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## The Impact of Clinical Pharmacist Intervention in Geriatric Patients with Chronic Diseases – An interventional study

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### ABSTRACT

**Background:** There has been an alarming rise in the prevalence and incidence of chronic diseases, particularly among senior patients with comorbid disorders and polypharmacy, which has a variety of severe health and well-being consequences.

**Aim:** Present study aimed to determine the impact of clinical pharmacist intervention in geriatric patients receiving treatment for chronic illness.

**Objectives:** The study's major goal was to assess the patient's overall quality of life and medication adherence using standard questionnaires.

**Methods:** This interventional study was conducted at the Government Medical College and Hospital in Udthagamandalam, The Nilgiris. The study included 160 patients in total. Male participants made up 45.63 percent, while female participants made up 54.37 percent. Medication adherence and QOL were assessed using the Morisky Medication Adherence Scale and the WHOQOL-BREF Questionnaires at the baseline and follow-up respectively. Paired t test and chi square test were used to analyze the data.

**Result:** In comparison to the obtained scores before interventions and counselling, the quality of life and medication adherence considerably improved after intervention and counselling (p value < 0.001) and (p value < 0.002), respectively.

**Conclusion:** Our findings, as well as those of other studies, reveal that pharmacist involvement has dramatically improved patients' quality of life and medication adherence. This depicts the critical role of the pharmacist in deducing and advising health-care professionals or counsel on how to improve a patient's clinical ailment. In addition, rather than reducing pharmacists' services, their position might be expanded. Physicians' workloads are currently very high, suggesting that the pharmacist's participation is worthwhile in lowering physician stress while simultaneously increasing patient quality of life. This study also found that pharmacist involvement/need is critical in chronic disease treatment in order to improve QOL by reducing disease recurrence, progression, and hospital admissions.

**Limitations:** This study was not able to be conducted in a larger population due of the pandemic condition. Our Study was confined to only one center (GH, Ooty) which is a limitation of the study.

**Key words:** Clinical Pharmacist, Intervention, geriatric patients, treatment, chronic illness

## **INTRODUCTION:**

The globe is going through a huge demographic shift. The ageing population is a global concern that leads to higher medical costs and a reduction in the workforce in the aged care industry, among other negative repercussions [1]. In 2010, 8% of the world's population was 65 years old or older. It is anticipated to nearly triple to 1.5 billion (16%) of the world's population by 2050 despite the fact that more developed countries have the oldest population profiles, whereas the under-developed countries also have a vast majority of older people and the fastest-aging populations. Between 2010 and 2050, the number of elderly persons in developing nations is expected to rise by more than 250 percent.

In India, things are heading in the same direction. The number of Indian senior people has surged by more than fourfold in the last 50 years. In 2011, the old population in India accounted for 8.2% of the overall population, and this figure is predicted to rise rapidly over the following four decades (to 19 percent in 2050) [3].

Chronic sickness affects over 70% of the Indian senior individuals. Single morbidity and multi-morbidity conditions account for 32 percent and 24 percent of the total [7]. Chronic conditions that include non-communicable diseases, long-term mental illnesses, and ongoing physical/structural impairment, as well as persistent communicable diseases like tuberculosis and human immunodeficiency virus infections/acquired immunodeficiency syndrome, which were recently added to the list.

According to health care, one of the most important issues that improves people's health level is quality of life, which is the most important health goal that has been acknowledged as one of the most important variables affecting people's lives, especially the elderly, in recent years [9]. The vast majority of chronic diseases wreak havoc on a patient's overall health.

Furthermore, senior patients' medication adherence has a significant impact on their quality of life. For both patients and healthcare workers, medication adherence is the major concern. Patients' health is being harmed as a result of medication non-adherence, which results in poor response to the treatment. Non-adherence has been vanquished to a greater extent, thanks to improvised approaches in clinical care. Clinical practice makes the greatest contribution to patient care and clinical pharmacy activities has seen a great transformation in the modern period, with an emphasis on optimizing pharmacological care. According to a study, 50% of chronic disease patients do not take their prescriptions as prescribed, with adherence rates ranging from 17% to 80%. Inadequate response to drug therapy, initial hospitalization, frequent hospital visits, and Adverse Drug Events (ADEs) are all common causes of medication non-adherence, which leads to an improper therapeutic outcome and, as a result, increased healthcare costs [11].

Chronic diseases and poor medication adherence can result in a loss of quality of life, as well as acute or long-term problems that necessitate costly hospitalization and readmissions [12].

Chronic disabilities are associated with a reduction in physical and functional capacity over time, as well as an increased risk and chance of future disease, social isolation, and loss of independence [13].

Their present quality of life and knowledge about medication adherence can be measured and recorded using standard questionnaires with the support of clinical pharmacist intervention to improve the quality of life and productivity of older patients with chronic conditions (WHOQOL-BREF, MORISKY MEDICATION ADHERENCE SCALE).

