ORIGINAL RESEARCH

Effects on hypertensive patients' satisfaction with information about their medication after nurses' consultation training

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Background: There is a well-known problem in hypertension care with patients' adherence to treatment. Patients who score high in answering the instrument Satisfaction with Information about Medicine Scale are reported to have greater adherence to their medication.

Aim: To explore how hypertensive patients' satisfaction with information about their medicines was affected by nurses' education in Motivational Interviewing.

Material and methods: The Stages of Change model and Motivational Interviewing was the theoretical base for consultation training for nurses. Nineteen nurses attended 3 days of video-recorded consultation training with simulated patients. They were updated in hypertensive medication and were trained in motivating patients to improve their self-management as well as adherence to lifestyle changes and medication. The satisfaction with information instrument identifies patients' satisfaction with information about the action and usage of medication as well as potential problems with it. The instrument was used to assess how well the needs of individual patients for medicine information were met at baseline and 2 years after the training. The 19 trained nurses in the intervention group worked with 137 patients, and a control group of 16 nurses, who gave normal care, worked with 51 patients.

Results: There was a difference between the intervention and control group in total score (P=0.028) 2 years after the intervention. Patients in the intervention group perceived higher satisfaction with the action and usage of their medication (P=0.001) and a lower degree of potential problems with their medication (P=0.001). Patients in the control group also perceived a lower degree of potential problems with their medication (P=0.028).

Conclusion: We suggest that consultation training for nurses with the aim of motivating patients to be more self-directed in their self-care improves satisfaction with information about medication.

Keywords: counseling, hypertension, SIMS instrument, adherence

Background

Decades of research have highlighted the importance of adherence to antihypertensive medication for decreasing cardiovascular risk of high blood pressure.[1–3] Besides the importance of suitable antihypertensive therapy, the result of the therapeutic regimen is affected by socioeconomic factors, lifestyle, and associated comorbidity.[4] Furthermore, as hypertension is a long-term condition, and as the patients manage the regimen by themselves, patient participation and satisfaction with and understanding of the regimen may be critical for the outcome of the care. To achieve concordance, ie, a mutual understanding of the need for medication, health providers need to understand patient information needs regarding the medicines prescribed.[5]

We conducted a 3-day residential training course to increase patient-centeredness by the use of motivational interviewing (MI),[6] the Stages of Change (SOC) model,[7] and guidelines for cardiovascular prevention.[8] In the randomized controlled study, 212 patients and 35 nurses participated. The beneficial effects of the consultation training on blood pressure control[9] emphasized the importance of consultation training and the use of behavioral models in motivating patients to adhere to treatment.

The interrelationship between patient-centeredness and satisfaction with care has recently been outlined by Ferguson et al.[10] Patients want more information on potential drug-related problems.[11] With the use of the instrument Satisfaction with Information about Medicine Scale (SIMS), the patients with a variety of diseases reported increased adherence to their medication.[12] The 826 patients were recruited from anticoagulant, asthma and diabetic, cardiac rehabilitation, and oncology outpatient clinics, and from cardiac and general medical wards. The patients at the cardiac rehabilitation clinic reported a positive correlation with reported adherence to anticholesterol medicines ($P<0.05$); the higher the score on the SIMS, the greater the adherence to their medicines.

Aim

The purpose of the study was to explore how hypertensive patients' satisfaction with information about their medicines was affected by nurses' education in patient-centeredness.

Subjects and methods

Nurses were recruited for the study from a register of all nurses who were members of the Swedish Hypertension Society and from a register of all nurse-led hypertension clinics at health centers in Sweden. They were randomly allocated to the intervention group (IG) (n=19) or control group (CG) (n=16). Only one nurse was recruited from each health center. During the winter of 2003 and 2004, the residential multifactorial education[13] was held for 3 days. The nurses in the intervention group were educated in the SOC model,[7] MI[6] with patient-centeredness (Table 1),[14] and applying guidelines for cardiovascular prevention,[8] lifestyle factors, and pharmacological treatment.[15] Simulated patients were used in the video-recorded role-play where the nurses practiced their consultation technique. The recordings were reviewed in small groups with supervision of the research team (ED, AB, KIK). The nurses only had

