

Health Promotion Intervention through Smartphone LINE Application for Increasing Physical Activity and Healthy Eating Behavior among Overweight Women in Urban Community in Bangkok, Thailand

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Background: Lack of physical activity and unhealthy eating behavior are considered to be global issues and lead the risk of non-communicable diseases. The previous studies indicated that mobile applications have the potential for delivering health information to promote health behaviors.

Objective: To evaluate the effect of health promotion intervention through smartphone LINE application to increase knowledge, perception, and practice of physical activity and healthy eating behavior among overweight women in urban community.

Materials and Methods: A quasi-experimental study was conducted among 100 overweight women with a BMI between 25 and 29.9 kg/m², and aged between 35 and 65 years living in urban community in Bangkok between October 2017 and April 2018. Participants were selected to the intervention group and control group. The intervention program consisted of group education, self-monitoring, individual counseling, and smartphone LINE application group chatting about physical activity and healthy eating behavior. Data were collected at baseline and after the intervention ended at 24 weeks. Chi-square, paired samples t-test, and independent t-test were used to find the effect of the program.

Results: At the end of 6-month, the results indicated that the intervention group had significantly increased in mean of knowledge ($p < 0.001$) and perception ($p < 0.001$) of physical activity and healthy eating behavior, food frequency scores ($p < 0.001$), MET-physical activity ($p = 0.007$) and decreased in mean of time spent sitting ($p < 0.001$), body weight ($p = 0.043$), and BMI ($p < 0.001$) when compared to the control group.

Conclusion: The use of LINE application was found effective to deliver health information, share and exchange their experienced, motivate, and monitor their physical activity and healthy eating behavior. This app can help the participants to increase the physical activity and healthy eating behavior, and to decrease their sedentary behavior resulting in weight loss. It is useful for healthcare providers to promote the health behaviors.

Keywords: Smartphone; LINE application; Physical activity; Healthy eating behavior; Urban community

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In recent years, overweight and obesity have become a global epidemic and increase the risk of non-communicable diseases (NCDs) around the world. Lack of physical activity (PA) and unhealthy eating behavior are the common cause factors. These factors are the leading global risk to have an

increasingly negative impact on rates of obesity, NCDs, and overall health⁽¹⁾. The population-level of PA is still declining. On the other hand, sedentary behavior is increasing in low- and middle-income countries including Thailand⁽²⁾. The Lancet Global Health reported that, in 2016, 1.4 billion or 28% of the global people have insufficient PA⁽³⁾. In Thailand, the survey data in 2015 reported that 28.4% of adults aged 18 years and above, lacked physically activity⁽⁴⁾. In addition to the developing countries, the levels of the physical inactivity and sedentary behavior have been increased as the results of urbanization lifestyle such as modern transportation and the use of technology⁽¹⁾. The previous study showed the barriers of PA included lack of PA promoters, effective actions, and knowledge⁽⁵⁾. The World Health Organization (WHO) has set up a new global action plan for helping every country increase PA by 10% by 2025 and 15% by 2030⁽³⁾.

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Unhealthy eating behavior is one important factor of the higher risk of diet-related diseases, including obesity, type 2 diabetes, cardiovascular diseases (CVD), certain cancers, and more deaths than any other risk factors across the world⁽⁶⁾. As a result of rapid urbanization and changing lifestyles, people have an excessive consumption of fats, sugars, and salt and sodium, and a low consumption of fruit and vegetables⁽⁷⁾. Healthy eating should be balanced between energy intake and energy expenditure. The previous studies indicated that nutrition education can change dietary behavior and dietary knowledge⁽⁸⁾.

In recent years, the number of smartphone users increased to 2.71 billion and estimated that smartphone users will reach 2.87 billion in 2020. Moreover, there are 2.95 billion people that are using social media and this will increase to 3.43 billion by 2023⁽⁹⁾. The previous studies suggested that public health professionals have been making efforts to prevent NCDs by using smartphone and various social media such as Twitter and Facebook to deliver health information⁽¹⁰⁾. In Thailand, LINE application is the most popular mobile application and has more than 10 million active users⁽¹¹⁾. This application is an Instant Messaging (IM) apps like WhatsApp, WeChat, and Facebook Messenger. It is free to download and easy to use once connected to the Internet. The feature offers free messages and text, stickers, photo, and video clips, free voice call and video calls, and group chats anywhere and anytime⁽¹²⁾. However, a few studies have used smartphone LINE application to promote health. Therefore, the present study aimed to evaluate the effects of health promotion intervention program through smartphone LINE Application for increasing knowledge, perception, and practice of PA and healthy eating behavior among overweight women in urban community.

