Counseling and motivational short text messages increase adherence and behavioral changes in patient with hypertension

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Counseling and motivational short text messages increase adherence and behavioral changes in patient with hypertension

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Original Article

ABSTRACT

Background: Patients with hypertension often fail to achieve treatment goals of controlling their blood pressure, hence they fall onto the condition of uncontrolled hypertension. In addition to counseling and patient-education programme, an enhanced methods of intervention is needed by pharmacist to increase patient adherence and commitment in taking antihypertension medicine. Motivational intervention has not been widely used by pharmacist in conducting pharmaceutical care to patients.

Objective: This research is aimed to understand the effect of motivational counseling and short text messages (SMS) with adherence and behavioral changes in outpatient with hypertension at PKU Muhammadiyah Hospital Bantul, Yogyakarta.

Methods: Sixty patients who meet the inclusion criteria was divided into two groups, which were experimental group (n=30) who received motivational counseling and SMS, and control group (n=30) who received usual care. Data was collected by interviews, behavioral questionaire, adherence questionaire using Morisky Medication Adherence Scale (MMAS), and blood pressure measurement according to the medical record.

Results: Trans theoretical model (TTM) was used in this research. Stages of behavioral changes were divided into pre-contemplation, contemplation, preparation, and action. Result showed that pharmacist intervention, using motivational counseling and SMS as reminder, contribute to an increase of patient adherence and action stage of behavioral changes in the experimental group by 50% compared to 20% in the control group (p=0,035). Increase of adherence as much as 83,33% was seen in experimental group (p=0,000). A bigger decrease of systolic and diastolic blood pressure (SBP/DBP) was also seen in the experimental group compared to control group (SBP=15,37 vs 1,27mmHg), (DBP=6,73 vs 0,43 mmHg) on their second visits.

Conclusion: Based on these results, it can be concluded that motivational counseling with SMS as a reminder and motivation by pharmacists in hypertensive patients give a positive influence on behavioral changes that improve adherence, and increase of systolic and diastolic blood pressure control.

Latar Belakang: Pasien dengan tingginya tekanan darah atau hipertensi sering mengalami kegagalan untuk mencapai target terapi yaitu pengontrolan tekanan darah. Kondisi ini disebut kondisi hipertensi tidak terkontrol. Selain konseling dan edukasi untuk meningkatkan pengetahuan pasien, diperlukan pengembangan metode intervensi Farmasis guna meningkatkan kepatuhan terapi antihipertensi. Intervensi motivasional belum begitu luas dipakai oleh farmasis dalam melakukan asuhan kefarmasian pada pasien hipertensi.

Tujuan Penelitian: Tujuan penelitian ini adalah untuk mengetahui pengaruh pemberian konseling motivasional

disertai SMS pengingat dan motivasi terhadap perubahan perilaku dan kepatuhan pasien hipertensi rawat jalan di PKU Muhammadiyah Bantul, Yogyakarta.
Metode: *Enam puluh pasien yang memenuhi kriteria inklusi dibagi menjadi dua kelompok, yaitu kelompok perlakuan (n=30, 50%) yang mendapatkan konseling motivasional disertai SMS pengingat dan motivasi, dan kelompok kontrol (n=30, 50%) yang mendapatkan usual care (pelayanan kefarmasian konfensional dari rumah sakit terkait). Pengumpulan data dilakukan dengan melakukan wawancara dan pengisian kuisioner perilaku, kuisioner kepatuhan Morisky Medication Adherence Scale (MMAS), serta nilai tekanan darah diambil dari catatan medis.*
Hasil: *Trans theoretical model (TTM) digunakan dalam penelitian ini, tahapan perilaku terbagi dalam pre kontemplasi, kontemplasi, persiapan dan aksi. Hasil penelitian menunjukkan bahwa pemberian intervensi Farmasis yang berupa konseling motivasional serta SMS sebagai pengingat dan motivasi mampu memperbaiki perilaku pasien kelompok perlakuan pada tingkat aksi sebesar 50% dibandingkan kelompok kontrol sebesar 20% (p=0,035). Terjadi peningkatan kepatuhan sebesar 83,33% pada kelompok perlakuan (p=0,000). Kelompok perlakuan mengalami penurunan tekanan darah sistolik dan diastolik (TDS/TDD) yang lebih besar dibandingkan dengan kelompok kontrol (TDS=15,37>1,27mmHg), (TDD=6,73>0,43 mmHg) pada saat kunjungan kedua (post)*
Kesimpulan: *Berdasarkan hasil penelitian ini dapat disimpulkan bahwa pemberian konseling motivasional disertai SMS sebagi pengingat dan motivasi oleh Farmasis pada pasien hipertensi memberikan pengaruh positif terhadap perubahan prilaku sehingga meningkatkan kepatuhan, serta meningkatkan pengontrolan tekanan darah sistolik dan diastolik.*