**Table 1** Description of every part of patient-centeredness

Patient-centeredness	Description
Using open questions	Questions that cannot be answered with just a "yes" or "no"
Using expansive ways of putting questions	Using questions that start with "describe", "list", "tell me more", for example, to get the patient to go into detail and unfold a line of thought
Reflecting on what is said	Repeating the last words, rewording, or checking on something to make sure it has been correctly understood
Perhaps provoking the patient	Provoking to lead the patient to talk about why to change behavior
Allowing pauses	Allowing for the patient's pauses and for one's own in order to leave the room for thought and reflection
Identifying the patient's perceived threats to health	Identifying or actively asking for the patient's apprehensions of threats to health
Identifying the patient's perceived vulnerability to complications	Identifying or actively asking for the patient's apprehensions about complications of hypertension
Making it easier for the patient to obtain and assimilate relevant knowledge	Making it easier to obtain and assimilate relevant information with a booklet or checking what the patient has heard or read before
Helping the patient to see opportunities for changing behavior	Giving suggestions about action to be taken or giving support for thoughts expressed
Helping the patient to weigh up the pros and cons of changing behavior	Asking the patient what he/she appreciates and dislikes about a particular behavior
Identifying the patient's beliefs in the power to change behavior	Identifying or actively asking for the patient's beliefs about the efficacy of behavioral change
Negotiating the reason for behavioral change	Discussing the basis for and the importance of making changes and the risks of not changing behavior
Negotiating where the patient should start his/her behavioral change	Discussing which behavior to start with and how the patient could start changing behavior
Negotiating the goal for changing behavior	Discussing what the change should produce
Negotiating the behavior the patient should change	Discussing the behaviors that are important to change
Summarizing the counseling	Summarizing possible needs for change

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this training once. The results of the consultation training on nurses' communication with patients have previously been reported.[9,14,16,17] Patients in the CG received normal care. The patient inclusion criteria were: hypertensive patients consulting nurses at health centers; men and women aged <75 years; systolic blood pressure ≥160 mmHg and/or diastolic blood pressure ≥90 mmHg; body mass index ≥25 kg/m^{2}; serum cholesterol ≥6.5 mmol/L and/or serum triglycerides ≥2.3 mmol/L; and not reporting regular physical activity. The trained nurses in the IG worked with 153 patients, and only 60 patients were worked with in the CG, although the inclusion period lasted for 4 years. The decision to stop the inclusion period was taken after a new power analysis was performed. As the amount of eligible hypertensive patients at the health centers differed greatly, the nurses worked with one to 14 patients each. There were no statistical differences between the groups at baseline except for systolic blood pressure (IG: 159.1 mmHg [standard deviation: 16.57] versus CG: 167.0 mmHg [standard deviation: 17.59], $P<0.01$). In the statistical analyses, patients were only included if they had complete data, collected from all three measurements at baseline, after 1 year, and after 2 years. Reasons for loss at follow-up are presented in Figure 1.