Materials and Methods

Study design

A quasi-experimental design measured the outcomes at baseline and six months post-intervention. The study was conducted between October 2017 and April 2018 at the Public Health Center located in one of urban community in Bangkok, Thailand.

Participants and sample size

The present study recruited overweight women from the community and Public Health Center by using flyers, posters, and brochures. The sample size was determined based on the previous study that compared the effectiveness of mobile health coaching

for weight loss⁽¹³⁾. The present study used G*Power software to compute statistical power analyses. The effect size was 0.63 with an alpha level of 0.05, and a power of 0.80. The required total sample size was 82. Additional participants were added to account for an attrition of 20%. Therefore, the sample size in the present study was 100. Those were selected into intervention group and control group with 50 participants per group.

Inclusion criteria and exclusion criteria

Overweight women aged 35 to 65 years with body mass index (BMI) between 25 and 29.9 kg/m², that owned a smartphone (iOS or Android) and had access to the internet were recruited. They were able to use LINE application and did no exercise or moderate exercise less than two times per week and less than 30 minutes per time. Volunteers that had health conditions that would restrict moderate exercise, history of myocardial infarction, angina, coronary bypass surgery, congestive heart failure, percutaneous transluminal coronary angioplasty, stroke, and on medication were excluded. Overweight woman who participated in another exercise program and plan to leave within six months were excluded as well.

Outcomes measurement

After the researcher developed questionnaires from several literature reviews, item-objective congruence index (IOC) was used to calculate the degree of agreement. The Cronbach's alpha coefficient was used to test the validity of the questionnaire. The primary outcomes were knowledge, perception, and practice of PA and healthy eating behavior. The secondary outcomes were body weight and BMI. Knowledge of PA and healthy eating behavior were measured using the questionnaire that adapted from the Health Education Division, Ministry of Public Health. The Cronbach's alpha coefficient of those were 0.742 and 0.760 respectively. The Cronbach's alpha coefficient of food frequency questionnaire was 0.841. Body weight was measured using the same digital weighing apparatus. BMI was calculated using overweight women's weight in kilograms divided by the square of height in meters (kg/m²). PA was measured using the short-term 7-day self-administered of the International Physical Activity Questionnaire (IPAQ). Total PA in minutes per week was categorized to determine the proportion of each participant that met the PA guideline of a minimum of 30 minutes of moderate-intensity PA on most, and preferably every day. Metabolic equivalent (MET)

minutes per week was calculated as duration of activity per day times frequency per week times MET intensity. This number was summed across activity of total activity from all reported activities per week. The Cronbach's alpha was 0.81.

Intervention

Before starting an intervention program, 100 overweight women completed the questionnaire and baseline measurement by measuring height, weight, and BMI. Fifty participants in the intervention group received health promotion intervention program. After finishing the intervention at six months, they completed the same questionnaire, and the measurements were taken again. In the control group, the participants did not receive any health intervention from the researcher. The intervention consisted of:

(i) The face-to-face education group: Health education group performed weekly for four weeks initially. Health education included PA knowledge such as daily work, leisure-time, and household activity, and healthy eating knowledge such as lower fat, sugar, salt, calorie food intake and increased fruit and vegetable consumption. In the fifth to eighth week, health coaching with Motivational Interviewing technique (MI) based on the Stage of Change Model was performed for motivating and encouraging the participants to increase the PA and healthy eating behavior.

(ii) LINE group communication: In the first week, the researcher created a new LINE group and invited the participants to be member. LINE group was set up for chatting, sending-receiving text messages, stickers, video clips, and photos, sharing, monitoring, motivating, and reminding the participants to increase the PA and healthy eating behavior. Moreover, the researcher created Note and Album for LINE group to keep important health information that helped all participants to access the health information 24-hours-a-day, depending on their needs.

