Assessment of medication adherence using medication adherence rating scale-5 in patients with major non-communicable diseases at tertiary care hospital

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INTRODUCTION

Adherence to medication is indispensable in the case of chronic illness were the patient has to stick to the prescribed medication for a long period of time whereas adherence in infectious diseases is relatively flexible were the duration of the treatment is less. In the rural setup, adherence has become complicated with the lack of understanding about the health condition or the vital importance of medicine in curing the illness. Non-adherence among the elderly is mainly due to forgetfulness or lack of assistance especially in taking them to the hospital or in delivering the medications at home. Sometimes the elderly due to their inability to read or due to their poor eyesight take the wrong medications at the wrong time or due to lack of knowledge take more medicines.1

It is also due to the fact that some of them don’t refill the prescriptions or take the medications as prescribed for the recommended period of time.2 Some of the working middle age adults do not prioritise coming for regular...
check-up, thus skipping to refill the prescriptions once the medicines get over. Re-filling of prescription is important in the case of diabetes were the set of medicines are changed after monitoring and reviewing of blood glucose level.2 Other predictors of non-adherence according to the WHO are co-morbidity, polypharmacy, non-adherence due to adverse effects of the medicine and patients with asymptomatic disease, who do not experience any symptoms from their health condition are susceptible to non-adherence and on the other hand patients with symptomatic disease stick more to symptom relieving medicines than to preventive medicines like the use of analgesics such as NSAIDS, opioids for temporary relief. Increase in frequency of daily doses of medicine increases non-adherence.

Patients’ understanding of directions given such as use of insulin pen and inhalers also affect adherence.3 Therefore, a new approach has been implemented through Pharmaceutical care by counselling the patients in different areas which includes the importance of using medicines in chronic illness; lifestyle changes like dietary modifications, exercise; maintenance of hygiene, self-monitoring.4 And it also focuses in encouraging the patients on the importance of their lives to their families and to the society. By effectuating this approach, we can strengthen them in their mental thinking towards the way they look at their own lives and towards adherence to medicine and treatment, thereby reducing hospital readmissions and the burden of health care costs.5

METHODS

Study design, site and period

A prospective observational study was conducted in the Department of Medicine, Rajah Muthiah Medical College Hospital (RMMCH), Chidambaram, India over a period of 6 months (November 2018 to April 2019) to assess the medication adherence in patients with major non-communicable diseases.

RESULTS

The study was conducted in patients with major non-communicable diseases at the Department of Medicine, RMMCH, Chidambaram, India in order to assess the medication adherence and compare the adherence between the adult and geriatric population. Table 2 shows demographic characteristics in which almost similar number of patients were observed in both the adult (77) and geriatric (73) age groups out of which 88 were males and 62 were females. Out of 150 patients, 29 were literate, 80 were able to read, 41 were unable to read; 132 were married, 18 unmarried; socio-economic habits suggest that 14 were smokers, 13 were alcoholic, 8 had both the habits, majority about 53 were neither smoker nor alcoholic.

Table 1: Medication adherence rating scale MARS-5.

| Item no. | Scale                                      | Always | Often | Sometimes | Rare | Never |
|----------|--------------------------------------------|--------|-------|-----------|------|-------|
| 01       | Patient forgets to take his/her medicines  |        |       |           |      |       |
| 02       | Patient alters the dose of medicines       |        |       |           |      |       |
| 03       | Patient stops his/her medicines            |        |       |           |      |       |
| 04       | Patient misses out a dose of the medicine  |        |       |           |      |       |
| 05       | Patient takes less medicines than prescribed |      |       |           |      |       |

Ethical approval was obtained from the ethical Department of Raja Muthiah Medical College Hospital, Chidambaram.
antihyperlipidemic, antiplatelets medicines and vitamin supplementation such as BCT.

The frequency of medicine use was mostly twice daily especially for patients with CVD and CVA and thrice for patients with DM. For most of the diseases, patients were asked to visit the outpatient once in a month. Table 4 shows that most of the diseases were associated with hypertension (26.66%), some of them with diabetic complications (7.32%) such as diabetic nephropathy, neuropathy, retinopathy and foot ulcer. Giddiness was a major complaint among the patients especially with CVD. To some proportion anemia’s (3.33%), hypothyroidism (4.66%), stroke (9.33%) were observed along with other diseases.

According to the scale, a score of <20 is considered as poor adherence, while 20 to 25 is considered as moderate and a score of 25 is good adherence. Table 5 shows that most of the patients from almost all chronic diseases showed moderate adherence of 60% (i.e.) MARS-5 score between 20 to 25, as most of them rarely or sometimes forget the medicine, take less than prescribed or miss a dose or alter the dose of medicine. About 40% showed poor adherence before patient counselling and was reduced to 13.33% after patient counselling. Poor adherence was slightly higher in geriatric population 17.80% than in the adults 9.09%. MARS-5 score was 25 for about 26.66%. Table 7 shows that adherence was more among the adults (90.90%) when compared to geriatric population (82.19%).