### **METHODS:**

The study took place in the Government Medical College and Hospital in Udthagamandalam, The Nilgiris, and was a 6-month single-centered study. The study's target population was geriatrics, with Ethical Considerations in line with the ethical standards of the 'Declaration of Helsinki.' And only after gaining their consent were the study subjects added. Case sheets, medication charts, and lab reports were used as in-patient records, and questionnaires such as the Morisky Medication Adherence Scale (MMAS), WHOQOL BREF were used to determine the individuals' current medical status.

### **STUDY DESIGN:**

Patients who satisfied the study's eligibility criteria were contacted and informed about the research. Participants were briefed on the aspects to be filled in the data collecting form after they had given their voluntary consent. Assistance with filling out the data collection form and study questionnaires was supplied whenever it was needed. Pharmacist involvement was deemed out following a review of the case reports, and patients were given appropriate advice. Patients were then examined using the same questions after a four-week gap. The data collecting form was used to record all of the observed data. In the excel sheets, the obtained data was imputed. IBM SPSS & Rstudio software was used to compare the results and the study findings acquired. The study's discussion and conclusion were written.

### **STATISTICAL ANALYSIS:**

The difference in quality of life and medication adherence before and after pharmacist intervention and counselling was estimated using normalcy and paired t test to examine the normality and improvement from the obtained data. Pearson correlation analysis was used to investigate the association between the Age and BREF scores. The IBM SPSS & R studio programme was used for all analyses.

### **RESULTS:**

The study enrolled a total of 160 participants. Male participants accounted for 49.3% of the total 160 participants, while female participants accounted for 50.6 percent. The study's participants ranged in age from 65 to 85 years old. The majority of the participants were aged 65 to 75 years old. The gender, age, marital status, and educational status of the study participants are shown in Table 1.

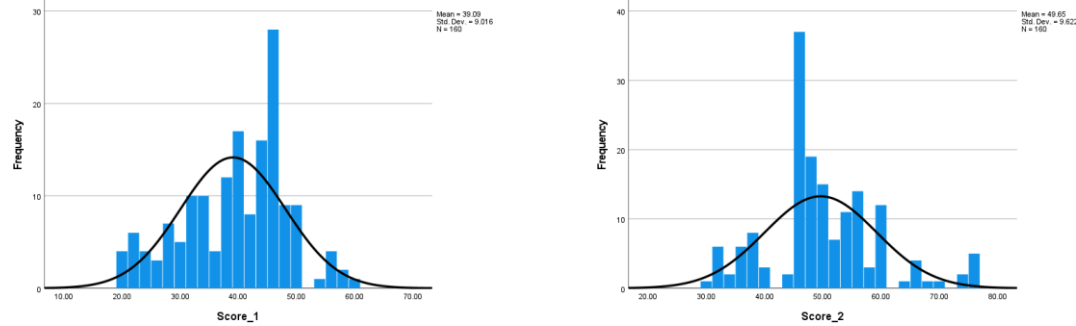
**Table 1: Gender, age, marital and educational status distribution of the study population**

<b>GENDER</b>	<b>n (%)</b>
Male	73 (45.63%)
Female	87 (54.37%)
<b>AGE (years)</b>	<b>n (%)</b>
65–75	91 (56.87%)
76–85	49 (30.62%)
86–95	20 (12.50%)
>96	0 (0.00%)
<b>MARITAL STATUS</b>	<b>n (%)</b>
Single	5 (3.12%)
Married	141 (88.12%)
Widow	9 (5.62%)
Widower	5 (3.12%)
<b>EDUCATIONAL STATUS</b>	<b>n (%)</b>
Illiterate	55 (34.37%)
Primary	54 (33.75%)
UG	51 (31.87%)

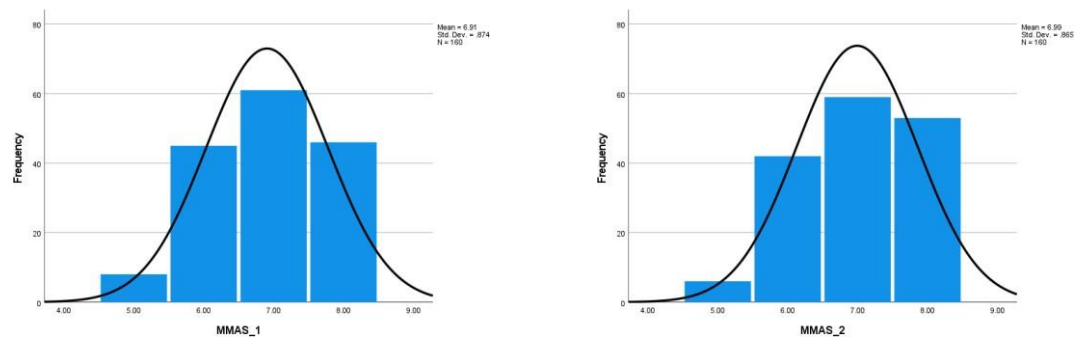
The majority of the patients (48.75 percent) were suffering from pulmonary disease. Between the ages of 65 and 75, (59.7%) were educated and (31.35%) were illiterate. Under the age of 76–85, 55.1 percent of people were educated, while 44.9 percent were illiterate. Sixty percent of patients aged 86 to 95 were educated, whereas forty percent were illiterate. 65.7 percent of those under the age of 96 were educated, while 34.4 percent were illiterate. It was discovered that the majority of the patients under the age of >96 was more educated than the other age groups.