INTRODUCTION

Adherence to antihypertensive therapy can result in a controlled blood pressure and minimize the risk of adverse effect.[1] According to Cordoba (2004), Non-compliance with treatment contributes to 50% of failure in hypertension management.[2] These non-compliance can be caused by the refusal of the patient towards treatment, changing the dose or how to take medicine, or quitting the treatment of hypertension. A lot of researches about intervention which aim to increase patient adherence has been developed. The role of health provider (especially pharmacist) is needed in the process of managing patient treatment plan.[3]

Poor control of blood pressure in hypertensive patient is associated with behavioral changes, where these changes usually occur gradually. Motivational steps or readiness to change has been studied widely, and it is shown to be one of the factor in behavioral changes. Trans Theoritical Model (TTM) had been developed by Prochaska and DiClemente from early 1983.[4] TTM was design to acquire direct effect (wanted or intentional behavioral changes) for individual or community. This model is a concept of behavioral changes which mostly used in health behavior researches.[5] DiClemente (1994) explained that intention or behavioral changes can be divided into 5 stages including: precontemplation (not considering change), contemplation (considering change, but not implementing it), preparation (seriously considering change, and immediately implementing it but not consistently), action (implementing change consistently for at least 6 months), and maintenance (maintaining behavioral changes for at least 6 months).[6]

Pharmacist interventions are needed to reach behavioral changes in adherence to treatment, these interventions include motivational intervention, behavioral intervention, and patient education intervention. William R. Miller has developed a counseling strategy in the form of motivational counseling, this method is a combination of skills and clinical counseling style which elaborate psychotherapy to help patient to commit to change. Motivational counseling helps health workers to explore patient's understanding and their readiness to change.[7]

Based on the things mentioned above, a research to study the correlation between motivational counseling and SMS as reminder with behavioral changes and blood pressure in hypertensive patient is needed.

METHODS

This research was conducted in Internal medicine clinic at PKU Muhamadyah Hospital Bantul Yogyakarta within January – April 2013 using quasi experimental design. Inclusion criteria included all patients within the age of 18-65 who was diagnosed with hypertension grade I and II with or without dyslipidemia or diabetes

mellitus, receiving one or more antihypertensive drugs, own a cellular phone, and was not deaf or blind during research period. Patients with pregnancy were excluded.

Subjects who meet the inclusion criteria was divided into two groups, where the odd-sequence subjects were included into control group, and even-sequence subjects were included into experimental group. Control group received conventional pharmaceutical care (usual care), while experimental group received motivational counseling and SMS as reminder and additional motivation. Oral counseling was given on their first visit, and SMS was sent one time every day at 7.00 am until their second visit (in average, every patient received 15-20 SMS). This was done as a reminder and to give more motivation. Motivational counseling included individual interest and awareness, as well as individual respect and appreciation to choose their treatment course, with a collaboration between patient and counselor. Hence, it was expected to improved internal motivation and desire to change from patient. These are the difference between traditional counseling method with motivational counseling.

