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Evaluation of medication adherence in elderly patients taking anti-hypertensive medications

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Abstract

INTRODUCTION: Medication adherence is one of the most compelling and puzzling behaviours displayed by patients and yet it is vital in achieving successful health outcomes. There are many factors that can affect adherence to a medication regimen which can be categorized as unintentional due to cognitive impairment, lack of understanding and knowledge of dosage schedule and intentional due to medication beliefs and inability to manage multiple medications. Patients with hypertension often managed with multiple anti-hypertensives which can result in poor adherence.

OBJECTIVE: To evaluate the medication adherence in elderly patients taking one or more anti-hypertensive medications.

METHODS: Cross-sectional study on patients admitted to Miri General Hospital (MGH). Data collection was done through questionnaire adapted from Brief Medication Questionnaire (BMQ).

RESULTS: Patients from Miri General Hospital participated in the survey (N=30). We found that 86.7% of the patients are compliant with their medications as they taken care by either their caretaker or family members.

CONCLUSION: In conclusion, it is essential for adherence to be studied to improve the quality of healthcare and reduce the complications of the disease.

KEYWORD: Medication adherence, anti-hypertensive medications

Introduction

Hypertension or high blood pressure defined as having persistent, elevated systolic blood pressure of 140 mmHg or above and/or diastolic blood pressure of 90 mmHg or above (1). Hypertension is a major risk factor for cardiovascular disease and especially stroke. Hypertension that left untreated or sub optimally treated could lead to increased risk of morbidity and mortality due to cardiovascular, cerebrovascular, or renal diseases. Therefore to reduce the risk of cardiovascular disease, hypertensive patients must be treated appropriately, either through lifestyle interventions alone or in combination with medication (2). Treatment fails when patient-related barriers towards treatment are not recognised. A better assessment and understanding of these barriers is required for optimised treatment.

Hypertension affects close to one billion individuals worldwide. In Malaysia, the prevalence of hypertension among adults aged 30 years and above has increased from 32.9% in 1996 to 40.5% in 2004 (2). Then again the number is continuously growing due to the progressive aging of the population. It is important to have a successful treatment in hypertension to reduce morbidity and mortality, as well as in controlling health care costs associated with these conditions. Unfortunately, blood pressure control is poor, especially in patients with chronic conditions such as hypertension. Determinants of poor blood pressure control are many. Physicians play an important role in patient's treatment choices and also optimizing doses of medicines prescribed is vital in ensuring the success of therapy. Moreover, patients' adherence to the prescribed antihypertensive medication is also an important factor in achieving blood pressure targets. Thus, health professionals need to work in partnership with their patients to achieve treatment goals.

Medication adherence is one of the most compelling and puzzling behaviours displayed by patients and yet it is vital in achieving successful health outcomes. However, the non-adherence may appear to be in greater risk in elderly populations as it aggravates health which leads to hospitalisation and to avoidable health-care expenditure (3). It has estimated that medication non-adherence cost as much as \$ 100 billion per year in the United States. There are many factors thought to affect adherence to a medication regimen in older patient which can be categorized as unintentional due to cognitive impairment, lack of understanding and knowledge of dosage schedule and intentional due to medication beliefs and inability to manage multiple medication (4).

Despite the decades of the study on causes of poor adherence and development interventions, it appears that experts have little agreement regarding the definition of adherence and how it is best measured. Furthermore, conflicting reasons for medication non-adherence have been revealed (3). For example, some reported non-adherence is associated with increased number of prescribed drugs while others disagreed. This may suggest that the measurement of adherence is a major problem in research.

There is currently no gold standard although some experts may consider Medication Event Monitoring System (MEMS) as one. Many methods have been employed in the past such as indirect method of pill counts, electronic monitoring, appointment keeping, patient questionnaires and direct method such as biological assays and measuring concentrations of a drug in the blood or urine. However, each method has its own advantages and limitations, although experts disagree about best method to measure adherence to medications (5). In short, there is no universally accepted criterion standard for measuring medication adherence despite the importance of adherence to the success of medication interventions.

The current study aimed to assess medication adherence to antihypertensive medications among individuals with hypertension by using the BMQ, which assesses drug regimens, beliefs and patient recall.