(iii) Self-monitoring and tailored feedback: Participants were asked to self-monitor body weight, food and beverage intake, and daily PA every Friday. Using a smartphone camera to take the picture of food and beverage intake and daily PA, this was sent to the researcher through LINE group. After researcher received the data, tailored feedback was sent to the individual participant.

(iv) Individual free call coaching by LINE group: From the ninth to the twenty-fourth week, the participants received eight individual free voice call coaching, twice a month, which lasted between 15

and 30 minutes each, from the researcher. Free call coaching took place anywhere or anytime depending on the participants' needs. These parts focused on the progress and barriers of PA and healthy eating, including motivation, encouragement, reminder, and problem solving for helping the participants to increase PA and healthy eating.

Ethics consideration

The present study was approved by the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (COA No. 190/2017). All participants provided informed, written consents before starting the intervention.

Statistical analysis

The data were analyzed using IBM SPSS Statistics, version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to describe participants' socio-demographic characteristics. Pearson's chi-squares test and independent t-tests were used to compare the differences between the baseline data in both groups. A paired samples t-test was used to determine significant differences before and after within group and an independent t-test for testing the differences between groups. The significant level was set at less than 0.05 with a 95% confidence interval.

Results

Characteristics of participants

One hundred overweight women enrolled at baseline and participated until finished at 6-month. The mean age was 53.02 ± 9.19 years, with an age range of 35 to 65 years. The mean body weight was 67.60 ± 6.87 with an average BMI of 27.78 ± 1.73 kg/m². Most of them were married and had secondary school education. The characteristics were not statistically significant different between the two groups ($p > 0.05$). The characteristics of the overweight women are shown in Table 1.

Changes in knowledge, perception, and practice of PA and healthy eating behavior

The intervention group received the program combined with group education, self-monitoring, group chatting, and individual counseling via smartphone LINE application. At baseline, mean scores of knowledge of PA and healthy eating behavior were low level at less than 12 points, and were not significant difference between groups

Table 1. Comparison of baseline characteristics between two groups

Characteristics	Intervention (n=50); n (%)	Control (n=50); n (%)	p-value	Characteristics	Intervention (n=50); n (%)	Control (n=50); n (%)	p-value
Age (years); mean±SD	53.72±8.734	52.32±9.650	0.449 ^b	Income; mean±SD	11,608±9,052.02	12,206±8,490.07	0.918 ^c
Marital status			0.479 ^a	Alcohol drinking			0.603 ^a
Single	8 (16.0)	11 (22.0)		No	42 (84.0)	40 (80.0)	
Married	30 (60.0)	24 (48.0)		Yes	8 (16.0)	10 (20.0)	
Divorced/separated	12 (24.0)	15 (30.0)		Menstruation			0.420 ^a
Educational level			0.950 ^a	No	30 (60.0)	26 (52.0)	
Primary school	18 (36.0)	15 (30.0)		Yes	20 (40.0)	24 (48.0)	
Secondary school	18 (36.0)	19 (38.0)		Body weight; mean±SD	68.53±7.64	66.68±6.11	0.186 ^b
Bachelor degree	14 (28.0)	16 (32.0)		BMI; mean±SD	27.83±1.78	27.66±1.73	0.612 ^b
Occupation			0.246 ^a				
Housewife	12 (24.0)	6 (12.0)					
General job	19 (38.0)	16 (32.0)					
Merchant	10 (20.0)	13 (26.0)					
Others	9 (18.0)	15 (30.0)					

SD=standard deviation; BMI=body mass index

^a Chi square, ^b Independent t-test, ^c Mann-Whitney U test**Table 2.** Comparison mean of knowledge and perception of physical activity and healthy eating behavior, food frequency score, physical activity MET-minutes per week, and sitting time (minutes/ day) between intervention group and control group at baseline and 6-month (n=100)

