work as massage therapists.

VIB is defined according to the criteria issued by the Taiwan Ministry of Health and Welfare, which are based on the guidelines of the International Classification of Functioning, Disability and Health (World Health Organization, 2013). Additional recruitment criteria included holding a disabled identification card issued by the Taiwan Ministry of Health and Welfare, aged 20–65 years, able to communicate in Mandarin or Taiwanese, and currently employed as a certified massage therapist. The exclusion criteria were as follows: aged over 65 or under 20 years and have another disability in addition to VIB. All of the participants in this study were recruited from massage stations in Tainan, Taiwan.

## Instruments

Each participant completed two instruments: the demographic and health-related characteristics questionnaire and the Health-Promoting Lifestyle Profile II (HPLP-II).

### ***Demographic and health-related characteristics questionnaire***

This questionnaire collected data on personal characteristics and health-related variables, including age, gender, marital status, education, employment status, health history, health-promoting activity, and perceived accessibility of medical care. For applicable female participants, results of Pap smear and clinical breast examinations were also collected.

### ***HPLP-II***

Permission to use and duplicate the HPLP-II instrument for this study was received via personal email from Dr. Susan Walker, who had developed the original HPLP-II instrument (Walker et al., 1987). The reliability of the HPLP-II was established in Walker and Hill-Polerecky (1996), with an alpha coefficient for internal consistency of .94 for the total score and subscale alpha coefficients of .86 for health responsibility, .85 for physical activity, .80 for nutrition, .86 for spiritual growth, .87 for interpersonal relationships, and .79 for stress management. Moreover, the 3-week test–retest reliability was .89 for the total score. Permission to use and duplicate the HPLP-II Chinese version for this study was also received from its developer, Dr. Yu-Ying Tang. Dr. Tang translated the HPLP-II into Chinese by applying a backward–forward procedure in consultation with a panel of five bilingual scholars to ensure equivalence. In pilot studies by Tang and colleagues, the HPLP-II Chinese version obtained Cronbach alpha values ranging from .79 to .96 (Tang, 2000; Tang & Chen, 2002).The HPLP-II is a two-page instrument containing 52 questions that requires approximately 10 minutes to complete. The six subscales of the HPLP-II are health responsibility (nine items), physical activity (eight items), nutrition (nine items), spiritual growth (nine items), interpersonal relations (nine items), and stress management (eight items). Respondents are required to rate items on a scale from 1 to 4 (1 = *never*, 2 = *sometimes*, 3 = *often*, and 4 = *routinely*).

The original HPLP and the HPLP-II have been used extensively to explore the determinants of health-promoting behaviors in various Taiwan and Hong Kong Chinese populations, including college students, healthcare providers, caregivers, taxi drivers, and the older adults. The HPLP-II Chinese version has shown satisfactory internal consistency and reliability (Tang & Chen, 2002).

In reliability tests of the HPLP-II instrument that was used in this study, the alpha coefficients for internal consistency were .90 for the 52 items and .82 for the six subscales. For individual subscales, the alpha coefficients were .75 for health responsibility, .85 for physical activity, .37 for nutrition, .85 for spiritual growth, .78 for interpersonal relationships, and .70 for stress management.

## Ethical Considerations

After receiving approval of the study from the institutional review board (No. 15-007-B1) of a local hospital, individuals

who met the enrolment criteria were informed of the study, including its aims, duration, benefits, and risks and the use of personal data (including data collection procedures, confidentiality, and anonymity). Participants who consented to participate were informed that they could withdraw at any time and that withdrawal would not affect their existing treatment or healthcare.

As recommended by the institutional review board, each participant who completed the study questionnaires received a gift card (US$3.30) as a token of appreciation for time spent completing the questionnaire during working hours.

As the target population was visually impaired, the layouts of the documents were modified for easy reading. For example, the study documents were printed in bold black Chinese BiauKai characters (標楷體) in a large font size (14- to 28-point font). The documents were also printed in different colors to ensure that they were easily distinguishable. In addition, each page of the questionnaire was printed on one side of a sheet of B4 (257 × 364 mm) paper instead of a sheet of standard A4 (210 × 297 mm) paper. The recruitment letter was printed on both sides of a sheet of green A4 paper. The document used to obtain agreement to participate was printed on one sheet of light blue A4 paper, and participants could indicate agreement to participate by signature or by personal seal. To avoid loss, all documents were placed in sheet protectors before being presented to participants.

