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Information-giving and its effect on elderly patients' adherence

Key Messages

1. The methods of information-giving, 'explicit categorisation' and 'specific advice', were found to be effective means of enhancing adherence in elderly diabetic patients.
2. Patients given information by means of 'explicit categorisation' were 1.89 times more likely to be adherent than those receiving no specific information-giving methods.
3. The probability of a patient being adherent was increased by 3.6 times if he or she was given 'specific advice'.

Introduction

Poor adherence is a common problem, found in 30 to 50% of patients, regardless of the nature of their disease and prognosis,[1] and has many adverse effects including harming prognosis and wasting health resources.[1] It has been argued that a patient who understands his or her disease, prognosis, and treatment plan; can memorise regimens; and is satisfied with the consultation, will adhere to a doctor's advice. Use of targeted information-giving skills can increase patients' memories and adherence.[2] This study examined the effectiveness of two types of information-giving skills, 'explicit categorisation' and 'specific advice', on elderly diabetic patients' adherence. Diabetic patients were chosen because diabetes is a major cause of morbidity and mortality in Hong Kong. A survey found that 10% of people aged between 25 and 74 years suffered from diabetes in the late 1990s[3] and the prevalence was higher among older people. Almost one in four elderly people had diabetes in 1999[4] and this rate is expected to rise as the population ages.

Objectives

The objectives of this study were: (1) to examine whether the use of 'explicit categorisation' and 'specific advice' are more effective for educating elderly diabetic patients than the usual presentation; and (2) to measure that level of effectiveness if the answer was positive.

Methods

This was a prospective study conducted in the diabetes clinic of a local district hospital. All patients aged 60 years or above attending between July and November 1996, with no psychiatric disorders or need for joint management, were invited to participate. After participants gave verbal consent, their doctors used the designated presentation skills and the consultation was tape-recorded. A total of 240 patients consented to participate and four doctors trained in the specific information-giving methods used their usual presentation, 'explicit categorisation' or 'specific advice', when presenting information to their patients. There was no specific requirement for a normal presentation; it was loose in structure and the advice was general. Doctors using 'explicit categorisation' structured the information and presented it category by category, with an introducing statement for each category. Doctors using the 'specific advice' technique would do their consultations as usual but would give concrete, specific advice.

After the consultation, respondents had a post-consultation interview, done with semi-structured questionnaires asking about socio-demographic information; morbidities; knowledge of diabetes; recall of doctors' advice; satisfaction with consultation; lay health beliefs and practices; perceived effectiveness of various treatments; and social support. Face validity of all related measurements was sought and tested in a pilot study. Scales of knowledge, patient satisfaction, and social support were found to have acceptable-to-good internal consistency in the pilot study (Cronbach's coefficient α=0.6075, 0.7819, and 0.8098, respectively).

A home visit was paid about 2 weeks after the consultation. Information concerning adherence was gathered using semi-structured questionnaires, tablet

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counts, and self-reports. Lastly, all participants' hospital records covering the 6-month period after their first consultation were checked to ascertain whether they had kept scheduled follow-up clinic appointments.

In the first 5 weeks, all four participating doctors followed their usual format during consultations. They were then evenly divided into two teams, with one team using 'explicit categorisation' and the other 'specific advice' over the next 5 weeks. To eliminate any carry-over effects, they swapped to the other information-giving methods for the final 6 weeks. All participants were randomly allocated to either the control group or any of the experimental groups according to when their consultation was made and which doctor they consulted. The doctors were given 1 to 2 weeks' training before adopting a new presentation skill.

The main outcome measure was patient adherence. This referred to the extent to which behaviour coincided with health advice given by the doctor. Five dimensions were measured: adherence to oral medication, insulin injections, diet control, exercise, and one scheduled follow-up clinic visit. Information concerning patients' compliance with dosage, frequency, usage, and recommended interval between dosages of both oral medications and insulin injections was elicited during home visits. All information collected was checked against the prescriptions given by doctors. Adherence to oral medications and insulin injections was expressed as percentages of agreement with the prescription. Adherence to diet control and exercise advice was measured by self-reported percentages. Hospital records were checked to ascertain whether the scheduled clinic appointment was kept and adherence recorded as either 0% or 100%. The mean adherence rate for the first four aspects was calculated and participants categorised as either adherents or non-adherents. The cut-off point was a 75% adherence rate.