Variables	Intervention group; mean±SD	Control group; mean±SD	Mean difference	95% CI	p-value
Knowledge					
Baseline	11.42±5.01	10.78±4.67	0.64	-1.28 to 2.56	0.511
6-month	16.46±1.74	10.94±3.73	5.52	4.36 to 6.67	<0.001
Perception					
Baseline	48.20±6.90	50.70±6.87	-2.50	-5.23 to 0.23	0.073
6-month	58.76±5.08	51.70±3.73	7.06	4.71 to 9.40	<0.001
Food frequency score					
Baseline	39.96±7.12	38.06±6.92	1.90	-0.88 to 4.68	0.170
6-month	43.84±5.74	37.98±6.78	5.86	3.36 to 8.36	<0.001
Physical activity MET-minutes/week					
Baseline	298.65±269.58	293.70±234.67	4.95	-95.35 to 105.25	0.922
6-month	498.74±226.66	236.16±119.18	262.58	190.71 to 334.44	<0.001
Sitting time (minute/day)					
Baseline	306.00±119.54	286.40±104.46	19.60	-24.95 to 64.15	0.385
6-month	186.00±87.24	295.20±99.55	-109.2	-146.35 to -72.04	<0.001
Body weight (kg)					
Baseline	68.53±7.64	66.68±6.11	1.84	-0.90 to 4.59	0.186
6-month	65.92±7.57	68.31±5.95	-2.80	-5.50 to -0.09	0.043
BMI					
Baseline	27.84±1.78	27.67±1.73	-0.17	-0.52 to 0.55	0.612
6-month	26.99±1.78	28.49±1.72	-1.49	-1.84 to -0.43	<0.001

SD=standard deviation; CI=confidence interval; MET=metabolic equivalent; BMI=body mass index

Significant at p<0.05

Table 3. Pairwise of the different measurements mean score of knowledge and perception of physical activity and healthy eating behavior, food frequency score, physical activity MET-minute per week, and sitting time within intervention group at baseline and 6-month (n=50)

Variables	Baseline; mean±SD	6-month; mean±SD	Mean difference	95% CI	p-value
Knowledge	11.42±5.01	16.46±1.74	-5.04	-6.23 to -3.84	<0.001
Perception	48.20±6.90	58.76±5.08	-10.56	-11.94 to -9.17	<0.001
Food frequency score	39.96±7.12	43.84±5.74	-3.88	-5.59 to -2.16	<0.001
Physical activity MET-minutes/week	298.65±269.58	498.74±226.66	262.58	190.71 to 334.44	<0.001
Sitting time (minute/day)	306.00±119.54	186.00±87.24	120.00	96.57 to 143.42	<0.001
Body weight (kg)	68.53±7.64	65.92±7.57	2.60	2.30 to 2.89	<0.001
BMI	27.84±1.78	26.99±1.78	0.84	0.74 to 0.93	<0.001

SD=standard deviation; CI=confidence interval; MET=metabolic equivalent; BMI=body mass index

Significant at p<0.05

Table 4. Pairwise of the different measurements mean score of knowledge and perception of physical activity and healthy eating behavior, food frequency score, physical activity MET-minute per week, and sitting time within control group at baseline and 6-month (n=50)

Variables	Baseline; mean±SD	6-month; mean±SD	Mean difference	95% CI	p-value
Knowledge	10.78±4.67	10.94±3.73	-0.16	-0.73 to 0.41	0.581
Perception	50.70±6.87	51.70±3.73	-1.00	-2.45 to 0.45	0.173
Food frequency score	38.06±6.92	37.98±6.78	0.08	-.41 to 0.57	0.744
Physical activity MET-minutes/week	293.70±234.67	236.16±119.18	57.54	-9.21 to 124.29	0.090
Sitting time (minute/day)	286.40±104.46	295.20±99.55	-8.80	-20.06 to 2.46	0.120
Body weight (kg)	66.68±6.11	68.73±5.96	-2.04	-2.27 to -1.81	<0.001
BMI	27.67±1.73	27.83±1.71	-0.12	-0.21 to -0.03	0.009

SD=standard deviation; CI=confidence interval; MET=metabolic equivalent; BMI=body mass index

Significant at p<0.05

(p=0.511 and 0.073, respectively). Mean score of perception of PA and healthy eating behavior were moderate level, with a score between 42.5 and 56.3. Mean score of food frequency, PA MET-minutes per week, and time spent sitting as minute per day, were not significant difference as well (p>0.05). After finishing the intervention at 6-month, the mean scores of knowledge and perception of PA and healthy eating behavior in the intervention group were increased significantly (p<0.001 and <0.001, respectively) (Table 2) and the difference within the groups showed statistical significant difference between baseline and 6-month (Table 3). Meanwhile food frequency score, PA MET-minutes per week, and time spent sitting were significant different between the groups (p<0.001, 0.007, and <0.001, respectively) and within the intervention group (p<0.001). In the control group after six months, the mean scores of knowledge and perception of PA and healthy eating behavior, food frequency score, PA MET-minutes per week, and time spent sitting were not significant different between baseline and 6-month (Table 4).