## Data Analysis

The IBM SPSS for Windows, Version 19.0 (IBM, Inc., Armonk, NY, USA) was used for data analysis. Descriptive and inferential statistics were used to achieve the objectives of the study. Demographic and health-related data were analyzed using descriptive statistics and were examined for homogeneity. The HPLP-II scores and demographic features of the VIBMTs were compared using either the Mann–Whitney *U* test or the Kruskal–Wallis *H* test in different group variable settings. Statistical significance was defined as $p < .05$ in two-tailed tests. All of the data were coded without identifying information.

# Results

The study was performed from January 2015 to December 2015. Of the 55 VIBMTs who were invited to participate in the study, 50 completed the questionnaires, giving a response rate of 91%, with five VIBMTs declining to participate. The stated reasons for declining to participate were concerns about personal income tax issues (two VIBMTs), lack of time during working hours (two VIBMTs), and lack of direct benefit (one VIBMT). Because this was an exploratory study, hypotheses were not tested in group comparisons. However, as gender differences in the HPLP-II score would be of great interest to healthcare providers, G-power analysis with gender comparison was performed to estimate the sample size. A nonparametric test of two independent samples (i.e., the Mann–Whitney *U* test) was performed with the Type I error set to 0.05 in a two-sided test, the power set to 0.8, and the effect size set to large (i.e., Cohen's $d = 0.8$), with the sample having equal numbers of men and women. As the calculation showed that 27 participants were needed for each gender, 55 participants were invited to participate. Our results for gender obtained a power of 0.42 with a moderate effect size (Cohen's $d = 0.56$).

## Personal Characteristics and Health-Related Variables

Table 1 shows the baseline demographic and health-related data for the participants. The mean age was 46.8 years (*SD* = 10.9 years, range = 23–63 years), most were male (70.0%), and half were married (50.0%). Most had 9 or more years of education (84.0%) and earned an income of less than US$1,000 per month (92.0%). The average years of experience working as a massage therapist was 11.6, and the average hours worked per week was 35.9.

Regarding health-related variables, almost 26.5% of the VIBMTs reported that they never exercised, 26.0% reported that they currently smoked cigarettes habitually, 38.8% reported that they currently consumed alcohol habitually, and 22.0% reported that they currently or previously chewed betel nut habitually. In addition, 21.4% and 14.3% of women reported that they had never received a breast examination or Pap smear, respectively. In terms of self-reported health status, 17.0% rated their health status as either fair or poor, and none rated their health status as excellent. Finally, 91.5% defined their visual impairment as either moderate or severe, and 34.0% reported that their visual impairment caused difficulty in accessing medical services.

## Health-Promoting Lifestyle

Table 2 lists the HPLP-II items that had the lowest and highest scores. Of the 52 items, the highest scores were for "Find it easy to show concern, love and warmth to others" (3.08 ± 0.72), which had a frequency ranging from "often" to "routinely" on the interpersonal relationships subscale, and the lowest scores were for "Check my pulse rate when exercising" (1.67 ± 0.85), which had a frequency of "never" to "sometimes" on the physical activity subscale.

Table 3 shows the total and subscale scores for health-promoting behaviors. The subscale with the highest score was spiritual growth (2.89 ± 0.56), followed by interpersonal relationships, stress management, health responsibility, and nutrition, in that order. The subscale with the

