Study Protocol

"Association of Depression with Polypharmacy among Diabetic Patients of Geriatric age group in Tertiary Care Teaching Hospital."

ABSTRACT

Background: Diabetes mellitus , one of the common serious conditions among elderly and depression is frequent finding as a Comorbidity. Polypharmacy is common in diabetes and In diabetic senior people, it has been linked to depression. Polypharmacy, especially among the elderly, is a consistent predictor of inappropriate medication. Approaching and analysing the prescription pattern in elderly diabetic patient will rationalize the drug utilization. The current research is to access the co-relation of polypharmacy in geriatric diabetic patient and accompanying depression.

Objectives: To assess depression and polypharmacy and correlate their association, in diabetic patients of geriatric age group.

Methodology: This is questionnaire based cross sectional observational study. This shall be conducted in geriatric population attending Medicine department (OPD and IPD) (AVBRH), DMIMS, Sawangi (M), Wardha, Maharashtra, India. The depression will be assessed using Geriatric Depression scale. The Polypharmacy will be assessed using contingency table and odds ratio.

Expected outcome: It is hypothesized that geriatric diabetic patients with depression (GDS>= 6) are at higher risk of encountering polypharmacy.

Conclusion: To upgrades standards of life of senior diabetic patients, prescribing procedures should be reviewed.

Keywords: Depression, Diabetes, Polypharmacy, Geriatric depression scale, Geriatric.

INTRODUCTION:

264 million peoples all around the world suffer from Depression which is common mental illness nowadays [1] According to the W.H.O, depression is a mental condition marked by dejection, aloof , detachment , guilt, interrupted sleep , poor attention, and exhaustion. (2) Diabetes, a epidemic in India, now has 62 million diabetics, with the data expected to increase to 72.4 million by 2030. (3) Diabetes is termed as a metabolic disease in which blood glucose levels are elevated and by the time it damages the blood vessels, kidney, heart and nerves. Type II Diabetes, the most common one in which the body doesn't respond to insulin, it gets resisted or there is lack of insulin production. India stands 2nd highest in no. of diabetic patients in world and by the year 2025 it is expected to reach 69.9 million diabetic population in India. [(4)] Individual with depression and diabetes has showed poor connection to exercise and dietary restrictions, poor self-management, and poor medication adherence when compared to patients with diabetes alone (5,6). While depression may play a role in low statistics in diabetes, and its consequences may also play a role in depression. (7,8,9) . Diabetes Type II is becoming more common in countries of all income levels over the last three decades. Depression affects around 43 million people worldwide. (10)

Diabetes is a global threat of the twenty-first century, according to "International Diabetic Federation." (11). In developed countries, depression and anxiety are 4th and 8th causes of disability adjusted life years , respectively. (12) . Diabetes will cause 6-7 million fatalities in 2021, with one death occurring every 5 seconds. (13) Aging is an unavoidable fact of life. It is natural and uncontrollable by humans. The term "Geriatric" refers to people in their senior years, and Geriatric or Geriatric medicine is involved with the diagnosis, therapy, and prevention of disease in the elderly. (14,15). Normal ageing and aging-related disease are both a part of life. Physiological functions are typically lowered as a result of age, such as decreased bone density, osteoarthritis, and cataract lens discomfort, among other things. Decreased vital function in the older people makes them more susceptible to numerous ailments, thus they will be prescribed a variety of drugs. (16,17)

Geriatric syndromes are common in the elderly, and they can be caused by using the wrong drugs. (18). Because of neuropathy, dysautonomia, and vascular disease, diabetic patients with long-term diabetes are particularly vulnerable to all of these adverse effects.

According to one data of Medical Expenditure of Panel survey, the Diabetic patient has minimum one comorbid chronic condition, and as many as 40% have at least three. (19,20,21)

Diabetes and depression have a complicated relationship. Depression is widespread among senior diabetic people, they are at a higher risk for co-morbid depression than non-diabetic patients. (22)

Polypharmacy is routine practice among diabetic patients and is more common in geriatric population with diabetes.(23,24)

Polypharmacy is explained as concomitant use of 5 or >5 drugs for management of co-existing health related issues, and there are some evidenced based data indicating the association of polypharmacy with increased rates of drug interaction and adverse drug events. (25,26,27,28)

Inappropriate prescription of drug leads to decrease in medical compliance.

