

## The Survey of SMS Effect on General Health and Quality of Life in People with Diabetes Type 2 Referring to Clinic of 22-Bahman Hospital of Gonabad City in 2011

Alireza Atarodi,<sup>1</sup> Mohammadreza RahmaniBeilondi,<sup>2</sup> Roghaieh RahmaniBeilondi,<sup>3</sup> Tayebeh Bondar,<sup>4</sup> Mahboobeh Bagheri,<sup>4</sup>

1. Department of Basic Sciences, Paramedical Faculty, Gonabad University of Medical Sciences, Gonabad, Iran
2. Department in Clinical Psychology, Gonabad University of Islamic Azad, Gonabad, Iran
3. Department of Midwifery, Nursing & Midwifery Faculty, Gonabad University of Medical Sciences, Gonabad, Iran
4. Department in public health, Department of Medical Sciences, Gonabad University of Medical Sciences, Gonabad, Iran

Article information	Abstract
<p>Article history: Received: 28 Jan 2012 Accepted: 22 Feb 2012 Available online: 5 Dec 2012 ZJRMS 2013; 15(4): 56-59</p> <p>Keywords: Diabetes Type II Quality of life SMS Education General Health</p> <p>*Corresponding author at: Department of Midwifery, Nursing &amp; Midwifery Faculty, Gonabad University of Medical Sciences, Gonabad, Iran E-mail: roghaiehrahmny@yahoo.com</p>	<p><b>Background:</b> Diabetes is one of the most common chronic diseases of the present era. This disease with its many complications has so many effects on quality of life that affects people. Since awareness increase is effective on self-control, some strategies can improve quality of life and technology has changed the way of education and life<sup>1</sup>. So, this study was performed to survey SMS effect on general health and quality of life in people with diabetes type 2 referring to clinic of 22-Bahman hospital of Gonabad city in 2011.</p> <p><b>Materials and Methods:</b> This is a quasi-experimental study. The samples were chosen with a simple random sampling from those referring to clinic of 22-Bahman hospital of Gonabad city in 2011. The data were collected by SF-36 quality of life questionnaire. In both of the intervention (X = 40) and the control groups (X = 40) SF-36, quality of life questionnaire was completed before intervention and again one month after sending educational short messages through mobile phone, and then the data were analyzed by independent Mann-whitney, Wilcoxon, Chi square and T-test and using SPSS-14 software.</p> <p><b>Results:</b> This study reviewed the mean quality of life before and after sending educational short messages in two intervention and control groups. The findings showed that the average quality of life score before intervention was 56.9 in the control group and 58.3 in the intervention group (<math>p=0</math>). But the comparison of the quality of life scores showed a significant difference in the intervention group according to t-test before and after sending educational mobile messages to them (<math>p=0</math>).</p> <p><b>Conclusion:</b> SMS based on educational text is effective on quality of life increasing and then modern technology can be effective positively if it used appropriately.</p> <p>Copyright © 2013 Zahedan University of Medical Sciences. All rights reserved.</p>

### Introduction

Diabetes is the most common chronic disease in the present era and the fifth cause of death in western societies [2]. The incidence and prevalence of this disease is increasing fast in Iran and in the world. So that based on a clinical study the average of diabetes prevalence rate in the world will increase from 4% in 1995 to 4.5% in 2025, now the prevalence rate is more in developing countries so that diabetes prevalence rate is considered to rise up in developed countries from 51 million to 72 million people and in developing countries from 84 million to 228 million. It seems that more than 4 million people are considered to have the disease while the figure is tripled every 15 years [1- 3]. Hyuk and colleagues conducted a research titled "Managing diabetes through Short Message Service" to survey self-control and economical impact of blood glucose levels in diabetic people through short messages that were sent through the Internet. The results showed that chronic diabetes improves through direct blood glucose control and this controlling can be performed either by itself or

through a management system of short message service (SMS) [4].

Based on conducted studies in different cities of Iran the prevalence of diabetes is changable from 4.2% to 15.9%. So it seems that the average of diabetes prevalence rate is higher in Iran than its average in the world [5]. Diabetes is always associated with physical and psychological complications that can lead to decreasing of diabetic people quality of life [6].

Many of the diabetic people donot receive an effective treatment involving lifestyle changes or measuring blood glucose and suffice and are limited only to a few times visit a year. A reciprocal relationship has been set up between the disease and quality of life, and physical symptoms and physical disorders has a direct impact on all aspects of life quality [7]. Education depends on its impact, changing or appearing health behaviors and behavior change is not a goal to be accessed easily and to avoid different problems frequent communication should be done between the patients and health care providers.

Sensitization process through a variety of trainings to engage patients and their families is highly significant in making cooperation in self-controlling of people with chronic diseases [8].