**TABLE 1.**

## *Demographic Characteristics of Participants and Mean Differences Between Groups (N = 50)*

| Characteristic | Frequency | % | HPLP-II | | | *H*/*U*[a] | *p* Value |
|---|---|---|---|---|---|---|---|
| | | | *M* | *SD* | Median | | |
| Gender | | | | | | 195.5 | .156 |
| Male | 35 | 70.0 | 2.58 | 0.39 | 2.55 | | |
| Female | 15 | 30.0 | 2.38 | 0.29 | 2.41 | | |
| Age (years; *n* = 48) | | | | | | 3.384 | .496 |
| 20–30 | 6 | 12.5 | 2.49 | 0.17 | 2.47 | | |
| 30.1–40 | 8 | 16.7 | 2.53 | 0.57 | 2.31 | | |
| 40.1–50 | 14 | 29.2 | 2.47 | 0.37 | 2.52 | | |
| 50.1–60 | 14 | 29.2 | 2.51 | 0.26 | 2.46 | | |
| 60.1–65 | 6 | 12.5 | 2.79 | 0.48 | 2.98 | | |
| Marital status | | | | | | 0.310 | .856 |
| Married | 25 | 50.0 | 2.53 | 0.33 | 2.55 | | |
| Single/widowed | 20 | 40.0 | 2.49 | 0.39 | 2.43 | | |
| Divorced | 5 | 10.0 | 2.63 | 0.56 | 2.32 | | |
| Education | | | | | | 0.351 | .986 |
| Elementary school | 4 | 8.0 | 2.51 | 0.39 | 2.41 | | |
| Junior high school | 4 | 8.0 | 2.49 | 0.39 | 2.67 | | |
| Senior high school | 24 | 48.0 | 2.50 | 0.40 | 2.45 | | |
| Junior college | 9 | 18.0 | 2.54 | 0.33 | 2.41 | | |
| University or above | 9 | 18.0 | 2.59 | 0.41 | 2.66 | | |
| Income (US$/month) | | | | | | 1.319 | .517 |
| < 1,000 | 46 | 92.0 | 2.53 | 0.37 | 2.49 | | |
| 1,000–1,333 | 3 | 6.0 | 2.48 | 0.60 | 2.32 | | |
| > 1,333 | 1 | 2.0 | 2.22 | 0.00 | 2.22 | | |
| Exercise (*n* = 49) | | | | | | 10.651 | .005* |
| Never exercised | 13 | 26.5 | 2.24 | 0.29 | 2.27 | | |
| Stopped exercising | 10 | 20.4 | 2.63 | 0.41 | 2.63 | | |
| Currently exercising | 26 | 53.1 | 2.63 | 0.34 | 2.64 | | |
| Cigarette smoking | | | | | | 1.225 | .542 |
| Never smoked | 30 | 60.0 | 2.46 | 0.35 | 2.42 | | |
| Stopped smoking | 7 | 14.0 | 2.62 | 0.36 | 2.62 | | |
| Currently smoking | 13 | 26.0 | 2.60 | 0.43 | 2.67 | | |
| Alcohol consumption (*n* = 49) | | | | | | 0.397 | .820 |
| Never consumed | 27 | 55.1 | 2.53 | 0.42 | 2.50 | | |
| Stopped consuming | 3 | 6.1 | 2.45 | 0.64 | 2.27 | | |
| Currently consuming | 19 | 38.8 | 2.50 | 0.27 | 2.40 | | |
| Betel nut chewing | | | | | | 0.898 | .638 |
| Never chewed | 39 | 78.0 | 2.51 | 0.35 | 2.47 | | |
| Stopped chewing | 10 | 20.0 | 2.61 | 0.48 | 2.47 | | |
| Currently chewing | 1 | 2.0 | 2.27 | 0.00 | 2.27 | | |
| Breast examination[b] (*n* = 14) | | | | | | 8.000 | .186 |
| No | 3 | 21.4 | 2.56 | 0.28 | 2.72 | | |
| Yes | 11 | 78.6 | 2.40 | 0.19 | 2.41 | | |
| Pap smear[b] (*n* = 14) | | | | | | 9.000 | .659 |
| No | 2 | 14.3 | 2.48 | 0.35 | 2.48 | | |
| Yes | 12 | 85.7 | 2.42 | 0.21 | 2.42 | | |