The validated instrument, SIMS,[12] was chosen as patients scoring high in answering it have greater adherence to their medication. Adherence to medication is of great importance in hypertension care to help the patients achieve blood pressure control. The intervention with consultation training, amongst other patient-centeredness interventions, was used with the aim of helping the nurses to individualize their counseling with their patients, which was expected to increase adherence to both medication and change of lifestyle. The instrument contains two subscales: patients' satisfaction with information about the action and usage of their medication (items 1–9) and the potential problems of medication (items 10–17) (Table 2). Examples of questions were "Have you received information about your medicine?", questions regarding "what it is called", "how it works", "whether the medicine has any side effects", and "what you should do if you forget to take a dose". The patients were asked to rate the amount of information they had received for all 17 items using the alternatives "too much", "about right", "too little", "none received", or "none needed". The alternatives "about right" and "none needed" were given a score of 1, and the rest of the alternatives were given a score of 0. This means that a high score indicate a high degree of overall satisfaction with the amount of information received according to Horne et al.[12] Besides analyzing each subscale one by one, a total satisfaction rating was made. The Cronbach's alpha coefficients of items 1–9 was 0.92 and of items 10–17 was 0.91. Questions were added to the instrument about where the patients had received their information (Table 3) and how useful they found it. For the latter question, the patient could choose the alternatives "very useful", "useful", "fairly useful", "not useful", or "don't know".
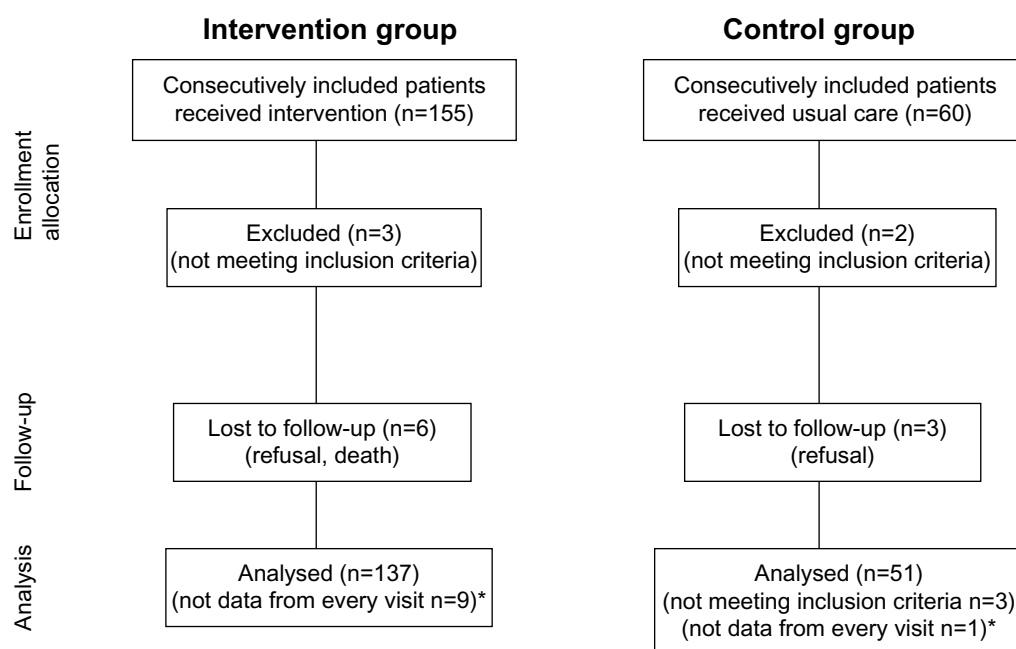
Figure 1 Flow diagram of patients.
Note: *Data missing due to patients not showing up or the nurses being off duty when data should be collected.

Table 2 The items of the Satisfaction with Information about Medicine Scale instrument

1. What your medicine is called
2. What your medicine is for
3. What it does
4. How it works
5. How long it will take to act
6. How you can tell if it is working
7. How long you will need to be on your medicine
8. How to use your medicine
9. How to get a further supply
10. Whether the medicine has any unwanted side effects
11. What are the risks of getting side effects
12. What you should do if you experience unwanted side effects
13. Whether you can drink alcohol whilst taking this medicine
14. Whether the medicine interferes with other medicines
15. Whether the medication will make you feel drowsy
16. Whether the medication will affect your sex life
17. What you should do if you forget to take a dose

Notes: Items 1–9 concern patients' satisfaction with information about the action and usage of their medication, and items 10–17 concern the potential problems of medication.

Statistics

Due to the ordinal character of the SIMS scale, nonparametric statistical methods were applied. For comparison of SIMS values at baseline and 2-year follow-up between IG and CG, the Mann–Whitney U-test was used. For comparisons within each group between baseline and follow-up at 2 years, the Wilcoxon signed rank test was used. The same statistical methods were applied to analyze sex differences. Cronbach's alpha was calculated for each of the subscales in SIMS.

