RESEARCH ARTICLE

Diet-Related Stomach Cancer Behavior Among Iranian College Students: A Text Messaging Intervention

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Abstract

Background: Stomach cancer is one of the five most common cancers in Iran. This study examined the effectiveness of a mobile telephone short-message service (SMS) based-education intervention using Health Belief Model (HBM) variables in improving dietary behavior in terms of stomach cancer prevention among a sample of Iranian female college students. **Materials and Methods:** In this quasi-experimental study, 124 female college students in the dormitories of Yazd University, Yazd, Iran were randomly selected and assigned to either the intervention (n=62) or the control group (n=62). Information (data) regarding HBM variables and dietary behavior related to stomach cancer prevention was collected by a self-administrated questionnaire. Forty eight messages were designed and sent to the participants' phones in the intervention group during the 48-day intervention period. Two groups were followed-up one month after the intervention delivered via SMS. **Results:** There were significant differences in HBM variables (except for the perceived severity) and the preventive dietary behaviors for stomach cancer in the intervention group compared to the comparison group following the education intervention delivered via SMS. **Conclusions:** SMS-delivered nutrition education intervention can be a practical strategy to improve dietary behavior related to stomach cancer prevention.

Keywords: Stomach cancer- prevention- dietary behaviors- short-message service- intervention- Iran

Introduction

Stomach cancer is the third most common causes of cancer death in the world (with 723,000 deaths) in 2012 (World Health Organization, 2015). In Iran, stomach cancer is recognized as one of the five common cancers among both Iranian males and females (with 7300 new cases annually) (Kolahdoozan et al., 2010; Mehrabian et al., 2010). The prevalence of the cancer was estimated 10.5 per 100,000 in 2007 in Iran (Mehrabian et al., 2010).

The intestinal histological subtype of gastric adenocarcinoma, as the most common form of gastric cancer, is a multi-factorial disease. Among modifiable risk factors of stomach cancer, nutrition and dietary behaviors play an important role in modifying the risk of the cancer (Buckland et al., 2015). Literature on the association between dietary factors and gastric cancer shows that individuals frequently consuming salt-preserved foods and salt per se, total meats, red meat, processed meat, chili pepper, smoked or broiled foods, high-fat dairy, nitrate foods, animal fat, fast foods and food prepared under less hygienic conditions, reheated foods or cooking oil and drinking bottled ground water containing nitrate in excess of 10 mg/L had more likely risks of stomach cancer (Tsugane and Sasazuki, 2007; Guggenheim and Shah, 2013; López-Carrillo et al., 1994; Knekt et al.,

1999; Navarro Silvera et al., 2008; Shakeel Ahmed et al., 2014; Salvador et al., 2015; Behnampour et al., 2014; Christian et al., 1999; World Health Organization, 2012). Whereas the risk of developing cancer is likely reduced by the frequent consumption of plant-based foods and total fresh fruit and vegetables, cruciferous vegetable (such as broccoli, cauliflower, cabbage, brussels sprouts), probiotic products, garlic, spices such as ginger, cinnamon and curcuma longa as feed additives, storing foods in the refrigerator, washing hands after defecation and before meal times (Behnampour et al., 2014; Riboli and Norat, 2003; Mahady et al., 2003; Nir et al., 2000; Koosirirat et al., 2010; Fahey et al., 2015; Wang et al., 2013; Van den Brandt et al., 2003; Kodali and Eslick, 2015).

Given the fact that at least half of the stomach cancers can be prevented by simple nutrition and lifestyle changes, studies have emphasized on the need to design appropriate educational interventions to increase the people awareness about the lifestyle risk factors, healthy food choices and anti-cancer diets (Behnampour et al., 2014; Watanable et al., 1997; Anetor et al., 2013). Literature also has shown that mobile Short-Message Service (SMS) -based interventions have positive dietary behavioral outcomes (Shapiro et al., 2008). This technology can create new and innovative opportunities for disease prevention and self-management interventions and they also provide

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essential support for the consumers (Free et al., 2013; Déglise et al., 2012; Jones et al., 2014).

