

Survey of the Impact of Using Text Messaging Educational Method on Breast Self Examination in Female Students of None-medical Fields In 2013

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Abstract: Purpose: Short text messaging is the easiest and cheapest way to promote knowledge level in the society which provides easy access to an extent layer of audience and a two way connection between users and educational sources in a short time and in any place. Present study has been done with the purpose of evaluating the impact of using text messages as an educational tool on breast self examination education in female students of none-medical fields in 2013. Method: in a clinical trial 54 female students from Tarbiat Modarres dormitories were selected by accidental sampling and then were educated about breast cancer, its control ways and breast self examination by 28 educational text messages at 9 AM every day for 1 moth. Data collection tool was a questionnaire designed by the researcher which was used as a pre-test and then 3 months after education as a post test and the quality of doing breast self examination was evaluated by an operational test and check list. Data analysis was done with SPSS 20 software and a parametric statistical test (paired T-test) in a significant level of $p < 0.05$. Findings: There is a significant difference in knowledge, attitude and performance points (KAP) about breast self examination before and after educational text messaging intervention ($p = 0.001$). Text messaging with 47.2% was selected as the first priority by the samples. Results: text messaging educational method is effective in promotion of breast cancer preventive behaviors. The amount of KAP in female students about breast self examination was effectively elevated after text message education. We suggest use of this educational method in health education programs especially in breast cancer controlling for maintaining women's health and hygiene.

Keywords: Breast self examination, female students, short text message

INTRODUCTION

Reports published by WHO indicate that in recent decay breast cancer mortality has increased (Abuidris *et al.*, 2013). In Iran breast cancer is the most common and most fatal cancer. Based on the reports of disease management center of hygiene administration, prevalence of this disease is increasing and for every 35 women 1 has the chance to develop this disease, age incidence index of this disease in 2008 from 27 per 100000 cases has reached to 33 per 100000 in 2010 while disease controlling center in the united states has reported a 2% decrease in mortality and 1% decrease in the prevalence of this disease each year (Alipour *et al.*, 2012). Iranian women compared with their western counterparts develop this disease 10 years earlier and 30% of these sick people are under 30 years old (Alwan *et al.*, 2012). Researchers think that it's because of women's less knowledge and delay in the detection (Babu *et al.*, 2011). Although 80% of cases in western

countries are detected and treated during the first stage of this disease, in Iran 65% of cases are detected in the second or third stage and this factor decreases its actual cure hope. Therefore its early detection is really important for improving the outcomes, survival and generally controlling breast cancer (Baig and Ali, 2006). Breast cancer screening as a control way has a great importance. Accepted methods for breast cancer screening include mammography, annual clinical examination by a doctor and self examination (Bashirian *et al.*, 2013).

Breast Self Examination (BSE) is one of the diagnostic methods for breast cancer in its early stages which has been suggested by the American cancer committee as a healthy, cheap and none aggressive method for breast cancer prognosis before monthly periods. BSE has no cost and takes only 15 min each time. The person will learn about her breast properties and will be able to diagnose any changes in its early stages. BSE should be done after 20 years old, on an

exact day of the month and with a fixed method (Berahman and Ardestani, 2012). Results of a study done in Iran showed that only 6% of women do the regular breast self examinations (Déglise *et al.*, 2012).

Hygiene education includes programmed educational situations and opportunities which have been designed carefully and is used as a programmed connection for promoting hygienic knowledge level and this guaranties promotion of the personal and social related skills and knowledge (Doshi *et al.*, 2012). Hygiene education is based on educational methods and techniques, therefore survey and comparison of educational methods about BSE and choosing an effective one improves quality of education and while promoting women's knowledge level, changes their attitudes and operational skills so doing BSE will become a hygienic and normal habit (Fayazi *et al.*, 2013).

Cell phone is one of the information and connection technologies that has acceded to the education field and has been suggested as a cell phone related education. This connective tool has changed the classic education method, has provided learning opportunities in any time and any place (at home, at work, on vacation or...) and has eliminated many of limitations and inefficiencies of the classic method. Cell phone education is a subset of electronic education and far away education which has been used officially in Britain, Sweden and Italy since 2007 (Harirchi *et al.*, 2012).