Method

The ethical approvals from the Ministry of Health Medical Research Ethics Committee (MREC) and Miri General Hospital (MGH) received before the study was conducted. A written consent was taken to each participant before taking part in the questionnaire.

A cross-sectional study carried out to evaluate the medication adherence in elderly patients taking one or more anti-hypertensive medications. The study included patients that admitted in the ward. Data collected across a 3 week period. All eligible patients during study period was 33 but 3 of them excluded in this study due to language barrier. The inclusion criteria in this study included (1) patient who are age 65 years and above (6), patient taking one or more antihypertensive medications. No exclusion criteria in this study.

A written consent was present to each subject. The consent form attached with the questionnaire.

There are 2 parts in the instrument, where part 1 is the consent form and part 2 is the questionnaire. The questionnaire adapted from Brief Medication Questionnaire. The first part of the questionnaire was asking the current antihypertensive medication the patient is taking including water pills. The second part of the questionnaire was asking the patient what their medication(s) indicated for, how much they took with respect to treatment regimens, patient beliefs and patient recall, the ability to remember to take medication.

Results

A total of 30 elderly patients with hypertension recruited. The average age of the participants was 75.5 years (from 65 to 86 years). Most participants were male, prescribed with two to three medications to control their blood pressure. Table 1 shows the characteristics of the participants in this study.

Table 1. Characteristics of the Study Sample

Characteristic	n	%
Age (years)	76	
Gender		
Male	21	70
Female	9	30
Number of antihypertensives per day		
1	3	10
2	14	46.7
3	8	26.7
4	3	10
5	2	6.6

Majority of the patients claimed that their doctors prescribed antihypertensive to be taken on daily basis. The remaining 6.7% reported that their prescribers wanted them to take their antihypertensive during non-dialysis days only (4 times a week).

All participants were asked if they stopped any of their medications for blood pressure in the past 6 months. Table 2, we observed that most of them claimed that they did not stop any of their medications over the past 6 months while some of them reported that they stopped one of their antihypertensive due to low blood pressure. The participants further interviewed on their dose administration for the past one week before admission. Majority

reported that they took their antihypertensive as prescribed in the past one week. There are some did forget to take their antihypertensive medications in the past one week (13.3%).

Table 2. Missed doses reported

	n	%
Missed dose for the past 6 months		
Yes	2	6.7
No	28	93.3
Missed dose for the past 1 week		
Yes	4	13.3
No	26	86.7
Total days of missed doses in the past 1 week		
2	2	6.7
3	1	3.3
7	1	3.3

According to Table 3, all participants had their single daily dosing antihypertensive regimen. About half of the subjects (43.4%) had to take their antihypertensive more than once daily dosing. Participants who had to take more than 1 pill were 23.3%. Most of the patients took one pill each time for their antihypertensive regimen. About a third of them had to split their tablets into halves for dose administration.

Table 3. Dosing Regimen for Study Sample

	n	%
Frequency of dosing		
1	30	100
2	8	26.7
3	5	16.7
Number of pills per dose		
0.5	11	36.7
1	25	83.3
1.5	1	3.3
2	3	10
3	3	10

Participants were asked if their antihypertensive regimen work well or bother them. Most of them satisfied with most of their antihypertensive while some thought that their antihypertensive medications worked moderately well for them. There is patient felt that his antihypertensive did not work at all for him. All patients had antihypertensive which did not bother them at all in their regimen prescribed. The results are shown in Table 4.

Table 4. Response Towards Patient's Drug Regimen

	n	%
How well does the drug work for patient		
Not at all well	1	3.3
Moderately well	4	13.3
Very well	28	93.3

How much does the drug bother the patient

Not at all	30	100
Bothers a little	0	0
Bothers a lot	0	0

They also interviewed on the difficulty in different areas such as remembering the doses, paying for their medications, getting their refill on time, getting unwanted side effects, long term effects of the drugs and other concerns or problems. Table 5 shows 83.3% had no difficulty in remembering the doses of each medications. All patients had no difficulty in paying for their medications. Some isolated cases where the patients had difficulty in getting her medication refill on time and had unwanted side effects from one of his antihypertensive and worried of the long term effects of his antihypertensive. Otherwise, other patients did not report any unwanted side effects or worry about long term effects of their regimen. Apart from that, only one patient had concern on one of his antihypertensive causing other problem leading to him stopping his medication without doctor's advice.