Data was colected using interviews and behavioral questionaire, adherence questionaire using Morisky Medication Adherence Scale (MMAS), while blood pressure measurement was collected from medical record data.[1] This measurement was done pre and post study. Statistical analysis was done using Chi-Square test to determine behavioral changes and adherence, while *T-Test* was used for blood pressure measurement. Results from data analysis was shown in mean ± deviation standard. P value <0,05 was considered statistically significant.

RESULTS

Sociodemographical characteristic of control and experimental group is shown in Table 1. Subjects characteristic, which includes gender, age, educational background, occupation, and grade of hypertension, is not significantly different between control and experimental group (p>0,05). In this research, based on patient characteristic, can be seen that majority of research subjects are female, in the age of 50-59.

Dominant educational background are between 0-9 years, most are private sector workers. Most subjects in control and experimental groups are patients with Hypertension grade I. Correlation between interventions and behavioral changes on the first (pre) and second (post) visits is shown in Table 2. Results shows statistically significant difference between control and experimental group on their second visits (post), indicated by P value=0,035 (p<0,05). Experimental group shows larger improvement in the action stage of behavioral changes (50%) compared to control group (20%) on their second visits (post).Whereas in the contemplation, pre-contemplation, and preparation stage, experimental group also shows better improvement compared to control group. This is indicated by a decrease in the number of patients who were in preparation stage (from 7 to 5 patients), contemplation stage (from 14 to 7 patients), and pre-contemplation stage (from 8 to 3 patients).Behavioral changes viewed from cognitive, affective, and psychomotoric aspects in control and experimental groups on their first (pre) and second visits (post) is shown in Table 3. In the experimental groups, statistically significant changes can be seen from the cognitive, affective, and psychomotoric aspect (p<0,05). While in the control group, there are no statistically significant change from the affective, and psychomotoric aspect (p>0,05).

The correlation between intervention with patient adherence to therapy in control and experimental group can be seen in table 4. Chi Square test was used to measure the correlation between intervention with patient adherence to therapy in control and experimental group at their first (pre) and second visits (post). Result shows P value=0,072 (p>0,05) on their first visits (pre) and P value=0,000 (p<0,05) on their second visits (post).

Tabel 1 Subjects characteristic of patient with hypertension at PKU Muhammadiyah Hospital Bantul Yogyakarta

Patients characteristic	Experimental group (n=30)	%	Control group (n=30)	%	P
Gender					
Male	8	26,7	9	30,0	0,604
Female	22	73,3	21	70,0	
Age (years)					
18-29	0	0	0	0	0,619
30-39	1	3,3	5	0	
40-49	9	30,0	16	16,7	
50-59	13	43,3	9	53,3	
60-65s	7	23,3	0	30,0	
Education					
0-9 years	14	46,7	20	66,7	0,423
10-12 years	8	26,7	6	20,0	
>12 years	8	26,7	4	13,3	
Occupation					
Government employee	7	23,3	7	23,3	0,536
Private sector workers	21	70,0	16	53,3	
Laborer	2	6,7	5	16,7	
Unemployed	0	0	2	6,7	
Level of hypertension					
Grade I	17	56,7	19	63,3	0,864
Grade II	13	43,3	11	36,7	

Pearson correlation test for parametric data, Spearman correlation test for non parametric data.

Table 2 Correlation between interventions and behavioral changes in hypertensive patients during first visits (pre) and second visits (post).

