IMPACT OF PILL BURDEN AND SOCIO-ECONOMIC STATUS OF PATIENTS ON ADHERENCE TO PHARMACOLOGIC THERAPY IN ELDERLY

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ABSTRACT

Background: Noncompliance is especially significant in elderly population due to a multitude of problems. Polypharmacy and socio-economic status have been reported as major factors influencing compliance and further the disease progression.

Aim: We studied the impact of pill burden and socio-economic status on drug compliance in our elderly population.

Methodology: Patients aged over 65 years with non-insulin dependent diabetes mellitus and hypertension attending our Geriatric clinic over a period of two months was assessed for drug compliance based on pill burden and socio-economic status.

Results: Pill burden was a significant factor influencing compliance in patients with uncontrolled diabetes mellitus (p<.01) and uncontrolled hypertension (p<.05). However, the effect of pill burden on compliance in patients with both uncontrolled hypertension and uncontrolled diabetes was not statistically significant (p>.05). Socio-economic status of the patients had no influence on compliance in any other compared groups.

Conclusion: While we found that pill burden was a major factor influencing patient drug compliance, socio-economic status did not seem to have a significant influence on the same.

KEYWORDS

Compliance; socio-economic status; polypharmacy

INTRODUCTION

Drug non-compliance is significant issue in all parts of the world, cutting across developing and developed countries and is compounded by variability...
in measurement and lack of uniformly defined parameters. The problem of noncompliance is especially significant in the elderly population who are burdened with a multitude of medical problems which further gets complicated owing to their cognitive decline, dependability on others to access medical care, polypharmacy, complex regimens and drug related adverse effects. In 2003, a national survey of Medicare beneficiaries found that 40% of seniors reported some form of medication non-adherence(1). While non-adherence in diabetes can lead to long term complications such as nephropathy and retinopathy which lower the quality of life, patients with hypertension who take < 80% of their antihypertensive doses have a fourfold increased risk of a cardiac event (2).

Non-adherence rates have been reported in ranges from 0-59% and these estimates are independent of pathological condition (3-6). However, an extensive search for similar studies in India yielded no result. There is a need to study the problem of noncompliance and its contribution in the control of hypertension and diabetes in the Indian elderly as we have one of the highest prevalence of diabetes and hypertension in the world. Hence, we undertook the present study to look into two major factors- pill burden and socio-economic status- and their impact on drug compliance in our elderly population.

MATERIAL AND METHODS

The present study was undertaken in a state-run tertiary care medical centre after obtaining ethical clearance from the institution's local body. Patients aged over 65 years with non-insulin dependent diabetes mellitus and hypertension attending our Geriatric clinic over a period of two months was included in the study after obtaining their consent. Patients with insulin dependent diabetes mellitus were excluded from the present study.

BP was measured by trained investigators using aneroid sphygmomanometer according to standard practice. An average of two readings measured 10 minutes apart was considered for analysis in the present study. BP control was defined as measurements <130/80 mmHg in diabetics in accordance to JNC 7 guidelines. The adequacy of blood sugar control was assessed by measuring glycosylated haemoglobin using standard methods. HbA1c more than 7 indicates inadequate control.

Patients were asked non-judgmentally the total number of tablets they had been prescribed per week and how many pills they took and missed in the last week. The compliance was evaluated by asking the patient and verified with the attendant to further increase the strength and consistency of our results. Adherence was defined as the extent to which patients followed their medication schedules as prescribed by their health care providers. Patients who reported taking less than 80% of their prescribed medicines were considered not to be adhering to treatment.
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A

Non-compliance (%)

Number of Pills

B

Non-compliance (%)

Number of Pills

C

Non-compliance (%)

Number of Pills
STATISTICAL ANALYSIS

Data were collected and analysed using the statistical package for social sciences (SPSS) version 16. Chi-square test was used to analyse the effect of pill burden on compliance in the following groups- controlled and uncontrolled hypertension, controlled and uncontrolled diabetes mellitus, controlled and uncontrolled diabetes and hypertension respectively. Two tailed ‘p’ values below 0.05 were considered significant.

RESULTS

A total of 218 patients were included in the study. The male: female ratio in the present study was 1.72:1. The mean age of the patients was 68 years. While 25.50% of the study group were uncontrolled diabetics, 30.20% of them had uncontrolled hypertension. 8.72% had uncontrolled diabetes and uncontrolled hypertension at the point of data collection.

The overall rate of non-compliance with medication was 14.09%. These numbers rose to 31.11% in uncontrolled hypertensives, 34.21% in uncontrolled diabetics and 84.61% in patients with both uncontrolled hypertension and uncontrolled diabetes mellitus (Figure 1).

Pill burden was a significant factor influencing compliance in patients with uncontrolled diabetes mellitus (p<.01) and uncontrolled hypertension (p<.05). However, the effect of pill burden on compliance in patients with both uncontrolled hypertension and uncontrolled diabetes was not statistically significant (p>.05). Socio-economic status of the patients had no influence on compliance in any other compared groups.

DISCUSSION

Drug adherence among elderly is a major issue in health care with compliance rates varying from 0% to 59%(7-10). Older age, previous non-adherence, competing health problems, non-white race, low socioeconomic status, pill burden, complex regimens, side effects, and cost of medications have been suggested as the other major factors influencing drug adherence in long term co-morbidities, while studies addressing these issues are limited (11). The non-compliance rate in the present study was low compared to those reported in the world literature (12, 13). We speculate that availability and access to medicines as a major factor to influence compliance. This issue was addressed prior to the start of the study by providing medicines for a very low insurance premium and ensuring patients' monthly visits to the hospital to collect these medicines. However, pill burden stood out as a major factor influencing compliance in the present study. Similar reports were seen in studies done by Borzecki and colleagues (14). Most of the studies addressing the issue of polypharmacy is in connection with HIV and most of the reports.
come to a consensus that polypharmacy has a detrimental effect on adherence (15-17).

We did not find socio-economic status of the patient to be significantly influencing the compliance in the present study. As stated earlier, this could be due to the availability of medicines for a very low insurance premium.

LIMITATIONS

Previous studies have adopted assessment over a longer duration of time, sometimes as much as months, to obtain data on compliance. We, however, employed a shorter time period to elicit more accurate responses by minimizing recall bias. This may have underestimated compliance the diseases under study are long term co-morbidities influenced by medication over weeks to months.

CONCLUSION

One should be aware of the common barriers to medication taking and provide screening and support to their patients to resolve barriers if they exist. Non-adherence often results in failing to reach recommended targets and impacts outcomes. Pill burden is a major modifiable factor influencing patient drug compliance. However, further large scale trials should be considered to study the dynamics of this modifiable factor. Meanwhile, Physicians and health care providers should seriously consider simplifying patients' drug regimen to the fullest to improve drug compliance.

REFERENCES