Despite the high prevalence of stomach cancer in the world and also Iran (World Health Organization, 2015; Kolahdoozan et al., 2010), few intervention studies have been done in this field. To the best of our knowledge, the majority of published studies in the world and Iran have focused on identifying geographic variations in the incidence and mortality of stomach cancer (Behnampour et al., 2014; Babaei et al., 2010; Guggenheim and Shah, 2013) and risk factors of stomach cancer such as dietary habits (Pakseresht et al., 2011; Navarro Silvera et al., 2008; Tsugane and Sasazuki, 2007) or environmental variables (Pourfarzi et al., 2009). Only two study has examined the effectiveness of a nutrition education intervention on increasing nutritional behaviors associated with gastric cancer (Alidosti et al., 2011; Anetor et al., 2013). The result of these studies showed that nutrition interventions is efficacious in modifying food choices and adopting anti-stomach cancer diets.

The aim of this study was to determine the effectiveness of a SMS based-education intervention using HBM variables in increasing the dietary behaviors related to stomach cancer prevention among the Iranian female university students.

Materials and Methods

Study participants and setting

The study was conducted among 124 female college students in Yazd, Iran, during May 2015–April 2016. Given the estimated sample size, 124 female college students were randomly selected from dormitories of Yazd University, Yazd, Iran and assigned to either intervention or comparison groups. Inclusion criteria in this study were the satisfaction to participate in the study, being a college student, residency in female dormitories, having a personal (own) mobile phone and no history of stomach cancer and other gastrointestinal cancers or chronic peptic ulcer. All participants were informed about the objective of the study and a written consent to participate in research activities was obtained from them. This submission had an Institute Review Board (IRB) approval. None of the participants refused to take part in the study.

Study instruments and measures

After review of the related literature and conducting two focus group discussions with 30 female students to explain their beliefs about the stomach cancer and its prevention, an initial 82-item instrument with 7 sub-scales (including perceived susceptibility, perceived severity, perceived barriers, perceived benefits, perceived self-efficacy, cues to action, and diet-related stomach cancer protective behaviors) was elaborated and consequently, qualitative face validity, quantitative content validity and also reliability of the items were evaluated. For evaluating the face validity, thirty female college students reflected their opinions on the clarity, simplicity, and readability of the items. According to their opinions, four ambiguous items were edited. Quantitative content validity of the items was measured by an expert panel of

6 specialists in health education and 4 in nutrition. They judged about the necessity and relevance of the scale items. Following their comments, the Content Validity Index (CVI) and the Content Validity Ratio (CVR) of the items were calculated. Finally, 3 items (2 items of perceived barriers and 1 items of perceived susceptibility) having CVR less than 0.6 and CVI less than 0.8 were omitted (Lawshe, 1975; Polit and Beck, 2004). In order to determine the internal consistency and the stability of the subscales, Cronbach Alpha and the test-retest correlation coefficients (with a 2-week interval between the tests) was measured by the thirty female college students. The estimate of test–retest correlation coefficient ≥0.61 and α≥0.70 were considered as satisfactory (Cronbach, 1951; Landis and Koch, 1997). No items were deleted in this stage. The final instrument had 79 items to measure HBM variables in terms of prevention of stomach cancer and behavioral outcomes.

Perceived susceptibility towards stomach cancer

Four items were used to measure this variable (e.g. "Even though none of my family is involved with the stomach cancer, I am still susceptible to it"). The items in this subscale were measured on a Likert-type scale ranging from 1= "Strongly disagree" to 5 = "Strongly agree". Cronbach α for the competing demands subscale was 0.79. The test–retest correlation coefficient for this subscale was 0.81 (p value = 0.001).

Perceived severity of the stomach cancer

Six items were used to measure the perceived severity (e.g. "Gastric cancer is fatal"). The items of this subscale were measured on a Likert scale ranging from 1= "Strongly disagree" to 5 = "Strongly agree". Cronbach α for the subjective norms subscale was 0.8. The test–retest correlation coefficient for this subscale was 0.90 (p value = 0.001).

Perceived benefits of adopting dietary behaviors

Thirteen items were used to measure this variable (e.g. "By adopting healthy dietary behaviors, the risk of stomach cancer can be reduced"). The items of this subscale were measured on a Likert scale ranging from 1= "Strongly disagree" to 5 = "Strongly agree". Cronbach's α of this subscale was 0.87. The test–retest correlation coefficient of this subscale was 0.74 (p value = 0.001).