Ethics

The study adhered to the principles outlined in the Declaration of Helsinki and was approved by the Local Ethics Committee

Table 3 Added questions about where the patient had received information from

1. Telephone nursing service
2. Physician at the hospital
3. Public health nurse at the health center
4. Physician at the health center
5. Nurse at the hospital
6. Pharmacy
7. Pharmacy at the hospital
8. Other people with the same disease
9. Family or friends
10. Helping organization
11. Patient association
12. Newspaper or magazine
13. TV or radio
14. Medical book
15. Other

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Results

There were 137 and 51 patients in the IG and CG, respectively, who completed the questionnaire at baseline and at follow-up at 1 and 2 years. There was a significant increase ($P<0.001$) in the SIMS score in the IG from baseline to the 2-years follow-up both in part 1 (information about the action and usage of medication) and in part 2 (information about potential problems of medication), as well as for the total score (Table 4). A significant difference between the IG and CG could be seen in part 2 ($P=0.037$) and in the total score ($P=0.028$) after 2 years. Where the patients had received their information about their medicines and how useful the information was at the 2-year follow-up is presented in Table 5. Most often, information was received from the pharmacy and from physicians and nurses at hospitals and health centers. Besides information from the pharmacy, the information from the nurses was the most useful.

Patients in the CG found the information from family or friends and medical books useful or very useful to a greater extent ($>10\%$) than patients in the IG. Furthermore, patients in the IG found the information from other people with the same disease, family or friends, and helping organization to be not useful to a greater extent ($>10\%$) than patients in the CG.

Discussion

The patients in the IG significantly increased their satisfaction with information about the action and usage of their medication as well as for potential problems of the medication from baseline to the 2-year follow-up, and did so significantly more so than patients in the CG. The information from nurses, physicians, and the pharmacy was the most useful as reported by the patients. Patients in the CG thought that the information they had from certain people or institutions was more useful than did patients in the IG. Furthermore, the patients in the IG were more negative regarding the usefulness of information from people with the same disease, family or friends, helping organization, and medical books compared to the patients in the CG.

The SIMS instrument has not been used in research to any great extent. For that reason, we do not have many other results to relate to. Another limitation of our study is that the results apply to the 2-year follow-up, but we do not know how long the effect of the intervention persists. On the other hand, the MI intervention means that the patient

Table 4 Overview of the results of the patients' answers to the Satisfaction with Information about Medicine Scale instrument part 1 (information about the action and usage of medication), part 2 (information about potential problems of medication), and the total of the scores

	Intervention group n=137		Control group n=51		Difference between the groups at 2 years
	Baseline	2 years	Baseline	2 years	
Part 1, median (range)	6 (0–9)	8 (0–9)***	7 (0–9)	6.75 (0–9)*	
Part 2, median (range)	4.57 (0–8)	6 (0–8)***	4 (0–8)	5 (0–8)	$P=0.037$
Part 1 and 2, median (range)	11 (0–17)	14 (0–17)***	10 (0–17)	11 (0–17)*	$P=0.028$

Notes: $*P<0.05$ and $***P<0.001$.

should follow behavior that is induced of their own free will and, therefore, will persist more than if they behave at someone else's demand.[6] For that reason we assume that the behavior of adherence to medication will be maintained. Another factor is that we do not know how well the nurses performed their counseling during the years after the one-time training.

After being counseled by educated nurses during the 2-year study period, the patients in the IG had higher scores in the SIMS instrument than patients in the CG. The reason why they scored higher, we assume, is that these patients became more secure and independent regarding their medication. The training was intended to help the nurses in the patient-centered counseling to make their patients more competent in taking care of themselves. This means that taking medicines is a kind of self-care that the patients exercised.[18] Feeling competent and independent may then have had the result that these patients perceived that they were content with the information they had received from the health care providers.

For that reason, they needed less information from other sources than patients in the CG.

We can compare the results from this study with how the same patients scored high in the Exercise of Self Care Agency instrument.[19] Scoring high in the Exercise of Self Care Agency instrument means that you value your health and take care of yourself. A natural conclusion of this is that patients who value their health and take care of themselves include adherence to their medication in these strategies, which helps the hypertensive patient to maintain controlled blood pressure. This is confirmed in our earlier results, which showed that, after 2 years, 52.6% of the patients in the IG reached the target of ≤140/90 mmHg compared with 39.2% in the CG.[9]

Patients in the IG felt reassured by the information provided by their nurses, physicians, and the pharmacy, and thought generally that other sources for information about their medicines were less useful than did the patients in the CG. The patients in the CG appreciated these sources too, but