Results

Among the 321 eligible samples approached, there were nine non-respondents and 83 refusals. Only 229 respondents completed the post-consultation interviews, leading to a response rate of 71%. Most respondents could only recall 15% of what doctors had told them. Their general knowledge about diabetes was also poor with 58% of respondents failing all six knowledge questions, while another 19% only gave one correct answer. Nevertheless, over half of the patients were either very satisfied or satisfied with the overall consultation. Almost 80% of patients rated their general health status as either good or average. Less than one third of the patients perceived their diabetes to be severe or very severe, and the majority (73%) were not worried about their prognosis. Most (80%) of them believed that treatment, including oral medication, insulin injections, diet control, and exercise was effective. Furthermore, 89% of the respondents believed 'trust in doctor' was the best means of treating diabetes. Nonetheless, adherence ranged widely from a high rate of 94% compliance with the follow-up clinic visit to a lower rate of 51% adhering to exercise advice. A total of 58% were considered adherents in the overall adherence measurements.

Only 219 cases were valid for further group analysis because one doctor forgot to use the designated skill and his 10 cases had to be discarded. They were randomly distributed into the control group (116 cases), 'explicit categorisation' group (ECG) [48 cases], and 'specific advice' group (SAG) [55 cases]. Patients in the ECG were more likely to live with either immediate family members or stem family members than the control group (χ^2=11.878, df=2, P=0.003), and were very satisfied with their social relationship with others (χ^2=8.664, df=2, P=0.013). Their overall knowledge of diabetes was poorer (χ^2=8.804, df=2, P=0.012), especially their knowledge about treatment (χ^2=8.815, df=2, P=0.017) and complications (χ^2=8.611, df=2, P=0.013). Nonetheless, their overall satisfaction was higher (χ^2=6.829, df=2, P=0.033). Higher satisfaction was also seen in communication comfort (χ^2=7.321, df=2, P=0.026), distress relief (χ^2=6.370, df=2, P=0.04), and rapport (χ^2=6.602, df=2, P=0.037).

Respondents in the SAG were younger (χ^2=10.417, df=2, P=0.005) but had a longer history of diabetes (χ^2=6.387, df=2, P=0.041). They were more likely to live with either immediate family members or stem family members (χ^2=14.206, df=2, P=0.001) [Table 1]. They tended to fail the diabetes knowledge test (χ^2=5.983, df=2, P=0.05) and also the treatment knowledge test (χ^2=9.549, df=2, P=0.008).

Only 190 respondents could be contacted for the home visits, making the response rate of 87%. Of these 190 respondents, 73% of the ECG and 81% of the SAG were adherents, while only 48% of the control group were adherents. Compared to the control group, the statistical differences were: ECG (χ^2=7.182, df=1, P=0.009) and SAG (χ^2=14.420, df=1, P=0.001). The higher adherence rate in the ECG was still present after controlling for some variables. It existed, for instance, among those who failed the diabetes knowledge test, had no knowledge about treatment, no knowledge about complications, average scores on patient satisfaction, high satisfaction with communication comfort, distress relief, and rapport. For the SAG, the higher adherence rate was also noted after controlling for history of diabetes. It prevailed among younger patients, those who lived with immediate family members or stem family members, who failed the knowledge test, and who had no knowledge of diabetes treatments. More adherents to diet control were found in the ECG compared with the control group (χ^2=6.427, df=1, P=0.015). Likewise, there were more adherents to oral medication in the SAG compared with the control group (χ^2=14.420, df=1, P=0.000) [Table 2]. These last two group differences disappeared after controlling for the other variables.

Table 1. Comparison of characteristics between groups

Characteristic	No. (%)		
	'Explicit categorisation' group (ECG), n=48	'Specific advice' group (SAG), n=55	Control group, n=116
Socio-demographic			
Gender			
Male	17 (35)	17 (31)	40 (34)
Female	31 (65)	38 (69)	76 (66)
Age-group (years)			
60-65	18 (38)	25§ (45)	25 (22)
66-70	14 (29)	16 (29)	52 (45)
≥71	16 (33)	14 (25)	39 (34)
Educational attainment*			
No formal education	29 (62)	29 (53)	60 (52)
Primary education	10 (21)	16 (29)	43 (37)
Secondary education or above	8 (17)	10 (18)	13 (11)
Marital status†			
Married	36 (75)	36 (65)	74 (64)
Others	12 (25)	19 (35)	41 (36)
Financial sustainability‡			
Not enough	9 (19)	8 (15)	20 (17)
Barely enough	17 (35)	22 (41)	36 (31)
More than enough	22 (46)	24 (44)	60 (52)
Living arrangements			
Living alone/living with other non-immediate or stem family member(s)	9§ (19)	11§ (20)	36 (31)
Living with immediate family member(s)	21 (44)	25 (45)	21 (18)
Living with stem family member(s)	18 (38)	19 (35)	59 (51)
Morbidities			
No. of years suffering from diabetes			
≤8	14 (29)	12‖ (22)	47 (41)
8-16	20 (42)	25 (45)	45 (39)
>16	14 (29)	18 (33)	24 (21)
Co-morbidity			
Diabetes only	23 (48)	14 (25)	40 (34)
Diabetes and hypertension/heart disease	17 (35)	26 (47)	45 (39)
Diabetes and other disease(s)	8 (17)	15 (27)	31 (27)