Perceived barriers to adopting dietary behaviors

Thirteen items were used to measure the students' perceived barriers (e.g. "In my family it is preferred to barbecue by putting the meat on the char and I cannot disagree"). The items of this subscale were measured on a Likert-type scale, ranging from 1 = "Strongly disagree" to 5 = "Strongly agree". Cronbach's α of this subscale was 0.90. The test–retest correlation coefficient for this scale was 0.96 (p value = 0.001).

Perceived self-efficacy for adopting dietary behaviors

Twelve items were used to measure this variable (e.g. "Although I do not like the taste of unsalted foods, I can reduce the amount of consumed salt"). The items in this

scale were measured on a Likert scale ranging from 1= "Strongly disagree" to 5 = "Strongly agree". Cronbach's α of this subscale was 0.82. The test–retest correlation coefficient for this subscale was 0.83 (p value = 0.001).

Internal cues for adopting dietary behaviors

Three items were used to measure the participants' internal cues to adopting dietary behaviors (e.g. "when knowing the death of any by stomach cancer it flips me to perform the preventive behaviors"). The items in this subscale were measured on a Likert-type scale, ranging from 1 = "Strongly disagree" to 5 = "Strongly agree".

Cronbach α of this subscale was 0.70. The test–retest correlation coefficient for this subscale was 0.95 (p value = 0.001).

Dietary stomach cancer prevention-related dietary behaviors

Twenty eight items were used to measure the behavioral outcomes (e.g. "How many times did you use the barbecued food (e.g. barbecued chicken, meat, etc. during the last month?"). The items in this subscale were measured on a Likert scale ranging from 1= "I have

Table 1. Developed messages in the study

Variables	Messages
Perceived severity	Stomach cancer is one of the common cancers in the country. It is fatal and had no certain cure. Stomach cancer is with severe pain and discomfort.
Perceived susceptibility	Even though none of your family suffers from the stomach cancer so far, there is still a possibility for the cancer. All of us are faced with the danger of cancer, so we must think of the prevention. Having unhealthy food habits increases the risk of stomach cancer in each person, so unhealthy food habits should be put aside.
Perceived barriers	Despite the almost high price of the fruits, part of the income can be considered for that. Although fresh vegetables are not always available, it is better to avoid the consumption of frigid vegetables (especially Spinach). Freezing increases the level of nitrate in the vegetables and consequently it hurts the stomach. Although you may like the taste of processed meats such as hamburger and sausages, you should decrease the consumption of it to prevent the stomach cancer. If you do not like the taste of low-salt foods, you can use flavors such as lemon juice, pomegranate dressing, thyme, etc. to improve the taste of foods. Although most of Iranians like to barbecue the meat on the char, this food habit can increase the risk of stomach cancer. In case you are forced to consume the conserved foods, carefully read the tag on them and buy only the cases which include the lower amount of salt and preservatives. If you are forced to provide the food from the restaurant, make sure that the food is made and kept in the healthy situation.
Perceived benefits	Observing the food tips for preventing the infection of the Helicobacter pylori can decrease the probability of the cancer to a great extent. Helicobacter pylori are one of the most persistent microbes. The gastric acid cannot destroy it. Forty percent of stomach cancer cases are caused by this microorganism. The full treatment of this infection is quite critical. To avoid the Helicobacter pylori infection, it is suggested to wash hands with soap before and after the eating. Not using other individuals' glasses, spoons and etc. is one of the preventive ways of Helicobacter pylori infection. Keeping the food leftovers in the refrigerator (even for the consumption for the next time) can destroy the growth and reproduction of Helicobacter pylori. The use of healthy foods can decrease the probability of Helicobacter pylori infection. Having a healthy nutrition would decrease the probability of other cancers (such as prostate, breast and esophageal cancers and so on) as well.
Perceived self-efficacy	In spite of a busy program, decrease the consumption of ready and conserved foods (e.g. tuna fish, beans and vegetables conserves, stews, etc. These foods include high amounts of salt and fat which can hurt the stomach a lot. Even though your family does not accompany you, you can adopt healthy nutritional manners to prevent the stomach cancer. Even you can extend it among your family members. Although you may prefer the taste of salty foods, you can change your palate. Despite the habit of barbecuing on the char in the vacation or on the trips, it is suggested to decrease their consumption and replace it with other cooking methods such as boiling. Avoid laziness! Wash your hands before eating in any condition. Avoid using joint dishes when eating foods. Do not mind about the increasing number of the dirty dishes to be washed. You can keep the remaining food in the refrigerator and safely have it in the next courses.
Internal cues to action	Seeing others with stomach cancer, we should seriously think of the prevention. Be proud of yourself for having healthy nutrition habits! Regarding the spread of stomach cancer in Iran, the fear of getting cancer is natural. By obtaining preventive nutritional habits, you can overcome the fear.

