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A Randomised Controlled Trial to Evaluate the Administration of the Health Improvement Card as a Health Promotion Tool: A Physiotherapist-led Community-based Initiative

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ABSTRACT

This study describes a physiotherapy-led health promotion project in Shanghai. A randominsed controlled trial was conducted to evaluate the administration of the Health Improvement Card (HIC) on lifestyle practices and biometric variables in community-dwelling Chinese participants.

Adults living in Shanghai were randomly assigned to either the HIC-intervention or control group. Measurements / assessments were conducted at baseline and three-month follow-up. Supervised physiotherapy students administered the HIC and four standardised questionnaires related to health and wellbeing. Both groups received a health promotion education pamphlet. Based on participants' HIC biometric and lifestyle scores, students prescribed lifestyle and exercise advice to the HIC-intervention group.

This is the first study to demonstrate that HIC-informed health promotion education can improve people's lifestyle practices, thereby, objective biometric variables.

ATTACHMENTS

HIC_Chinese.docx HIC_English.docx

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KEYWORDS

Health Improvement Card, Chinese community-dwelling adults, physiotherapy-led health education strategy

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1 Adults between 50-90 years of age were recruited through information sessions, posters and pamphlets provided by 3 community centres affiliated with a university involved in this study

2 Interested subjects were screened for inclusion and exclusion criteria.

2.1 Inclusion criteria: inhabitants of Shanghai, no barrier to communication, stable cardiovascular and respiratory conditions at the time of induction

2.2 Exclusion criteria: known mental illness/dementia/communication difficulty, heart disease (cardiac dysrhythmia, heart failure, post-infarction angina, history of cardiogenic shock), liver and/or kidney dysfunction, malignancy.

3 Eligible participants were randomly allocated to either a control group or an HIC-intervention group.

3.1 Group randomisation was achieved by computer-generated sequencing.

3.2 The randomization list was concealed in a sequentially numbered, sealed, opaque envelope, prepared by an independent physiotherapist not involved in subject recruitment.

3.3 Each new subject was assigned a sequential number and the corresponding envelope determined their group allocation.

4 Baseline measurements

4.1 demographic data included gender, age, measured height, weight, and waist circumference (WC);

4.2 biometric data included random blood sugar (RBS), total cholesterol (TC), systolic and diastolic blood pressures (SBP and DBP). All the biometric tests were conducted by the same qualified nurse

4.3 General Anxiety Disorders-7 (GAD-7) (Validated Chinese version)- for assessment of anxiety level

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4.4 Patient Health Questionnaire-9,(PHQ-9) (Validated Chinese version)- for assessment of depression

4.5 Pittsburgh Sleep Quality Index (PSQI) (Validated Chinese version) - for assessment of sleep quality

4.6 The Medical Outcome Study Short Form 36 (SF-36) (Chinese version)

4.7 All participants also completed the Chinese HIC with assistance from a physiotherapy student

5 HIC- intervention

5.1 Each participant was seen by a physiotherapy student under the supervision of a physiotherapy educator, and provided with advice diet, smoking cessation strategies, and reduction of alcohol consumption as appropriate and based on information recorded in the participant's HIC.

5.2 An individual specific exercise program was also prescribed.

5.3 Participants were invited to return to see the same physiotherapy student monthly for follow up and modification of the action plan, as indicated.

5.4 All participants in this group were asked to complete a self-reported diary recording daily exercise duration, vegetable and fruit intake, alcohol consumption and sleep quality.

6 Control group - Participants in the Control Group were given a handbook on health education, with standard information on the benefits of consuming a healthy diet, engaging in optimal physical activity for health, weight control, healthy sleeping habits, smoking cessation, and moderate alcohol consumption.

7 Post-intervention measurements. All participants from both groups were invited back to the community centre for reassessment of biometer parameters, 3 months after their baseline assessment. Biometric measurements were undertaken by nurses who were blinded to the patient groups.

8 Equipment and reliability

8.1 A Glucometer (ACCU- Check performa, SN79527019132, Germany) was used for measurement of blood sugar level;

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8.2 A “Total Cholesterol Tester” (TCT) (Bene Check, BKM 13-1, Taiwan) was used for measurement of total blood cholesterol level;

8.3 Blood pressures were measured using a sphygmomanometer (Yutu, XJ11D, China).

8.4 Reliability of the Glucometer and TCT were undertaken by comparing samples taken by the Glucometer and TCT from the right middle finger and with blood samples drawn from the right arm of 10 persons with normal health. Blood samples were then sent to the laboratory for analysis. Arm and finger sample data were compared

9 Feedback on participating students’ experience of involvement in a community health education project was solicited via a questionnaire.

10 Statistical analysis

Statistical analyses were performed using the IBM SPSS Statistics for Windows, Version 21.0 (Armonk, NY: IBM Corp). Summary statistics of the demographic characteristics and other outcome variables were computed; means and standard deviations for continuous data and percentage for categorical data calculated. Differences between baseline and three-month follow-up for outcome score variables were computed as "improvement" scores. Independent t tests were used to compare the improvemet cores between the Intervention group and Control group, provided the improvement scores met the statistical assumption of approximate normality (Rasch et al, 2007) and the 95% confidence intervals were calculated. Mean differences between scores over time for each individual were compared with paired t-tests.The changes in 'diet', 'physical activity', and both 'diet and physical activity' practices from high to low-risk level were analyzed with McNemar tests. Where appropriate, alpha was set at 0.05.

11 Sample size estimation

The sample size estimation was based on a conservative hypothesized effect size index of 0.4 in testing the mean difference of BMI change scores between the Intervention group and Control group with two-tailed independent t test using the G*Power 3.1.9.4 (Universität Kiel, Germany), with a level of significance of 0.05 and statistical power of 0.8. A total of 200 participants were required with 100 participants in each of the Intervention and Control groups.

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