*(continues)*

**TABLE 1.**

## *Demographic Characteristics of Participants and Mean Differences Between Groups (N = 50), Continued*

| Characteristic | Frequency | % | HPLP-II | | | $H/U^a$ | *p* Value |
|---|---|---|---|---|---|---|---|
| | | | *M* | *SD* | Median | | |
| Health status (*n* = 47) | | | | | | 3.638 | .303 |
| Poor | 2 | 4.2 | 2.35 | 0.53 | 2.35 | | |
| Fair | 6 | 12.8 | 2.33 | 0.51 | 2.24 | | |
| Good | 30 | 63.8 | 2.53 | 0.35 | 2.49 | | |
| Very good | 9 | 19.1 | 2.68 | 0.35 | 2.67 | | |
| Excellent | 0 | 0.0 | | N/A[c] | | | |
| Visual impairment (*n* = 47) | | | | | | 3.442 | .179 |
| Mild | 4 | 8.5 | 2.68 | 0.64 | 2.47 | | |
| Moderate | 8 | 17.0 | 2.32 | 0.22 | 2.31 | | |
| Severe | 35 | 74.5 | 2.55 | 0.36 | 2.58 | | |
| Medical accessibility (*n* = 47) | | | | | | 227.000 | .637 |
| No difficulty | 31 | 66.0 | 2.51 | 0.35 | 2.40 | | |
| Difficulty | 16 | 34.0 | 2.55 | 0.46 | 2.63 | | |

*Note.* HPLP-II = Health-Promoting Lifestyle Profile II.
[a]*H* indicates $\chi^2$ value for more than two independent samples in Kruskal–Wallis *H* test, and *U* indicates Mann–Whitney *U* test with two independent samples. [b]Women only. [c]Not applicable (cell frequency is zero).
*$p < .05$.

lowest score was physical activity (2.09 ± 0.67). The mean total score for the HPLP-II was 2.52 ± 0.37.

Table 1 compares the mean HPLP-II scores in terms of demographic characteristics. Mean HPLP-II scores were not significantly associated with gender, age, marital status, educational level, income, cigarette smoking, alcohol consumption, betel nut use, clinical breast examination, Pap smear examination, health status, severity of visual impairment, or difficulty accessing medical care ($p > .05$).

However, mean HPLP-II scores were significantly associated with exercise habits ($H(2) = 10.651$, $p = .005$). Table 1 shows that mean HPLP-II scores were consistently higher in VIBMTs who currently exercise regularly (median = 29.19) or who had exercised regularly (median = 28.50)

**TABLE 2.**

## *Most and Least Frequent Health Behaviors, as Measured by the Health-Promoting Lifestyle Profile II (HPLP-II; N = 50)*

| HPLP-II Item | Subscale | Mean | *SD* |
|---|---|---|---|
| Most frequent health behaviors | | | |
| 25. Find it easy to show concern, love, and warmth to others. | IR | 3.08 | 0.72 |
| 19. Spend time with close friends. | IR | 3.06 | 0.74 |
| 13. Maintain meaningful and fulfilling relationships with others. | IR | 3.04 | 0.67 |
| 42. Am aware of what is important in my life. | SG | 3.02 | 0.75 |
| 12. Believe that my life has purpose. | SG | 2.98 | 0.77 |
| 18. Look forward to the future. | SG | 2.98 | 0.85 |
| 43. Get support from a network of caring people. | IR | 2.98 | 0.69 |
| Least frequent health behaviors | | | |
| 40. Check my pulse rate when exercising. | PA | 1.67 | 0.85 |
| 44. Read labels to identify nutrients, fats, and sodium content in packaged food. | NT | 1.73 | 0.81 |
| 32. Eat 2–3 servings of milk, yogurt, or cheese each day. | NT | 1.84 | 0.85 |
| 45. Attend educational programs on personal health care. | HR | 1.88 | 0.83 |
| 46. Reach my target heart rate when exercising. | PA | 1.92 | 0.90 |
| 10. Exercise vigorously for 20 or more minutes at least three times a week (e.g., brisk walking, bicycling, aerobic dancing, or using a stair climber). | PA | 1.92 | 0.98 |
| 22. Take part in leisure-time (recreational) physical activities (e.g., swimming, dancing, or bicycling). | PA | 2.00 | 1.01 |

*Note.* IR = interpersonal relations; SG = spiritual growth; PA = physical activity; NT = nutrition; HR = health responsibility.

**TABLE 3.**
***Subscale Analysis for Health-Promoting Lifestyle Profile II (HPLP-II) Scores (N = 50)***

| Rank Order | HPLP Subscale | Item | Range | Mean | *SD* |
|---|---|---|---|---|---|
| 1 | Spiritual growth | 9 | 1.22–4.00 | 2.89 | 0.56 |
| 2 | Interpersonal relations | 9 | 1.89–3.78 | 2.79 | 0.46 |
| 3 | Stress management | 8 | 1.88–4.00 | 2.58 | 0.47 |
| 4 | Health responsibility | 9 | 1.44–3.33 | 2.43 | 0.51 |
| 5 | Nutrition | 9 | 1.33–3.44 | 2.35 | 0.39 |
| 6 | Physical activity | 8 | 1.00–3.38 | 2.09 | 0.67 |
| | HPLP-II total | 52 | 1.65–3.60 | 2.52 | 0.37 |

compared with those who had never exercised regularly (median = 13.92).