According to current estimates, 350 million people worldwide go through from depression, whereas > 400 million people worldwide suffer from DM. (29)

Only about 1/3rd of persons with depression and diabetes are diagnosed and treated adequately . (30)

There are some studies about polypharmacy and its health-related hazards, but as per as our knowledge is concerned there are no study taking consideration of polypharmacy as association with depression in geriatric diabetic patients. Hence, we are planning to do present study.

RATIONALE:

The relationship of depression with diabetes has been recorded years ago, but the kind of this connection remains undefined. Both diseases are serious and chronic in nature that adversely affect life quality, functional ability, and diminish overall life expectancy.(31,32)

Epidemiological evidence suggests that the prevalence of depression is higher in both type 1 and type 2 diabetic patients compared to population across the world. (33)

When compared to people who do not have diabetes, geriatric diabetic patients are at a high risk of developing co-morbid depression. (34)

Geriatric syndromes are common among the elderly, and they are often coupled with improper drugs, leading to polypharmacy. (35) Polypharmacy is evident in diabetic patients in order to maintain tight glucose control while also managing comorbid illnesses such as coronary artery disease, dyslipidemia, hypertension, and neuropathy. (36)

Evidence based data indicates the association of polypharmacy with increased rates of drug interaction and ADEs. (37,38,39)

In the years ahead, the increasing number of multi-morbid elder adults with complex treatment regimens is continued to provide a drawback to the health-care system.

As a result, it makes sense to look into the link between depression and polypharmacy among diabetic patients in their later years.

AIM: To find out association of depression with polypharmacy among diabetic patients of geriatric age group.

OBJECTIVES:

1.To assess the Depression in diabetic patient of geriatric age group

2. To observe the Polypharmacy in diabetic patient of geriatric age group

3. To correlate the association of depression and polypharmacy in diabetic people of geriatric age group.

METHODOLOGY:

Study Setting: The research will begin once the Institutional Ethical Committee has given its approval. All participants must give their informed consent**.**

It will be 2 months questionnaire based, cross sectional, observational study. It will be conducted in geriatric population attending Medicine department (OPD and IPD) of (AVBRH), DMIMS, sawangi (M), Wardha, Maharashtra, India.

Study Design: Cross Sectional study.

Sampling Method: Simple random sampling

Study Population:

Geriatric population attending Medicine department (OPD and IPD) of (AVBRH), DMIMS, Sawangi (M), Wardha, Maharashtra, India.

Inclusion Criteria:

1. Geriatric patients having diabetes attending Medicine department (OPD and IPD).

2.Elderly diabetic patients willing to give consent for participation in the study.

Exclusion Criteria:

1. Patients whose case sheets are incomplete.

2. Patients who are in Emergency and intensive care unit.

3. Patients having serious illness, malignancies and other complications which are not related.

Data Collection:

The examination of the study participants' case sheets will collect all relevant data concerning demographics (age, gender), clinical information (medical diagnosis, nature of co-morbidity, number of co-morbid illnesses), and pharmacological specifics (prescription drugs, quantity of drugs).

Throughout the study period, the study investigator will check the case sheets of these study participants on a daily basis.

A total of 15 score GDS score is used to evaluate depression, with a GDS score of 6 indicating depression. (20)

Out of 15 questions, 10 signifies the presence of depression when answered positively, and the rest (1,5,7,11,13) signifies depression when answered negatively. Scores 0-4 considered normal, score 5-8 considered mild , score 9-11 considered moderate , and score 12-15 considered severe depression.

Polypharmacy will be accessed by suing contigency table and odd ratio to compare clinical features of patients that whether patients use less than 5 , 5 or more medications daily in the month prior to admission.

Age group are divided as 60-65 years, 65-70 years and more than 70 years.