* There was only one respondent who had attained post-secondary education; one missing case for ECG
† One missing case for the control group
‡ One missing case for the SAG
§ P≤0.05 (all comparisons between ECG and control group, and SAG and control group were conducted by using the Chi squared test)
‖ P≤0.005 (all comparisons between ECG and control group, and SAG and control group were conducted by using the Chi squared test)

Table 2. Comparison of number of adherents between groups

Adherence	No. (%)		
	'Explicit categorisation' group (ECG), n=41	'Specific advice' group (SAG), n=48	Control group, n=101
Overall adherence*			
Non-adherents	11† (27)	9† (19)	52 (52)
Adherents	30 (73)	39 (81)	49 (48)
Adherence in different treatment regimens			
Oral medication			
Non-adherents	6 (21)	4‡ (11)	22 (32)
Adherents	23 (79)	31 (89)	47 (68)
No. of missing cases	1	6	10
Insulin injection			
Non-adherents	2 (14)	3 (20)	6 (15)
Adherents	12 (86)	12 (80)	35 (85)
No. of missing cases	0	2	6
Diet control			
Non-adherents	5‡ (16)	11 (31)	36 (41)
Adherents	26 (84)	24 (69)	51 (59)
No. of missing cases	7	14	10
Exercise			
Non-adherents	11 (41)	12 (43)	41 (55)
Adherents	16 (59)	16 (57)	33 (45)
No. of missing cases	7	12	9
Follow-up clinic appointment			
Non-adherents	3 (6)	4 (8)	6 (5)
Adherents	44 (94)	48 (92)	106 (95)
No. of missing cases	1	3	4

* The overall adherence referred to the overall mean of adherence with oral-medication, insulin injection, diet control, and exercise
† P≤0.005 (all comparisons were done between ECG and control group, and SAG and control group by using Chi squared test)
‡ P≤0.05 (all comparisons were done between ECG and control group, and SAG and control group by using Chi squared test)

Table 3. Multiple regression analyses of patient adherence

	Standardised coefficient beta	P value
Model 1		
(Constant)		0.000
Explicit categorisation	0.175	0.037
R^2=0.031		
Model 2		
(Constant)		0.000
Explicit categorisation	0.196	0.023
Diabetes knowledge level	0.372	0.016
Knowledge of treatment regimens	-0.360	0.019
R^2=0.073		
Model 1		
(Constant)		0.000
Specific advice	0.203	0.013
R^2=0.041		
Model 2		
(Constant)		0.000
Specific advice	0.191	0.021
Diabetes knowledge level	0.347	0.021
Knowledge of treatment regimens	-0.359	0.018
R^2=0.080		

Multiple regression analyses showed that after the use of 'explicit categorisation', patients' overall diabetes knowledge and specific treatment knowledge could significantly account for patient adherence. The explanatory power after adjustment (R^2=0.073) was even higher than the use of 'explicit categorisation' per se (R^2=0.031). Similarly, apart from the use of 'specific advice', patients' overall diabetes knowledge and specific treatment knowledge could significantly explain the adherence (R^2=0.080). The variance accounted for was also higher than the use of 'specific advice' per se (R^2=0.041) [Table 3].

Patients given information via 'explicit categorisation' were 1.89 times more likely to be adherent than those receiving no specific information-giving method (odds ratio [OR]=2.89; confidence interval [CI], 1.31-6.40). Patients given 'specific advice' were 3.6 times more likely to be adherent (OR=4.60; CI, 2.02-0.47). Yet, these probabilities were no longer significant after all explanatory variables, including patients' diabetes knowledge and specific treatment knowledge, were taken into consideration.

