



**RELATIONSHIP BETWEEN HYPERTENSION AND KIDNEY FAILURE: A STUDY  
DONE AT A PHARMACEUTICAL CARE CENTRE**

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**ABSTRACT**

Hypertension is one of the leading risk factor for cardiac diseases. High blood pressure (Hypertension) is one of the leading cause of death, causing over 7.5 million deaths and 57 million cases of disability all over the world. It manifests through entire organ systems, including the heart it self. Features of hypertensive heart disease include left ventricular hypertrophy, diastolic and systolic heart failure. Hence, this study was conducted in order to investigate the relationship of hypertension with incidence of kidney failure on clinical basis. This study is a cross sectional study, involving patients from a pharmaceutical Care Centre in Pola de Allande (Asturias), Spain. A total of 78 patients participated in the study. In this study, we found that 87, 98% of patients with hypertension develop kidney failure and that hypertension showed significant relationship to the incidence of kidney failure.

**KEYWORDS:** Pharmaceutical care, Quality of life, Hypertension, Kidney failure, Pharmacist contribution.

**INTRODUCTION**

Overall kidney function is judged by the level of filtration that occurs. Filtration is accomplished by the tiny blood vessels in the kidney called “glomeruli”. So overall kidney function is called the “glomerular filtration rate” (GFR), measured as the volume of blood filtered per minute (milliliters/minute). Normal values are about 100 ml/min, but varies with age and sex. GFR can be estimated (eGFR) using formulas that take into account your age, sex and a blood test called creatinine.

Kidney failure is most often found when the creatinine level is high, indicating that kidney function is reduced. Creatinine is a molecule made by your muscles. A normal kidney will remove creatinine from the blood stream and get rid of it in urine. More creatinine in the blood is a sign that the kidneys aren't cleaning the blood as well as they should. This test can spot something is wrong before a patient with kidney failure feels sick.

To treat AKI, you have to treat the cause (Such as blood pressure that is too high or too low, a kidney stone or high blood sugar). Sometimes you need dialysis for a short time.

With CKD, treating the cause (Such as high blood pressure and/or high blood sugar) can slow the disease. The goal is to prevent CKD from turning into advanced kidney disease, or end stage kidney disease (ESKD, formerly known as end stage renal disease, ESRD).

When kidney function falls below 10% of normal, dialysis or a kidney transplant is usually needed, especially if you have signs of uremia (A buildup of waste in the blood), like nausea, loss of appetite, weight loss and itching.<sup>[1,2,3,4,5]</sup>

Dialysis is a way to remove extra salt, acid, potassium and waste products from the blood. The 2 types of dialysis are hemodialysis and peritoneal dialysis.

Hemodialysis: For hemodialysis, a tube (Catheter) is stuck into one of the veins in your neck or leg. Preferably, an access, or arteriovenous fistula, is constructed in the arm. Hemodialysis is most often done 3 times a week for 3 to 4 hours at a time.

Peritoneal dialysis: Peritoneal dialysis is done through a tube permanently set in your belly. Fluid is then run into the abdomen, takes out the extra salt and potassium and water, and then removed. Most exchanges of fluid can be done by an automated “exchanger” while you sleep.

Most adults have dialysis done in an outpatient hemodialysis center. Most children have peritoneal dialysis done at home. Peritoneal dialysis has a number of advantages and is becoming more frequently used in adults in the US.<sup>[6,7,8,9]</sup>

The context above raises questions about how to achieve optimal care within a multidisciplinary setting in which

specialist pharmacists are providing new services requiring networking arrangements to underpin the quality of care as the patient moves between clinical settings, home, hospital, and clinic. The pharmacist input has been developing over the past seven years via inpatient services. The aim of this study was to evaluate the impact of a newly developed pharmaceutical care service within a multidisciplinary outpatients service.

## MATERIALS AND METHODS

A pharmaceutical care consultation led to the identification of pharmaceutical care issues. The session focused on determining whether all patient's drug therapy was the most appropriate, safe, effective, and conveniently available for the patient. During the pharmaceutical care consultation, the clinical pharmacist identified pharmaceutical care issues. Actual drug therapy problems are problems which are present and hence need to be resolved immediately whereas potential drug therapy problems are problems which are not yet present, but which might arise in future, and which could be avoided if the correct action is taken. The category non-drug therapy problems were added to the list to accommodate pharmaceutical care issues which were not directly related to drug therapy but relied on patient's perception, information on treatment or the need of other help from other health care professionals. Actions (checks or changes) needed to resolve each care issue problem were documented in the care plan within the patient's medical file.

## RESULTS AND DISCUSSION

In our study, we found that the number of male patients (74%) exceeds and almost double the number of female patients (26%). Cardiovascular diseases (CVDs) are considered more common in male. In a study conducted by Connor *et al* and Miller R *et al*, it is postulated to have association with unhealthier lifestyle of men (higher stress, higher consumption of alcohol and smoking cigars) as well as the fact that men pay less attention to healthy diet including routine consumption of vegetables and fruits. Women are considered more fortunate due to oestrogen which naturally lessen the risk of women getting CVDs. In a study conducted by Wellman GC *et al*, they explained that oestrogen enhance nitric oxide (NO) production by the vascular endothelium probably through enhanced production of enzyme NO synthase. In a similar study conducted by Julian *et al*, it was shown that through population of above 45 years of age, risk of getting CVD in both men and women is close to 1.5 : 1. This suggests that degenerative process, lifestyle, and baseline condition in each gender contribute to larger proportion regarding how more likely an individual to get CVDs.<sup>[10,11,12]</sup>

## CONCLUSION

Pharmaceutical care services offered within out-patient clinic multidisciplinary team can help to improve the patients' quality of life. This study has confirmed the positive impact of the pharmacist intervention within this

multidisciplinary team on the patients' quality attending the out-patient clinic. This has been confirmed in other studies in other areas such as in the management of cardiovascular patients and diabetes patients. Processes to identify patients who would require pharmaceutical care services within the setting may need to be identified in the scenario that the pharmaceutical care services are offered to all patients attending the clinic. Research to standardize the pharmaceutical care services is now being undertaken to ensure a harmonized evidence-based quality service.

In present study, we found that 88.7% of patients with hypertension develop kidney failure and that hypertension showed significant relationship to the incidence of kidney failure. Further analysis showed that hypertension class has no significant correlation with the incidence of kidney failure, thus indicating that there is no proven consistency between hypertension class and kidney failure. This indicates that regardless the degree of hypertension, an individual may develop, therefore, this issue must also be seriously addressed along with controlling blood pressure in the extent of hypertension management.

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