Statistical Analysis:

Contingency tables will be used for comparison of the clinical, demographic features of patients. By using SPSS software, statistical analysis will be carried out. Descriptive analyses of age, sex, associated problems will be carried out. Continuous variables which are ordinarily distributed will be depicted by using Standard, Mean error. Comparison between quantitative variables will be done using chi-square test.

EXPECTED RESULTS:

Depression is expected co-morbid condition in older adult patients with diabetes. Majority of these diabetic patients can have GDS >6 score, which are strongly associated with depression.

Depression is expected to be more significant in female patients as compared to male patients and also people residing in rural area and those with presence of complications, comorbidities.

Age group of 65-70 years of patients are expected to have high degree of depression.

Many of the patients might be the consumer of 5 or more drugs and more frequently be depressed than consumer of less than 5 drugs.

Polypharmacy should be a top priority for diabetic people, especially the geriatrics . Patients having diabetes need strategies to limit the prescription of unneeded drugs, which could enhance their quality of life and adherence to therapy.

Early detection and treatment of depression can lower mortality rates.

As a result, our research can show that there is a statistically significant link between depression and polypharmacy in elderly DM patients.

DISCUSSION:

This article is to assess the association between polypharmacy and depression in the diabetic people of geriatric age group.

Evidence shows the cases of depression is increased in the previously diagnosed DM patients compared to ordinary glucose metabolism fellows. (40),moderately increased in undiagnosed patient and prediagnosed diabetes patients.

Lower prevalence rates of depression is seen in DM patients according to research in UK, Germany and Canada. (41,42,43)

A research by Gendelman et.al shows remarkably higher rates of depression in both women and men with type 1 diabetes compared to those who doesn't had diabetes (44).. Similarly, increased rates of depression in people were shown by Collins et al. in their study (45)

Another study by pouwer et.al, concerning diabetic patients attending OPD in the Netherlands, found that one third of their sample of type 1 diabetes reported depression.(46)

A Study in Italy shows prevalence of polypharmacy to be 46% in the elderly aged group, i.e 65 years and older.(47)

Study by Golden et al. shows rate of depression is higher in older diabetic people as compared to younger.(48)

Most studies have suggested that numerous factors may be linked with increased prevalence rate of depression among diabetic people and out of these , persistent poor glycemic control has been to be important one..(49)

A Review article by Good et al. suggests that strict control of glycaemic levels and comorbid illness mainly responsible for polypharmacy among geriatric diabetic patients.(50)

Even after accounting for the effects of obesity and adipose tissue distribution, the Baltimore study of ageing found that secretion of insulin decreased with age. (51) It demonstrates that diabetes mellitus is more prevalent in the geriatric age group.

Geriatrics use an average of 2-9 drugs every day, according to several studies conducted around the world. (52)Inappropriate medication use by geriatric patients was reported to be between 11.5 to 62.5 percent. (53)

Type 2 diabetic patients consumed much more drugs, at significantly higher costs, than non-diabetic patients matched by sex, age, and residential location in a national study in Finland.(54)

A multi-centre cross-sectional survey conducted in Italy, 57 percent of diabetic patients use five or more drugs.(55) Polypharmacy was also detected in 84 percent of diabetic individuals aged 65 and over.

Diabetes, doubles the risk of comorbid depression, which affects about 30% of patients with type 1 and DM patients.(56)

Depression found to be more in female because of estrogen level (57). It happens twice frequently in females compared to males.(58,59-62,63) reason could also be social role attributed to women.(64)

Some studies demonstrated, depression is more common in humans over the age of 60, owing to the fact that they are retired and rely on other family members; nevertheless, other studies reveal no link between age and the statistics of depression in diabetic patients. (65)

Similar studies by Raval et al, Ciechanowski et al. reveal that in rural areas depression is more prevalent than in metropolitan areas (66-75)

Depression could be a barrier to good DM treatment since it leads to patient non-adherence to medication.

Screening is mandatory for depression and other mental disorder for diabetic patients, so that it can be treated early.

Conflict of Interest: None

Funding: ICMR Funded

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