Today, the patients' sensitivity to self-controlling is cleared for every one and due to its high prevalence in human community it is a necessity to provide and increase awareness in this field. Today, different definitions and interpretations of quality of life have been presented. Some know it the ability of a person to run living from his point of view and the some others define their view of the overall assessment of a good life, or at least define it a satisfactory life.<sup>9</sup> World Health Organization (WHO) define quality of life, individuals understanding of their position in life in cultural contexts, their relations with goals, dreams and their concerns [10].

It seems that the first goal of therapy, particularly in chronic diseases is to improve quality of life through reduction disease impacts. Negative impacts of diseases can be determined through measuring people quality of life [11]. It seems that reducing public health and quality of life not only reduce a person's satisfaction with life but also can affect the results of caring and treatment of the disease through impressing of the person commitment to do caring and treatment [6].

In the present study that has been planned based on sending short messages to patients, it has been emphasized on increasing of self-controlling and reducing health care costs and this has been taken into account and surveyed that if it possible to improve public health and quality of life of diabetic patients by sending short message services, so that by using a simple, low cost, available and reminders find a way to improve public health and quality of life of diabetic patients through increasing of their knowledge, initiate a small step and beneficial effects on health by our technology.

## Materials and Methods

This study is a quasi-experimental trial and applicational one. The study population included all patients with diabetes type 2 referring to diabetes clinic of 22-Bahman hospital in Gonabad city who had inclusion criteria. The samples in this study were randomly assigned to one of two groups of the study. Each of the subject were put in one of the control group (n=40) and or in intervention group (n=40) based on purposive method in simple random sampling from the number of records in 22-Bahman hospital clinic of Gonabad. Sampling method was done in two steps that in the first step, sampling was performed based on purpose sampling it means that all people with diabetes type 2 having a history record in the hospital diabetes clinic had inclusion criteria and were selected as the study population and were included in the study. In the second stage, a random selection (Randomly sampling) was performed from the selected persons of the first stage for full random sampling selection and then in the next stage they were divided into two groups of control and interventional randomly.

The study measurement tool were a checklist included demographic data and quality of life questionnaire of SF-36 that is a standard questionnaire for assessing public health and quality of life and has been used in different studies that has showed an acceptable reliability and validity used by many researchers. SF-36 scale was translated and its Persian reliability and validity was conducted, and then the results indicate that Persian type of the scale has necessary reliability and validity for measuring quality of life related to health [12].

The questionnaire contained 26 questions in physical dimension (21) and in mental (15). Physical dimension consisted of 4 subscales: physical functioning, functional limitation resulted from physical problems, physical pain, general health and mental health including 4 subscales including: a feeling of happiness, mental health, functional limitation due to emotional problems and social functioning. The minimum score for each question was zero (0) and its maximum was one hundred (100). Then, the mean score on each of the physical and mental aspects and its subscales was considered zero (0) in minimum and 100 in maximum that the higher scores indicated a better health status of the samples.

The data were collected from diabetic patients referring to diabetes clinic of 22-Bahman hospital in Gonabad city in simple random sampling by quality of life questionnaire SF-36. In both the intervention and control groups, SF-36 quality of life questionnaire was filled out before the intervention and again one month after sending teaching SMS via mobile included information on nutrition, exercise and ... for diabetics. Educational messages were sent for diabetics three times a week. For analyzing the data, descriptive statistics (mean and SD), statistical analysis tests (Mann-Whitney,  $\chi^2$  and Wilcoxon) and SPSS-14 software were used.

Inclusion criteria included having diabetes type 2, age between 18 to 65 years, at least 6 months passed from diabetes diagnosing, having a mobile phone, to be literate, at least reading and writing ability, and not taking part in educational research conferences on diabetes. The exclusion criteria included lack of willingness for cooperation, under taking surgery or hospitalization during project implementation, organ impairment during project implementation and participating in special training courses for diabetic patients.

The study was emerged from a research plan approved by the research council of Gonabad University of medical sciences. We used the patient records information after obtaining approval from deputy of research and educational, the head of 22-Bahman hospital of Gonabad. Meanwhile, we decided not to include the names of the subjects and it was considered that all the ethical and moral codes be respected in data collection process, data analysis and in final report, too. It was also stated for the patient that demographic and research data will remain confidential and its results will be published in a paper after data analysis and its results will be accessible only for the researchers in the field.

## Results

The results showed that the majority of individuals' education degree in the intervention group (37.5%) and control group (47.5%) was in elementary level. The mean age of the subjects in the intervention group was 48.35 and in the control group 49.2 years. Diabetes duration in the intervention group was 4.5 and in the control group 5.4 years. Statistical test showed that both of the groups in terms of education, age and duration of having diabetes were quite homogeneous. In terms of Job characteristics 62.5% in the intervention group and 80% in the control group were unemployed. Both groups were similar in terms of occupation and gender.