Table 5. The patients' answers to where they had received their information about their medicines and how useful the information was at the two year follow-up

	Very useful/useful		Fairly useful		Not useful	
	IG n=137 n (%)	CG n=51 n (%)	IG n=137 n (%)	CG n=51 n (%)	IG n=137 n (%)	CG n=51 n (%)
Telephone nursing service	27 (19.7)	12 (23.5)	6 (4.4)	2 (3.9)	25 (18.2)	6 (11.8)
Physician at the hospital	69 (50.4)	25 (49.1)	7 (5.1)	1 (2.0)	12 (8.8)	3 (5.9)
Public health nurse at the health center	85 (62.1)	26 (51.0)	8 (5.8)	1 (2.0)	6 (4.4)	1 (2.0)
Physician at the health center	53 (38.7)	21 (41.1)	6 (4.4)	0	14 (10.2)	4 (7.8)
Nurse at the hospital	111 (81.0)	37 (72.6)	2 (1.5)	2 (3.9)	0	1 (2.0)
Pharmacy	93 (67.9)	28 (54.9)	14 (10.2)	7 (13.7)	3 (2.2)	0
Pharmacy at the hospital	28 (20.4)	12 (23.5)	7 (5.1)	4 (7.8)	16 (11.7)	4 (7.8)
Other people with the same disease	18 (13.2)	11 (21.5)	27 (19.7)	9 (17.6)	27 (19.7)	5 (9.8)
Family or friends	23 (16.7)	14 (27.5)	26 (19.0)	6 (11.8)	33 (24.1)	6 (11.8)
Helping organization	4 (2.9)	1 (2.0)	0	3 (5.9)	38 (27.7)	8 (15.7)
Patient association	4 (2.9)	1 (2.0)	3 (2.2)	3 (5.9)	30 (21.9)	8 (15.7)
Newspaper or magazine	16 (11.7)	6 (11.8)	13 (9.5)	8 (15.7)	32 (23.4)	9 (17.6)
TV or radio	18 (13.1)	9 (17.6)	14 (10.2)	9 (17.6)	27 (19.7)	8 (15.7)
Medical book	13 (6.4)	11 (21.6)	13 (9.5)	9 (17.6)	25 (18.2)	5 (9.8)
Other[a]	23	4	0	0	0	0

Note: [a]Internet, medicine package/information note, patients' guide to pharmaceutical specialties in Sweden, the nurse at the health center.
Abbreviations: IG, intervention group; CG, control group.

they thought other sources, eg, family and friends, helping organizations, and people with the same disease, were useful too and did not distance themselves from these other sources to the same extent as the patients in the IG did. This is confirmed with the negative answers about what was perceived as less/not useful for both groups. The information available from these other sources is, perhaps, not always accurate or up-to-date, which, for the patients in the CG, might imply that they did not have the same opportunity to perform their self-care; in other words, they did not have the same opportunity to adhere to their medication as the patients in the IG. This applies not just to the patients in the CG as all patients have the right to, and also want to, have information about their medication.[11] Furthermore, all patients, without any exceptions, benefit from having controlled blood pressure.[2] Moreover, we may presume that there was a difference in the quality of information that was given to the patients in the CG compared to the patients in the IG due to the training these nurses had had.

As the patients in the IG had higher SIMS score than the patients in the CG, we may assume that their nurses talked about the patients' medication to a greater extent or in another way than the nurses in the CG. From this we can draw the conclusion that training of nurses in MI and the SOC model in order to be able to communicate information in a comprehensive manner is very important and even crucial for patients in improving adherence to medication. This was exemplified in a meta-analysis on effects of MI used with patients in primary care,[20] and was further confirmed in another meta-analysis specifically studying cognitive-based behavior-change techniques.[21] Whether or not our results are valid for patients with other cardiovascular disorders or other diseases in other contexts is a subject for further research.

Conclusion

We suggest that consultation training for nurses with the aim of motivating patients to be more self-directed in care improves satisfaction with medication.

Acknowledgments

Author contributions

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in either drafting the article or revising it critically for important intellectual content; and gave final approval of the version to be published.

Disclosure

The authors report no conflicts of interest in this work.

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