# Discussion

One objective of this study was to survey health-promoting behaviors in VIBMTs. Table 3 shows that the frequency at which the surveyed VIBMTs practiced health-promoting behaviors ranged from "sometimes" to "often." Rankings of HPLP-II scores from highest to lowest showed that the most frequently practiced behaviors were those in the spiritual growth subscale and the interpersonal relationships subscale. In terms of frequency of practice, the stress management, health responsibility, nutrition, and physical activity subscales ranked third through sixth, respectively. The frequencies of lifestyle behaviors observed in this study were consistent with recent studies of health-promoting lifestyle performed elsewhere in the world (Hurlbut et al., 2011; Kavlak et al., 2013; Lee & Chung, 2013; Lee & Loke, 2005; Lo, 2009; Padden et al., 2013; Tsai & Liu, 2012). The highest and second highest subscale scores were for spiritual growth and interpersonal relations, respectively, which is also consistent with the literature (e.g., Lee & Chung, 2013; Hurlbut et al., 2011; Padden et al., 2013; Kavlak et al., 2013).

## High Scores on Spiritual Growth and Interpersonal Relations Subscales

Items that had high scores in the spiritual growth and interpersonal relations subscales included "Am aware of what is important in my life," "Believe that my life has purpose," and "Look forward to the future." Working as a VIBMT in a massage station generally requires good physical function and stable psychosocial function. Because they successfully obtained their professional qualifications despite the grief or negative emotion caused by their vision loss, the VIBMTs targeted in this study were expected to be highly resilient. Therefore, they were also expected to have a positive life attitude or life perspective. We further hypothesized that, because of the limited occupational options for people with VIB, achieving economic independence positively affects their spiritual growth.

The second highest HPLP-II subscale score in the study population was for interpersonal relations. Items that had high scores in the interpersonal relations subscale included "Find it easy to show concern, love and warmth to others"; "Spend time with close friends"; and "Maintain meaningful and fulfilling relationship with others." These data show that, although their impairment prevents them from receiving visual cues and making eye contact, VIBMTs are able to express caring effectively through various forms of nonverbal and verbal communication. As their main task is reducing musculoskeletal discomfort, VIBMTs naturally express concern and a caring attitude toward clients and health seekers. In addition, their visual impairment makes them likely to request assistance in daily life, such as when navigating through a space or around an obstacle. Therefore, people with VIB are expected to develop skills that facilitate interactions with others.

## Low Scores on Physical Activity and Nutrition Subscales

The lowest subscale score in this study was for physical activity. Notably, VIBMTs who exercised regularly had higher mean HPLPL II scores compared with those who did not. The mean score for physical activity was lower than those reported in both Padden et al. (2013) and Hurlbut et al. (2011) but were slightly higher than those reported in both Kavlak et al. (2013) and Lee and Chung (2013). In the physical activity subscale, the items with the four lowest scores were "Check my pulse rate when exercising," "Reach my target heart rate when exercising," "Exercise vigorously for 20 or more minutes at least three times a week (e.g., brisk walking, bicycling, aerobic dancing, using a stair climber)," and "Take part in leisure-time (recreational) physical activities (e.g., swimming, dancing, bicycling)." Scores for these items were probably low because of their interrelationships with other items. For example, subjects with low exercise frequency would be expected to have low scores for "Reach my target heart rate when exercising." The low scores

on the physical activity subscales of the HPLP-II are probably attributable to the limitations that are faced by people with visual impairments. For example, visual impairment often limits access to exercise facilities and discourages unaided indoor and outdoor exercises. Because of these limitations on the ability to exercise, volunteers must assist VIBs to exercise in home settings, in the workplace, and in community fitness centers. Because visual impairment is probably the main factor limiting physical activity, a safe physical environment and a motivational strategy are needed to promote physical activity in VIBMTs.