Short message service is the easiest and cheapest method for increasing knowledge level in the society. By this method in a short time access to a large layer of audience who can use this presented short text message any time of the day is provided. In the health education programs, short text messages can be used in 4 axes of health knowledge promotion, increasing society motivation about some of health issues, advices for having a healthy life style and presenting health educational programs. The most impact of using text messages in health education programs is seen among teen ages and young people (Hashemian *et al.*, 2013).

Cell phone owners have this device in most of the day and night hours and places with them. Therefore it can maintain its connection with the audience and send messages in emergency situations. If sent messages were attractive or effective they would have viral effect and people would send it to others. Using short text messages provides a two way interaction between sender and receiver. Short text messaging has the ability to be used for immediate message sending and in addition of its wide accessibility, sender will be sure about the number of receivers. Short text messages are read in most of the cases. In case of not being accessible or being turned off, telecommunication network will save the message and resend it when possible (Michels, 2012). In the education system, the

most important group which should be focused about hygiene are the students layer because by educating this layer we can lead a wide population of the society and these educated students will be effective in giving information to others (Michielutte *et al.*, 1999). As one of the important duties of hygiene authorities of the country is to promote women's knowledge level, attitude and performance to maintain their health and considering that the researcher has seen that breast self examination has not found its real position in the society (especially among young girls) and women need to be educated by effective and proper methods about breast cancer controlling, this study is done to evaluate the impact of using short text messages on breast self examination education in female students of none-medical fields in 2013. The present study tries to introduce use of short text messages as an effective educational aid and evaluate the impact of short text messaging education on breast cancer controlling.

METHODOLOGY

This study is a clinical and practical trial that was done on 54 students between 22-30 ages of none-medical fields in Tarbiat Modarres university. The number of needed samples was calculated based on formula and with a statistical expert opinion:

$$n = \frac{2(1-\rho)\left(\frac{Z_{\alpha}+Z_{\beta}}{2}\right)^2}{d^2} = 54$$

In order to choose the samples 2 steps random cluster sampling was done. After getting permission from related organs and presenting certificates, 3 dormitories were chosen randomly from the list of the dormitories of Tarbiat Modarres university and then random clusters were selected based on our entrance conditions check list which included: not having breast cancer, not having breast biopsy, no history of breast cancer in first-degree relatives (mother or sister) and no history of checking for breast cancer (mammography, Sonography, breast self examination) and none of studied unites were athletes, under weight (<45 kg) or overweight (>100 kg) and they were verbally chosen by the researcher. Data collection tool was a questionnaire made by researcher which had 2 sections. Section 1 included 16 questions about demographic properties and section 2 included 10 questions about knowledge, 10 about attitude, 10 performance and the last 10 questions were a checklist for direct observation about the quality of doing breast self examination. Maximum point in the knowledge part was 10 (1 point for each correct answer and zero points for wrong ones). In order to investigate the attitude part, the students were asked to express their opinion in a 5 degree Likert scale (I completely agree, I agree, I have no idea, I disagree, I

completely disagree). For each question in this part we considered a point from 0-5 and after summing the points, they were divided into 2 groups, one as the negative attitude (points between 10-30) and the other as the positive attitude (points between 30-50). In the performance part, each correct answer had 1 point and zero points for wrong ones. Finally pointing the direct observation checklist was just like the performance part. The educational program was prepared based on the information collected from pre-test and educational needs of the studied society. A 2 h lecture and a booklet about the importance of breast cancer, its control ways and breast self examination was presented to all of the samples. Then with short text messaging method, every days of the week at a special hour (9 AM) and with a fixed title, 28 educational text messages were sent to the studied samples for 1 month. The purpose of sending text messages was to promote knowledge level about breast cancer in students of none medical fields, increase students' motivation about doing regular breast self examinations, give advices for having a healthy life style, present breast self examination education programs, remind doing monthly self examinations and finally to transfer these messages to a wide population of women in the society in order to prevent from breast cancer. Post test was done 3 months after education. Operational test was given from the samples before and after the educational intervention and the results were written in the direct observation checklist. Justifiability of the questionnaire was evaluated based on content validity and by 10 faculty members of the nursing and midwifery college and its stability was evaluated based on the information collected from the pilot study which

was done on 20 female students of Ahwaz medical university and Cronbach's alpha was 0.77 (Mohseni, 2003). Data analysis was done by SPSS 20 software, parametric statistical test (paired T-test) in a significant level of $p < 0.05$.