Changes in body weight and BMI

At baseline, the mean of body weight and BMI between the intervention and the control group were not significant different (p>0.05). After the intervention, the mean body weight and BMI in the intervention group were decreased with significant difference between groups (p=0.043 and <0.001, respectively) (Table 2) and within group (p<0.001) (Table 3). In the control group it was found that after 6-month, the mean body weight and BMI were significant different within group (p<0.001 and 0.009, respectively) (Table 4).

Discussion

The present study results showed the positive outcomes of health promotion program through smartphone LINE application. After 6-month, 50 overweight women in the intervention group exhibited an increase in the knowledge and perception of PA and healthy eating behavior, food frequency score, and PA calculated with MET-minutes per week, as well as a decrease in time spent sitting, body weight,

and BMI. On the other hand, the control group did not show an increase in any outcomes, except time spent sitting, body weight, and BMI.

The present study indicated that after 6-month, overweight women in the intervention group had significant increased in mean of knowledge, perception toward PA, healthy eating behavior, and food frequency score comparing between the two groups and within the group as the results of health promotion program consisting of PA and healthy eating behavior. The face-to-face education group was combined with LINE application as a tool to deliver and retain the important health information. This application enabled to send-receive text messages, photos, stickers, video clips, and offered chat room between researcher and the participants⁽¹⁴⁾. Chat room allowed users to communicate in real time to share and exchange their knowledge and experiences⁽¹⁴⁾. The latest features of LINE apps are Keep, Note, and Album that permanently saved their favorite chats, messages, photo, word document, and Excel files⁽¹⁵⁾. Face-to-face education group got more benefits than single individual because of the variety of backgrounds and experiences of participants⁽¹⁶⁾. As a result, overweight women received more knowledge and perception about PA and healthy eating. These results are consistent with the previous study that used the digital media-based education intervention including mail, Internet, and telephone platforms. After six months, the results showed a significant increase in mean score of knowledge and attitude of PA and healthy eating between groups⁽¹⁷⁾. The result contrast with the recent study that used Facebook to delivery nutrition and exercise education messages. After 4-month, there was no significant difference in knowledge and attitude between groups⁽¹⁸⁾.

The others primary outcomes were increased PA and decreased in time spent sitting. The measurement of PA used IPAQ, a short form 7-day self-administered questionnaire. The instrument measured the total PA in minutes per week of walking, moderate intensity activity, and vigorous-intensity activity. The present study found that the intervention group increased in METs 151.86 minutes per week and reduced time spent sitting 120 minutes per day. The program provided the knowledge of PA including how to increase and monitor their PA. Motivation and encouragement was done by sending text messages, sticker, and chatting through LINE application combined with self-monitoring of PA. A recent study has shown that self-monitoring was an effective method for increasing PA⁽¹⁹⁾. Consistent with the

previous study, using internet and mobile phone to delivery PA program significantly increased the level of moderate PA⁽²⁰⁾. However, this study is in contrast with a previous study that indicated that Facebook-based online social support did not increase PA in female undergraduate students⁽²¹⁾.

In terms of secondary outcomes, the results revealed that after 6-month, the overweight women in the intervention group had a mean weight loss of 2.80 kg (95% CI -5.50 to -0.09) or 3.8% when compared to the control group. There was a significant difference on weight loss within the group and between the groups. The results are consistent with the recent study that used Facebook and text messaging to deliver a weight loss program to college students, which lasted eight weeks. There was statistically significant difference on weight changes among groups ($p < 0.05$)⁽²²⁾. Similarly, the study of Svetkey et al (2015) indicated that smartphone weight loss program significantly decreased the mean of weigh by 1.92 kg ($p = 0.003$) when compared with the control group at 6-month⁽²³⁾. In contrast, a prior study that used smartphone application for weight loss among overweight patients, the weight change was not different between groups after finishing the intervention at 6-month⁽²⁴⁾. The present study showed the mean weight loss of overweight women in the intervention group was 2.60 kg or 3.8% of the initial weight. In contrast, the control group had an increase of weight of 2.04% (2.05 kg) of their initial weight. With respect to considerations, it is important to note that researcher expected the results of the intervention program to decrease more than 5% of the initial weight after finishing the intervention at 6-month. During the intervention between October 2017 and April 2018, in Thailand, there were three important Thai festivals. The first is New Year in January, the second, Chinese New Year in February; and the third, traditional Thai New Year or Songkran festival in April. During that period, there were long public holiday where most Thai people returned to their hometown for cerebrating with their families and friends. They enjoyed special party with variety of foods, a more carefree lifestyle, and less activity. These may be the cause of excessive food consumption and the less than 5% lost weight in the intervention group. On the other hand, the control group had increased in body weight. These situations are similar with the study of the New England Journal of Medicine (NEJM) indicating that the participants from three countries, United States, Germany, and Japan had significant increase in body weight on their national holidays