Table 1. Continued

Variables	Messages
Dietary behaviors related to stomach cancer prevention	The relation between too much salt consumption and the stomach cancer has been proved. Decrease the use of salt to the extent possible. Many research studies have shown that too much consumption of salt hurts the stomach septum. Also, salt causes the carcinogenic nitrosamine combinations in the stomach. Decide not to put the salt on the table. The existence of saltshaker tempts you to sprinkle it on the food. Decrease having salty junk foods such as chips and snacks for having much salt. To decrease the amount of consumed salt, it is suggested to use raw nuts instead of salty and roasted nuts. Different kinds of pickles include high amounts of salt, nitrate and preservatives which can increase the danger of stomach cancer. Decrease their consumption! Barbecuing the meat makes aromatic hydrocarbons which itself is one of the most important causes of stomach cancer. Instead of barbecuing the meat, you can do it on the stove and enjoy that. Try it! Although the consumption of fire-cured food is not common in all parts of the country, but this food habit can increase the probability of stomach cancer. Nutrition specialists advise that to prevent the stomach cancer use of red meat should be limited to two or three units (each unit equals two matches box of meat). The use of 3-5 units of vegetable per day (each unit equals half a glass of cooked vegetable or a glass of raw vegetable) can decrease the risk of stomach cancer. Daily use of 2-3 units of fruits (each unit equals an average apple) can decrease the possibility of stomach cancer. The anti-oxidant materials inside the fruits prevent hurting the stomach by the Helicobacter pylori. Due to higher calcium and other useful materials, the use of low-fat dairy materials can decrease the possibility of digestion cancers. Use of cabbage for having sulforaphane (a kind of useful herbal element) can decrease the possibility of stomach cancer. Using spices such as cinnamon, ginger and curcuma longa can decrease the possibility of stomach cancer. It is advised to use them in your daily cooking. Too much use of non-standard bottled water for having high amounts of nitrate is harmful and it can hurt the stomach. Use them only in emergency. Many people are not familiar with probiotic products such as probiotic yogurt. The use of such materials for having useful bacteria and consequently reinforcing the body immune system can decrease the possibility of stomach cancer. You should use frying only oils for frying. Using usual oils or vegetable oils can produce some free radicals (i.e. a kind of harmful element) which can be a cause of stomach cancer.

never consumed" to 6 = "I have consumed every day". Cronbach's α for the subjective norms subscale was 0.83. The test–retest correlation coefficient for this subscale was 0.82 (p value = 0.001).

Developing the SMS-intervention program

The intervention program was conducted in six phases. In phase 1, members of a small sample of female college students (n = 30) were asked to explain their beliefs about severity and susceptibility of stomach cancer, barriers, benefits and self-efficacy for adopting diet-related stomach cancer protective behaviors, cues to adopting the behaviors on an open-ended questionnaire. In phase 2, based on the literature review conducted by the research team to identify the dietary behaviors and beliefs associated with the development of stomach cancer and the analysis of qualitative responses (in step 1), an instrument was developed to measure HBM variables and also the tailored messages were designed. Fifty short and long messages were developed based on HBM variables. Also, behavioral outcomes were developed during this phase by the research team. In phase 3, the developed messages were pretested. For this aim, a group of 25 female college students were recruited to participate in an interview, the purpose of which was to identify how the students responded to the developed messages. To guide the interviews, some semistructured questions for testing messages in the various materials -introduced by the AIDSCAP Behavior Change Communication Unit- were used (Flanagan et al., 2016). Some of the questions were "Is there anything in the message that you do not believe? What?", "What do you think you will remember best about this message?", "Are there any words that you do not understand? What are they?", "Do you think the message is meant for people like yourself, or is it for other people? Why?" and "What do you think can be done to make this a better message". In addition, in this phase, 7 experts in nutrition and health education reviewed the messages individually and expressed their comments about whether the messages were factually correct and appropriate for the participants in the study. Based on the suggestions of the experts and female college students, 2 messages were deleted and 3 messages were revised. The final developed messages are shown in Table 2. In phase 4, those variables used for the design of tailored messages were collected in the two groups through a self-administered instrument at baseline. In phase 5, while the control group did not receive any messages, one member of the research team sent one message daily to the participants' phone in the intervention group during the 48-day intervention period, and in phase 6 two groups were followed up one month after the education intervention delivered via SMS and they completed the instrument again.