Discussion

Our participants were similar to those in previous studies: for instance, the elderly are more likely to suffer from chronic co-morbidities, taking an average of three or more prescription medications.[5] They also usually have poor recall of the information given during a consultation, and poor knowledge about their disease.[6] Nonetheless, they have quite high patient satisfaction levels.

In our study, those who did not receive any intervention during consultation showed similar levels of adherence to those in other studies. We found adherence percentages ranged from a high rate of 85% with insulin injections to a low rate of 45% to exercise advice. As a whole, 48% of respondents were classified as adherents in the overall adherence measurements (including adherence with oral medication, insulin injection, diet control, and exercise). This was no different from the 50% observed in other countries.[7] The levels of adherence to follow-up clinic visits was higher in this study. Meta-analyses show that about 19 to 28% fail to turn up for medical appointments,[8] yet the failure rate observed in our control group was just 5%. The overall absence rate for follow-up clinic visits throughout the period of sample recruitment was between 13 and 18%. A high attendance rate for out-patient medical appointments is common because people are made to wait a long time for these appointments and tend not to miss the opportunity.

Patients were more likely to be adherents if their doctors adopted either 'explicit categorisation' or 'specific advice' when delivering information to their patients. Some issues remain unresolved. Firstly, adherence was explained by the use of specific presenting skills (either 'explicit categorisation' or 'specific advice'), patients' diabetes knowledge and treatment knowledge. The latter two variables are supposed to theoretically overlap with each other, yet their impacts on adherence were not cancelled out in the overall explanatory model. The relationship of the constructs of these two variables needs to be solved if a full explanation is to be found.

Secondly, the inverse relationship between patients' treatment knowledge and adherence shown in the adherence explanatory model suggests an alternative account for adherence. According to the cognitive model (in which the doctor's presentation skills are emphasised), cognitive functioning, reflected in both a patient's knowledge of diabetes as well as the patient's recall of information, plays a substantial role in improving adherence. Such an explanation overlooks the subjective experience of individual patients. Patients with chronic diseases may become 'experts' by learning about the disease, treatments, and their physical responses during health seeking. They may exchange notes with other patients and seek further information from the media or relevant organisations. Such a process suggests that they may actively negotiate the management of their treatment regimens. Fine adjustments may be made to fit individual needs. Knowledge that is supposed to be useful in medical settings may therefore not be so accurate when accounting for the adherence.

Thirdly, the small variations noted in the explanatory models indicate the weak explanatory power of information-giving skills (either 'explicit categorisation' or 'specific advice') in adherence. There was not much difference; even after both the patient's overall knowledge of diabetes and knowledge about treatment were taken into consideration. Nevertheless, as the prime objective of this study was to examine the effectiveness of the use of 'explicit categorisation' and 'specific advice' for improving patient

adherence, an explanatory model is beyond the scope of this study.

Furthermore, the use of 'explicit categorisation' and 'specific advice' were proven to be effective means of improving patient adherence. The outcome effect of 'specific advice' was more obvious than that of 'explicit categorisation'. This is understandable as concrete and specific advice on treatment regimens is easier to follow. Although clear and well-structured, the information used during 'explicit categorisation' may only enable patients to remember what categories of information have been given.

Limitations of the study

There is no gold standard for adherence. All measurements are subject to methodological strengths and weaknesses. For example, the time for measuring outcomes is arbitrary. The benefits brought by any intervention may wane within a year. Self-reporting also leaves room for patients to give socially desirable answers. This study was limited to a specific group of patients and was thus not representative of the entire spectrum of elderly diabetic patients in the territory. The sample size was also modest. Refusals increased in the last phase of the 'consultation' stage but the data were sufficient for analysis. Overall, the 26% refusals recorded in this study was lower than the 36% noted in overseas studies.[9] Information about non-respondents was unavailable so a comparison between respondents and non-respondents was not possible. Likewise, no baseline data for within-group and between-group comparisons were available because of tight schedules in the clinic and the physical constraints of the setting. The observations drawn from this study may thus not fully reflect the actual effect of the information-giving skills. Furthermore, being the means of intervention themselves, participating doctors could not be blind to the study. This was not the case for the respondents, who were only told it was a study on their consultation needs.

Conclusions

Use of 'explicit categorisation' or 'specific advice' during medical consultations can improve adherence in elderly diabetes patients. Patients given information via 'explicit categorisation' are about two times more likely to adhere than those receiving information by no specific method. If given 'specific advice', patients were almost four times more likely to adhere.

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