compared to pre-holiday weight⁽²⁵⁾. A previous study showed an average body weight increased from 0.4 to 0.8 kg over the holiday period in the United States⁽²⁶⁾. The present study showed the control group had an increased in body weight at 6-month. Moreover, they lacked PA and healthy eating knowledge at baseline. They did not know how to increase PA and what healthy foods look like. It is, therefore, possible that they were not concerned about their own weight, so they did not change their health behavior.

The present study performed individual counseling by using a free voice call of the smartphone LINE group. Counseling sessions were focused on subjects of PA and healthy eating. The main barriers for PA were lack of time to exercise, lack of motivation, lack of knowledge about how to exercise, and lack of access to facilities. The previous study indicated that the most frequently reported barrier of PA in developed countries is lack of time⁽²⁷⁾. In contrast with that study, in Pelotas, Brazil in 2003, it was found that lack of money was the most important barrier of PA with the secondary feeling too tired, and the third being lack of company. Lack of time was the last⁽²⁸⁾. In the present study, overweight women lived in an urban community. Most of them work outside their home. Moreover, they had low income when compared to the general population. After they finished their work and went home, they had many things to do including preparing food for the family, washing their clothes, and cleaning their house. On the other hand, they had time to watch television, access internet, and talk to friends. The main barriers of healthy eating behavior in the present study were lack of knowledge and lack of time to prepare food. They did not know what food is healthy. Similarly, a previous study found that lack of nutritional knowledge is the common barrier of healthy eating behavior⁽²⁹⁾. In contrast with a previous study indicating that the participants lacked cooking skills⁽³⁰⁾, overweight women in the present study preferred convenience food because it is easy, convenient, and save time. They did not know that convenience foods were high in fat, sugar, and salt. A counselor provided advice on how to increase PA and healthy eating behavior. Health education group, smartphone LINE group conversation, and individual free voice call were combined in the intervention program. Smartphone LINE group was used to deliver text messages, share, and exchange their experiences, keep important information such as how to increase PA, exercise methods, and healthy foods menu, motivate, monitoring, and reminder. These methods contributed to the positive outcomes among

overweight women.

Limitation

Some limitations of the present study should be noted. First, the present study focused on only overweight women, limiting the generalization. Second, the sample size was rather small. Third, the researcher collected the data immediately following completion of the intervention. Because of limited time, it may affect the sustainability of the program. Further research should be followed up continuously and avoid the period of special festivals that may be affecting the outcomes. For policy maker recommendation, health promotion intervention should be promoted PA and healthy eating information through LINE application.

Conclusion

Using smartphone and social media are increasing worldwide including Thailand. The use of smartphone LINE application was found effective to deliver health information, share and exchange their experience, motivate, and monitor their PA and healthy eating behavior. This application can help the participants to increase the PA and healthy eating behavior, and decrease their sedentary behavior resulting in weight loss. It is useful for healthcare providers to promote the health information.

What is already known on this topic?

Using smartphone LINE application has more potential than just deliver health information. This platform can be used as a tool for chatting, sharing their experience, monitoring their PA and eating behavior, and keeping health information. Moreover, LINE application intervention has been successfully used for behavior change, to increase PA and healthy eating behavior.

What this study adds?

Smartphone LINE application combined with health education group have effectively changed their PA and healthy eating behavior.

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Conflicts of interest

The authors declare no conflict of interest.

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