Table 5. Difficulty Faced by Patients

	n	%
Remember all the doses	5	16.7
Pay for the medications	0	0
Get refill on time	1	3.3
Get unwanted side effects from the drug	1	3.3
Worry about long term effects of the drug	1	3.3
Drug may cause other concerns or problems	1	3.3

Discussion

Our study adopted the definition of adherence by WHO which is the extent to which a person's behaviour corresponds with agreed recommendations from a health care provider (7). Adherence to medication plays an important role in treatment for patients with hypertension to reduce risk of complications such as renal failure, stroke, myocardial infarction and heart failure (1). Generally, adherence to antihypertensive in elderly participants recruited in this study is satisfactory. Majority of them did not miss their medication one week before admission to the ward. Most of them used to their regimen prescribed as they have been taking the medications for some time and they taken care by family members who will monitor their dose administration at home.

Single daily dosing is the simplest way of taking their medications as they only need to remember to take their medications once at the same time every day, for instance, taking their medication after waking up in the morning before starting their activities of the day. All the patients prescribed with the single daily dosing regimen for higher adherence to their antihypertensive medications. However, some patients often prescribed with more than one antihypertensive due to poor control of blood pressure. In some cases, they had to take medications two or three times daily due to the pharmacokinetic of the drug itself. Nevertheless, elderly patients participated in this study showed that a more sophisticated regimen did not seem to affect their adherence to their medications as only two out of 13 of them missed their medications one week before admission. Besides, it is very common to prescribe one tablet dosing for patient for their ease and adherence as they do not have to split their medications before

administration. In this study, we found that 50% of the patients who missed their medications one week before admission had half tablet or one and a half tablet in their antihypertensive regimen. However, those patients who had to take two to three tablets per dose were able to adhere to their medications. This could mean that patient might face some difficulty in adhering to their regimen due to the additional effort to halve the tablet before administration. Hence, further study needs to be carried out.

Effectiveness of the medications prescribed is vital in ensuring adherence to their medications. Patients will not be compliant to their medications if they find that their medication is not working well for them. Majority of the patients recruited reported that they are satisfied with the medications prescribed for them and hence the high adherence percentage observed. On the other hand, a side effect of the medications is one of the contributing factors which could result in non-adherence to their medications. Patients who had experienced certain adverse effects from the medication might stop the medication themselves before consulting the prescriber. This may then lead to poor health outcome and more complications. Thus, communication with prescriber or pharmacist might play a role in resolving this issue.

Of all the difficulties listed for the participants, the need to remember the doses is the most commonly difficulty faced. Age might be a contributing factor in this case as all the participants are above 65 years old. However, most of the patients had family members to take care of their medications and thus poor adherence is not a big issue in this group of patients. Nevertheless, reinforcement on the importance of adherence by pharmacist during dispensing of medications and usage of pill box may help in improving patient's adherence to their medications. On the other hand, Malaysia government provides a highly subsidised healthcare needs up to 97% (8). This high rate

of subsidy reduces the burden faced by patients as they do not need to pay a high amount of money for their follow-up and medications in government setting, resulting in higher adherence to their medications. Patients are also often educated to appreciate their medications to avoid wastage of medications. Besides, medications are supplied on monthly basis in government setting to ensure proper storage of medications and avoid wastage. This, however, does not affect the adherence in patients recruited in this study as only not many of them had problem to get their subsequent supply on time.

Study Limitations and Future Research

This study has a few limitations one of which is the sample size. Due to time constraint, the study could not conduct to bigger sample size as to see the real impression of medication adherence. As with all research involving self-report questionnaires, this study involved elderly patients who are taken care by caretakers or family members. Therefore, these findings are limited by the possibility that participants can easily manipulate the answers given consequently transmit a false impression of medication adherence.

Conclusion

Owing to the high prevalence of hypertension and the complexity of treating such chronic health conditions, it is essential that adherence be studied to improve the quality of healthcare and reduce the complications of the disease (9). There are still many challenges in further understanding the rationality for non-adherence and to design a better intervention to improve adherence, however getting the patient to play a role in taking their medications as prescribed is a worthy goal for patient to achieve maximal benefits from the treatment.

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