Statistical analyses

Statistical analysis of the data was performed through SPSS software (English version). Chi-square and independent samples t-tests were used for assessing

the homogeneity of baseline data of the two groups with regard to the demographic variables. Normality of the data was also surveyed through Kolmogorov–Smirnov test. Student's paired samples t-test was used to test the within-group changes in terms of HBM variables and behavioral outcomes. The analysis of Covariance used to make over-group comparisons. Data was reported as mean ± SD. The significance level for all of the results was set at the $P<0.05$ level.

Results

The mean age of the participants in the intervention and comparison group was 26.2 (SD 2.2) and 26.41 (SD 3) years, respectively. Other demographics characteristics of the participants in the two groups are shown in Table 2. No significant differences were found for any of the demographics, HBM variables and behavioral outcomes between the two groups prior to the intervention. Findings revealed that the intervention group showed a significant increase in perceived benefit, perceived severity, perceived susceptibility, self-efficacy belief and the dietary behaviors compared with the comparison group following the education intervention delivered via SMS. In addition, there was a significant reduction in perceived barriers to adopting diet behaviors in the intervention group compared with the comparison group (Table 3). There was no significant difference in the perceived severity about the stomach cancer between both groups after the conducted intervention. As shown in Table 4, there were significant association between such HBM variables with dietary behaviors in the associations two groups before and after the intervention.

Discussion

Results of the present study showed that there was a considerable increase in the dietary behaviors related to stomach cancer prevention in the intervention group compared to the comparison group one month after the intervention delivered via SMS. The findings are consistent with those studies that examined the effectiveness of SMS-texts in increasing the cancer prevention behaviors (Hingle et al., 2014; Lakkis et al., 2011; Youl et al., 2015;

Table 2. Descriptive Statistics (Means (SD) and Percentages) of Participant Characteristics in the Two Groups (n=122)

Variables	Intervention group N (%)	Comparison group N (%)
Occupation of Father		
Self-employed	28 (45.16)	32 (51.61)
Employee	6 (9.67)	8 (12.90)
casual laborer	-	1 (1.61)
Retired	28 (45.16)	21 (33.87)
Occupation of Mother		
Self-employed	1 (1.61)	-
Employee	5 (8.06)	6 (9.67)
Household duties	56 (90.32)	56 (90.32)
Fathers` education level		
Illiterate	6 (9.67)	2 (3.22)
≤12th (grade)	43 (69.35)	42 (67.74)
>12th(grade)	13 (20.96)	18 (29.03)
Mothers` education level		
Illiterate	9 (14.51)	5 (8.06)
≤12th	50 (80.64)	48 (77.41)
>12th	3 (4.83)	9 (14.51)
Marital status		
Single	52 (83.87)	54 (87.09)
Married	10 (16.12)	7 (11.29)
Divorced	-	1 (1.61)
Participants` education level		
Undergraduate	11 (17.74)	13 (20.96)
Postgraduate	51 (82.25)	49 (79.03)

Lee et al., 2014). These results highlight the need to further use SMS text massaging service to influence the behavior of various groups for the prevention of cancer.

The results of the present study also showed that the mean scores of perceived susceptibility, perceived severity, self-efficacy beliefs, perceived benefits and internal cues to action variables among the intervention participants increased significantly following the intervention. This finding is consistent with similar

Table 3. Comparison of the HBM Variables and Adopting Dietary Stomach Cancer Prevention-Related Dietary Behaviors before and after the Intervention in the Intervention and the Comparison Group