In term of frequency for sex 50% were males and 50% were females in the intervention group and in the control group 72% were women. Then the most sex were in the control group (72%) women but in the intervention group 20 for 20 that was (50%). X2 statistical test did not show a significant difference between the two study groups in sex. Then, the two groups were homogeneous. The mean age of the subjects in the intervention group was (48.35) and in the control group (49.2), respectively. Independent t-test showed that there was not a significant difference between mean ages of the two study groups, and then the two were homogeneous for age. In relation with sub-components such as quality of life, the average of general health, social functioning, the performance limitation rate due to physical problems had increased after sending educational short messages in the intervention group than the control group, but this increase was not significant statistically by Wilcoxon statistical test. The sub-components of quality of life were improved after sending educational short messages in the intervention group (Table 1).

General health scores in the intervention group showed increasing than the control group after sending educational SMS (Table 2). The quality of life score before the intervention in the control group was (56.9) and in the intervention group (58.3), and quality of life mean score after intervention in the control group was (61) and in the intervention group was (67.51). Mann-Whitney statistical test showed a significant difference between the two groups after the intervention ( $p \leq 0.001$ ).

**Table 1.** The comparison of quality of life components mean before and after sending educational SMS in the intervention group

Quality of life components in the intervention group	Before intervention Mean±SD	After intervention Mean±SD	p-value
General health	35±17.26	50.31±15.62	0.001
Physical function	71.8±24.78	98.12±17.62	0.001
Functional limitation due to physical problems	51.87±39.78	67.5±30.59	0.006
Functional limitation due to emotionall problems	39.52±20.46	61.4±34.27	0.001
Social function	76.78±31.71	83.12±24.92	0.059
Feeling of pain	61±32.64	69±26.77	0.015
Feeling of happiness	54.19±12.07	52.94±13.81	0.366
Mental health	50.74±18.06	52.84±18.98	0.79

**Table 2.** the comparisons of general health mean score before and after the intervention in both of the groups

Variable	Group Frequency	Intervention Mean±SD	Control Mean±SD	p-value
General health	Before intervention	35±17.26	45±22.43	0.05
	After intervention	50.31±15.62	45.93±22.23	0.18

## Discussion

Based on these study results, educational SMS is effective on quality of life scores in patients of diabetes type 2. The study also showed that sending short messages have a positive impact on the quality of life factors including general health, physical functioning, and functional limitations rate due to physical problems of diabetic people in the intervention group. In Ferrer-Roca and colleagues study sending SMS improved self-managing and self-controlling of diabetic patients. In this study 33 SMS were sent per month for a period of 8 months, and the patients were resending messages such as blood glucose levels and weight control information to the sender [13].

The results of this study are consistent with our results. In another study conducted by Sharifi-Rad et al showed that education to diabetics type 2 on nutrition led to increase of performance scores in the intervention group that these results are in accordance with our study results, in this study the data were collected by completing questionnaire through direct interview in two times before and one month after educational intervention.8 In Braun and colleagues study in patients receiving insulin, a significant improvement was observed in physical complaining and symptoms after 6 months of participation in the diabetic educational plan and planning techniques [14].The results of this study is coordinated with our results and approve significant and positive impact and improvement on diabetic patients so that the quality of life score had increased in intervention group after sending educational SMS than in the control group.

Ghavami et al in their study showed that continuous care model on quality of life of diabetic patients who is considered as an educational curriculum can improve quality of life (including the general, specific and total) [15].

Heidari et al in a research also showed that education of empowerment model can improve the quality of life mean scores between the two groups [16].Yousefi and colleagues also showed that behavioral-cognitive training results in improvement of quality of life for people with heart disease [17]. These studies emphasize on the accuracy of this study. But in another study which was conducted by Braun and colleagues, the results showed that patients who had previously use insulin, participating in diabetes educational programs and planning techniques had no such an effective impact on the quality of life of the patients [14]. In taghdisi and colleagues study implementing educational programs based on PRECEDE model-based on statistical tests for diabetic persons had

no impact on quality of life score of diabetic patients[18] that the results is in conflict with the results of the present study. Then, the difference between this study results with others be in characteristics of the participants, duration of the program and in education method. The participants' quality of life was determined one month after education and considering the short time interval was due to fear of sample loss or missing them.

The overall results of this study showed that sending educational short messages for the patients with diabetes type 2 results in improvement of general health and quality of life of them both in physical and mental aspects and these findings were also confirmed by statistical tests. Therefore according to the obtained findings sending short messages to diabetics' mobile phones can be used for enhancing self-control of diabetes by themselves, this is a simple, low cost and without limitations of time and place that is accessible for most of the people in the society. It is also proposed to conduct similar studies with larger sample size and in a larger area with increasing the

number and duration of short messages and also it should be tried to enrich and enhance the contents of short messages from both physical and mental point of view.

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### Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

### Conflict of Interest

The authors declare no conflict of interest.

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