FINDINGS

Based on the information of the study, the average age of the samples was about 26, most of them (48 people = 88.9%) were single and 6 (= 11.1%) were married. None of the samples had the history of breast cancer in them or their first degree relatives and none of them were educated about breast self examination before. Based on the samples statements, the first information source about breast self examination were books (20.4%), the second were hygiene personnel (18.5%) and friends (13%) were the third information source. Also about the reason of not doing breast self examination the samples stated that they had no problem in their breast and didn't think it's necessary (17.6%), the second reason was lack of knowledge (14.8%) and the third one was not having enough time (20.2%). Text messaging method was chosen as the first educational priority with 47.2% by the samples. Lecturing method with 38.9% became the second priority preferred and the third one was the booklet with 13.9%. Therefore short text messaging method was confirmed. Based on the results, Kelmograph index is higher than 0.005 so our variables are normal and we can use statistical paired T-test to compare knowledge level, attitude and performance in the studied group. Findings show that the average point of knowledge

Table 1: Survey of data normality in separated groups

Group/KAP	Text message				
	Number	Average	S.D.	Kelmograph- Esmirnoph	p-value
Knowledge-before	54	5/064	1/949	0/900	0/393
Attitude-before	54	30/760	2/745	1/054	0/216
Performance-before	54	1/537	2/738	2/749	0/069
Check list-before	54	1/146	2/044	1/979	0/083
Knowledge-after	54	7/827	0/785	2/709	0/073
Attitude-after	54	39/902	9/855	2/230	0/108
Performance-after	54	8/629	1/391	2/268	0/101
Check list-after	54	8/889	1/689	1/933	0/099

Table 2: Survey of the average knowledge points about breast self examination in studied samples before and after intervention

Group/knowledge	Text message			
	After intervention		Before intervention	
Weak	0	0	38.9	21
Mediocre	18.5	10	46.3	25
Good	79.6	43	14.8	8
No answer	1.9	1	0	0
Sum	100%	54	100%	54
Average	8/6981		4.6226	
Standard deviation	1/29474		2.16818	
SEM	0/17785		0/29637	
Paired T-test	T = -11/78 df = 52 p-value = 0/001			

Table 3: Survey of the average points of attitude about breast self examination in studied samples before and after intervention

Group	Text message			
	After intervention		Before intervention	
Intervention/performance				
Weak	1.9	1	81.5	44
Mediocre	18.5	10	9.3	5
Good	79.6	43	9.3	5
Sum	100%	54	100%	54
Average	8.6296		1.5370	
Standard deviation	1.39130		2.73836	
SEM	0.18933		0.037264	
Paired T-test	T = - 16.201 df = 53 p-value = 0.001			

Table 4: Survey of the average points of performance about breast self examination in studied samples before and after intervention

Group	Text message			
	After intervention		Before intervention	
Intervention/attitude				
Weak	0	0	16.7	9
Good	100	54	83.3	45
Great		0	0	0
Sum	100%	54	100%	54
Average	44.6667		37.5185	
Standard deviation	3.29093		7.10764	
SEM	0.44784		0.096723	
Paired T-test	T = -7.416 df = 53 p = 0.001			

Table 5: Survey of the average points about breast self examination in studied samples before and after intervention