Interventions	Action		Preparation		Contemplation		Pre-contemplation		Σ	P
	Σ	%	Σ	%	Σ	%	Σ	%		
Pre										
Control	6	20,0	1	3,3	11	36,7	12	40,0	30	0,799
Experimental	1	3,3	7	23,3	14	46,6	8	26,7	30	
Σ	7	11,7	8	13,3	24	40,0	21	35,0	60	
Post										
Control	6	20,0	3	10,0	13	43,3	8	26,7	30	0,035*
Experimental	15	50,0	5	16,7	7	23,3	3	10,0	30	
Σ	21	35,0	8	13,3	20	33,3	11	18,3	60	

* = Statistically significant difference (p<0,05) between experimental and control groups

Table 3 Cognitive, Affective, and Psychomotoric changes of hypertensive patients in control and experimental groups during their first (pre) and second visits (post)

Class	Aspect	*Pre*	*Post*	*P*
Control	Cognitive	2,27±1,08	2,60±0,77	0,005*
	Affective	1,97±0,96	2,00±1,01	0,769
	Psycomotoric	1,83±1,01	2,03±1,03	0,180
Experimental	Cognitive	2,50±0,97	2,87±0,43	0,014*
	Affective	2,43±0,57	2,63±0,56	0,031*
	Psycomotoric	1,90±0,76	2,70±0,47	0,000*

* = Statistically significant difference (p<0,05) between experimental and control groups

Table 4 Correlation between intervention with hypertensive patients adherence to therapy in control and experimental group on their first (pre) and second visits (post)

Group	Patien Adherence						Σ	P
	High		Medium		Low			
	Σ	%	Σ	%	Σ	%		
Pre								
Control	5	16,7	13	43,3	12	40,0	30	0,072
Experimental	12	40,0	10	33,3	8	26,7	30	
Post								
Control	6	20,0	16	53,3	8	26,7	30	0,000*
Experimental	25	83,3	3	10,0	2	6,7	30	

* = Statistically significant difference (p<0,05) between experimental and control groups

Table 5 Decrease in blood pressure (Δ) systolic and diastolic in hypertensive patients between control and experimental group during their first (pre) and second visits (post)

Blood pressure	Experimental group (n=30)	Control group (n=30)	P
	mean±SD	mean±SD	
Systolic	15.37±23.69	1.27±19.89	0.015*
Diastolic	6.73±14.72	0.433±8.66	0.048*

* = Statistically significant difference (p<0,05) between experimental and control groups

Decrease in systolic and diastolic blood pressure between control and experimental group during their first and second visits shows statistically significant difference, where systolic P value =0,015 and diastolic P value=0,048 (P<0,05) (Table 5).

DISCUSSION

Transtheoretical Model (TTM) is a concept of behavioral changes which mostly used in health behavior researches. It was developed by Prochaska & DiClemente in the early 1983. This research used TTM to explain stages in behavioral changes. This model assumed that individual in different stages of behavioral changes would think and act differently.[4] Stages of behavioral changes from *stage of change DiClemente algorithm* consist of pre-contemplation, contemplation, preparation, and action.

During pre-contemplation stage, an individual has not think or intend to change their bad habits in the near future (within 6 months). During contemplation stage, an individual has started to realize and willing to change their bad habit (usually within the next 6 months). At this stage, an individual would contemplate the pros and cons or the benefits and disadvantages of their behavioral changes. During preparation stages, an individual would have been prepared to start taking real action in the near future (within 30 days). While during the action stage, an individual would have been changing their bad habits for 6 months and continue to work hard to keep moving forward.

Pharmacist interventions in the form of motivational counseling and SMS as a reminder are able to improve the behavioral changes of hypertensive patients in experimental group, causing a statistically significant correlation between the level of interventions and hypertensive patient adherence to therapy (p=0,000). Experimental group received counseling and SMS as reminder in addition to patient education, as a motivation from researcher. Oral motivational counseling was aimed to educate and motivate patients, as well as to measure patients readiness to change. SMS was sent to remind and motivate patient to raised awareness and adherence towards therapy.