Visual impairment limits not only the ability to exercise but also the ability to access food, read food labels, and prepare food. Thus, nutrition is another important issue for visually impaired populations. The participants earned low scores for "Read labels to identify nutrients, fats, and sodium content in packaged food" and for "Eat 2–3 servings of milk, yogurt, or cheese each day." These results indicate that VIMBTs benefit from education on daily nutrition intake and on identifying, selecting, and preparing healthy foods such as fresh produce. Another concern is nutrition labels. Food manufacturers usually print nutritional information on food packages in small font sizes, which people with VIB have difficulty reading. These problems may be reduced by requiring food manufacturers to use a tactile writing system such as braille to provide nutritional information on food packages or to use QR codes that may be easily scanned and read by a text-to-speech system.

## Gender, Exercise, Cigarette Smoking, and Lifestyle Score

Previous studies have reported that men who exercise regularly have a better health status than women who exercise regularly. Similarly, the men in this study had significantly higher scores on the stress management and physical activity subscales of the HPLP-II than the women, which is consistent with the findings of Lee and Chung (2013) and Al-Kandari and Vidal (2007). However, in some studies, for example, Can et al. (2008), the scores on these HPLP-II subscales were higher in women than in men. The discordant results reported in the literature may be explained not only by gender differences in anatomy and physiology but also by cultural differences in gender roles. For example, ethnically Chinese women are traditionally expected to perform household chores and to raise children, which limit their time and capability to engage in stress-reducing recreational activities or physical activities.

The HPLP-II results obtained in this study were generally congruent with those reported in previous surveys of populations with normal vision. Notably, however, the VIBMTs in this study had lower overall scores for lifestyle behavior in comparison with people who have normal vision. Given the well-established effects of healthy lifestyle practices on individual health, an appropriate method is needed to deliver education on the benefits of healthy lifestyle practices to VIBMTs.

## Limitations

This study is affected by several limitations. First, because of budget limitations and the difficulties faced in accessing the target population, this cross-sectional study analyzed a small sample of individuals in a local area, which limits the generalizability of the findings. For expanded applicability, further studies on larger samples that have been selected randomly from multiple locations are needed. Furthermore, longitudinal studies of VIBMTs are necessary to monitor fluctuations in the frequency of lifestyle behaviors to elucidate the causes of change in health-promoting behaviors over time.

## Conclusion and Implications

This preliminary study is the first to specifically describe the health-promoting lifestyle behaviors of VIBMTs. Healthcare providers may use the results of this study to improve the healthcare that is available to populations with VIB elsewhere in Taiwan and in other parts of the world. In addition, the high scores on the spiritual growth and interpersonal relationships subscales and the low scores on the physical activity and nutrition subscales indicate the need to develop volunteer assistant programs to increase physical activity in home settings and in the workplace as well as the need to establish exercise facilities for disabled populations in local communities. Finally, the survey data indicate that educational programs for VIBMTs should target the improvement of personal nutrition and the increased consumption of fresh produce and other healthy foods and that food manufacturers should be required to provide VIB-accessible nutritional information on food packaging in a tactile writing system such as braille or other formats.

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# References

Al-Kandari, F., & Vidal, V. L. (2007). Correlation of the health-promoting lifestyle, enrollment level, and academic performance of college of nursing students in Kuwait. *Nursing and Health Sciences*, *9*(2), 112–119. https://doi.org/10.1111/j.1442-2018.2007.00311.x

American Heart Association. (2016). *Healthy living*. Retrieved from http://www.heart.org/HEARTORG/HealthyLiving/Healthy-Living_UCM_001078_SubHomePage.jsp

Can, G., Ozdilli, K., Erol, O., Unsar, S., Tulek, Z., Savaser, S., … Durna, Z. (2008). Comparison of the health-promoting lifestyles of nursing and non-nursing students in Istanbul, Turkey. *Nursing and Health Sciences*, *10*(4), 273–280. https://doi.org/10.1111/j.1442-2018.2008.00405.x

Chen, C. W. (2011). *Draft law about visually impaired persons engaged in medical massage—With British visually impaired physiotherapists as a example* (Unpublished master's thesis). National Chengchi University, Taipei City, Taiwan, ROC. (Original work published in Chinese)

Eshah, N. F. (2013). Predischarge education improves adherence to a healthy lifestyle among Jordanian patients with acute coronary syndrome. *Nursing and Health Sciences*, *15*(3), 273–279. https://doi.org/10.1111/nhs.12018

