Mobile SMS: A tool for behavior and life style modification in management of diabetes – a study from Karachi, Pakistan

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Background

Mobile technology is an innovative way to communicate with patients regarding diabetes education. An interventional study therefore was conducted to determine the effectiveness of mobile Short Message Service (SMS) to improve knowledge and belief regarding diabetes among patients and relatives.

Objective

To determine the effectiveness of Mobile SMS to improve knowledge and belief regarding diabetes among patients and relatives.

Methodology

This interventional study was conducted among 1040 participants where 520 were patients with diabetes (260 as a SMS Group and 260 as a Non-SMS Group) and 520 were their relatives (260 as a SMS Group and 260 as a Non-SMS Group) attending the out-patient department of Baqai Institute of Diabetology and Endocrinology (BIDE) a tertiary care diabetes center from July 2014 to April 2015. The study subjects were selected by systematic randomly. Registered patients' data was collected from the electronic hospital database called Health Management System (HMS) against their medical record number, while the information of relatives was collected on a predefined questionnaire by trained diabetes educator. Even number (patients and relatives) were treated as SMS Group while odd number (patients and relatives) were treated as Non-SMS Group. At baseline visit participant's knowledge and beliefs regarding diabetes were recorded on a predesigned questionnaire followed by an educational session given to both groups on one to one basis by a trained diabetes educator. Educational intervention regarding healthy lifestyle was repeated through SMS to the Non-SMS Group. Two messages per days were sent to the SMS Group for two months. At the end of the study, same questionnaire was used for data collection among both SMS and Non-SMS Group. Statistical Package for Social Sciences (SPSS) version 17.0 was used for statistical analysis.

Results

Baseline characteristics

Variables	Patients			Relatives		
	Non-SMS Group	SMS Group	p-value	Non-SMS Group	SMS Group	p-value
n	139	188	-	137	188	-
Age (years)	47.06 ± 14.83	45.41 ± 15.13	0.3290	31.02 ± 11.51	34.58 ± 11.91	0.0080
Gender						
Male	67 (48.2%)	102 (54.3%)	0.2790	64 (46.7%)	102 (54.3%)	0.1790
Female	72 (51.8%)	86 (45.7%)		73 (53.3%)	86 (45.7%)	
Weight (kg)	72.21 ± 16.32	71.22 ± 17.24	0.6060	61.18 ± 14.80	66.82 ± 13.53	<0.0001
Height (cm)	160.75 ± 10.41	161.58 ± 9.80	0.4660	158.02 ± 16.07	161.60 ± 12.48	0.0280
Body mass index (kg/m ²)	27.87 ± 5.44	27.28 ± 6.54	0.4010	24.79 ± 6.04	25.74 ± 5.70	0.1590
Systolic blood pressure (mmHg)	123.62 ± 16.67	125.31 ± 19.93	0.4270	133.70 ± 27.94	133.31 ± 26.03	0.9020
Diastolic blood pressure (mmHg)	75.64 ± 9.80	77.45 ± 10.04	0.1110	73.62 ± 11.45	72.96 ± 11.22	0.6120
Marital status						
Single	25 (18.0%)	31 (16.5%)	0.9380	56 (40.9%)	46 (24.5%)	0.0030
Married	109 (78.4%)	150 (79.8%)		80 (58.4%)	136 (72.3%)	
Others (Divorced, widow, etc)	5 (3.6%)	7 (3.7%)		1 (0.7%)	6 (3.2%)	
Years of education						
5 years or less	27 (19.4%)	36 (19.1%)	0.040	15 (10.9%)	20 (10.7%)	0.0230
6 to 10 years	55 (39.6%)	50 (26.6%)		57 (41.6%)	51 (27.1%)	
11 to 14 years	48 (34.5%)	78 (41.5%)		49 (35.8%)	97 (51.6%)	
More than 14 years	9 (6.5%)	24 (12.8%)		16 (11.7%)	20 (10.6%)	
Living Status						
Alone	8 (5.8%)	3 (1.6%)	0.039	4 (2.9%)	3 (1.6%)	0.417
Family	131 (94.2%)	185 (98.4%)		133 (97.1%)	185 (98.4%)	
Type of diabetes						
Type 1	16 (11.5%)	32 (17.0%)	0.284	1 (40.0%)	0 (0%)	0.342
Type 2	111 (88.5%)	156 (83.0%)		4 (80.0%)	4 (100%)	
Medications for diabetes						
Oral Hypoglycemic Agents	45 (32.4%)	52 (27.6%)	0.584	2 (40.0%)	0 (0%)	0.056
Insulin	50 (36.0%)	68 (36.2%)		1 (20.0%)	4 (100%)	
Both	44 (31.6%)	68 (36.2%)		2 (40.0%)	0 (0%)	
Hypertension						
Yes	26 (18.7%)	43 (22.9%)	0.618	4 (2.9%)	7 (3.7%)	0.671
No	109 (78.4%)	141 (75%)		129 (94.2%)	178 (94.7%)	

Data presented as Mean ± S.D

Conclusion

Mobile phone messaging is an innovative and effective technology to improve knowledge and beliefs and reduce misconceptions regarding diabetes mellitus both among patients and relatives. Further large scale studies are needed to validate our findings.

Level of knowledge before & after intervention

Level of beliefs before & after intervention