Group	B			
	After intervention		Before intervention	
Intervention/Check list				
Very weak	0	0	24.1	13
Weak	1.9	1	68.5	37
Mediocre	11.1	6	5.6	3
Good	87.0	47	1.9	1
Sum	100%	54	100%	54
Average	8.6829		1.1463	
Standard deviation	1.84985		2.04403	
SEM	0.28890		0.31922	
Paired T-test	T = -15.334 df = 40 p-value = 0.001			

about breast self examination with text messaging method before our educational intervention was 5.17 and the standard deviation was 1.98 which became 8.81 for the average and 1.29 for the standard deviation after intervention and these results indicate that there is a significant difference ($p = 0.001$) in the knowledge points about breast self examination before and after intervention with text messaging method. In other words our intervention was effective because an increase is seen in the points. Findings show that the average point of knowledge about breast self examination education by text messaging method before intervention was 5.17 and the standard deviation was 1.98 which became 8.81 for the average and 1.29 for the standard deviation after intervention. Findings indicate that there is a significant difference ($p = 0.001$) in the knowledge points about breast self examination before and after educational intervention by text messaging method. In other words the intervention was effective because an increase is seen after our educational method (Table 1 and 2).

The average point of attitude about breast self examination before intervention with text messaging

method was 37.8800 and the standard deviation was 2.7600 which became 43.341 for the average and 9.7931 for the standard deviation. Findings indicate that there is a significant difference ($p = 0.001$) in the knowledge points about breast self examination before and after our educational intervention by text messaging method. In other words the intervention was effective because an increase is seen after our educational method (Table 3).

The average point of positive attitude about breast self examination reached from 9.7 to 10.7 and the average point of negative attitude reached from 8.4 to 6.7 after intervention, which shows a significant difference in positive and negative attitude before and after intervention ($p = 0.001$).

The average point of performance about breast self examination before education by text messaging method was 2.0017 and the standard deviation was 3.28642 which became 8.6742 for the average and 2.07332 for the standard deviation. Findings indicate that there is a significant difference in the performance point before and after education by text messaging method ($p = 0.001$). In other words our intervention

was effective because an increase is seen in the performance points after intervention (Table 4).

The average point of breast self examination check list before our educational intervention with text messaging method was 1.67 and its standard deviation was 1.78 which became 8.93 for the average and 1.48 for standard deviation. Findings indicate that there is a significant difference in the check list points before and after education by text messaging method ($p = 0.001$). In other words our intervention was effective because an increase is seen in the check list points after intervention (Table 5).

DISCUSSION

The reason of choosing this age group is that Iranian women compared with their western counterparts develop this disease 10 years earlier and 30% of these sick people are under 30 years old (Alwan *et al.*, 2012). Based on Jahangir Rafat's research, because of the trace-related differences (like onset of monthly periods in lower ages) this cancer affects younger patients more than others in our country. But the second reason can be the fact that our country has a younger population than western countries. These factors show that screening programs in our country should be launched at lower ages (Motamedi *et al.*, 2012; Muttappallymyalil *et al.*, 2010). Choosing healthy subjects who didn't have any breast problem was like Michillutte's study in 1999 (Northington *et al.*, 2011). In such researches the necessity of choosing healthy people is because of our educational purpose for early detection of breast cancer so women who have been diagnosed with this disease are not in this target range.

In this study the major reason for not being examined by a doctor is lack of knowledge. Considering the results of this study we can say that in the education field, knowledge is the most important and effective factor. Text messaging method was more effective than lecturing. This result matches with Jin Wei's study and Carole Deglise's research which showed that text messaging method for medical education has a greater acceptance and impact on samples and can help to prevent from many diseases in developing countries (Nur, 2010; Petro-Nustas *et al.*, 2013). There is a significant difference in knowledge points about breast self examination ($p = 0.001$) before and after intervention. In other words an increase is seen in the points after intervention. Findings of various studies done in Iran indicate the impact of education on knowledge. For example the results of Sadaf Alipour's research with the title of "comparing the effect of breast cancer education by two methods of short text messaging and the traditional education method on genecology residents in 2012" indicated that text messaging educational method can be an effective and interesting method for knowledge promotion in higher educational degrees (Rafat and Atri, 2010). In various

studies done in the world like NH Nik Rosmawati's study and Dolar Doshi's research and Nada A.S Alwan's study, results were similar to our study and it shows that students extremely need educational programs to increase their knowledge about breast cancer screening tests (Rosmawati, 2010; Sadeghnezhad *et al.*, 2001; Shahroodi *et al.*, 2013).