**Table 2: Demographic characteristics of study population.**

| Category       | No. of patients | Percentage (%) |
|----------------|-----------------|----------------|
| Age            |                 |                |
| 18-39          | 24              | 16             |
| 40-59          | 53              | 35.33          |
| 60-80          | 67              | 44.66          |
| 80 above       | 6               | 4              |
| Gender         |                 |                |
| Male           | 88              | 58.66          |
| Female         | 62              | 41.33          |
| Marital status |                 |                |
| Married        | 132             | 88             |
| Unmarried      | 18              | 12             |
| Education      |                 |                |
| Literate       | 29              | 19.33          |
| Able to read   | 80              | 53.33          |
| Unable to read | 41              | 27.33          |
| Social habits  |                 |                |
| Smoker         | 14              | 9.33           |
| Alcoholic      | 13              | 8.66           |
| Both           | 8               | 5.33           |
| None           | 53              | 35.33          |

**Table 3: Disease and therapy related information.**

| Characteristics   | No. of patients | Percentage (%) |
|-------------------|-----------------|----------------|
| Diseases          |                 |                |
| CVD               | 70              | 46.66          |
| Stroke            | 14              | 9.33           |
| Diabetes mellitus | 15              | 10             |
| Hypertension      | 6               | 4              |
| Asthma            | 10              | 6.66           |
| COPD              | 5               | 3.33           |
| Chronic kidney disease | 22       | 14.66         |
| Cancer            | 2               | 1.33           |
| Seizure           | 4               | 2.66           |
| Parkinson’s disease | 2             | 1.33           |

**Table 4: Co-morbid condition.**

| Co-morbidity             | No. of patients | Percentage (%) |
|--------------------------|-----------------|----------------|
| Dm with nephropathy      | 2               | 1.33           |
| Dm with neuropathy       | 2               | 1.33           |
| Dm with retinopathy      | 4               | 2.66           |
| Dm with foot ulcer       | 3               | 2              |
| Dm with hypertension     | 38              | 25.33          |
| Pulmonary edema          | 3               | 2              |
| Giddiness                | 31              | 20.66          |
| Epitaxis with hypertension | 2                | 1.33          |
| Anaemia                  | 5               | 3.33           |
| Aspiration pneumonia     | 2               | 1.33           |
| Hypothyroidism           | 7               | 4.66           |
| Pulmonary TB             | 3               | 2              |
| Drug induced hypoglycemia | 3               | 2              |
| Urinary tract infection  | 2               | 1.33           |
| Facial palsy with CVA    | 4               | 2.66           |
| Others                   | 26              | 17.3           |
Table 5: Medication adherence before and after patient counselling.

| No. of patients based on counselling | Good adherence | Moderate adherence | Poor adherence |
|-------------------------------------|----------------|--------------------|---------------|
|                                     | MARS-5=25 N (%) | MARS-5=20 to 25 N (%) | MARS-5=<20 N (%) |
| Before patient counselling          | 15 (10)        | 75 (50)            | 60 (40)       |
| After patient counselling           | 40 (26.66)     | 90 (60)            | 20 (13.33)    |

Table 6: Comparison of medication adherence before patient counselling in adults and geriatrics.

| Category   | Good adherence | Moderate adherence | Poor adherence |
|------------|----------------|--------------------|---------------|
|            | MARS-5=25 N (%) | MARS-5=20 to 25 N (%) | MARS-5=<20 N (%) |
| Adult (77) | 10 (12.98)     | 44 (57.14)         | 23 (29.87)    |
| Geriatric (73) | 5 (6.84) | 31 (42.46)         | 37 (50.68)    |

Table 7: Comparison of medication adherence after patient counselling in adults and geriatrics.

| Category   | Good adherence | Moderate adherence | Poor adherence |
|------------|----------------|--------------------|---------------|
|            | MARS-5=25 N (%) | MARS-5=20 to 25 N (%) | MARS-5=<20 N (%) |
| Adults (77) | 22 (28.57)     | 48 (62.33)         | 7 (9.09)      |
| Geriatric (73) | 18 (24.65) | 42 (57.53)         | 13 (17.80)    |

DISCUSSION

Medication adherence in chronic illness is substantial without which the rates of mortality and morbidity would become worse, also leading to increased hospital readmissions and adverse effects. It not only affects the clinical outcome but also the financial outcome of the healthcare system.4

So, providing pharmaceutical care through patient counseling would be supportive in the healthcare system and also plays an immense role in reducing non-adherence among the patients.7

The study observed that some of the demographic, disease and therapy related characteristics of the patient population also affect adherence in various ways.4 Advancing age affects adherence by increase in chance of forgetfulness, lack of assistance and polypharmacy which is supported by a study conducted in Pakistan. This study did not find any obvious association between gender and adherence. Majority of the subjects were illiterate as the study was conducted in rural area but some of them were slightly able to read and understand.

Disease type and comorbidity also plays major role in adherence to medicine. Adherence in cardiovascular patients was 50% according to a study conducted in Pakistan and in one more study conducted in Australia, adherence was 43% for asthma, and in one more study adherence was 57% for hypertension, concluding that adherence varies with the type of disease.8-10

Number of medicines used also has an effect on medication adherence as some of the patients get so annoyed to take more medicines therefore considering, polypharmacy also indirectly affects adherence.4

This study shows that before patient counselling, chronic disease population mostly has poor adherence and was improved after proper patient counselling which is supported by two other studies. Also, patient counseling through telephone calling and OP visits using pictogram and educating them on the importance of drug use proved to improve adherence.11 The current study did not record income details, adverse effects of the drug or duration of treatment like other studies.

CONCLUSION

Based on our study we conclude that through pharmaceutical care, patient counseling would convey the actual importance of medicine in chronic illness and could improve the adherence to medicine, thereby reducing further complications of the disease through long-term hospital stay or re-admissions.

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