At the end of the research, the proportion of behavioral changes in action stage in experimental group were larger than control group, which are 15 patients (50,0%) compare to 6 patients (20,0%) in control group (Table 2). Larger behavioral changes was also seen in experimental group in all other stages, whether at the stage of preparation, contemplation, or pre-contemplation. Better behavioral changes was seen in every stages due to the intervention of pharmacist in the form of motivational counseling and education about Hypertension and the use of antihypertensive medicine, as well as SMS as a reminder and motivation to all patients in experimental group. These have been proven to motivate patients to change their behavior to become better. Hence, it can be concluded that pharmacist intervention in the form of motivational counseling and SMS

as reminder has valuable contributions toward behavioral changes in hypertensive patients. This result is parallel to Posidente et al., (2005) who said that motivational counseling can improve patient adherence during treatment.[7]

In this research, patients behavior was also observed from 3 aspects, based on Benyamin Bloom theory who differentiate behavior into three domains, which are cognitive, affective, and psychomotoric.[8] Result showed statistically significant increase in all three domains in experimental groups (p<0,05). While in control group, there were no statistically significant changes in any domains (p>0,05). Experimental group showed statistically significant increase in cognitive (p=0,014).This is because educational counseling about hypertension and its treatment was given. Control group also showed statistically significant increase in cognitive (p=0,005), this might be due to external education or knowledge about hypertension, (ex. from clinician, newspaper, advertisement, and other source of information). Cognitive has a major role in behavioral changes. A team from the World Health Organization (WHO) analyzed that one of the factor that cause changes in an individual behavior is knowledge. This is parallel to the thoughts and feelings theory in behavioral changes.[8]

Statistically significant improvement was also seen in affective aspect of the experimental group (p=0,031). In contrary, there were no statistically significant change in the control group (p=0,769). Affective is defined as an individual's readiness and willingness to perform an action based on their prior knowledge.[8] Improvement of affective in the experimental group is due to the information gained from pharmacist which change their attitude positively towards their disease and treatment course. Information gained from pharmaceutical counseling grew trust from patient's perspective and developed a sense of importance towards their treatment course, hence patients tend to be more prepared to change.

Psychomotoric is the end phase of behavioral changes which is underlied by prior knowledge with the result of positive behavior and action.[8] Table 3 shows statistically significant increase

in psychomotoric aspect in experimental group (p=0,000) compare to control group (p=0,180). This is due to the prescence of pharmaceutical counseling, patient education programme about hypertension and its treatment, as well as SMS as a reminder which was sent everyday at 7.00 am to encourage patient adherence.

The final result of action and psychomotor change is demonstrated by compliance in carrying out antihypertensive therapy. Previous research also showed that adherence to therapy is statistically significant in correlation with behavioral changes, individual efficacy, and age.[9] Result showed bigger improvement of adherence to therapy (83,3%) in experimental group compared to control group (20%). As seen in Table 4. This result is parallel to Posidente et al., (2005) who said counseling in combination with patient education and motivation could increase adherence to therapy.[7]

Adherence to therapy is a major factor in controlling patient's blood pressure.[10] In this research, blood pressure control was measured based on the decrease of systolic and diastolic blood pressure during subjects first (pre) and second visits (post) as seen in Table 5. The average reduction in systolic blood pressure in the experimental group is greater than the control group (15,37 vs 1,27 mmHg). Diastolic blood pressure in experimental group also showed greater reduction compared to control group (6,73 vs 0,43 mmHg).

According to this result, statistically significant difference were seen between experimental and control group's blood pressure control. Motivational counseling and SMS has positive contribution towards behavioral changes, hence increases adherence to therapy and elevates blood pressure control in hypertensive patients. This result is parallel to Morgado et al.,(2011) which said that pharmaceutical intervention can increase adherence to therapy, and systolic and diastolic blood pressure control.[11]

CONCLUSION

Motivational counseling accompanied by SMS as reminders in pharmaceutical care of hypertensive patients gives positive impact on behavioral changes, increase adherence to therapy, and increase blood pressure control.

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