There is a significant difference ($p = 0.001$) in the attitude points about breast self examination before and after intervention. The average point of positive attitude about breast self examination has increased after intervention and the average point of negative attitude has decreased after intervention and a significant difference ($p = 0.001$) is seen in the positive and negative attitude before and after intervention.

The results indicate that education promotes knowledge level, improves attitude and quality of doing breast self examination among the students. Thus it's suggested that operational education classes about breast self examination should be continuously presented for students and public. Before our education, knowledge and attitude about breast self examination was not enough even in students and likely it's lower among women population. Proper educational programs about breast self examination should be designed even in higher educational environments. In the present study 10.7% of the students had a positive attitude and 6.8% of them had negative attitudes and a statistical correlation was seen between knowledge level and attitude ($p = 0.001$). In Muttappallyalil and his colleagues' study people's attitudes about breast self examination and screening methods was evaluated positive (91.4%) which matches our results (Soleimani and Pap Zan, 2010).

There is a significant difference ($p = 0.001$) in the performance and direct observation check list points about breast self examination before and after intervention. Findings of this study showed that breast self examination education by text messaging method had a positive and stable effect on improvement of performance about breast self examination after 3 months. These results match the results of Fatemeh Motamedi's research which showed that check list points before education were increasing compared with the points after it and education had a positive and 2 years stable effect on the samples' performance (Wei *et al.*, 2011).

Based on our findings we can say that the KAP index about breast self examination in female students after education by text messaging method has a significant difference ($p = 0.001$) compared with before education. Text messaging method was selected (47.2%) as the first priority by the samples.

RESULTS

Text messaging educational method is effective in promotion of preventive behaviors from breast cancer

disease. The KAP index in the female students about breast self examination has been effectively elevated after education by text messaging method. Thus education by sending text messages can be an interesting and attractive method for knowledge promotion even in higher educational degrees.