Patients under the age of 65–75 years old were found to be (93.4 percent) married, (5.5 percent) widowed, (1.1%) single, and (0.0%) widower. Under the age of 85, (83.7%) of married people, (6.1%) of widows, (6.1%) of widowers, and (4.1%) of single people are between the ages of 76 and 85. Between the ages of 86 and 95, (75%) were married, (5%) were widows, (10%) were widowers, and (10%) were single. It was discovered that the majority of patients under the age of 65–75 were married; the majority of patients under the age of 76–85 were widows; the majority of patients under the age of 86–95 were widowers; and the majority of patients under the age of 76–85 and 86–95 were single.

The histograms show the patients' responses before and after intervention and counselling. These histograms were used to confirm the normality of the dispersed data, and the WHOQOL–BREF scores were found to be normally distributed.

**Fig. 1 - Responses from patients before and after interventions**

The WHOQOL-BREF ratings obtained before and after pharmacist interventions and counselling were compared using a paired samples test. The WHOQOL-BREF scores showed a significant change ( $p$  value of 0.005), indicating that the patient's quality of life improved as a result of the pharmacist's intervention and counselling.

**Fig. 3 - Responses from patients before and after counselling**

The Morisky Medication Adherence Scale (MMAS) ratings obtained before and after pharmacist counselling were compared using a paired samples test. There was a significant difference in the Morisky Medication Adherence Scale (MMAS) scores ( $p$  value of 0.005), indicating that the patient's medication adherence improved following pharmacist counselling.

Pearson's correlation was performed to determine the relationship between Age and BREF score. The strength of association for the above-mentioned parameters was found to be negative moderate correlation ( $r = -0.0741$ ;  $p =$ ;  $CI =$ ), which indicates that the Clinical pharmacist initiatives have had a beneficial impact on patients aged 65 to 75, enhancing the quality of life.

## **DISCUSSION:**

The number of drugs and dosage frequency were two characteristics determined in this study that had a detrimental impact on the patients' health through a decrease in medication adherence, which could have resulted in a poor QOL.

The MMAS assessment of medication adherence clearly demonstrated that there was a significant improvement in medication adherence of the patients ( $<0.002$ ) in the post counselling group compared to the pre counselling group because the patients were counselled, gentle and moderately frequent telephone reminders made them adapt strongly towards disease management.

From baseline to follow-up, many factors impacting non-adherence rates were reduced. This strongly suggests that a pharmacist's influence on a chronic patient's QOL is significant.

A total of 91 people were categorized as being between the ages of 65 and 75, accounting for 56.8% of the total. Adherence was observed to be high in this group of patients. The 75–85 age group accounted for 41 (25.6%) of all patients. This age group's patients were shown to have a modest level of adherence. Twenty patients (or 12.5%) were found to be non-adherent, all of whom were between the ages of 85 and 95.

The patient's medication adherence may be influenced indirectly by their marital status, as evidenced by the fact that 141 patients were married and aged 65 to 75 years, which is statistically significant.

The post-counselling group exhibited a substantial improvement ( $<0.001$ ) in WHOQOL-BREF ratings compared to the pre-counselling group. When comparing the baseline to the follow-up, the various QOL domains scores likewise revealed a significant improvement. The final individual domains indicate a significant improvement in overall QOL, indicating a positive influence on their QOL. However, continuous monitoring is still required to manage their disease condition and quality of life.

Because of the pandemic, this study was not able to be conducted in a broader group. Our investigation was limited to only one center (GH, Ooty), which is a drawback. As a result, research results may not be generalizable. The majority of the patients had transportation concerns; hence the study was limited. As a result, phone contacts were used to guarantee that follow-up was done. Unlike an interview, the investigator cannot assess the respondents' sincerity, apparent reluctance, or even evasiveness using a questionnaire.

To summarize, our findings, as well as those of other studies, show that pharmacist involvement improves patients' quality of life and medication adherence significantly. This illustrates the pharmacist's vital function in determining and guiding health-care professionals or counsel on how to enhance a patient's clinical condition. Furthermore, rather than curtailing pharmacists' services, their role may be extended. Physician workloads are now very high, implying that the pharmacist's involvement might be beneficial in reducing physician stress while also improving patient quality of life. This study also discovered that pharmacist involvement/need is crucial in chronic disease treatment to increase QOL by minimizing disease recurrence, progression, and hospitalizations.

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**FUTURE DIRECTIONS:** A similar study with children and adults could be undertaken in the future. Multiple Center studies might be undertaken in order to re-confirm the findings.

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