Variable	Intervention group		Comparison group	
	Before intervention	After intervention	Before intervention	After intervention
Perceived severity about stomach cancer	23.9 ± 3.7	25.9 ± 3.4†	23.2 ± 3.6	23.5 ± 3.2
Perceived susceptibility to stomach cancer	11.9 ± 2.9	14.2 ± 3.5*†	12.3 ± 2.4	12.5 ± 5.0
Perceived benefits of adopting dietary behaviors	51.5 ± 5.9	58.0 ± 5.8*†	50.1 ± 6.4	50.7 ± 7.9
Perceived barriers	22.2 ± 5.8	18.3 ± 5.7*†	20.74 ± 5.3	22.5 ± 4.8†
Perceived self-efficacy to adopting behaviors	61.9 ± 6.7	64.8 ± 5.3*†	60.58 ± 7.2	61.0 ± 8.1
Internal cues to adopting dietary behaviors	11.5 ± 2.4	12.8 ± 1.8*†	11.87 ± 1.9	11.3 ± 1.83†
Adopting stomach cancer prevention-related dietary behaviors	113.9 ± 8.8	123.2 ± 0.2*†	109.2 ± 11.9	111.2 ± 10.6†

Values are Mean ± SD; Result of paired T-test for paired sample; P†< 0.05 compared to pre-intervention values; Result of Analysis of Covariance; P *< 0.05 than the comparison group

Table 4. Correlation of Stomach Cancer Prevention-Related Dietary Behaviors with Each of HBM Variables in the Two Groups before and after the Intervention

	Intervention group		Comparison group	
	Before intervention	After intervention	Before intervention	After intervention
Perceived severity about stomach cancer	0.02	0.02	0.02	0.008
Perceived susceptibility to stomach cancer	0.12	0.15	0.01	0.01
Perceived benefits of adopting dietary behaviors	0.51*	0.49*	0.24*	0.29*
Perceived barriers	-0.35*	-0.28*	-0.31*	-0.29*
Perceived self-efficacy to adopting behaviors	0.09	0.02	0.09	0.15
Internal cues to adopting dietary behaviors	0.10	0.31*	0.27*	0.15

*, $P < 0.05$, Significant

studies in the cancer field (Dehdari et al., 2014; Kye et al., 2014; Shobeiri et al., 2016). In the same line, Alidosti et al. reported that conducting education intervention about nutritional factors associated with gastric cancer may be important for increasing the beliefs in relation to the preventability of the cancer among Iranian females (Alidosti et al., 2011). Quintiliani et al. also showed that providing diet-related cancer prevention messages written to university employees may increase their self-efficacy beliefs for eating low-fat foods and 5 daily servings of fruit and vegetables (Quintiliani et al., 2005). Mirzaei et al. also indicated that conducting a theory-based campaign could modify the psychological factors which influence hot tea consumption among Iranian children (Mirzaei et al., 2016). On the whole, these theoretical variables can help for a better understanding of the influencing factors in anti-cancer food choices and developing effective population- based intervention programs.

In this study, we found that the mean score of the perceived barriers to prevent stomach cancer decreased in the intervention group when compared to the comparison group after the intervention. Literature also showed that there were many barriers to adopting cancer prevention dietary behaviors. As an example, Harnack et al. reported that one of the perceived barriers to eating an anti-cancer diet was perceived ease of eating a healthful diet (Harnack et al., 1997). Arroyave et al. also showed that commercial which make high-fat foods look so appealing and having friends who consume high-fat foods were such barriers for restricting the high-fat foods consumption among a sample of childhood cancer survivors (Arroyave et al., 2008). It is suggested that dietetics practitioners should not only educate the public about the importance of healthy diet for the prevention of stomach cancer, but also address barriers to dietary change.

The main strength of our study is that it was among the first studies which tested the effect of a mobile telephone short-message service (SMS) based-education intervention using HBM variables on increasing dietary behaviors in terms of stomach cancer prevention. The findings of this study may be helpful to nutritionists, health educators, and health professionals in developing modern technologies that promote healthful lifestyle in a large population.

The limitation of the present study is that data was collected from a sample of female college students in Yazd University, Yazd, Iran. Therefore, the findings cannot be generalized to other groups (e.g. male students). Similar studies are needed in this field within other racial/ethnic groups and geographic areas in Iran. Also, the next limitation of the present study is the short duration of the follow-up period. Researches are needed to investigate whether this effect can last for longer periods of time.

In conclusion, the results of the present study showed that short message service may be a useful tool for increasing the dietary behaviors related to stomach cancer prevention among Iranian university students, although the efficacy of this approach needs further studies.

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