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REFERENCES

- Abuidris, D.O., A. Elsheikh, M. Ali, H. Musa, E. Elgaili, A.O. Ahmed, I. Sulieman and S.I. Mohammed, 2013. Breast-cancer screening with trained volunteers in a rural area of Sudan: A pilot study. *Lancet Oncol.*, 14(4): 363-370.
- Alipour, S., A. Moini, S.H. Jafari-Adli and N.G. Haraie, 2012. Comparison of teaching about breast cancer via mobile or traditional learning methods in gynecology residents. *Asian Pac. J. Cancer P.*, 13(9): 4593-5.
- Alwan, N.A., W.M. Al-Attar, R.A. Eliessa, Z.A. Madfaie and F.N. Tawfeeq, 2012. Knowledge, attitude and practice regarding breast cancer and breast self-examination among a sample of the educated population in Iraq. *East Mediterr. Health J.*, 18(4): 337-345.
- Babu, G.R., G. Samari, S.P. Cohen, T. Mahapatra, R.M. Wahbe, S. Mermash and O.M. Galal, 2011. Breast cancer screening among females in Iran and recommendations for improved practice: A review. *Asian Pac. J. Cancer P.*, 12(7): 1647-55.
- Baig, S. and T.S. Ali, 2006. Evaluation of efficacy of self breast examination for breast cancer prevention: A cost effective screening tool. *Asian Pac. J. Cancer P.*, 7(1): 154-6.
- Bashirian, S., A. Hidarnia, H. Allahverdipour and E. Hajizadeh, 2013. The theory-based substance abuse prevention program for adolescents. *Iranian J. Health Educ. Health Promot.*, 1(1): 3-12.
- Berahman, P.F. and M. Ardestani, 2012. Choosing Media Health Education Programs Guide. Health Education and Promotion Office of the Hygiene, Treatment and Medical Education Administration. Arman Bratha Publication, Tehran.
- Déglise, C., L.S. Suggs and P. Odermatt, 2012. Short Message Service (SMS) applications for disease prevention in developing countries. *J. Med. Internet Res.*, 14(1): e3.
- Doshi, D., B.S. Reddy, S. Kulkarni and P. Karunakar, 2012. Breast self-examination: Knowledge, attitude and practice among female dental students in Hyderabad city, India. *Indian J. Palliative Care*, 18(1): 68-73.
- Fayazi, S., M. Arabi, M. Bagheri, S.M. Latifi and Gh. Basiri, 2013. Survey of knowledge attitude and performance about breast self examination in female students of medical university of Ahwaz. *Jentashapier (Jondi Shapour) J.*, 4th year, No. 1.
- Harirchi, I., S. Azary, A. Montazeri, S.M. Mousavi, Z. Sedighi and G. Keshtmand, 2012. Literacy and breast cancer prevention: A population-based study from Iran. *Asian Pac. J. Cancer P.*, 13: 3927-30.
- Hashemian, M., E. Heidarnia, F. Amin Shokravi, M. Lamyian, K. Hasanpoor and A. Akaberi, 2013. Survey of the perceived beliefs of women with a positive family history for breast cancer and its preventive methods. *Women, Midwifery and Infertility Magazine*, 15th Period, Nom 35, pp: 17-24.
- Michels, K.B., 2012. The rise and fall of breast cancer rates. *BMJ*, 344, Doi: 10.1136/bmj.d8003.
- Michielutte, R., M.B. Dignan and S.B. Lannier, 1999. Psychosocial factors associated with the use of breast cancer screening by women age 60 years or over. *Health Educ. Bbehav.*, 26(5): 625-647.
- Mohseni, M., 2003. Basics of Hygiene Education. Assistant Research, Tehran.
- Motamedi, B., F. Yazdanpanah and B. Tirgari, 2012. Survey of impact of education on stability of doing breast self examination in the health personnel of Kerman city. *Hygiene and Development Magazine-year 1/ NO. 3/ Autumn of 2012.*
- Muttappallymyalil, J., J. Sreedharan, M. Venkatramana and M. Thomas, 2010. Attitude and practice of nurses in imparting knowledge on breast self examination to women in Ajman, United Arab Emirates. *Iran J. Cancer Prev.*, 3(3): 139-44.
- Northington, L., T. Martin, J.T. Walker, P.R. Williams, S.P. Lofton, J.R. Cooper *et al.*, 2011. Integrated community education model: Breast health awareness to impact late-stage breast cancer. *Clin. J. Oncol. Nurs.*, 15(4): 387-92.
- Nur, N., 2010. Breast cancer knowledge and screening behaviors of the female teachers. *Women Health*, 50(1): 37-52.
- Petro-Nustas, W., H. Tsangari, C. Phellas and C. Constantinou, 2013. Health beliefs and practice of breast self-examination among young cypriot women. *J. Transcult. Nurs.*, 24(2): 180-188.
- Rafat, J. and M. Atri, 2010. Demographic properties and clinical picture of 1500 breast cancer cases in Iranian women. *Iran Surgery Publication*, 18(2010): 1-2.

- Rosmawati, N.H., 2010. Knowledge, attitudes and practice of breast self-examination among women in a suburban area in Terengganu, Malaysia. *Asian Pac. J. Cancer P.*, 11(2010): 1503-8.
- Sadeghnezhad, F., S. Niknami and M. Ghofrani Pour, 2001. Comparative survey of the effect of health education methods on promoting Breast Self-Examination (BSE). M.A. Thesis, Hygiene Education Group, Tarbiat Modarres University, Iran, pp: 77.
- Shahroodi, M.V., F. Amin-Shokravi, A. Hidarnia and H. Jabbari Nooghabid, 2013. A survey on the effects of the pender's health promotion model on prediction of the employees' physical activity. *Iran. J. Health Educ. Health Promot.*, 1(1): 51-66.
- Soleimani, E. and E. Pap Zan, 2010. Survey of the impact of two educational methods through cell phone and lecturing on learning ability. *J. Inform. Connect. Technol. Educ. Sci.*, 1(1).
- Wei, J., H. Ilene and K. Stan, 2011. A review of the use of mobile phone text messaging in clinical and healthy behaviour interventions. *J. Telemed. Telecare*, 17(1): 41-48.