Hurlbut, J. M., Robbins, L. K., & Hoke, M. M. (2011). Correlations between spirituality and health-promoting behaviors among sheltered homeless women. *Journal of Community Health Nursing*, *28*(2), 81–91. https://doi.org/10.1080/07370016.2011.564064

Kavlak, O., Atan, S. U., Sirin, A., Sen, E., Guneri, S. E., & Dag, H. Y. (2013). Pregnant Turkish women with low income: Their anxiety, health-promoting lifestyles, and related factors. *International Journal of Nursing Practice*, *19*(5), 507–515. https://doi.org/10.1111/ijn.12093

Khalil, K. (2014). *Factors affecting health promotion lifestyle behaviors among Arab American women* (Unpublished doctoral dissertation). University of San Diego, CA, USA.

Kirag, N., & Ocaktan, E. M. (2013). Analysis of health promoting lifestyle behaviors and associated factors among nurses at a university hospital in Turkey. *Saudi Medical Journal*, *34*(10), 1062–1067.

Lee, R. L., & Loke, A. J. (2005). Health-promoting behaviors and psychosocial well-being of university students in Hong Kong. *Public Health Nursing*, *22*(3), 209–220. https://doi.org/10.1111/j.0737-1209.2005.220304.x

Lee, S. J., & Chung, C. (2013). Comparisons of health conditions of immigrant and domestic women in Korea and China using propensity score matching. *Health Care for Women International*, *34*(11), 989–1004. https://doi.org/10.1080/07399332.2012.741636

Li, Y. C. (2001). A study of occupation of individuals with visual impairments. *Bulletin of Special Education and Rehabilitation*, *9*, 51–69.

Lo, M. H. (2009). Health-promoting behavior and quality of life among caregivers and non-caregivers in Taiwan: A comparative study. *Journal of Advanced Nursing*, *65*(8), 1695–1704. https://doi.org/10.1111/j.1365-2648.2009.05032.x

Ministry of Health and Welfare, Taiwan, ROC. (2017). *2017 statistics of the disable population in Taiwan*. Retrieved from http://www.mohw.gov.tw/cht/DOS/Statistic.aspx?f_list_no=312 and fod_list_no=4198 (Original work published in Chinese)

Office of Disease Prevention and Health Promotion. (2014). *Determinants of health*. Retrieved from https://www.healthypeople.gov/2020/about/foundation-health-measures/Determinants-of-Health

Padden, D. L., Connors, R. A., Posey, S. M., Ricciardi, R., & Agazio, J. G. (2013). Factors influencing a health promoting lifestyle in spouses of active duty military. *Health Care for Women International*, *34*(8), 674–693. https://doi.org/10.1080/07399332.2012.736572

Prüss-Üstün, A., & Corvalán, C. (2006). *Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease*. Geneva, Switzerland: World Health Organization.

Tang, Y. Y. (2000). *Health promotion behaviors among family caregivers of stroke patients in Taiwan* (Unpublished doctoral dissertation). University of Illinois at Chicago, IL, USA.

Tang, Y. Y., & Chen, S. P. (2002). Health promotion behaviors in Chinese family caregivers of patients with stroke. *Health Promotion International*, *17*(4), 329–339. https://doi.org/10.1093/heapro/17.4.329

Tsai, Y. C., & Liu, C. H. (2012). Factors and symptoms associated with work stress and health-promoting lifestyles among hospital staff: A pilot study in Taiwan. *BMC Health Services Research*, *12*, 199. https://doi.org/10.1186/1472-6963-12-199

Walker, S. N., & Hill-Polerecky, D. (1996). *Psychometric evaluation of the Health-Promoting Lifestyle Profile II* (Unpublished manuscript). University of Nebraska Medical Center, Medical Center, Omaha, USA.

Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The health-promoting lifestyle profile: Development and psychometric characteristics. *Nursing Research*, *36*(2), 76–81. https://doi.org/10.1097/00006199-198703000-00002

World Health Organization. (2013). *How to use the ICF: A practical manual for using the international classification of functioning, disability and health (ICF)*. Geneva, Switzerland: Author.

World Health Organization. (2014). *Visual impairment and blindness*. Retrieved from http://www.who.int/mediacentre/factsheets/fs282/en/